Package of Essential Noncommunicable (PEN) disease and healthy lifestyle interventions

Training modules for primary health care workers
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Training modules for primary health care workers

World Health Organization
Regional Office for South-East Asia

#beatNCDs
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These training modules have been developed based on the Package of Essential Noncommunicable (PEN) disease interventions for primary health care in low-resource settings, HEARTS Technical Package which are developed by WHO headquarters. In addition, the modules contain additional topics related to the noncommunicable diseases relevant to Member States of the South-East Asia Region.

The training modules have been developed under the aegis of Dr Thaksaphon Thamarangsi, Director, Department of Noncommunicable Disease and Environmental Health, WHO Regional Office for South-East Asia, through an elaborate consultative process involving regional experts, officials of the ministries of health of Member States and other international reviewers.

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When in 2008 WHO launched its groundbreaking report *Primary Health Care (Now More Than Ever)* – some thirty years after the issuing of the Declaration of Alma-Ata – the case for a primary health care (PHC) approach to public health was made anew, and more forcefully than ever. It is a case that is particularly pertinent to the WHO South-East Asia Region, where the approach provides real opportunities to prevent and control a growing threat to public health – noncommunicable diseases (NCDs).

Following the UN General Assembly’s 2011 declaration to do exactly that, unprecedented Regionwide efforts have been made to implement the PHC approach. In 2016, for example, at the Sixty-ninth session of WHO South-East Asia’s Regional Committee, the Colombo Declaration on Strengthening Health Systems was issued. The Declaration – endorsed and adopted by all Member States – explicitly acknowledges the need to integrate quality NCD services at the PHC level. But even before that, in 2014, WHO South-East Asia made combating NCDs one of its Flagship Priorities, with several Member States rolling out or piloting the WHO Package of essential noncommunicable disease interventions (WHO PEN) – a tool developed to help low- and middle-income countries devise the right mix of NCD services and how best to provide them.

As the WHO PEN emphasizes, all components of health systems – including the availability of essential medicines and diagnostics for common NCDs – are fundamental to preventing and controlling NCDs. And as the following training modules outline, a critical component of this is ensuring the availability of a competent PHC workforce that can provide comprehensive and patient-centric care to improve health outcomes. That is especially so as countries work to roll back NCDs and the threat they pose to health and development more broadly and the responsibilities and scope of work at the PHC level changes.

To this end, the following Package of Essential Noncommunicable diseases and Healthy Lifestyle Intervention training modules aim to build the competencies of frontline health workers by harnessing the power of fundamental public health principles. As Member States expand their capacity to provide NCD services, the following training modules can – and should – be used to expand the capacity of PHC workers. Importantly, the modules provide standardized, competency-based training for PHC workers that Member States can adapt as per their own contexts, and to ensure the uniformity of services provided. Among other strategies being implemented, the modules are an important means of accelerating country actions towards realizing the 25x25 NCD targets and related components of the 2030 Sustainable Development Agenda.

Given the vast scope of diseases and risk factors addressed herein, the modules must be regularly updated. With that in mind, I nevertheless hope this first edition is a valuable addition to our ongoing quest to enhance the capacity of frontline health workers to prevent and control NCDs, to meet regional and global NCD targets, and to advance progress towards quality health services for all.

Dr Poonam Khetrapal Singh
Regional Director
WHO South-East Asia Region
Scope of the Training Modules
WHAT’S INSIDE

- Introduction
- Four themes
- Competency focus
- Audience for the training
- Curriculum
- Teaching–learning techniques
- Training design and implementation
- Training replication
- Training of trainers
- Health facility-based PEN coaching
- Training duration
INTRODUCTION

Noncommunicable diseases (NCDs – cardiovascular diseases [CVDs], diabetes, chronic obstructive pulmonary disease [COPD], asthma, and cancers) and other modifiable risk factors that can result in NCDs such as tobacco and alcohol use, unhealthy diet and physical inactivity can be addressed in primary care settings using cost-effective interventions. Although using the primary health care (PHC) approach has been a success story in addressing public health issues, at the moment, its full potential for NCD prevention and control remains untapped in Member States of the WHO South-East Asia (SEA) Region. Currently, PHC services have a low capacity for NCD care and provide reactive and episodic responses rather than using a coordinated and patient-centred approach. The existing PHC systems need to be fully strengthened and optimized for early detection, treatment and follow-up care of patients with NCDs.

All Member States of the SEA Region have endorsed a commitment to align their national NCD targets towards the 2025 regional and global targets. These include achieving the two health service targets: ensuring that 80% of health facilities have essential NCD medicines and technologies, and 50% of high-risk populations needing drug therapy and counselling receive them by 2025. Member States have further reaffirmed their commitment to strengthen the PHC approach to deliver NCD services in the 2016 Colombo Declaration (SEA/RC69/R1).

In order to support scaling up of essential NCD services, WHO has developed a cost-effective PHC intervention known as the Package of Essential Noncommunicable Disease Interventions (WHO PEN). It contains a set of validated, evidence-based simple clinical algorithms and protocols for clinical diagnosis and treatment of CVDs, management of chronic respiratory diseases, suspected breast and cervical cancers, guidance on minimum requirements for essential medicines and affordable technologies, and standards and indicators to measure progress. WHO PEN also consists of protocols for behavioural interventions to address key modifiable risk factors: tobacco cessation, dietary modification, avoiding harmful use of alcohol and increasing physical activity, which can be delivered by physicians or non-physician health-care workers (e.g. nurses, health assistant, etc.).

Although WHO PEN algorithms and protocols were developed based on the current evidence, there is no standardized PEN training package for health workers. When Member States initiated PEN services, the technical unit of the Regional Office along with country experts prepared country-specific PEN training packages. In 2016–2017, using the country-specific PEN training packages, Maldives, Myanmar, Nepal and Timor-Leste conducted PEN training. One of the key challenges faced with country-level training were the variations in duration, content and training methods, even though the training outcome was expected to be similar in principle. This variation was due to lack of standardized regional PEN training modules. Recognizing the gap, the technical unit developed a South-East Asia (SEA) Regional PEN training module building on the experiences of successive country-level training conducted in the recent past.

The additional topics on NCDs included in the training module were rheumatic heart deases, stroke, addressing comorbidities of common mental disorders and NCDs, household air pollution, oral cancer and palliative care.
FOUR THEMES

The training modules cover four thematic areas.

Theme 1. Overview of the burden of NCDs and cost-effective public health interventions

The course begins with participants discussing the epidemiological situation of NCDs at the global, regional and national levels. Participants then discuss the current situation of NCD services and conclude by discussing the concept of PEN as a PHC approach, and the contents and components of PEN interventions.

Theme 2. Health education and counselling on lifestyle risk factors for NCDs

This section covers the brief interventions and counselling of individuals and patients on NCD risk factors in the PHC setting. Topics include the basics of brief interventions using the 5A’s and 5R’s, motivational interviewing of individuals for behaviour change on tobacco and alcohol use, physical inactivity, unhealthy diet and exposure to indoor air pollution.

Theme 3. Approaches to NCD management in the PHC setting

The sessions include a review of the basic clinical approaches to early detection and management of common NCDs: CVDs, diabetes, COPD and cancers. The pathophysiology, risk factors, symptoms and signs, complications, and management of common NCDs are discussed in simple language. Additional topics include comorbidity of NCD and mental disorder and palliative care.

Theme 4. Delivering PEN services within the health facility

The sessions dwell on the delivery of essential NCD services through a team-based approach at the PHC level and turning PHC centres into learning organizations through team-based learning and peer coaching. It also covers building service linkages and improving work flow for patient care within the various units of the health facility, strengthening quality improvement processes and information systems, integrating supportive supervision for PEN services.

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1 The five major steps to behavioural counselling intervention using the “5A’s” include: Ask, Advise, Assess, Assist, and Arrange.

2 The steps to motivate patients to adopt healthy behaviours (e.g. a quit attempt to cease tobacco use) with the “5R’s” include using 5 steps: Relevance, Risks, Rewards, Roadblocks, and Repetition.
COMPETENCY FOCUS

The training course is intended to increase knowledge, enhance the application of skills and practices of primary health care (PHC) workers in the early detection and appropriate management of NCDs at the first point of contact. Expected competencies to be acquired by trainees include their ability to do the following:

- detect, treat and appropriately refer patients with major NCDs (CVDs, diabetes, chronic respiratory diseases and common cancers);
- employ the 5A and 5R techniques to motivate positive behavioural change among individuals using tobacco, alcohol, consuming unhealthy diets and whose physical activity levels are low;
- link indoor air pollution to health risks and advise on preventive measures to reduce exposure to poor indoor air quality;
- measure weight, height, abdominal circumference, waist and hip, and calculate the body mass index (BMI), waist–hip ratio (WHR);
- calculate and stratify cardiovascular risk using the WHO/International Society for Hypertension (ISH) risk prediction chart, demonstrate the use of basic diagnostics and patient aids such as a glucometer, peak flow meter, spacer and inhaler, measurement of blood pressure;
- interpret the results of blood pressure, blood sugar and peak flow measurements;
- develop an implementation plan to enhance a team-based approach to deliver essential NCD services at the PHC level;
- conduct peer coaching on PEN interventions at PHC centres; and
- collect, generate and use data for monitoring and evaluation of the WHO PEN Programme.

AUDIENCE FOR THE TRAINING

The intended audience are in-service PHC workers involved in clinical care at the first point of contact. PHC workers consist of physician and non-physician health care providers, depending on the country setting. The participants are expected to possess considerable field and work experience.

CURRICULUM

The core topics for the PEN training comprise essential and desirable topics. Essential topics include clinic-based interventions that are the standard of care at the PHC level. These consist of skills and clinical practices in delivering services for major NCDs. Desirable topics include broad policy interventions such as public policy and socioeconomic interventions that are not directly related to clinical care yet are critical for NCD prevention and control in the population.
### Table 1: Competency areas

<table>
<thead>
<tr>
<th>Topic area</th>
<th>Competency focus</th>
<th>Contents/key messages</th>
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<tbody>
<tr>
<td>NCD burden and public health approaches.</td>
<td>- Be able to identify the risk factors and apply population- and individual-level interventions for NCD prevention and control.</td>
<td>- Determinants of NCDs</td>
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<td>- Information on the burden of NCDs at the global, regional and national levels and their risk factors</td>
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<td>- Concepts of NCD prevention in relation to the natural history of the disease</td>
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<td>- Best buys for addressing NCDs and their risk factors</td>
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<tr>
<td>PHC approach to delivering essential NCD services.</td>
<td>- Apply skills to integrate essential NCD services in the PHC setting.</td>
<td>- Functions of comprehensive PHC</td>
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<td>- Chronic care model</td>
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<td>- Screening/early detection of NCDs at the PHC level</td>
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<td></td>
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<td>- Rationale of PEN implementation.</td>
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<td>Addressing healthy lifestyle in primary health care.</td>
<td>- Ability to conduct motivational interviews and employ the 5A’s and 5R’s for healthy lifestyle counselling.</td>
<td>- Micro skills in counselling</td>
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<tr>
<td></td>
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<td>- Basic principles and steps in motivational interviewing</td>
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<td></td>
<td></td>
<td>- 5A’s and 5R’s techniques in lifestyle counselling</td>
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<tr>
<td>Brief interventions for tobacco cessation at the primary health care level.</td>
<td>- Deliver brief tobacco cessation interventions to tobacco users attending primary health care facilities.</td>
<td>- Effects of tobacco on health, socioeconomic, and environmental consequences.</td>
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<td>- Major forms of tobacco use – smoking and smokeless tobacco.</td>
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<td>- Nicotine addiction and nicotine withdrawal symptoms.</td>
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<td>- Brief advice for tobacco cessation (5A’s and 5R’s intervention).</td>
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<td>- Pharmacotherapy for tobacco dependence.</td>
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<td>- Role of primary health care workers in tobacco cessation and control.</td>
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<tr>
<td>Brief interventions for harmful alcohol use at primary health care level.</td>
<td>- Ability to identify alcohol use disorders and provide brief advice.</td>
<td>- Alcohol use disorders (AUD): hazardous/harmful drinking and alcohol dependence.</td>
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<td>- Screening for problem drinking using the Alcohol Use Disorder Identification Test (AUDIT) – scoring and interpretation.</td>
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<td>- 5A’s and 5R’s techniques.</td>
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<td>- Referral mechanisms for persons with AUD.</td>
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<tr>
<td>Topic area</td>
<td>Competency focus</td>
<td>Contents/key messages</td>
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<tr>
<td>Providing brief intervention for healthy diet at</td>
<td>◦ Provide brief advice using the 5A’s and 5R’s to patients/clients to adopt healthier diets based on</td>
<td>◦ Concepts of a healthy diet.</td>
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<td>primary health care level.</td>
<td>standard recommendations.</td>
<td>◦ Simplified dietary guidance to promote healthier diets.</td>
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<td></td>
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<td>◦ Food groups, food pyramid or food plate model.</td>
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<tr>
<td>Promotion of physical activity in primary health</td>
<td>◦ To deliver brief interventions using the 5A’s and 5R’s to patients/clients to promote physical</td>
<td>◦ Definition of physical activity and exercise.</td>
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<td>◦ Age-specific physical activity recommendations.</td>
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<td>◦ 5A’s and 5R’s brief interventions to promote physical activity.</td>
</tr>
<tr>
<td>Addressing overweight and obesity in primary</td>
<td>◦ Deliver brief interventions using the 5A’s and 5R’s to manage overweight and obesity in adults and</td>
<td>◦ Environmental and lifestyle drivers for overweight and obesity.</td>
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<td>health care.</td>
<td>children.</td>
<td>◦ Definitions of overweight and obesity in adults and children.</td>
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<td>◦ Prevention of overweight and obesity in adults and children.</td>
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<tr>
<td>Understanding the health impacts of household air</td>
<td>◦ Ability to identify people who come to primary health centres and who are at risk from exposure to HAP</td>
<td>◦ Introduction to air pollution.</td>
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<td>pollution (HAP) at the primary health care level.</td>
<td>and explain to them the importance of moving to cleaner fuels in order to protect their health.</td>
<td>◦ Sources of HAP.</td>
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<td>◦ Key pollutants from the burning of biomass fuels.</td>
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<td>◦ Particulate matter (PM), sources, size and PM toxicology.</td>
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<td>◦ Cardiovascular disease, chronic respiratory disease (e.g. COPD), lung cancer, childhood pneumonia,</td>
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<td>low birth weight, asthma, cataract and other diseases linked to exposure to HAP.</td>
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<td>Prevention and management of cardiovascular</td>
<td>◦ Ability to calculate CVD risk and interpret the meaning of 10-year CVD risk.</td>
<td>◦ Concept, rationale and goal of cardiovascular risk assessment.</td>
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<td>diseases in primary health care.</td>
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<td>◦ WHO/ISH risk chart and risk score for patient management.</td>
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<td>◦ Criteria for conducting CVD risk assessment.</td>
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<td>◦ Limitation of CVD risk assessment.</td>
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<td>◦ Pathophysiology and risk factors of CVDs.</td>
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<td>◦ Types of CVDs (coronary heart disease [CHD], cerebrovascular disease, peripheral vascular disease).</td>
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<td>◦ Approach to the assessment of chest pain at the primary health care level.</td>
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<tr>
<td>Topic area</td>
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<td>Contents/key messages</td>
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<tr>
<td>Managing COPD and asthma.</td>
<td>○ Ability to diagnose and manage COPD and asthma using the evidence-based guidelines and communicate effectively with patients to enable self-care.</td>
<td>○ Pathophysiology, signs and symptoms of COPD and asthma.</td>
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<td>○ Approach to a patient with chronic cough, wheezing, chest tightness and difficulty in breathing.</td>
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<td>○ COPD and asthma overlap symptoms (ACOS).</td>
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<td>○ Management of COPD and asthma in adults and children.</td>
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<td>○ Use of peak expiratory flowmeter.</td>
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<td>○ Use of metered-dose inhalers and other aerosol delivery equipment (nebulizers).</td>
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<td>○ Self-care in COPD and asthma.</td>
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<td>Assessment and referral of women with suspected cervical cancer at primary health care level.</td>
<td>○ Participants are able to differentiate signs and symptoms that are similar to cervical cancer and refer women with suspected cancer for early diagnosis and provide follow-up care and palliative care to women with terminal cancer.</td>
<td>○ Anatomy of the cervix and natural history of cervical cancer.</td>
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<td>○ Risks factors for cervical cancer.</td>
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<td>○ Signs and symptoms of cervical cancer.</td>
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<td>○ Prevention of cervical cancer.</td>
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<td>○ Techniques of clinical examination of the cervix.</td>
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<td>○ Use of an algorithm for early detection of and referral for cervical cancer.</td>
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<td>○ Patient communication on cervical cancer awareness and relaying results.</td>
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<tr>
<td>Assessment and referral of suspected breast cancer at primary health care.</td>
<td>○ Ability to evaluate woman with breast complaints and manage suspected breast cancer using the algorithm.</td>
<td>○ Basic information about breast cancer.</td>
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<tr>
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<td>○ Risks factors for breast cancer.</td>
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<td>○ Signs and symptoms of breast cancer.</td>
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<td>○ Technique of clinical breast examination.</td>
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<td>○ Appropriateness of breast cancer screening.</td>
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<td>○ Use of algorithm for early detection of breast cancer.</td>
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<td>○ Patient communication on breast awareness and cancer.</td>
</tr>
<tr>
<td>Early detection and referral of suspected oral cancers in primary health care.</td>
<td>○ Ability to identify oral potentially malignant lesions and refer appropriately and counsel patients at high risk for oral cancer or those diagnosed with it.</td>
<td>○ Symptoms and signs of oral potentially malignant lesions and oral cancers (with images).</td>
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<td>○ Technique for visual examination of the mouth at the primary health care level.</td>
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<td>○ Communication with the at-risk patient and his/her family on the implications of his/her lifestyle and/or oral condition. Education of the individual, family and community on how to prevent oral cancer.</td>
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</tbody>
</table>
### Scope of the Training Modules

<table>
<thead>
<tr>
<th>Topic area</th>
<th>Competency focus</th>
<th>Contents/key messages</th>
</tr>
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</table>
| Organizing NCD services through a team-based approach. | ◦ Ability to foster team approach to NCD care to enhance integrated quality care at the health facility. | ◦ Steps to implementing team-based care.  
◦ PEN clinical audit.  
◦ PEN peer coaching. |
| Palliative care in primary health care. | ◦ Communicate effectively with patients and manage pain and distressing symptoms in patients with terminal NCDs. | ◦ Concept of palliative care and the public health approach for integrating it into primary health care.  
◦ Role of effective communication in the management of diseases.  
◦ Identification, assessment and documentation of chronic pain.  
◦ WHO analgesic ladder for management of pain and neuropathic pain.  
◦ Common distressing symptoms in terminal NCDs and their management.  
◦ Prevention and management of pressure sores. |
| Addressing comorbidities of common mental disorders and NCDs. | ◦ Participants have the ability to identify and manage depression and other significant mental health complaints among NCD patients. | ◦ Identification of depression and other significant mental health problems.  
◦ Management of depression and other significant mental health problems.  
◦ Modifiable risk factors, which are common for NCDs and mental disorders. |
| Monitoring systems. | ◦ Ability to plan supportive supervision and develop simple monitoring of outcome of treatment. | ◦ Organizing and conducting supportive supervision.  
◦ Steps in supportive supervision.  
◦ Reporting tools. |
| Practicum for clinical examination and use of screening tools. | ◦ Ability to use essential point of care diagnostic tools and procedures for management of common NCDs (BMI calculation, measurement of the waist circumference, blood pressure, assess the 10-year risk of a cardiac event, calculate the AUDIT test score, operate glucometer, demonstrate peakflow meter, speculum examination of the cervix, conduct clinical breast examination, visual examination of the oral cavity) | ◦ Measurement of blood pressure  
◦ Use of glucometer  
◦ Spectrum of BMI (underweight, normal BMI, overweight and obesity) for adults and children  
◦ Waist–hip ratio for males and females  
◦ Types of obesity and risks associated with obesity  
◦ 10-year risk prediction charts  
◦ AUDIT questionnaire  
◦ Steps for the use of a peak flow meter  
◦ Steps for speculum examination of the cervix  
◦ Steps for visual examination of the oral cavity  
◦ Steps for clinical examination of the breast |
TEACHING–LEARNING TECHNIQUES

Participants are in-service candidates with cumulative experiential knowledge and practice in the delivery of NCD interventions. Teaching–learning techniques are designed according to the background of the participants. Overall, the training sessions are learner-centric, and made practical using adult learning techniques promoting problem solving critical thinking and collaborative learning. Learning will be enhanced by using effective methods such as:

- case studies
- group activities
- recap quizzes
- session end review questions
- videos
- practicum
- review of learning
- action planning.

Participants will be encouraged

- to stay engaged in learning
- to ask questions
- to share experiences
- to learn from discussions (learning from each other)
- to make useful notes
- to minimize outside distractions.

TRAINING DESIGN AND IMPLEMENTATION

The training should be of high quality. Training materials should be prepared before the training commences. The following training documents should be provided during the training:

- Trainer’s guide
- Trainee’s notes and worksheets
- Counselling and patient education aids (flipchart, NCD toolkit)
- Pre-test and post-test questions
- Other training aids.
TRAINING REPLICATION

The overall aim of the training is to integrate NCD services at the PHC level. Integration can be achieved through a two-step training process. They are:

- Training of trainers, and
- Health facility-based PEN coaching.

TRAINING OF TRAINERS

Training of trainers involves building a team of master trainers representing various professional disciplines such as clinicians, nutritionists, dieticians, health counsellors and educators, physical activity trainers, health managers and planners.

Master trainers will in turn train the subnational level of trainees from the states, provinces, regions and districts.

Provincial- and district-level training teams may not necessarily have representation of all disciplines of professionals. At the minimum, the training team should include a clinician, a dietician and a health counsellor who has completed a prior training on PEN interventions and possesses good understanding of essential NCD interventions.

HEALTH FACILITY-BASED PEN COACHING

PEN implementation involves various cadres of PHC professionals. At the health facility level, PEN implementation involves a constant interaction within and across various units of health facilities. For example, screening for diabetes may involve a laboratory staff to do the blood test, a nurse to provide healthy lifestyle education, a PHC physician or non-physician health care worker for clinical work-up and prescription, and pharmacist to dispense medicines and so on. Depending on the staffing composition at a health facility, the skills mix and role delegation may vary slightly in different settings. However, the fundamental commonality in all settings is a reliance on team work, shared responsibility, close coordination and sense of team belonging among the cadre of PHC workers.

Engagement in a whole-of-health-facility approach not only has the potential to improve the quality of delivery of NCD services but can also transform health service delivery by strengthening team work among PHC staff. In order to achieve this transformational change, concerted efforts are needed at the health facility supported by supervisors and managers of district- and higher-level health tier administrators.
It is important to ensure that the PEN coaching programme conforms to the defined parameters, such as: exposure and dosage of lessons, and quality of the training content. PEN coaching should aim at enhancing knowledge and skills and build a culture of continuous learning among PHC workers.

The PEN coaching programme should be introduced in a health facility without interrupting the routine services. The coaching should be scheduled within a specific duration with an agreed starting and end date over an extended duration of 6–8 weeks on a designated day/s of the week such as an afternoon of a relatively lean day. Conducting PEN coaching over an extended time period provides an on-site learning opportunity using real case examples and maximizes staff attendance in the training.

TRAINING DURATION

The duration of the PEN training can vary depending on the topics and modules. In general, primary care physicians will need 5–7 days of on-site training to orient to the PEN programme for physicians. For non-physician health workers, longer training will be required. Samples of the training agenda are attached overleaf.
### Table 2: A sample of the provisional agenda for training on integrating the Package of Essential NCD Services at the primary health care level (four days)

<table>
<thead>
<tr>
<th>Day one</th>
<th>Day two</th>
<th>Day three</th>
<th>Day four</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30–9:30</td>
<td><strong>Theme 3: Review of management of major NCDs</strong></td>
<td>08:00–10:30</td>
<td>08:00–10:30</td>
</tr>
<tr>
<td>Opening session*</td>
<td>08:00–10:30</td>
<td>Cancer (detection of suspected cases and referrals)</td>
<td>PEN Programme management</td>
</tr>
<tr>
<td>08:00–10:30</td>
<td>Cardiovascular diseases: early detection and management</td>
<td>08:00–10:30</td>
<td>08:00–10:30</td>
</tr>
<tr>
<td>08:00–10:30</td>
<td>Coronary heart disease</td>
<td>08:00–10:30</td>
<td><strong>Theme 4: Service delivery and community linkages</strong></td>
</tr>
<tr>
<td>08:00–10:30</td>
<td>Stroke</td>
<td>11:45–13:00</td>
<td>11:45–13:00</td>
</tr>
<tr>
<td>08:00–10:30</td>
<td>Others</td>
<td>11:45–13:00</td>
<td>11:45–13:00</td>
</tr>
<tr>
<td>10:30–10:45</td>
<td><strong>Theme 1: Public health approaches to NCD prevention and control</strong></td>
<td>10:30–10:45</td>
<td>08:00–10:30</td>
</tr>
<tr>
<td>Healthy break time</td>
<td>08:00–10:30</td>
<td>Oral cancer</td>
<td><strong>Post-test assessment</strong></td>
</tr>
<tr>
<td>10:45–11:45</td>
<td>PEN as a primary health care approach</td>
<td>10:45–11:45</td>
<td>10:45–11:45</td>
</tr>
<tr>
<td>10:30–10:45</td>
<td><strong>Theme 2: Brief interventions on addressing NCD risk factors at PHC level</strong></td>
<td>10:30–10:45</td>
<td>08:00–10:30</td>
</tr>
<tr>
<td>Healthy break time</td>
<td>11:45–13:00</td>
<td><strong>Team-based approach to NCD care at PHC level</strong></td>
<td>08:00–10:30</td>
</tr>
<tr>
<td>11:45–13:00</td>
<td>Total CVD risk assessment and management</td>
<td>11:45–13:00</td>
<td>08:00–10:30</td>
</tr>
<tr>
<td>11:45–13:00</td>
<td>5A’s and 5R’s approaches</td>
<td>11:45–13:00</td>
<td>08:00–10:30</td>
</tr>
<tr>
<td>11:45–13:00</td>
<td>Tobacco brief interventions</td>
<td>11:45–13:00</td>
<td>08:00–10:30</td>
</tr>
</tbody>
</table>

*Opening session* included in the schedule for Day one.
### Scope of the Training Modules

<table>
<thead>
<tr>
<th>Day one</th>
<th>Day two</th>
<th>Day three</th>
<th>Day four</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00–15:30</td>
<td>14:00–15:30</td>
<td>14:00–15:30</td>
<td>14:00–15:30</td>
</tr>
<tr>
<td>▪ Brief intervention on diet</td>
<td>▪ Management of COPD at PHC level ▪ Counselling on adherence to treatment</td>
<td>▪ PEN information systems and record-keeping</td>
<td>▪ Group work presentation of health facility PEN implementation</td>
</tr>
<tr>
<td>15:45–17:00</td>
<td>15:45–17:00 Practicum II – Case management (Apply cardiovascular risk prediction chart, take blood pressure, use glucometer, calculate BMI, WHR)</td>
<td>15:45–17:00 Community mobilization and engagement for NCD prevention and control*</td>
<td>15:45–17:00 Closing session*</td>
</tr>
</tbody>
</table>

*Awarding of certificate of participation ● If possible conduct a field visit to a PHC facility.
Table 3: A sample of the provisional agenda for training on Integrating the Package of Essential NCD Services at the primary health care level (5 days)

<table>
<thead>
<tr>
<th>Tentative Agenda</th>
<th>Day one</th>
<th>Day two</th>
<th>Day three</th>
<th>Day four</th>
<th>Day five</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00–10:00 Opening session*</td>
<td>08:45–10:30</td>
<td>08:45–10:30</td>
<td>08:45–10:30</td>
<td>08:45–10:30 4.2 Field visit – session 1 Observation of the current process of NCD service delivery ♦ Health facility visit ♦ Family visit</td>
<td></td>
</tr>
<tr>
<td>Theme 1: Setting the scene and the big picture</td>
<td>2.3 Diabetes: early detection and management</td>
<td>3.3 Alcohol use: brief interventions</td>
<td>4.5 PEN Programme management and service delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00–10:30 1.1 Situation of major NCDs and common risk factors</td>
<td>10:30–10:45</td>
<td>10:30–10:45</td>
<td>10:30–10:45</td>
<td>10:30–10:45</td>
<td></td>
</tr>
<tr>
<td>10:45–11:45 1.2 Current situation of NCD services</td>
<td>10:45–11:45</td>
<td>10:45–11:45</td>
<td>10:45–11:45</td>
<td>10:45–11:45</td>
<td></td>
</tr>
<tr>
<td>11:45–13:00 1.3 PEN as a primary health care approach</td>
<td>11:45–13:00</td>
<td>11:45–13:00</td>
<td>11:45–13:00</td>
<td>11:45–13:00</td>
<td></td>
</tr>
<tr>
<td>13:00–14:00 Lunch</td>
<td>13:00–14:00</td>
<td>13:00–14:00</td>
<td>13:00–14:00</td>
<td>13:00–14:00</td>
<td></td>
</tr>
</tbody>
</table>

Scope of the Training Modules
## Tentative Agenda

<table>
<thead>
<tr>
<th>Day one</th>
<th>Day two</th>
<th>Day three</th>
<th>Day four</th>
<th>Day five</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theme 2: Review of disease management</strong></td>
<td><strong>Theme 3: Brief interventions on NCD risk factors</strong></td>
<td>14.00–15.30</td>
<td>14.00–15.30</td>
<td>14.00–15.30</td>
</tr>
<tr>
<td>(PEN protocol 1)</td>
<td><strong>3.6 Practicum II – Case management</strong></td>
<td>4.3 Reorienting NCD service delivery</td>
<td></td>
<td>5.4 Group competency test</td>
</tr>
<tr>
<td>14.00–15.30</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2.1 Cardiovascular diseases: early detection and management</strong></td>
<td>14.00–15:30</td>
<td>15.30–15:45</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>3.1 Lifestyle counselling and client education</strong></td>
<td>Healthy break time</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:30–15:45</td>
<td>Healthy break time</td>
<td>15:30–15:45</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2.2 Total CVD risk assessment</strong></td>
<td></td>
<td>15:45–17:30</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>3.2 Tobacco cessation counselling using 5A’s and motivational interviewing</strong></td>
<td>4.4 Quality improvement processes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:45–17:30</td>
<td></td>
<td>15:45–17:30</td>
<td></td>
<td>Closing session</td>
</tr>
</tbody>
</table>

*Awarding of certificate [not marked in table. Pl check]*
Module 1.1

NCD burden and public health approaches
WHAT’S INSIDE

- Introduction
- Learning outcomes
- Topics covered
- Competency
- Teaching and learning activities
- Background information
INTRODUCTION

Noncommunicable diseases (NCDs) kill 41 million people each year, equivalent to 71% of all deaths globally. The burden of these diseases is rising disproportionately among lower-income countries and populations. The leading causes of NCD deaths in 2015 were cardiovascular diseases (CVDs, 17.7 million deaths, or 45% of all NCD deaths), cancers (8.8 million, or 22% of all NCD deaths) and respiratory diseases, including asthma and chronic obstructive pulmonary disease (COPD, 3.9 million). Diabetes caused another 1.6 million deaths. This module will brief the primary health care worker about the burden of NCDs, the risk factors and how population- and individual-level interventions can be applied to prevent it.

LEARNING OUTCOMES

At the end of the session, participants will be able to do the following:

- Explain the determinants and causal pathways of four major NCDs (CVDs, diabetes, COPD and cancers).
- Describe the global, regional and national burden of four major NCDs and their risk factors.
- Describe and apply population- and individual-level interventions for NCD prevention and control.

TOPICS COVERED

- Determinants of NCDs
- Information on the burden of NCDs at the global, regional and national levels and their risk factors
- Concepts of NCD prevention in relation to the natural history of the disease
- Best buys for addressing NCDs and their risk factors

COMPETENCY

- Be able to identify the risk factors and apply population- and individual-level interventions for NCD prevention and control.
Total session time: 75 minutes

Activity 1. Determinants and risk factors of NCDs: 25 minutes

Step 1. Divide the participants into convenient groups.

Step 2. Present the following problem statements that describe the current epidemiological situation in a country:

- Hypertension is increasing.
- Obesity is increasing among children.
- Rates of tobacco use are still high (smoking and smokeless tobacco).

Step 3. Assign one of the problem statements to one group.

Step 4. Ask the group to identify possible causes, potential implications and potential solutions to address the assigned problem.

Step 5. Ask them to report their discussion in the below table provided in their workbook.

<table>
<thead>
<tr>
<th>Problem statement</th>
<th>What are the causes of the problem?</th>
<th>What are the implications of the problem?</th>
<th>What are the solutions to address the problem?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension is increasing.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity is increasing among children.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rates of tobacco use are still high.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Step 6. Ask each group to make a brief presentation.

Step 7. Summarize the socioeconomic determinants, behavioural and metabolic risk factors, and public health solutions that can be implemented at the population and individual levels using a powerpoint presentation.
Activity 2. Estimating the number of people with NCD risk factors in the adult population: 25 minutes

Step 1. Refer to the following table in the workbook that presents the current epidemiological situation in a country with a population of 1,000,000*.

<table>
<thead>
<tr>
<th>Disease/Risk factor</th>
<th>Prevalence (%) from surveys</th>
<th>Absolute numbers (head counts) with the disease/risk factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raised blood pressure</td>
<td>30%</td>
<td></td>
</tr>
<tr>
<td>Raised blood sugar</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Current tobacco users</td>
<td>25%</td>
<td></td>
</tr>
<tr>
<td>Current alcohol drinkers</td>
<td>40%</td>
<td></td>
</tr>
<tr>
<td>Overweight and obesity</td>
<td>20%</td>
<td></td>
</tr>
</tbody>
</table>

*If country-level data are available please use that for this activity.

Step 2. Answer the following questions:

1. Estimate the number of adults living with various NCDs or those exposed to a risk factor in the table above.
2. The survey also recorded that 30% of those with raised blood pressure were not getting treatment. Calculate the number of people with raised blood pressure who are not on treatment.
3. The mean daily salt intake was calculated to be 9 g day in the survey. What implications does this have on the health of the people?

Step 3. Ask three participants to volunteer and present answers to one of the above-mentioned questions.

Step 4. Using the following guiding questions, discuss some of the implications of the population living with diseases or risk factors.

- Which disease or condition appears to be a leading cause of the NCD burden in this country?
- What are some probable reasons for the underdetection of people with the most common NCDs?
- What proportion of people with known NCDs actually take treatment and what do you think are the major barriers to accessing care?
- What can be done at the individual level to prevent NCDs in this country?
- What can be done at the population level to prevent NCDs in this country?
Activity 3. Best buys’ and other recommended interventions: 25 minutes

Step 1. Summarize the discussion by presenting the powerpoint slides with the following contents:

- burden of NCDs (add a slide on the country burden of NCDs and its risk factors)
- best buys for NCD prevention and control at the population and individual levels
- global evidence for NCD prevention and control.

Step 2. Ask the participants to list best buys’ and other recommended interventions being implemented in their communities/countries. Invite few volunteers to share to the big group.

Pre- and post-tests

1. Which behavioural risk factor contributes to a person developing an NCD?
   a. opium addiction
   b. helmet use
   c. unhealthy diet
   d. physical activity.

2. Which disease causes the most deaths worldwide?
   a. CVDs
   b. HIV/AIDS
   c. malaria
   d. tuberculosis.

3. The following is a good way to prevent NCDs:
   a. eating more salt
   b. eating more sugar
   c. eating more vegetables and fruits
   d. eating high-calorie foods.

4. Which of the following is a populationwide approach for the prevention and control of NCDs?
   a. opportunistic screening
   b. counselling
   c. increasing the price of tobacco
   d. self-care.
BACKGROUND INFORMATION

Global and regional burden of NCDs

Worldwide, 39.5 million deaths were due to NCDs in 2015. The leading causes of NCD deaths are CVDs, cancer, chronic respiratory disease and diabetes. In 2015, over three quarters of NCD deaths – 30.7 million – occurred in low- and middle-income countries with about 48% of deaths occurring before the age of 70 years in these countries. The probability of dying from the four main NCDs between 30 and 70 years is highest in the WHO- South-East Asia Region (25%). As NCDs affect people in the productive age group, in addition to the health burden, it has serious social and economic consequences.

Determinants of health

The health of individuals and communities is influenced by many factors. These factors are called the “determinants of health”. According to WHO, the following are considered to be the determinants of health:

- social and economic environment,
- physical environment, and
- individual characteristics and behaviour.

These factors can further be separated into modifiable and non-modifiable factors.

Table 1 categorizes these factors and provides a brief description of each. Note that health-care providers such as health care workers often cannot target the non-modifiable factors such as age, sex, etc. and have a limited role in targeting some of the modifiable factors such as income, education and social status. However, by targeting other modifiable lifestyle factors such as diet, exercise and access to social support and health care, health care workers can improve a patient’s quality of life, leading to improvements in other aspects of their lives.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifestyle/behaviours</td>
<td>Modifiable</td>
<td>Diet, level of exercise, alcohol consumption and smoking status are all considered lifestyle factors that can be modified to achieve better health.</td>
</tr>
<tr>
<td>Social environment</td>
<td>Modifiable</td>
<td>Support from the community, family, friends and health-care providers can also have a considerable impact on the health status of a person.</td>
</tr>
<tr>
<td>Access to health care</td>
<td>Modifiable</td>
<td>Improving access to recommended care through effective public health programmes can improve the health of individuals and communities.</td>
</tr>
</tbody>
</table>
### Factor Type Description

<table>
<thead>
<tr>
<th>Factor</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income/social status</td>
<td>Modifiable</td>
<td>Higher income and social status are linked to better health. Poverty is both a cause and a consequence of poor health. The greater the gap between the rich and the poor, the more the inequality, and therefore a greater difference in health. Health care workers should advocate for poverty alleviation programmes.</td>
</tr>
<tr>
<td>Education</td>
<td>Modifiable</td>
<td>Low education levels are linked to poor health, more stress and lower self-confidence. Health care workers should advocate for education programmes on healthy lifestyle.</td>
</tr>
<tr>
<td>Physical environment</td>
<td>Modifiable</td>
<td>Safe water and clean air, healthy workplaces, and safe houses, and communities all contribute to good health. Health care workers should advocate for these efforts.</td>
</tr>
<tr>
<td>Genetics</td>
<td>Non-modifiable</td>
<td>Contrary to what many people believe, for most chronic NCDs, the role of genes remains small and considerably smaller that the role of traditional modifiable risk factors.</td>
</tr>
<tr>
<td>Gender/age</td>
<td>Non-modifiable</td>
<td>This emphasizes that different prevention and control strategies can be appropriate at different ages and there is a need to adjust such strategies along the life-course (e.g. provide health education to deter children from starting smoking, screen for hypertension among middle-aged adults, etc.)</td>
</tr>
</tbody>
</table>

### Health promotion and disease prevention

Prevention has been typically defined at three levels; primary, secondary and tertiary.

*Primary prevention* focuses on keeping the healthy in a healthy state. This is true prevention. This simply means that one looks at the actual causes of disease rather than looking down the line after a risk factor or disease has manifested itself within a population. For example, engaging people in regular exercise and a healthy diet, or abstaining from alcohol or tobacco use can keep them healthy.

*Secondary prevention* is employed when a problem has already occurred, e.g. taking action to reduce blood pressure among people with raised blood pressure through diet and physical activity. This is an effort to thwart the damages caused by the presence of a risk factor or a disease before it causes permanent changes that cannot be undone.

*Tertiary prevention*. In this case, a person has suffered from a disease that has caused some damage to his or her health. For example, a person has suffered from a heart attack or stroke and has been advised by doctors to change their lifestyle to prevent further consequences.

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There is a need to focus as much effort as possible on primary prevention. Unfortunately, in all countries, a lot of health care money is spent on the secondary and tertiary levels of prevention.

*Health education* and *health promotion* are important public health approaches to disease prevention. Health education is the delivery of any information that is conducive to health. *Health promotion* takes this step further and includes any social support, law or policy change that may improve health.

A health education campaign may be aimed at children to try and prevent them from smoking. Health promotion efforts include banning the sale of tobacco products to minors in an effort to facilitate this education process.

Two approaches are used when implementing prevention. Addressing prevention at the individual level considers individual-level factors, such as knowledge, attitude and beliefs. A health worker who tells an obese patient to become more physically active, or a smoker to cease tobacco use is an individual-level approach to health education.

Population-level approaches address broader social and environmental circumstances that influence individual behaviours. A country banning the sale of alcohol to underage individuals, or banning smoking in public places are examples of a population-level intervention.

**Phases of prevention**

- **Health education and promotion**
- **Primary prevention**
- **Secondary prevention**
- **Tertiary prevention**

**Susceptibility**
- No signs
- No symptoms

**Presymptomatic**
- Signs
- No symptoms

**Clinical manifestation**
- Signs
- Symptoms

**Disability**
- Signs
- Symptoms

Source: Courtesy of Dr Cheryl Hawk

**Best buys’ and other recommended interventions in NCD prevention and control**

There are many interventions for the prevention and control of NCDs. Even in the wealthiest countries, however, choices have to be made about which of these interventions should be prioritized for implementation because resources for health are finite and, in most countries, very limited. A number of criteria enter into such decisions, including the current and projected burden of disease, cost-effectiveness, fairness and feasibility of implementing the interventions, and political considerations.

In preparation for the United Nations (UN) High-level Meeting, WHO has identified a set of evidence-based “best buy” interventions that are not only highly cost-effective but also feasible and appropriate to implement within the constraints of the local health systems in low- and middle-income countries.

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2 Tackling NCDs – Best buys. World Health Organization
Appendix 3 of the Global Action Plan for the Prevention and Control of NCDs 2013–2020 was updated and endorsed in May 2017 by the Seventieth World health Assembly. The updated Appendix 3 comprises a total of 88 interventions containing the most cost effective interventions, and other recommended interventions. Among them, the 16 interventions where considered to be the most cost-effective and feasible for implementation with an average cost-effectiveness ratio of \( \leq 100 \) per DALY averted in low- and lower middle-income countries. Interventions with an average cost-effectiveness ratio > 100 are listed next and may be considered as per the country context.

**Additional reading resources**

5. Tackling NCDs – Best buys. World Health Organization
NCD burden and public health approaches

Activity 1: Step 7

Root causes

NCD burden and public health approaches
NCD burden and public health approaches

Intervention

Prevention is better than cure

Population-wide versus individualized-interventions

Distribution of people according to risk factor level
NCD burden and public health approaches

Blood pressure and risk of heart attack

High-risk (individualized) interventions: large effect in few

High-risk (individualized) interventions resource intensive

NCD burden and public health approaches
High-risk (individualized) interventions

Only half of those who are aware, are treated and reach their target BP level (25%)

Population-wide interventions: salt reduction programme

Has the potential to reach everyone

Small effect in many – shift in population distribution to lower risk

Inexpensive
Population-wide and individualized strategy

Population-wide strategy
- Primary prevention
- Targets entire population
- Interventions outside Ministry of Health
- Small effect in many
- Less expensive

Individualized strategy
- Secondary prevention
- Targets high-risk individuals
- Interventions largely in Ministry of Health
- Large effect in a few
- More expensive

Activity 3: Step 1

Probability of premature death due to NCDs

NCD burden and public health approaches
Premature death due to one of four NCDs

Estimated deaths, by cause, South-East Asia Region, 2012

Categories of interventions

NCD burden and public health approaches
Examples of categories of tobacco interventions

**Best buys**
- Increase excise taxes and prices of tobacco products
- Implement plain/packaged or unitary packaging and mandatory health warnings on tobacco products
- Ban or severely restrict tobacco promotions in all tobacco workplaces, multi-share public transport
- Implement effective media campaigns that educate the public about the harms of smoking tobacco and second-hand smoke

**Effective interventions**
- Provide cost-effective, evidence-based, and population-wide support, including print or online materials for tobacco cessation to all those who want to quit

**Other recommended interventions**
- Implement measures to minimize illicit trade in tobacco products
- Ban cross-border advertising, including using modern means of communication
- Provide mobile phone-based tobacco cessation services for all those who want to quit

Examples of categories of alcohol interventions

**Best buys**
- Increase excise taxes on alcoholic beverages
- Enact and enforce bans on or severe restrictions on advertising, promotions, or sponsorship of alcohol products
- Enact and enforce restrictions on the physical availability of alcoholic beverages (e.g., reduced hours of sale)

**Effective interventions**
- Enact and enforce drinking and driving laws and blood alcohol concentration limits in all jurisdictions
- Provide brief, tailored advice to persons with harmful and hazardous alcohol use

**Other recommended interventions**
- Carry out regular research to assess the costs and benefits of interventions
- Implement an awareness campaign that raises public awareness
- Enact and enforce laws and regulations that are consistent with the prevention and control of alcohol problems
- Monitor and report on the effectiveness of interventions
- Implement public information campaigns, and distribute alcohol health awareness materials

Examples of categories of unhealthy diet interventions

**Best buys**
- Make use of taxation through the introduction of food products to ensure a lower reliance on sugary and high-fat foods
- Implement a national strategy to reduce the amount of trans fats in foods
- Implement a national strategy to reduce the amount of salt in foods
- Implement a national strategy to reduce the amount of sugar in foods
- Implement a national strategy to reduce the amount of saturated fat in foods

**Effective interventions**
- Implement a national strategy to reduce the amount of sugar in foods
- Reduce sugar consumption through effective taxation on sugary-sweetened beverages

**Other recommended interventions**
- Implement a national strategy to reduce the amount of sugar in foods
- Reduce sugar consumption through effective taxation on sugary-sweetened beverages
- Reduce sugar consumption through effective taxation on sugary-sweetened beverages
- Reduce sugar consumption through effective taxation on sugary-sweetened beverages
- Reduce sugar consumption through effective taxation on sugary-sweetened beverages

NCD burden and public health approaches
NCD burden and public health approaches

Examples of categories of physical activity interventions

<table>
<thead>
<tr>
<th>Best buys</th>
<th>Effective interventions</th>
<th>Other recommended interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implement community-wide public education and awareness campaigns for physical activity which can be combined with other community-based educational and environmental programmes aimed at supporting behaviour change of physical activity levels.</td>
<td>Provide physical activity counselling and material as part of routine primary health care services through the use of a brief intervention.</td>
<td>Ensure that any contact with a healthcare professional or a member of the public about physical activity is recognized and rewarded through the use of appropriate incentives.</td>
</tr>
</tbody>
</table>

Cardiovascular disease and diabetes management

<table>
<thead>
<tr>
<th>Best buys</th>
<th>Effective interventions</th>
<th>Other recommended interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug therapy (including glycerin and insulin) for diabetes and hypertension.</td>
<td>Treatment of cardiovascular disease with medications such as angiotensin-converting enzyme inhibitors, ACE-inhibitors and beta-blockers.</td>
<td>Cardiovascular disease prevention and management through the use of established prevention strategies.</td>
</tr>
</tbody>
</table>

Diabetes management

<table>
<thead>
<tr>
<th>Effective interventions</th>
<th>Other recommended interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention and early diagnosis of diabetes, including screening for prediabetes and diabetes control.</td>
<td>Effective interventions for preventing type 2 diabetes:</td>
</tr>
<tr>
<td>Prevention and early diagnosis of diabetes, including screening for prediabetes and diabetes control.</td>
<td>Effective interventions for preventing type 2 diabetes:</td>
</tr>
<tr>
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</tr>
<tr>
<td>Effective interventions for preventing type 2 diabetes:</td>
<td>Effective interventions for preventing type 2 diabetes:</td>
</tr>
</tbody>
</table>
Chronic respiratory disease management

Effective interventions
- Symptomatic relief for patients with asthma with inhaled medication
- Symptomatic relief for patients with chronic obstructive pulmonary disease with inhaled medication

Other recommended interventions
- Asthma management to prevent exacerbations
- Cost-effective interventions to prevent occupational lung diseases, for example, from exposure to silica, asbestos

Cancer management

Best buys
- Vaccination against human papillomavirus (HPV) vaccine
- Tobacco cessation by engaging women and men
- Early detection of cervical cancer
- Early detection of breast cancer

Effective interventions
- Cancer screening for women
- Treatment of cancer
- Prevention of cancer

Other recommended interventions
- Prevention of liver cancer through hepatitis B immunization
- Cancer screening in high-risk groups
- Early detection of breast cancer

Summary of best buys

<table>
<thead>
<tr>
<th>Risk factor/behavior</th>
<th>&quot;Real buy&quot; interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tobacco use (smokers)</td>
<td>- Monitor tobacco use and prevention policies</td>
</tr>
<tr>
<td></td>
<td>- Offer: offer to quit tobacco use</td>
</tr>
<tr>
<td></td>
<td>- Water: water treatment to tobacco treatments</td>
</tr>
<tr>
<td></td>
<td>- Reducing tobacco advertising, promotion and sponsorship</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>- Water: limit alcohol intake</td>
</tr>
<tr>
<td></td>
<td>- Reduce salt intake in food</td>
</tr>
<tr>
<td></td>
<td>- Limit trans fats with sodium content limit</td>
</tr>
<tr>
<td></td>
<td>- Promote public awareness about diets and physical activity</td>
</tr>
<tr>
<td></td>
<td>- Reduce marketing to children</td>
</tr>
<tr>
<td>Cardiovascular disease and diabetes</td>
<td>- Popula screening and multi-disease therapy for people with modifiable risk factors</td>
</tr>
<tr>
<td></td>
<td>- Preventing heart disease and stroke</td>
</tr>
<tr>
<td></td>
<td>- Preventing diabetes and obesity</td>
</tr>
<tr>
<td>Cancer</td>
<td>- Aiming at immunization beginning at birth to prevent liver cancer</td>
</tr>
<tr>
<td></td>
<td>- Screening and treatment of any cancerous lesions in a young and old cancer cases</td>
</tr>
</tbody>
</table>
Global evidence of prevention and control

Population-based best buys

Impact of tobacco control measures in Thailand (1991-2011)
Best buys for reducing harmful use of alcohol, Thailand

- Alcohol Act 2008
- Taxation
- Restriction on sales/place of drinking
- Partial ban on alcohol advertising
- Minimum age of purchase 20 years

Outcome:
1. Rising trend in consumption plateaued
2. Percentage of former drinkers increased from 4.7% in 2001 to 8.7% in 2011

Best buys for promoting healthy diet and physical activity

- Reduce dietary salt intake
- Replace saturated, trans fat with polyunsaturated fat
- Increase fruits and vegetables consumption
- Promote public awareness
- Regulate marketing to children
- Promote breast feeding.

Salt reduction in UK

- Strategies:
  - Research, evidence
  - Targets set
  - Dialogue with food industry
  - Voluntary food reformulation
  - Consumer awareness
  - Labeling
  - Independent monitoring

- Impact:
  - Table salt intake decreased from 23% to 23%
  - Salt intake reduced from 6.5 g/day to 8.1 g/day
  - 6000 lives saved a year
  - £1.8 billion in savings a year
NCD burden and public health approaches

Fat reduction, Finland

Strategies
- Mass awareness
- Engaging with food industry, agriculture sector
- Legislation
- Monitoring

Age-adjusted CHD mortality among men 35–64 years, North Karelia and Finland, 1969 to 2011

Impact
>80% reduction in CHD mortality

Sugar

Averting Obesity and Type 2 Diabetes in India through Sugar-Sweetened Beverage Taxation: An Economic-Epidemiologic Modeling Study

- 20% tax is projected to reduce overweight/obesity by 3% and diabetes incidence by 1.6 over 10 years
- i.e., 11.2 million cases of overweight/obesity and 400,000 cases of diabetes averted
- 5% tax levied on aerated drinks in 2014 in India.
Promoting physical activity

- Physical activity, Brazil
- Social marketing, sports groups, Tonga
- Road closures for recreation, NYC
- Move for health walk, Bhutan

Individual (high-risk) best buys

- Package of essential noncommunicable disease (NCD) interventions in primary healthcare settings of Bhutan: a performance assessment study

Individual (high-risk) best buys – cervical cancer

- Most preventable cancer
- 35% of global burden in the SEAR countries
- HPV vaccination
  - Bhutan: >80%
- Cervical cancer screening
  - Bhutan: 64%
  - Thailand, Sri Lanka: 25-50%
  - Other countries: low coverage
Reduction in CHD mortality attributed to individualised vs. population-wide interventions in various countries

Consider case of Ms Maya

Why did Maya get diabetes?
Because she was overweight
But why was she overweight?
Because she frequently consumed “fizzy drinks” and “energy-dense junk food”
But why did she frequently consume fizzy drinks??
Because it was inexpensive and considered “cool”
But why was it considered “cool”?
Because it was marketed and endorsed by celebrities.
But why ......marketing?
profit, lack of regulation....

Summary

A combination of population-wide (primary prevention) and individualized (high-risk) approaches are required to reduce premature mortality due to NCDs.
Module 1.2

PHC approach to delivering essential NCD services
WHAT’S INSIDE

Introduction
Learning outcomes
Topics covered
Competency
Teaching and learning activities
Background information
INTRODUCTION

Most health-care systems have developed in response to acute problems, but health care for chronic noncommunicable diseases is different from health care for acute problems. Because the management of chronic conditions requires lifestyle/behaviour change, emphasis must be upon the patient’s central role and responsibility in self-care. Focusing on the patient in this way constitutes an important shift in current clinical practice. This module covers rationale of implementing the Package of Essential Noncommunicable disease (PEN) interventions and how to integrate interventions for noncommunicable diseases (NCDs) at the primary health care (PHC) level.

LEARNING OUTCOMES

At the end of the session, participants will be able to do the following:

- Comprehend the contribution of the PHC approach to NCD prevention and control.
- Explain the concept of a people-centred chronic care model.
- Describe the rationale of implementing PEN at the PHC level.
- Integrate NCD interventions at the first point of contact, i.e. PHC level.
- Functions of comprehensive PHC.
- Chronic care model.
- Screening/early detection of NCDs at the PHC level.
- Rationale of PEN implementation.

COMPETENCY

- Apply skills to integrate essential NCD services in the PHC setting.
TEACHING AND LEARNING ACTIVITIES

Total session time: 60 minutes

Activity 1. NCDs and chronic care: 30 minutes

Step 1. Divide participants into convenient groups.

Step 2. Ask the participants to review the following issues: (if possible, use morbidity data of a PHC centre)

- What kind of care is usually provided in clinics or health centres?
- Is it mostly acute care or chronic care?
- Is it mostly for communicable diseases or NCDs?
- Is screening for or early diagnosis of NCDs done routinely?
- What are the bottlenecks in the clinic to acute care and chronic care management? How can these bottlenecks be addressed?

Step 3. Ask each group to summarize the discussion in 2–3 minutes.

Step 4. Sum up the discussion by presenting the powerpoint with the following contents:

- approaches to NCD prevention and control
- characteristics of acute and chronic care
- comprehensive primary care involves care of acute and chronic cases
- barriers to and facilitators of chronic care
- chronic care model
- vision of NCD care in PHC.

Activity 2. Contribution of PHC approaches to NCD goals: 30 minutes

Step 1. Present powerpoint slides with following contents:

- Sustainable Development Goals (SDGs)
- healthy living and well-being: universal health care
- NCD targets.
Step 2. Ask participants’ views on the following issues and list responses on a flip chart/white board.

How can the PHC system play a role in achieving the 2030 NCD targets agreed upon by countries?
- What are the bottlenecks to implementing essential NCD services in PHC in countries?
- What solutions can address these bottlenecks?

Step 3. Present the powerpoint slides with the following contents:

- rationale of PEN
- goals and objectives of PEN
- PEN protocols
- examples of PEN implementation in the WHO South-East Asia Region
- linkages of PEN to health system building blocks
- screening/early detection.
1. Which one of the following UN Sustainable Development Goals is related to Universal Health Coverage by 2030?
   a. climate action
   b. good health and well-being
   c. no poverty
   d. gender equality.

2. The reasons for focusing on integrated NCD care at the PHC level are all except
   a. utilization of limited resources
   b. set of core interventions
   c. promotes community participation
   d. promotes social equity?

3. Failure of individual treatment in primary care can lead to more
   a. amputations in diabetics
   b. myocardial infarction
   c. tuberculosis
   d. chronic renal failure?

4. Which of the following is a modifiable risk factor for cardiovascular disease?
   a. age
   b. gender
   c. heredity
   d. hypertension.

5. The following are the goals of PEN except:
   a. achieving universal access to high-quality diagnosis and patient-centred treatment
   b. reducing the suffering and socioeconomic burden associated with major NCDs
   c. improving vertical health programmes
   d. protecting poor and vulnerable populations from heart disease, stroke, hypertension, cancer, diabetes, asthma and chronic respiratory disease.
PHC approach to delivering essential NCD services

Most PHC centres provide acute care such as for common cold, fever, diarrhoea, etc. Most healthcare systems have developed in response to acute problems; they are designed to address urgent health-care needs, relieve symptoms and anticipate a cure.

Health care for chronic conditions is different from health care for acute problems. Chronic care is health care that manages cases with long-term conditions. The most prevalent health problems such as hypertension, diabetes, chronic obstructive pulmonary disease, asthma, heart disease and depression require extended and regular health-care contact. The aim of chronic care is to control symptoms, prevent disease progression and complications, and maintain a good quality of life.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Definition</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute</td>
<td>Lasts for a short duration of time and can be cured</td>
<td>Common cold, diarrhoea, etc.</td>
</tr>
<tr>
<td>Chronic</td>
<td>Lasts for a longer duration and often cannot be cured, requiring lifelong management</td>
<td>Diabetes, high blood pressure, etc.</td>
</tr>
<tr>
<td>Communicable diseases</td>
<td>Can spread from one person to another either directly or indirectly</td>
<td>HIV, common cold, malaria, dengue fever, etc.</td>
</tr>
<tr>
<td>Noncommunicable diseases</td>
<td>Cannot be spread from one person to another and have complex underlying mechanisms</td>
<td>Cardiovascular disease (CVD), cancer, diabetes, COPD, asthma and allergies, mental and neurodegenerative disorders, musculoskeletal diseases, etc.</td>
</tr>
</tbody>
</table>

**Chronic disease management at the PHC level**

Because the management of chronic conditions requires lifestyle/behaviour change, emphasis must be upon the patient’s central role and responsibility in self-care. Focusing on the patient in this way constitutes an important shift in current clinical practice.

Good chronic care recognizes the fact that the patient must understand and learn to manage his or her own chronic condition. Chronic diseases require much education and support to provide patients the skills for self-care. Although the clinical team and others at home and in the community can help, it is the patient who needs to learn to cope with their disease, practise healthy living to limit disease progression, and understand disease management and what to do in case it worsens.
The following principles can be used in managing many chronic diseases or risk conditions.

- Develop a treatment partnership with your patient.
- Focus on your patient’s concerns and priorities.
- Use the 5 A’s: Assess, Advise, Agree, Assist and Arrange.
- Support patient self-care and family support.
- Organize proactive follow up.
- Involve “expert patients”, peer educators and support staff in your health facility.
- Link the patient to community-based resources and support.
- Use written information – registers, treatment plan, treatment cards and written information for patients – to document, monitor and remind.
- Work as a clinical team.
- Assure continuity of care.

**Prevention and control of NCDs**

One of the UN SDGs calls for achieving good health and well-being by 2030. Hence, countries have initiated steps to improve the coverage of health care at health centres and at hospitals comprehensively for both acute and chronic conditions covering infectious/communicable diseases and NCDs and injuries in a coordinated manner.

NCDs are described as diseases that cannot spread from one person to another unlike infectious diseases. However, it can be said that risk factors of chronic NCDs can be “communicated”, e.g. through advertisements for cigarettes or through commercial promotion of unhealthy foods or beverages, which underlies the fact that NCDs can also occur as “epidemics”, with upward and downward trends in different populations.

NCDs can be prevented and controlled by implementation of a combination of populationwide public health approaches and individual-level primary care approaches.

**Why focus on integrated NCD care at the PHC level?**

Care for major NCDs (hypertension, heart disease, stroke, diabetes, cancer, asthma, and chronic obstructive pulmonary disease [COPD]) can be integrated in primary care settings using cost-effective interventions.

An integrated approach is particularly important for low-resource settings so that limited resources are used efficiently. Bringing about the paradigm shift from a vertical to an integrated approach involves the selection of a set of core interventions that can be integrated with the PHC services.

Integration of NCDs into PHC in low-resource settings is an area where evidence is evolving. The implementation of a package involves adaptation and use of plans and models to suit local contexts.

The PHC approach provides the best chance of providing integrated NCD services at the right place, at the right time and to the right people. Providing NCD services through a PHC approach not only ensures people-centric care, but it also enhances health coverage, makes more effective use of health resources and promotes social equity.
**Package of Essential NCD interventions (PEN)**

The aim of PEN is to provide an equitable framework for scale up as countries strive to achieve universal access to health care. PEN is a flexible, innovative, action-oriented health systems approach. PEN is aimed towards “closing the gap between what is needed and what is currently available” to achieve higher coverage of essential NCD interventions in PHC.

**Overview of WHO PEN**

<table>
<thead>
<tr>
<th>Vision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective and equitable prevention and care for people with NCDs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>To close the gap between what is needed and what is currently available to reduce the burden, health-care costs and human suffering due to major NCDs by achieving higher coverage of essential interventions in low- and middle-income countries</td>
</tr>
<tr>
<td>To achieve universal access to high-quality diagnosis and patient-centred treatment</td>
</tr>
<tr>
<td>To reduce the suffering and socioeconomic burden associated with major NCDs</td>
</tr>
<tr>
<td>To protect poor and vulnerable populations from heart disease, stroke, hypertension, cancer, diabetes, asthma and chronic respiratory disease</td>
</tr>
<tr>
<td>To provide effective and affordable prevention and treatment through primary care</td>
</tr>
<tr>
<td>To support early detection, community engagement and self-care</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objectives</th>
</tr>
</thead>
</table>

**Equity and efficiency objectives**

**Improve the efficiency of care of major NCDs in primary care through:**

- enhanced implementation of human rights standards;
- provision of cost-effective interventions based on need rather than ability to pay;
- targeting limited resources to those who are most likely to benefit due to high risk;
- standardization of diagnostic and investigation procedures and drug prescription;
- formulation of referral criteria for further assessment or hospitalization;
- definition of parameters for planning and budget;
- selection of monitoring and evaluation indicators.

**Quality-of-care objectives**

**Improve the quality of care of major NCDs in primary care through:**

- appropriate referral and follow up;
- prevention, early detection and cost-effective case management;
- management of exacerbations and emergencies;
- follow up of long-term treatment prescribed by the specialist.
Health impact objectives
Have a beneficial impact on health through:

- reducing tobacco consumption in patients with NCDs;
- reducing the average delay in the diagnosis of NCDs by the health services;
- reducing the risk of heart attack, stroke, amputation and kidney failure;
- reducing the case fatality of major NCDs;
- preventing acute events and complications;
- prolonging the duration of stable clinical periods for patients with CVDs, diabetes, asthma and COPD.

Contribution of PEN to health systems strengthening

Properly functioning health systems are vital for the prevention and control of NCDs. As a health systems approach, PEN interventions contribute to strengthening health systems.

<table>
<thead>
<tr>
<th>Leadership/governance</th>
<th>Assessed needs and gaps, and facilitate the use of available resources for the prevention and control of NCDs efficiently and equitably.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Support government efforts to drive the agenda towards universal coverage.</td>
</tr>
<tr>
<td>Financing</td>
<td>Prioritise NCD interventions to support the raising of adequate funds for universal coverage.</td>
</tr>
<tr>
<td></td>
<td>Facilitate phased-out provision of financial protection for NCDs.</td>
</tr>
<tr>
<td>Medical products and technologies</td>
<td>Define prerequisites for integrating a core set of essential NCD interventions into primary care.</td>
</tr>
<tr>
<td></td>
<td>Develop an affordable list of essential medicines and appropriate technologies.</td>
</tr>
<tr>
<td></td>
<td>Improve access to essential medicines.</td>
</tr>
<tr>
<td>Health information system</td>
<td>Provide templates to gather reliable health information of people</td>
</tr>
<tr>
<td>Health workforce</td>
<td>Provide training material to enhance knowledge and skills for NCD prevention and control.</td>
</tr>
<tr>
<td></td>
<td>Audit performance.</td>
</tr>
</tbody>
</table>
PHC approach to delivering essential NCD services

| Service delivery | • Improve access to essential preventive and curative NCD interventions.
|                  | • Provide equitable opportunities for early detection.
|                  | • Define a core set of cost-effective NCD interventions.
|                  | • Provide tools for their implementation.
|                  | • Improve the quality of care.
|                  | • Improve the gatekeeper function of primary care.
|                  | • Reduce costs due to hospital admissions and complications.
| People           | • Develop tools for community engagement and empowerment of people for self-care.
|                  | • Improve health outcomes.

Planning and implementation of PEN at the PHC level can contribute to health systems strengthening and achievement of universal health coverage as is envisaged in SDG-3. Pilot implementation of PEN in Bhutan and the Democratic People’s Republic of Korea has shown a decline in the risk factors of NCDs among patients seeking care at primary health care facilities.

**Additional reading resources**


PHC approach to delivering essential NCD services

Activity 1: Step 4

NCD prevention and control approaches

- Individual prevention and treatment (primary care approach)
- Population-wide prevention (public health approach).
Characteristics of acute & chronic care

<table>
<thead>
<tr>
<th>Character</th>
<th>Acute disease (eg communicable disease)</th>
<th>Chronic disease (eg NCD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onset</td>
<td>Sudden</td>
<td>Gradual</td>
</tr>
<tr>
<td>Duration</td>
<td>Short/acute</td>
<td>Long term/chronic</td>
</tr>
<tr>
<td>Cause</td>
<td>Single</td>
<td>Multiple</td>
</tr>
<tr>
<td>Prevention</td>
<td>Primarily by health sector</td>
<td>Policy change in multiple sectors</td>
</tr>
<tr>
<td>Goal of treatment</td>
<td>Cure-return to normal life</td>
<td>- Adapt to changed life</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Manage day-to-day symptoms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Palliative care</td>
</tr>
<tr>
<td>Patient's role</td>
<td>Comply with treatment plan</td>
<td>Self care &amp; lifestyle changes</td>
</tr>
<tr>
<td>Staff's role</td>
<td>Provide medical care</td>
<td>- Provide medical care</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Prepare patients to self-manage</td>
</tr>
</tbody>
</table>

Barriers & facilitators of chronic care

**Barriers**
- Physician-centred practice
- Disease episode management
- Lack of clinical information system
- Resistance to change

**Facilitators**
- Patient-centred practice
- Case management
- System support (patient registers/cards for follow up)
- Innovative leadership

Comprehensive primary health care

**Health promotion**
- Promoting healthy environment and behaviors

**Disease prevention**
- Detecting/Screening & managing the risks

**Early diagnosis & treatment**
- Diagnosing, managing the disease including referrals
Aim: long term care for NCDs near the patient’s home; referral if needed

Frontline health facility
- Assess and initiate treatment without referral
- Or
- Refer if indicated by agreed protocols
- Treat according to the treatment plan
- Regular follow up

Hospital
- Diagnose and develop treatment plan
- Refer back to frontline care
- Manage severe exacerbations hospitalize when needed

*Adapted from general principles of good chronic care

Activity 2: Step 1

Sustainable Development Goals and NCD targets
Universal health coverage (UHC)

- UHC means that all individuals and communities receive the health services they need without suffering financial hardship. It includes the full spectrum of essential, quality health services, from health promotion to prevention, treatment, rehabilitation, and palliative care.
- Indicators for UHC
- Category 1: Reproductive, maternal, newborn and child health:
  - family planning
  - antenatal and delivery care
  - full child immunization
  - health-seeking behaviour for pneumonia.

Activity 2: Step 3
WHO-PEN rationale

Cost-effective high impact interventions for major NCDs
Implementable in primary health care by physician/non
physician health worker teams using affordable appropriate
technology & medicines.

Integration of service delivery for screening, diagnosis,
treatment, health education/counselling and follow-up etc.
Community-based self-care in home/family
Contribute to health system development for universal
coverage.

Package of essential NCD (PEN) interventions
for primary health care

Goals
- Achieve universal access to high quality diagnosis & patient-centred care
- Reduce suffering & socio-economic burden of major NCDs
- Protect poor & vulnerable populations from major NCDs
- Provide effective & affordable prevention & treatment through PHC approach
- Support early detection, community engagement and self-care

Objectives
- Improve the efficiency of care of major NCDs in PHC
- Improve quality of care in PHC
- Beneficial impact on health

Invert the pyramid

Hospitals are taking a
high load of complicated NCDs
MI, strokes, diabetes cases

Primary healthcare is not
proactive in early detection

Vision

Primary healthcare is proactive in early detection

PHC approach to delivering essential NCD services
Individual prevention and treatment of NCDs in PHC

- Early cases are asymptomatic
- Early detection is vital
- Proactive case detection needs to be done close to the community
- Prioritization of NCDs that can be addressed in PHC.

Implication of delayed or ineffective primary health care

- Amputations in diabetics
- Blindness in diabetics
- Myocardial infarction
- Strokes
- Chronic renal failure
- Late stage cancers.

WHO PEN Protocols

- Prevention of heart attacks, strokes and kidney disease through integrated management of diabetes and hypertension
- Management of asthma and chronic obstructive pulmonary disease
- Health education & counselling on healthy behaviours
- Assessment & referral of women with suspected breast cancer, cervical cancer and oral cancer
- Palliative care.
**PHC approach to delivering essential NCD services**

**Impact of WHO PEN implementation in DPR Korea**

**PEN contributes towards strengthening health systems**

<table>
<thead>
<tr>
<th>Category</th>
<th>Contributions</th>
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</table>
| Leadership/governance | - Assess need/plan in NCD services  
                        |  - Facilitate use of available resources for NCDs efficiently and equitably |
| Financing          |  - Prioritize NCD interventions to support a lagging of adequate funds for mental health |
| Medical products & technologies |  - Define prerequisites for incorporating a core set of essential NCD interventions into primary care  
                              |  - Develop an affordable list of essential medicines and appropriate technologies |
| Health information system |  - Provide information (paper-based or electronic) to gather reliable information of people |
| Health workforce   |  - Provide training material to enhance knowledge and skills for NCDs and IPC |
| Service delivery   |  - Improve access to essential prevention and control NCD medicines  
                              |  - Provide equitable opportunities for early detection  
                              |  - Define case set of cost-effective NCD interventions  
                              |  - Provide tools for implementation of NCD interventions  
                              |  - Improve quality of care  
                              |  - Improve quality function of primary care  
                              |  - Reduce cost due to hospital admissions and complications |
| People             |  - Develop tools for community engagement and empowerment of people for self-care  
                              |  - Improve health outcomes |

**Detecting and treating NCDs: where are we now?**

![Graph showing hypertension prevalence](image)
Screening and early detection

- Screening refers to the application of a test to a population which has no overt signs or symptoms of the disease in question, to detect disease at a stage when treatment is more effective.
- The screening test is used to identify people who require further investigation to determine the presence or absence of disease and is not primarily a diagnostic test.

Screening criteria

- The condition should be an important health problem
- There should be sufficient direct evidence that early detection improves health outcomes, and that the benefits of screening outweigh any potential harms and accepted treatment for patients with recognized disease
- Facilities for diagnosis and treatment should be available
- There should be a recognizable latent or early symptomatic stage
- There should be a suitable test or examination that has high level of accuracy.
Screening criteria

- The test should be acceptable to the population
- The natural history of the condition, including development from latent to declared disease, should be adequately understood
- There should be an agreed policy on whom to treat as patients
- There must be an effective treatment for the disease when detected at an early stage – and there has to be scientific proof that that treatment is more effective when started before symptoms arise
- The cost of case finding (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole
- Case finding should be a continuing process and not a ‘once and for all’ project.

Types of screening

- Organized screening programmes/mass screening
- Opportunistic screening programmes
- High risk or selective screening
- Multiphasic screening
- Multipurpose screening.

NCD prevention and control puts new demands on frontline services and health workers, in many health systems

Questions
1. How to detect NCDs in people who may be symptom-free, and who can be any age – young or old?
2. Once detected, how to maintain care long-term?
3. How to better organize services for people who commonly have multiple health problems at the same time?
4. The equity question: how can health services deliver continuing, care to everyone who needs it?
Accelerating frontline NCD service delivery in context of SDGs: some messages

- The key to NCD control is well-functioning frontline services
- Mid-level health workers can safely deliver most essential NCD interventions, if properly trained and supported
- Training is necessary but not sufficient. Other actions are needed, some of which are beyond remit of programmes
- ‘Integrated’ approaches to expand range and quality of frontline services appear to be more successful than standalone NCD services
- Medicines availability in frontline services is possible with good coordination and strong political commitment
- Better data, evidence needed to know if ‘on track’ and what works.
Module 2.1

Addressing **healthy lifestyle** in primary health care
WHAT’S INSIDE

Introduction
Learning outcomes
Topics covered
Competency
Teaching and learning activities
Background information
INTRODUCTION

Health care worker (HCWs) must have good communication skills. Many well-planned health intervention programmes fail due to ineffective communication between HCWs and their patients/clients, HCWs and supervisors or between supervisors and programme managers. The role of HCWs is very important in bridging this gap. A health programme can be sustained only if HCWs can deliver the key message successfully and change attitudes to and behaviours regarding health and disease. This module highlights the core communication skills and basics of the 5A’s and 5R’s that need to be implemented during patient/client interaction.

LEARNING OUTCOMES

At the end of the session, participants will be able to do the following:

- Understand the basics of counselling and motivational interviewing in promoting healthy lifestyles in primary health care (PHC).
- Employ the 5A and 5R techniques to target specific healthy lifestyle modifications.

TOPICS COVERED

- Micro skills in counselling.
- Basic principles and steps in motivational interviewing.
- 5A’s and 5R’s techniques in lifestyle counselling.

COMPETENCY

Ability to conduct motivational interviews and employ the 5A’s and 5R’s for healthy lifestyle counselling.
TEACHING AND LEARNING ACTIVITIES

Total session time: 90 minutes

Activity 1. Personal behaviour change: 10 minutes

Step 1. Ask participants to work in pairs.

Step 2. Discuss a positive behaviour change that you have successfully adopted in your personal life.

Use the following questions as a guide for this exercise:

- What made you decide that you needed to change this behaviour?
- How long did you spend thinking about it before you actually started trying to change?
- Did you manage to change to the extent you had planned or desired?
- What were some factors that helped you change?
- What kind of challenges did you face?
- How did you overcome those barriers to change?

Facilitator’s explanatory notes

Facilitator should emphasis the following key points:

- Change is not always due to lack of knowledge or information.
- Lack of change is due to a motivational issue.
- People are ambivalent about the change and get stuck. This leads to postponing the decision to change.
- The delay in the decision to change can be perceived by health care workers as resistance.

Activity 2. Explanation of the 5A’s and 5R’s model: 15 minutes

Step 1: Present the powerpoint slides with following contents:

- principles of behaviour change
- stages of behaviour change
- principles of motivational interviewing and techniques
- brief interventions using the 5A’s and 5R’s models.

Note: Include a reflection on personal behaviour change in the powerpoint discussion.
Step 2. Ask participants to reflect on the behaviour change described in the previous exercise and share their experience of moving through the stages of change model.

**Activity 3. Patient/client communication and motivational interviewing: 35 minutes**

Step 1. Ask the participants to think of the communication strategies that they use in their interaction with patients/clients. Discuss these skills using the following questions:

- Are there any specific techniques that work well?
- What about techniques that don’t work well?
- Have you had any negative experiences with patients/clients?
- How did communication factor in these negative patient/client experiences?

Step 2. Ask participants the following questions.

- Do you employ motivational interviewing techniques in your clinical practice?
- What are some experiences in using motivational interviewing techniques in your clinical practice?

Step 3. Show a short video demonstrating the basics of motivational interviewing.

- Ask the participants to recall the lessons learnt from the video.

Step 4. Note the key lessons on a whiteboard or flipchart.

**Activity 4. Introducing the 5A’s and 5R’s frameworks: 30 minutes**

Step 1. Ask the participants to review the 5A’s and 5R’s frameworks provided in the workbook.

Step 2. Ask the participants to identify the part of the 5A’s counselling framework each of the following questions or statements would fall under.

(1) “This was a really productive visit. What are your thoughts about our conversation today? I am hoping to come back in a week’s time and just check how you are doing and whether I can offer some additional assistance and more information if you have any questions. It was a pleasure to meet you and I would like to congratulate you for planning to change your behaviour.” – ARRANGE
(2) “Now that I have provided some information on the benefits of eating a healthy diet, are you ready to adopt a diet that will help you manage high blood pressure, high cholesterol and obesity?” – **ASSESS**

(3) “I see that you are raising a family while also meeting the demands of your work. I understand that balancing these demands must be difficult. However, I would like to provide some information on how smoking and secondhand smoke increases your risk of developing cardiovascular disease (CVD) and harms your children.” – **ADVISE**

(4) “Thank you for taking the time to speak to me. I would like to begin by asking you about your level of physical activity throughout a typical week.” – **ASK**

(5) “It is really great that you are taking this step to change your lifestyle. I want to congratulate you for your willingness to start this process as soon as possible. Just so I that I can help you set goals better, what is a realistic start date for you to stop your tobacco use? Can we get someone in your family or a close friend to help you as you take this important step in lowering your CVD risk? What are some challenges that may stop you from going through with this plan? Can we take some measurable steps and help you remove tobacco products so that you are less likely to use them?” – **ASSIST**

**Practical exercise – 5R’s**

You may encounter patients who are not willing to change their behaviours. For these patients, the 5R’s counselling framework is a strategy that you can use to see if they might change their minds. In this exercise, match the following statements to the corresponding step in the framework.

(1) “I am really interested in learning more about whether you have tried to change your consumption of alcohol in the past. Was there a time when you were successfully able to cut back on alcohol consumption? I recognize that this must be a challenging situation for you but if you are ready, I think we can explore some of the reasons why this may be a difficult change for you.” – **ROADBLOCKS**

(2) “As you may know, there are several risk factors that can lead to CVD. I was just wondering if you were aware of the link between lack of physical activity and the higher risk of CVD. If not, I would love to share this information with you if you would like to learn more.” – **RISKS**

(3) “Did you know that stopping the use of tobacco is the best change you can make for your health? Not only is there a direct benefit of decreasing your risk of CVD and other chronic diseases, but you may also notice a large financial difference over the period of a few months and years.” – **REWARDS**

(4) “I understand that you may not be ready to change your behaviour at this time, but I just wanted to explore some reasons around this. Do you think your current level of physical activity is having any effect on your health and well-being?” – **RELEVANCE**

(5) “I think this was a really productive visit. With the information I have provided today on the risks and benefits of changing your behaviour, are you ready to commit to a change?” – **REPETITION**
Communication skills

HCWs must have good communication skills. Many well-planned health intervention programmes fail due to ineffective communication between HCWs and their patients/clients, HCWs and supervisors or between supervisors and programme managers. The role of HCWs is very important in bridging this gap. A health programme can be sustained only if HCWs can deliver the key message successfully and change attitudes and behaviours regarding health and disease. This section highlights the core communication skills you should try to implement during patient/client interaction.

Appropriate physical environment

It is very important to establish an appropriate physical environment to enhance patient/client privacy, comfort and attentiveness. Small things such as arranging seating in a manner that is neither threatening nor distant, or having a curtain to create a sense of privacy will improve the outcome of patient/client interviews.

Greeting patients/clients

Greeting patients/clients in a manner that is acceptable within the cultural norms relating to age, sex, and so on will help maintain their dignity and encourage their participation. Using the patient’s/client’s name as appropriate where the patient/client is known to the health care workers or offering an appropriate signal of recognition are all acceptable ways to greet patients/clients.

Active listening

This involves using both verbal and nonverbal communication techniques. The health care worker should clearly signal that the patient/client has his/her full attention by look, and offer acceptance and continuation signals such as nods, phrases such as “right/I see”, etc. A willingness to listen actively is however best signalled by the use of open-ended questions to promote fuller answers.

Empathy, respect, interest, warmth and support

These issues are at the heart of interpersonal skills. health care workers should clearly signal their interest in how the patient’s/client’s problem is perceived, how it affects their life, whether it concerns them and what their hopes and expectations are. The health care workers should also show respect, interest, warmth and support, which involves being non-judgemental in attitude.

Language

Education (i.e. general literacy) and health literacy do not necessarily go hand in hand. Low health literacy adversely affects people’s health and is related to poorer health outcomes, especially among
people with chronic conditions. Therefore, it is very important to explain concepts in simple terms rather than use jargon with patients/clients. Some methods to help with this can include the following:

- use of plain language, both written and oral, when communicating health information;
- use of simple and straightforward images, graphs and processes when designing written materials;
- confirmation of the patient’s/client’s comprehension using the “teach-back” method;
- rigorous user testing of information with target audiences (e.g. patients/clients and caregivers, hospital managers, etc.).

Nonverbal communication

Skills in nonverbal communication such as eye contact, physical proximity and facial expression are also very important in making patients/clients feel comfortable.

Collaborative relationship

It is important for patients/clients to feel that HCWs clearly understand their needs, and are prepared to work with patients/clients to achieve them. This will also allow patients/clients to feel involved in the management plan and will make them more likely to follow counselling and treatment advice.

What is healthy lifestyle counselling?

Healthy lifestyle counselling is the second-last step in the treatment pathway (Fig. 1) and involves counselling for behavioural changes such as quitting tobacco use, increasing physical activity, eating a healthy diet and limiting the harmful use of alcohol. Healthy lifestyle counselling involves the use of specific, structured and evidence-based techniques to motivate patients/clients to undergo behaviour change.

It is important to recognize that behaviour change is difficult. However, it is also an underused strategy by HCWs and has been shown to improve outcomes if delivered as part of a comprehensive cardiovascular disease (CVD) risk prevention and management strategy. Behaviour change counselling involves the following:

- **Understanding the process of behaviour change**
  
  The stages of change model can assist in understanding the behaviour change process. It is used to map the patient’s/client’s readiness to change and helps to target the counselling approach to the patient’s/client’s needs.

- **How to provide counselling**
  
  This refers to the communication style that the health care workers uses to interact with the patient/client during the counselling session.

  - **Motivational interviewing** is an approach used to motivate patients/clients to undergo behaviour change by guiding self-exploration and drawing out the internal motivations unique to the person.
What a counselling session should include

This refers to the structure of the counselling process and the content that should be covered during the counselling session. Healthy lifestyle interventions can be delivered using brief interventions.

- **A brief intervention is a** short interaction of 3–20 minutes between health care worker and patient/client, which aims to identify a real or potential problem, provide information about it and then motivate and assist the patient/client to do something about it.

Two types of brief interventions can be used for healthy lifestyle counselling:

- **The 5A’s (Ask, Assess, Advise, Assist, Arrange):** an approach to help patients/clients who are ready to change their behaviour.
- **The 5R’s (Relevance, Risks, Rewards, Roadblocks, Repetition):** an approach to help increase motivation in patients/clients who are not yet ready to change their behaviour.

Counselling approaches to promote behaviour change

Lifestyle modifications for healthy living are a fundamental way to prevent CVD. Changing modifiable risk factors, such as bad habits into good ones that minimize risk, is the backbone of CVD prevention. Lifestyle modification can be implemented at every stage of the disease, and is therefore crucial to CVD prevention, even if the disease has already commenced. This section introduces the stages of change model and explain how motivational interviewing can be used to deliver brief interventions for a healthy lifestyle following the outlines of the 5A’s and 5R’s frameworks.

Understanding behaviour change and its stages

Reducing health risks may require changes to be made in some behaviours. Behaviour change is a complex issue and various models have been used to help understand it. The “stages of change” model shown below (also known as the “transtheoretical model of health behaviour change”) is one such example. In this model, behaviour change is not a one-off event but rather a set of different stages through which a person moves. Identifying a patient’s/client’s current stage can help to target a brief intervention toward their needs.

Behaviour change takes time and different people go through the stages at various speeds: some may remain indefinitely at one stage. Even though a person intends to start or maintain a new behaviour, for a range of reasons they may move back to an earlier stage. Relapse into an old behaviour does not necessarily mean a failure to change. Many people who eventually adopt a new behaviour make several attempts before it is maintained over the long term.
Figure 1: The stages of change model

5. **Maintenance**
   - Maintains the behaviour change

4. **Action**
   - Starts to make changes

3. **Preparation**
   - Ready to change
   - Collects information about the problem and options to address it
   - May experiment with small changes
   - May have concerns about possible failure

2. **Contemplation** (This stage can last for years)
   - Seriously considering change
   - Recognizes the behaviour as a problem
   - Starts to consider the pros (benefit/rewards) and cons (risks/consequences)
   - May have mixed feelings about making changes; may see costs as outweighing benefits

1. **Pre-contemplation**
   - Not intending to start changing in the near future
   - May not be aware that the behaviour is a problem
   - May be in denial
   - May not feel confident about ability to change

Relapse/recycling

This is not a stage and can occur at any point.
- Returns to previous behaviour
- May feel disappointed, frustrated or tired

Using motivational interviewing to trigger behaviour change

Motivational interviewing is a style of talking with a person that can help in motivating them to change. In motivational interviewing, the counsellor does not try to convince the person to change but instead guides them to reach conclusions themselves and draws out the internal motivations that are unique to the person.

A central idea in motivational interviewing is that most people experience some ambivalence or “mixed feelings” about change. They have some reasons to change and also some reasons for staying the same, and may remain “caught in the middle”, unable to change. Motivational interviewing encourages people to explore these mixed feelings so that they can move toward positive change.
Motivational interviewing meets people where they are. This means gaining an understanding of the person and their circumstances so that the counsellor can adapt the communication approach to the person’s current behaviour change stage.

A comprehensive explanation of motivation interviewing is beyond the scope of this module. The next section summarizes some key principles and communication techniques for motivational interviewing. Further reading is suggested at the end of the module.

**Key principles for motivational interviewing**

The following principles can be used to guide the overall approach of motivational interviewing.

1. **Don’t tell the person what to do**
   Telling people what to do can result in resistance. The patient/client should be the one to decide that they need to change and how they will do it. In motivational interviewing, rather than taking the role of an advising expert, the counsellor becomes a partner. The counsellor and patient/client work as a team toward the goal of behaviour change.

2. **Listen and show empathy**
   In motivational interviewing, the patient/client does most of the talking. The counsellor listens and shows that they understand the patient’s situation, without judging or criticizing. Empathy can be described as “getting into the person’s skin” to understand how they think and feel and see the world. Empathetic listening creates an environment of acceptance and respect that can help the patient to be open to exploring the reasons for their behaviour and options for change.

3. **Help the patient/client see the gap between where they are and where they want to be**
   This is also called “developing discrepancy”. By asking questions about the patient’s/patient’s goals and values, and then about the behaviour and its consequences, the counsellor helps the patient/client to see the difference between their life as it is now (with the behaviour and its consequences) and the way they want their life to be.

4. **Let the patient/client tell you that they need to change**
   Rather than telling the patient/client that they need to change, the counsellor draws out the patient’s thoughts and feelings, helping them to find their own reasons for change and ways to start the change process.

5. **Help the patient/client to feel confident about changing**
   If a person is convinced of the need for change, but does not feel confident about succeeding, they may not even make an attempt to change. The patient/client needs to believe that change is possible. This is called self-belief or self-efficacy. The counsellor can support self-efficacy by highlighting previous successes or strengths that the patient/client may already have.

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(6) Roll with resistance

During a counselling session, a patient/client might show resistance to change in different ways, for example, by interrupting, becoming defensive or appearing to lose interest. This is an indication that the counsellor needs to adapt the communication approach. Direct confrontation or argument should be avoided. Rolling with resistance means acknowledging the resistance and adjusting to it, for example, by expressing understanding of the patient’s/client’s point of view, acknowledging personal choice and control, and redirecting the conversation.

Key communication techniques to use in motivational interviewing

Using four basic communication techniques can help the counsellor to build a relationship with the patient/client and understand them and the issues they face. These techniques can be remembered using the acronym “OARS”.

- Open-ended questions
  Open-ended questions cannot easily be answered with a single word such as “yes” or “no”. For example, rather than asking, “Do you think that smoking is bad for your health?” ask, “What are some of the effects that smoking could be having on your health?” Open-ended questions can help to start a conversation and can provide in-depth information to help the counsellor in understanding the patient/client.

- Affirm
  Help the patient/client to recognize their strengths and have a more positive view of themselves. Ask questions that help them to verbalize positive things about themselves and give positive feedback on any past success.

- Reflective listening
  Show that you have heard and understood the patient/client by reflecting on what they have said. For example: Patient: “I don’t want to quit smoking right now.” Counsellor: “So you think that quitting won’t work for you in your present circumstances.”
  Reflective listening can also help the patient/client to hear themselves and think about what they have said. It can also help to draw their attention to inconsistencies.

- Summarize
  At intervals, summarize what has been covered up to that point during the counselling session. This confirms mutual understanding and can help draw the patient’s/client’s attention to the most important parts of the discussion.

Targeting the brief intervention to the patient's/client's needs

Using the stages of change model, you can determine which stage a patient/client is at and whether they are ready to change. Ideally, we want patients/clients to be at the preparation staircase in Fig. 1 as this is a stage where counselling interventions such as the 5A’s may work best.
However, as the next section explains, you can still deliver an intervention called the 5R’s to patients/clients who are not ready to change. This is also very important because these interventions could help patients/clients move from the pre-contemplation and contemplation stages to the preparation stage.

In both instances (5A’s and 5R’s approach), the communication style should reflect the motivational interviewing concept to help patients/clients explore their feelings about behaviour change.

**Tools to encourage behaviour change and self-care**

**The 5A’s and 5R’s brief interventions**

Primary health-care workers play an important role in helping patients/clients change their unhealthy behaviours and maintain healthy behaviours. Short interactions of between 3 and 20 minutes, called brief interventions, aim to identify a real or potential problem, provide information about it, and motivate and assist the patient/client to do something about it.

Brief interventions can be made using two key tools:

- **The 5A’s (Ask, Advise, Assess, Assist, Arrange)** brief intervention, which helps people who are ready change their behaviour.
- **The 5R’s (Relevance, Risks, Rewards, Roadblocks, Repetition)** brief intervention, which helps to increase motivation among those not yet ready to change.

**The 5A’s brief intervention: how to do it**

The 5A’s summarize what a health care worker can do to help someone who is ready to change.

- **Ask:** provides sample questions on the most important aspects of the behavioural risk factor.
- **Advise:** provides the minimum key messages that the health care worker should provide to all patients/clients.
- **Assess:** helps the health care worker to find out whether the patient/client is ready for additional information and assistance.
- **Assist:** provides guidance on more in-depth counselling and assistance.
- **Arrange:** provides guidance on referral and follow-up actions.
Table 1: The 5A’s: General theoretical framework for how to do it

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<tr>
<th>5A’s</th>
<th>What to say/do and how to say/do it</th>
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| **Ask** | Ask the patient about the relevant risk factor(s) at every visit.  
Ask in a friendly way, without being judgmental.  
Keep the questions simple.  
Record the information in the patient’s medical record/notes. |
| **Advise** | Health care workers have special authority because of their training. Patients usually respect this expertise. Provide information, key messages and advice in a clear, simple, and personalized manner. Link the advice to something that is relevant for the person. For example:  
- a person with hypertension may be interested in the benefits of reducing salt intake  
- people with young children may be concerned about the effects of secondhand smoke. |
| **Assess** | Assess the patient’s readiness to start making a change by asking two questions:  
1. Are you ready to have a diet that includes more healthy options? Be more physically active? Be a non-smoker? Be a lower-risk drinker?  
2. Do you think you will be able to make the change? |
| Question 1 | Yes | Not sure | No |
| Question 2 | Yes | Not sure | No |
| **Assist** | Help the person to develop a plan that can increase the chance of success. Provide practical counselling that focuses on:  
- provision of basic information about the risk factor  
- identification of situations that could trigger relapse  
- ways of coping with trigger situations. Provide social support including:  
- providing encouragement  
- communicating interest and concern  
- encouraging the person to talk about the change process with family and friends.  
Provide and ensure availability of health education materials and details about additional resources, such as support groups, quit lines, etc. |
5A’s | What to say/do and how to say/do it
--- | ---
Arrange | Arrange a follow-up contact, by phone or in person. Discuss timing of follow-up with patients. At follow-up for all patients:
- identify problems already experienced as well as new ones that could arise
- remind them of the additional support that is available
- schedule next follow-up visit.
Refer to specialist services if needed and available. For those who have made the planned changes:
- congratulate them on their success.
For those who have challenges:
- remind them to view this as a learning experience
- review their circumstances and motivate them to re-commit
- link to more intensive support, if available.

The 5R’s brief intervention: how to do it

The 5R’s (Relevance, Risks, Rewards, Roadblocks, Repetition) are areas that should be addressed in a brief intervention to help people who are not ready to change at this time (see Table 2). These people are in the pre-contemplation or contemplation stage of behaviour change. If the person does not want to change or does not think that the change is important, focus on the risks and rewards. If they are considering the change but do not feel confident about being able to achieve it or have mixed feelings about it, focus more time on roadblocks. The sample questions below address diet, but they can be adapted to address other behavioural risk factors.

Table 2: Sample questions for a 5R’s brief intervention to motivate for a healthy diet

<table>
<thead>
<tr>
<th>5R’s</th>
<th>What to say/do</th>
</tr>
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<tbody>
<tr>
<td>Relevance</td>
<td>What kind of effects do you think your current eating habits are having on your life and health?</td>
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</tbody>
</table>
| Risks | What do you understand about the risks to your health of unhealthy eating habits?  
Go over the list of risks of an unhealthy diet and ask the person if they are concerned about any of these. |
| Rewards | Can you think of any benefits that could happen if you made some changes to your eating habits?  
Go over the benefits of a healthy diet, specifically highlighting the ways in which healthier choices could address the concerns previously mentioned. |
### SR’s | What to say/do
---|---
**Roadblocks** | *Have you ever tried to change your eating habits in the past?*
*Are there things that make it difficult to change your eating habits?*
*Can you think of ways to reduce these difficulties?*
Acknowledge the challenges and encourage the person to think of various options to address them.

**Repetition** | *Now that we have had a chat, let’s see if you feel differently.*
1. *Would you like to make changes to your eating habits, to help you achieve a healthier diet?*
2. *Do you think you have a chance of successfully making changes to your eating habits?*

If the person remains unwilling to start making changes to their diet at this time, end the discussion in a positive way, assure them of your support and invite them to return for further discussion if they change their mind.

Provide health education materials.
At the next CVD follow-up visit, ask again if they feel ready to make changes to their eating habits.
Addressing healthy lifestyle in primary health care

Activity 2: Step 1

Basics of counselling

- Appropriate physical environment
- Greeting patients
- Active listening
- Language
- Empathy, respect, interest, warmth and support
- Non verbal communication.
Principles of behaviour change

Behaviour change counselling involves the following:

- Understanding the process of behaviour change
- HOW to provide counselling
- WHAT a counselling session should include.

Stages of behaviour change

1. Maintenance: Maintain the behaviour change
   - Works best when someone has decided to stop smoking.
   - Maintain motivation and support.
   - Avoidance of triggers.
   - Regular follow-up.

2. Preparation: Prepare for change
   - Collects information about the problem and options to address it.
   - May experience minor setbacks.
   - May have anxiety about possible failure.

3. Contemplation: Consider the issue
   - Discusses the behaviour as an issue.
   - Seeks to understand the pros and cons of change.
   - May have mixed feelings about making changes.

4. Precontemplation: Not thinking about the changes
   - Not planning to change in the near future.
   - May not be aware of the behaviour as a problem.
   - May see the need for change.
   - May not feel confident about ability to change.

5. Action: Take action
   - This stage is indicated to occur at any point.
   - Returns to previous behaviour.
   - May feel disappointed, frustrated, or tired.

Principles of motivational interviewing and techniques

- Don’t tell the person what to do
- Listen and show empathy
- Help the patient see the gap between where they are and where they want to be
- Let the patient tell you that they need to change
- Help the patient to feel confident about changing
- Roll with resistance.
Brief intervention

A brief intervention is a short interaction of 3–20 minutes between health worker and patient, which aims to identify a real or potential problem, provide information about it and then motivate and assist the patient to do something about it.

Using the five A’s

1. ASK
2. ADVICE
3. ASSESS
4. ASSIST
5. ARRANGE

Provide guidance on referral and follow-up actions

Ask important aspects of behavioral risk factors

Provide important key messages on the risk factor

Find out whether the client is ready for additional information and assistance

Provide in-depth counselling and assistance

Addressing healthy lifestyle in primary health care
What is 5R’s?

The 5R’s (Relevance, Risks, Rewards, Roadblocks, Repetition) brief intervention, which helps to increase motivation among those not yet ready to change.

Using the five R’s

1. ASK
2. ADVICE
3. ASSESS
4. ASSIST
5. ARRANGE

Brief interventions using the 5A’s and 5R’s models

- **The 5A’s (Ask, Advise, Assess, Assist, Arrange)** brief intervention, which helps people who are ready to change their behaviour.
- **The 5R’s (Relevance, Risks, Rewards, Roadblocks, Repetition)** brief intervention, which helps to increase motivation among those not yet ready to change.
Module 2.2

Brief interventions for tobacco cessation at the primary health care level
WHAT’S INSIDE

- Introduction
- Learning outcomes
- Topics covered
- Competency
- Teaching and learning activities
- Background information
INTRODUCTION

Tobacco consumption in any form—including smoking, chewing and snuff— and exposure to tobacco combustion products through passive or involuntary smoking contribute considerably to illness and premature deaths. Tobacco smoking is the largest single external and avoidable cause of death from cardiovascular diseases and cancers. Primary health care teams can play an effective role in providing personalized, clear, practical advice to tobacco users and those likely to use tobacco. This module covers practical training on providing brief interventions for tobacco users in the primary health care setting using the 5A’s and 5R’s approaches.

LEARNING OUTCOMES

At the end of the session, participants will be able to:

- Describe the health, social, economic and environmental impact of tobacco and second hand smoke exposure.
- Explain the types of tobacco use and nicotine dependence.
- Describe and deliver brief tobacco cessation interventions using the 5A’s and 5R’s techniques.

TOPICS COVERED

- Effects of tobacco on health, socioeconomic, and environmental consequences.
- Major forms of tobacco use – smoking and smokeless tobacco.
- Nicotine addiction and nicotine withdrawal symptoms.
- Brief advice for tobacco cessation (5A’s and 5R’s intervention).
- Pharmacotherapy for tobacco dependence.
- Role of primary health care workers in tobacco cessation and control.

COMPETENCY

- Deliver brief tobacco cessation interventions to tobacco users attending primary health care facilities.
TEACHING AND LEARNING ACTIVITIES

*Time*: 135 minutes

**Activity 1. Types of tobacco use and its consequences:**
15 minutes

**Step 1.** Ask the participants to briefly respond to the following questions. Write responses on a flip chart/white board:
- What are types and patterns of tobacco use in their countries?
- What are the effects and consequences of tobacco use?
- Is exposure to second-hand smoke common in your country?
- What are the health effects of exposure to second-hand smoke on adults and children?
- Are you aware of third-hand smoke?
- What are benefits of quitting tobacco?

**Step 2.** Present the powerpoint slides with the following contents:
- types of tobacco use and harmful chemicals
- health, social, economic and environmental consequences of tobacco
- adverse impact of exposure to second-hand smoke
- benefits of quitting.

**Activity 2. Tobacco use and nicotine dependence:**
15 minutes

**Step 1.** Ask the participants to briefly respond to the following questions. Write the responses on a flip chart/white board.
- Why people smoke or use tobacco?
- Why is it difficult to quit?
- What are elements of nicotine addiction?
- What are the symptoms of nicotine withdrawal?
- How can nicotine dependence be assessed among tobacco users?
- What are the effective tobacco cessation programmes that are available in your country?
Step 2. Present the powerpoint slides with following contents:

- elements of nicotine addiction
- nicotine dependence
- nicotine replacement therapy and pharmacological management.

**Activity 3. Brief tobacco interventions in the primary health care level:** 15 minutes

Step 1. Ask participants to share their experiences of talking to patients about tobacco use.

**Facilitator’s explanatory notes**

As a health professional, you may feel concerned as many tobacco users are resistant to change and you may not know how to reduce their resistance and support them to quit tobacco use. There are effective brief tobacco intervention models to help you talk to patients about quitting tobacco and deliver advice.

Generally, brief tobacco interventions are not intended to treat people with high tobacco dependence (heavy tobacco users). The primary purpose of a brief tobacco intervention is to help the patient understand the risks of tobacco use and the benefits of quitting, and to motivate them to make a quit attempt. Brief tobacco interventions can also be used to encourage those heavy tobacco users to seek or accept a referral to more intensive treatments within their community.

It is estimated that approximately 40% of tobacco users make some form of attempt to quit in response to advice from a doctor.

Step 2. Ask participants to share how giving advice on clinical issues (e.g. “you have asthma”) differs from giving advice on behaviour change (e.g. “you need to quit smoking”)?

**Facilitator’s explanatory notes**

Primary health care workers may feel more knowledgeable and confident to give advice on clinical issues because they know more than their patients, and they have clear instructions or advice for patients. However, giving advice on behaviour change is more than providing information and recommending solutions to patients. It involves helping patients discover their own solutions to their problems and to accept patients’ choices. It requires primary health care workers to establish a good relationship with patients, and to show empathy to them. The advice on behaviour change should be tailored to patients’ particular circumstances.

Step 3. Present the powerpoint slides with the following contents.

- role of a brief tobacco cessation intervention
- components and use of 5A’s
- components and use of 5R’s.
Activity 4. Review of the 5A’s algorithm on tobacco brief interventions: 30 minutes

Step 1. Divide the participants into convenient groups and discuss the algorithm.

Step 2. Ask the participants to discuss if there are ambiguities in the algorithm. Inform the participants that they will be referring this algorithm in the subsequent activities.

<table>
<thead>
<tr>
<th>5A’s</th>
<th>Tobacco</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask</td>
<td>Have you smoked or used any other tobacco product in the past 12 months? (for example, cigarettes (including home-made), cigars, pipe, water-pipe, chewing tobacco, snuff): Yes No</td>
</tr>
<tr>
<td></td>
<td>Do you currently smoke or use any other tobacco product?: Yes No</td>
</tr>
<tr>
<td></td>
<td>Does anyone smoke around you at home or at work, or do you often go to places where there is a lot of smoke such as restaurants or bars? Yes No</td>
</tr>
<tr>
<td></td>
<td>If No to all these questions: • Advise not to start tobacco use smoke and to avoid secondhand exposure</td>
</tr>
<tr>
<td></td>
<td>If Yes to any questions: • Advise on risks of exposure to secondhand</td>
</tr>
<tr>
<td>Advise</td>
<td>Quitting tobacco is the most important thing you can do to protect your health now and in the future.</td>
</tr>
<tr>
<td></td>
<td>Advantages: • Tobacco use is a major cause of heart attack and stroke, of serious lung problems and certain cancers. • Tobacco can damage every part of the body. • Secondhand smoke damages the health of your family and others around you.</td>
</tr>
<tr>
<td>Assess</td>
<td>1. Are you interested in quitting tobacco use? 2. Do you think you will succeed in quitting?</td>
</tr>
<tr>
<td></td>
<td>Question 1 Yes Not sure No</td>
</tr>
<tr>
<td></td>
<td>Question 2 Yes Not sure No</td>
</tr>
<tr>
<td></td>
<td>Any answer in the shaded area indicates that the person is not yet ready to change. In this case effort needs to be made to increase the motivation for change</td>
</tr>
<tr>
<td></td>
<td>Answers in the white area suggest that you and the patient can move on to the next step.</td>
</tr>
</tbody>
</table>
### HOW TO ASK ABOUT TOBACCO USE

Primary care providers should ask about tobacco use at EVERY patient visit, and document tobacco use status in the medical record. Please ask simple questions like:

- Do you use tobacco?
- Does anyone else smoke around you?

Asking and recording tobacco use status is the first important step towards helping patients stop tobacco use. Health facilities should make a system change to ensure that, for every patient at every visit, tobacco use status is asked and documented. One strategy could be to include tobacco use status in medical records as a “vital sign”.

<table>
<thead>
<tr>
<th><strong>5A’s</strong></th>
<th><strong>Tobacco</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Assist</td>
<td>Help the patient to develop a quit plan using the STAR method:</td>
</tr>
<tr>
<td></td>
<td><strong>Set</strong> a quit date, ideally within 2 weeks.</td>
</tr>
<tr>
<td></td>
<td><strong>Tell</strong> family and friends about quitting and ask for support.</td>
</tr>
<tr>
<td></td>
<td><strong>Anticipate</strong> challenges in the quit attempt.</td>
</tr>
<tr>
<td></td>
<td><strong>Remove</strong> tobacco products from personal environment and make home smoke-free.</td>
</tr>
<tr>
<td></td>
<td>Provide practical counselling:</td>
</tr>
<tr>
<td></td>
<td>• Provide basic information about tobacco use and quitting.</td>
</tr>
<tr>
<td></td>
<td>• Help the patient to identify situations (e.g. feelings, places, activities) that could increase the risk of smoking or relapse.</td>
</tr>
<tr>
<td></td>
<td>• Help to identify and practise ways of coping with these situations. Provide social support.</td>
</tr>
<tr>
<td></td>
<td>• Provide encouragement in the quit attempt by showing care and concern.</td>
</tr>
<tr>
<td></td>
<td>• Encourage the patient to talk about the quitting process.</td>
</tr>
<tr>
<td></td>
<td>• Provide health education materials and information on additional resources, e.g. support groups, quit lines.</td>
</tr>
<tr>
<td></td>
<td>Recommend the use of medications if indicated and available, e.g. nicotine replacement therapy.</td>
</tr>
<tr>
<td>Arrange</td>
<td>Refer to specialist support services if needed and available.</td>
</tr>
<tr>
<td></td>
<td>Follow-up:</td>
</tr>
<tr>
<td></td>
<td>• Decide the timeline and method and schedule the next appointment.</td>
</tr>
<tr>
<td></td>
<td>• Ask about successes and challenges.</td>
</tr>
<tr>
<td></td>
<td>• For those who have quit: congratulate them on their success.</td>
</tr>
<tr>
<td></td>
<td>• For those who have used tobacco again:</td>
</tr>
<tr>
<td></td>
<td>– Remind them to view any failures as a learning experience.</td>
</tr>
<tr>
<td></td>
<td>– Review circumstances and encourage them to recommit to quitting.</td>
</tr>
<tr>
<td></td>
<td>– Link with more intensive support if available.</td>
</tr>
<tr>
<td></td>
<td>• For all patients:</td>
</tr>
<tr>
<td></td>
<td>– Identify problems and discuss ways to address them.</td>
</tr>
<tr>
<td></td>
<td>– Remind them of additional support and resources that are available.</td>
</tr>
<tr>
<td></td>
<td>– Assess use of medications and any problems experienced.</td>
</tr>
</tbody>
</table>
Step 3. Ask the participants to volunteer to play the role of a primary health care worker and fictional smokers (Hamid, Lisa and Mustafa). Each smoker will differ as to the demographic background, health status, family and social circumstances, and beliefs about smoking. Before each role play, the fictional smoker will introduce himself or herself.

Step 4. Ask primary care provider to:

- Ask about the patient’s smoking;
- Give some tailored advice using the following instructions.

<table>
<thead>
<tr>
<th>Smokers</th>
<th>Primary health care worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Hamid: “I am a 57-year-old man with 10 grandchildren. I have a heart condition and breathing problems.”</td>
<td>Advice should refer to health, longer life and risk of exposure to second hand smoke among grandchildren.</td>
</tr>
<tr>
<td>2. Lisa: “I am a 25-year-old woman and I have just married. We hope to have a large family but we do struggle financially.”</td>
<td>Advice should refer to impact on fertility and the cost of smoking.</td>
</tr>
<tr>
<td>3. Mustafa: “I am a man aged 35.”</td>
<td>Mustafa does not give much information. The volunteer will need to recognize this and should ask Mustafa what he doesn’t like about being a smoker. Once Mustafa answers, the volunteer should add extra information on the issue raised.</td>
</tr>
</tbody>
</table>

**Activity 5. Motivational support to quit tobacco using 5R’s:**

**30 minutes**

Step 1. Ask participants to discuss why people continue to smoke or why don’t they quit?

Few common reasons may include:

- addiction
- everyone does it
- social activity
- after a meal
- stress relief
- when having coffee or tea
- emotional support
- sharing of cigarettes
- boredom/filling in time
- bonding/acceptance.

Step 2. Ask few participants to define “motivation”.

**Facilitator’s explanatory notes**

In general, motivation is the driving force by which humans achieve their goals. The word “motivation” here refers to “intrinsic motivation”: the key predictor of behaviour change. According to behavioural scientists, “intrinsic motivation” is an internal state that activates, directs and maintains behavior towards goals. In this workbook, we define it as the state of readiness to change.
Step 3. Ask few volunteers to share experiences of dealing with tobacco users who are not willing to quit.

Facilitator’s explanatory notes

Many health professionals find it impossible to create a positive dialogue with unmotivated patients about their behaviours. They often make patients angry and receive all kinds of excuses as to why these changes are not appropriate when they try to give advice to unmotivated patients. In this module, you will learn and practise using the 5R’s model and some other tools to deal with tobacco users who have low motivation to quit.

Step 4. Divide the participants into convenient groups and discuss the below table on 5R’s.

<table>
<thead>
<tr>
<th>5R’s</th>
<th>Strategies for implementation</th>
<th>Example</th>
</tr>
</thead>
</table>
| Relevance | Encourage the patient to indicate how quitting is personally relevant to him or her.     | Health care worker(HCW): “How is quitting most personally relevant to you?”  
P: “I suppose smoking is bad for my health” |
|        | Motivational information has the greatest impact if it is relevant to a patient’s disease status or risk, family or social situation (e.g. having children in the home), health concerns, age, sex, and other important patient characteristics (e.g. prior quitting experience, personal barriers to cessation). |                                                                          |
| Risks  | Encourage the patient to identify potential negative consequences of tobacco use that are relevant to him or her. | HCW: “What do you know about the risks of smoking to your health? 
What particularly worries you?”  
P: “I know it causes cancer. That must be awful.”  
HCW: “That’s right – the risk of cancer is many times higher among smokers.” |
<p>|        | Examples of risks are:                                                                       |                                                                          |
|        | • Acute risks: shortness of breath, exacerbation of asthma, increased risk of respiratory infections, harm to pregnancy, impotence, and infertility. |                                                                          |
|        | • Long-term risks: heart attacks and strokes, lung and other cancers (e.g. larynx, oral cavity, pharynx, oesophagus, pancreas, stomach, kidney, bladder, cervix, and acute myelocytic leukemia), chronic obstructive pulmonary disease (chronic bronchitis and emphysema), osteoporosis, long-term disability, and need for extended care. |                                                                          |
|        | • Environmental risks: increased risk of lung cancer and heart disease in spouses; increased risk for low birth-weight, sudden infant death syndrome (SIDS), asthma, middle ear disease, and respiratory infections in children of smokers. |                                                                          |</p>
<table>
<thead>
<tr>
<th>5R’s</th>
<th>Strategies for implementation</th>
<th>Example</th>
</tr>
</thead>
</table>
| **Rewards** | Ask the patient to identify potential relevant benefits of stopping tobacco use. Examples of rewards could include:  
- improved health  
- food will taste better  
- improved sense of smell  
- saving money  
- feeling better about oneself  
- home, car, clothing and breath will smell better  
- setting a good example for children and decreasing the likelihood that they will smoke  
- having healthier babies and children  
- feeling better physically  
- performing better in physical activities  
- improved appearance, including reduced wrinkling/ageing of skin and whiter teeth. | HCW: “Do you know how stopping smoking would affect your risk of cancer?”  
P: “I guess it would be lower if I quit.”  
HCW: “Yes, and it doesn’t take long for the risk to decrease. But it’s important to quit as soon as possible.” |
| **Roadblocks** | Ask the patient to identify barriers or impediments to quitting and provide treatment (problem-solving counselling, medication) that could address barriers. Typical barriers might include:  
- withdrawal symptoms  
- fear of failure  
- weight gain  
- lack of support  
- depression  
- enjoyment of tobacco  
- being around other tobacco users  
- limited knowledge of effective treatment options. | HCW: “So what would be difficult about quitting for you?”  
P: “Cravings – they would be awful!”  
HCW: “We can help with that. We can give you nicotine replacement therapy (NRT) that can reduce the cravings.”  
P: “Does that really work?”  
HCW: “You still need will-power, but study shows that NRT can double your chances of quitting successfully.” |
| **Repetition** | Repeat assessment of readiness to quit. If still not ready to quit repeat intervention at a later date. The motivational intervention should be repeated every time an unmotivated patient visits the clinic setting. | HCW: “So, now we’ve had a chat, let’s see if you feel differently. Can you answer these questions again...?”  
(Go back to the Assess stage of the 5A’s. If ready to quit then proceed with the 5A’s. If not ready to quit, end intervention positively.) |
Brief interventions for tobacco cessation at the primary health care level

Tips for implementing the 5R’s model

- Let the patient do the talking. Don’t give lectures!
- If the patient does not want to be a non-tobacco user – focus more time on “Risks” and “Rewards”.
- If the patient does want to be a non-tobacco user but does not think he or she can quit successfully, focus more time on “Roadblocks”.
- Even if patients remain not ready to quit, end positively with an invitation to them to come back to you if they change their minds.

Step 5. Role play of 5R’s interventions

Ask participants to volunteer to play the role of two practitioners and two fictional smokers to assess two fictional smokers’ readiness to quit.

Each smoker will differ in his or her response when assessed for readiness to quit.

A. Hamid: “My smoking isn’t really a concern to me.” In role play, Hamid should express concern about heart disease.

B. Lisa: “I want to be a non-smoker but I could never quit – I’m very addicted.” In role play, Lisa should express concern about her stress levels while quitting.

In role play, the two volunteers should:

- complete the “Assess” questions appropriately in each case to indicate non-readiness to quit;
- deliver the 5R’s interventions in an appropriate way.

Note: In the case of Hamid, the 5R’s should be delivered, focusing on Risks and Rewards. In the case of Lisa, the 5R’s should be delivered with the focus on roadblocks.

Activity 6. Arrange for follow-up contacts: 15 minutes

Step 1. Discuss briefly how to arrange the follow up and supporting quit attempt for the client. Make sure to cover when, how, what to do.

Facilitator’s explanatory notes

------------------------------- HOW TO ARRANGE FOLLOW-UP CONTACTS FOR THE PATIENT ------------------------------

When

The majority of relapse occurs in the first two weeks after quitting. Therefore, follow-up contact should begin soon after the quit date. The first follow-up contact should be arranged during the first week.

A second follow-up contact is recommended within one month after the quit date.
How

Use practical methods such as telephone, personal visit and mail/e-mail to do the follow-up. Following up with patients is recommended to be done through teamwork if possible.

What

Below table describes all actions that primary care providers need to take during follow-up contacts

<table>
<thead>
<tr>
<th>For all patients</th>
<th>Identify problems already encountered and anticipate challenges.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Remind patients of available extra-treatment social support</td>
</tr>
<tr>
<td></td>
<td>• Assess medication use and problems</td>
</tr>
<tr>
<td></td>
<td>• Schedule the next follow-up contact.</td>
</tr>
<tr>
<td>For patients who are abstinent</td>
<td>Congratulate them on their success.</td>
</tr>
<tr>
<td>For patients who have used tobacco again</td>
<td>Remind them to view relapse as a learning experience.</td>
</tr>
<tr>
<td></td>
<td>• Review circumstances and elicit recommitment</td>
</tr>
<tr>
<td></td>
<td>• Link to more intensive treatment if available.</td>
</tr>
</tbody>
</table>

**HOW TO ASSIST PATIENTS IN MAKING A QUIT ATTEMPT**

For the patient who is willing to quit, the following actions can be taken to aid the patient in quitting:

- help develop a quit plan
- provide practical counselling
- provide intra-treatment social support
- help patient obtain extra-treatment social support
- recommend pharmacotherapy if appropriate
- provide supplementary materials.

Help develop a quit plan

Strategies for this action can be summarized by the acronym STAR.

- **S**et a quit date, ideally within two weeks.
- **T**ell friends, family and coworkers of the plan to quit, and ask for support.
- **A**nticipate challenges, particularly during the critical first few weeks, including nicotine withdrawal.
- **R**emove cigarettes from home, car and workplace and avoid smoking in these places. Make your home smoke-free.
Answer questions asked by patients who are willing to quit:

- What if I still have cravings?
  - Primary health care workers can answer the first question based on the following key points:
    - Cravings/urges occur even when smoking. Typically they are brief, lasting only 1–2 minutes.
    - There are many ways to deal with them. One good strategy is named “4Ds”:
      - Delay (every time you get the urge to puff, try to delay it as long as you can)
      - Deep breathing (deep breathing and meditation can help you relax yourself from within until the urge fades away)
      - Drink water (water refreshes the body and flushes out toxins)
      - Do something else (take a shower).
    - As time goes on, urges will occur less often and will become less intense.

- What if I smoke after quitting?
  - Relapse is common. Most people make multiple attempts before they are successful.
  - If you smoke after quitting:
    - don’t blame yourself (none of us is perfect)
    - use the relapse as a learning experience rather than as a sign of failure
    - just try another quit attempt.

Step 2. Discuss Hamid’s follow-up contacts by answering WHEN, HOW and WHAT should be done. Present the follow up table:

<table>
<thead>
<tr>
<th>Questions</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHEN</td>
<td></td>
</tr>
<tr>
<td>HOW</td>
<td></td>
</tr>
<tr>
<td>WHAT</td>
<td></td>
</tr>
</tbody>
</table>
**Practical test:** 15 minutes

Practice is important for you to improve your confidence and skills in delivering brief tobacco interventions. You will now do a role play to practise 5A’s and 5R’s brief tobacco interventions.

**Step 1. Invite two volunteers to role-play a brief intervention in front of the group:**

- Volunteer 1 will be a primary health care worker who attempts to address the patient’s smoking.
- Volunteer 2 will be a forty year old male, satisfied smoker who is not especially keen to stop.

**Step 2. Ask the rest of the participants to observe the brief intervention session.**

**Step 3. Ask few participants to share with their observations to the whole group.**

Record the observations under 5A’s in the table provided in your workbook:

<table>
<thead>
<tr>
<th>Areas of A’s</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASK</td>
<td></td>
</tr>
<tr>
<td>ADVICE</td>
<td></td>
</tr>
<tr>
<td>ASSESS</td>
<td></td>
</tr>
<tr>
<td>ASSIST</td>
<td></td>
</tr>
<tr>
<td>ARRANGE</td>
<td></td>
</tr>
</tbody>
</table>

Also complete the following table on 5R’s in the table provided in your workbook:

<table>
<thead>
<tr>
<th>Areas of R’s</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td></td>
</tr>
<tr>
<td>Rewards</td>
<td></td>
</tr>
<tr>
<td>Roadblock</td>
<td></td>
</tr>
<tr>
<td>Repetition</td>
<td></td>
</tr>
</tbody>
</table>
BACKGROUND INFORMATION

Tobacco use
Tobacco kills nearly half its users and causes more than 7 million deaths every year. Nearly 10 per cent of these deaths are the result of inhaling second-hand smoke in homes, restaurants, offices or other enclosed spaces.

What is tobacco use?
Tobacco can be smoked, sucked, chewed or snuffed, applied or gargled. Tobacco products can generally be divided into two types: smoked tobacco (in cigarettes, cigars, pipes and water pipes); and smokeless tobacco (in chewing tobacco, snuff, dentrifice and tobacco water). All tobacco products contain the addictive substance nicotine that is absorbed into the bloodstream when a tobacco product is used. Globally, cigarette smoking is the most common form of tobacco use but smokeless tobacco has high prevalence in many SEAR countries.

Consequences for health
All tobacco products are harmful. Tobacco smoke contains at least 7000 harmful chemicals and at least 69 are known to cause cancer. Tobacco use can damage every part of the body and is one of the main risk factors for non-communicable diseases (CVDs, COPD, DM and cancers) and is associated with communicable diseases such as tuberculosis and HIV/AIDS. Tobacco use contributes to a range of other diseases (see Box 1) and exposes family and other people to health risks through second-hand smoke (see Box 2).
Box 1: Diseases caused by tobacco use

- **Cardiovascular system:**
  - Heart attack/angina
  - Stroke/transient ischemic attack
  - Peripheral vascular disease
  - Aortic aneurism
- **Diabetes**
- **Respiratory system:**
  - Shortness of breath
  - Exacerbated asthma
  - Chronic obstructive pulmonary disease
  - Respiratory infections
- **Cancers:**
  - Larynx, oropharynx, oesophagus, trachea, bronchus, lung, acute myeloid leukaemia, pancreas, stomach, colon, kidney, cervix, bladder
- **Eyes:**
  - Blindness
  - Cataract
- **Mouth:**
  - Gum disease
- **Bones:**
  - Osteoporosis
  - Hip fractures
- **Reproductive system**
  - Impotence
  - Infertility
  - Miscarriage
  - Premature birth
  - Low birth weight

Box 2: Diseases that can result from exposure to second-hand smoke

<table>
<thead>
<tr>
<th>Diseases in children</th>
<th>Diseases in adults</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Sudden infant death syndrome</td>
<td>- CVD</td>
</tr>
<tr>
<td>- Acute respiratory disease</td>
<td>- Nasal irritation</td>
</tr>
<tr>
<td>- Middle ear disease</td>
<td>- Lung cancer</td>
</tr>
<tr>
<td>- Chronic respiratory symptoms</td>
<td>- Reproductive effects in women</td>
</tr>
</tbody>
</table>

**Economic consequences**

The costs of tobacco use include illness, disability, premature death, and foregone consumption and investment. Progress has been made during the past decade on estimating the costs of smoking and tobacco use. These estimates are useful in documenting the economic burden of tobacco use and motivating the policy makers to implement strong tobacco control policies. A recent study found that diseases caused by smoking accounted for 5.7% of global health expenditures in 2012, while the total economic cost of smoking was equivalent to 1.8% of global GDP. Smoking imposes a heavy economic burden throughout the world.

---

1 Global economic cost of smoking-attributable diseases: Mark Goodchild, Nigar Nargis, Edouard Tursan d’Espaignet
There is ample evidence to suggest that the economic costs of tobacco use are substantial and include significant health care costs for treating the diseases caused by tobacco use and the lost productivity that results from tobacco attributable morbidity, disability and mortality. Cost of Illness studies often categorize direct costs into either healthcare or non-healthcare expenditures. Healthcare expenditures are those incurred from the diagnosis and treatment of smoking-attributable diseases (hospitalization, physician services, medications, etc), while non-healthcare expenditures are incurred outside of the health system (eg, property loss from fires caused by cigarettes).

The countries should make efforts to generate their own evidence on economic costs of tobacco. The total economic cost attributable to tobacco use from all diseases in India in the year 2011 (for persons aged 35-69) amounted to nearly US$ 22.4 billion.

Tobacco use takes away not just health but also wealth. The smoking cost calculator can be used to estimate financial losses:

<table>
<thead>
<tr>
<th>Number of packs a person smokes per year</th>
<th>×</th>
<th>Number of years smoked</th>
<th>×</th>
<th>Average price of pack of cigarettes</th>
<th>=</th>
<th>Amount spent on smoking in lifetime</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>×</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Social consequences**

In many cultures, tobacco use is viewed negatively, for example, a smoker may be considered dirty, smelling badly or being unhealthy. Smoking can therefore affect personal relationships. Children of smokers are more likely to smoke, and to smoke more heavily at a young age.

In many countries small children are employed in tobacco farming or tobacco industry such as bidi rolling in India, amounting to child labour and exploitation.

**Environmental effects**

In many tobacco growing countries, evidence indicates irreparable environmental damage from tobacco agriculture, particularly when associated with the deforestation necessary to increase farmland for tobacco growth and cure tobacco plants.

In many developing countries, wood is used to cure tobacco leaves and to construct curing barns. An estimated 200,000 hectares of forests and woodlands are cut down each year because of tobacco farming.

Environmental degradation also results from the tobacco plant leaching nutrients from the soil, as well as pollution from pesticides and fertilizers. Indeed, large and frequent applications of pesticides are required to protect the plant from insects and disease. This not only causes severe health problems to the farmers, as they are not properly equipped and trained to use these chemicals, but it also decreases the long term fertility of the soil and pollutes the groundwater and waterways often used by populations downstream.

The manufacturing of tobacco products also produces an immense amount of waste. In 1995, the global tobacco industry produced an estimated 2.3 billion kilograms of manufacturing waste and 209 million kilograms of chemical waste. This does not include the enormous amount of litter...
caused by cigarette butts, which are not bio-degradable. According to one estimate, 954 million kilograms worth of filters were produced in 1998, with many of them eventually littering countries’ streets, waterways and parklands. Compounding the extent of this problem is the waste created by cigarette packaging, lighters, matches and other polluting by-products of tobacco use.

What are the benefits of quitting tobacco?

Quitting tobacco is the best action a user can take to improve their health. Quitting has immediate and long-term health benefits for all users, including living up to 10 years longer. The sooner a person quits, the sooner the effects of tobacco can start to be reversed.

- **Benefits to health**
  Within a few months of quitting smoking, coughing and shortness of breath decrease, and within 1 year the person’s risk of heart attack and angina is about half that of a smoker. Fifteen years after quitting, the risk of heart attack and angina is the same as that of a non-smoker. Additionally, quitting smoking after a heart attack reduces the chances of having another heart attack by 50%.

  Quitting tobacco reduces the likelihood of problems such as impotence, difficulties in getting pregnant, premature births, babies with low birth weights, and miscarriage. It also decreases the risk of diseases related to second-hand smoke in children, such as asthma and middle-ear disease.

  Other benefits to quitting smoking are being better able to taste food; an improved sense of smell; feeling better physically; performing better in physical activities; improved appearance, including reduced wrinkling/aging of skin, and whiter teeth. It also improves the health of family members.

- **Financial benefits**
  Money previously spent on tobacco is saved, as well as the potential health care costs related to illnesses caused by tobacco. The same can be utilized to meet the health, food, education and other needs of the family.

- **Social benefits**
  Quitting decreases absenteeism and improves productivity and quality of life. Quitters will be able to expand their social interactions. When tobacco users quit, their children become less likely to start tobacco use and more likely to quit if they already use it.

What are elements of nicotine addiction?

**Physical/physiological addiction**

*Nicotine*

Nicotine is as addictive as many illegal drugs. Nicotine has been shown to have effects on brain dopamine systems similar to those of drugs such as heroin and cocaine. Nicotine increases the number of nicotinic receptors in the brain.
Inhalation (smoking) is the quickest way for nicotine to reach brain (within 7–10 seconds). As a smoker, your brain and body get used to functioning with a certain level of nicotine. Your nicotine level will drop dramatically one or two hours after your last cigarette (the half-life of nicotine is 120 minutes), and then you will crave nicotine (cigarettes). If you stop smoking suddenly, the absence of nicotine in your brain (the nicotinic receptors in your brain are empty) will make you feel uncomfortable and cause withdrawal symptoms.

**Nicotine dependence**

This is often referred to as addiction. This happens because of certain brain changes. Features of addiction are:

- carving: a strong desire to use the nicotine
- withdrawal symptoms
- increase and regular use
- use despite harm
- difficulty in controlling use
- use despite knowing harmful effects

**Nicotine withdrawal symptoms**

Nicotine withdrawal symptoms refer to a group of symptoms (the physical and mental changes) that may occur from suddenly stopping the use of tobacco. Withdrawal is the adjustment of the body to living without nicotine, positively referred to as recovery symptoms. They are normally temporary (2–4 weeks) and are a product of the physical or psychological adaptation.

Most smokers know about withdrawal symptoms through hearsay or from direct experience. They can be a major barrier against staying quit, or even attempting to quit in the first place. Some common nicotine withdrawal symptoms are:

- headaches
- restlessness
- coughing
- decreased heart rate
- cravings
- difficulty concentrating
- increased appetite or weight gain
- influenza-like symptoms
- mood changes (sadness, irritability, frustration, or anger)
- insomnia.
Emotional/psychological connection

Smokers link feelings with cigarettes via the process of withdrawal and “operant conditioning”. Here are some of the emotional connections that may be associated with smoking: when smokers feel stressed, happy, sad or angry, they will get craving for a cigarette. In fact, using cigarettes to calm your nerves or cope with stress is misguided. It does not help solve the source of your problems.

Other psychological factors relevant to smoking are cognitions (i.e. thoughts and beliefs). Smokers who do not want to quit may have positive thoughts and beliefs on smoking, such as:

- “It helps me relax.”
- “It’s not really that harmful!”
- “It’s cool to smoke!”
- “It keeps my weight down.”

Habitual and social connection

Smoking is a tenacious habit precisely because it is so intimately tied to the everyday acts in smokers’ lives. Smokers link behaviour with cigarettes via the process of “operant conditioning”.

It is not easy to let go of something that’s been such an integral part of a smoker’s life for so long. Smoking may be associated with the following habits or behaviour: having coffee or tea, the end of meal, making a phone call, watching television, driving.

Smoking is also prone to social influences. Children and adolescents are more likely to start smoking if their parents or people they respect and admire smoke. Smoking with friends is a way to socialize with them.

Interactions between the three elements of tobacco addiction

The physical, psychological and social influences are not independent of each other. All three types of factors influencing smoking need to be explored and referred to when you provide support for tobacco users to quit.

Additional reading resources

5. Guidelines for the implementation of article 14 of the WHO Framework Convention on Tobacco Control (Demand reduction measures concerning tobacco dependence and cessation) –Annex.
6. HEARTS Healthy lifestyle Counselling for tobacco cessation, diet, physical activity, alcohol use and self-care to prevents cardiovascular disease.
Brief interventions for tobacco cessation at the primary health care level

Activity 1: Step 2

Tobacco use and harmful chemical in cigarettes

Types of tobacco use:
- Smoked tobacco (in cigarettes, cigars, pipes and water pipes)
- Smokeless tobacco (in chewing tobacco, snuff, dentifrice and tobacco water)
- Tobacco smoke has more than 7000 chemical compounds including known carcinogens.

Brief interventions for tobacco cessation at the primary health care level
Benefits of quitting tobacco

<table>
<thead>
<tr>
<th>Time</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 days</td>
<td>Recovery has likely progressed to the point where your addiction is no longer driving the desire to use. Blood circulation in your arms and legs appears similar to that of a non-user.</td>
</tr>
<tr>
<td>2 to 4 weeks</td>
<td>Cessation-related anger, anxiety, difficulty concentrating, impatience, irritability, restlessness, and depression have ended. If still experiencing any of these symptoms get them assessed and evaluated by your physician.</td>
</tr>
<tr>
<td>2 weeks to 3 months</td>
<td>Your heart attack risk has started to drop. Your lung function is beginning to improve.</td>
</tr>
<tr>
<td>21 days</td>
<td>The number of acetylcholine receptors, which are up-regulated in response to nicotine's presence in the brain, has decreased, and receptor binding has returned to levels seen in the brains of non-smokers (2007 study).</td>
</tr>
<tr>
<td>3 weeks to 1 months</td>
<td>Your circulation has substantially improved. Walking has become easier. Your chronic cough, if any, has likely disappeared. If you get sore by a doctor and caught at all concerned, as a chronic cough can be a sign of lung cancer.</td>
</tr>
<tr>
<td>4 weeks</td>
<td>Ploosa or PNA is a stable inflammatory biomarker predictive of development of cardiovascular events and mortality in smokers. A 2018 study found that within 4 weeks of quitting smoking, with or without HRT, that surival levels in 16 former smokers had fallen from a baseline pre-medicating median of 3.5 mg/hL levels “no longer significantly different from the never smokers” (C. R. White).</td>
</tr>
<tr>
<td>8 weeks</td>
<td>Inhaled resistance has normalized despite weight gain of 2.2 kg (DS: 5050, 3: 446).</td>
</tr>
</tbody>
</table>
Benefits of quitting tobacco

<table>
<thead>
<tr>
<th>TIME</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 week</td>
<td>Any smoking-related sinus congestion, fatigue or shortness of breath has decreased. Cells have regained their ability to handle mucus. Lungs are clearer and reduce infections. Your body's overall energy has increased.</td>
</tr>
<tr>
<td>1 year</td>
<td>Your risk of coronary heart disease, heart attack and stroke has dropped to less than half that of a smoker.</td>
</tr>
<tr>
<td>5 years</td>
<td>Your risk of a stroke/hemorrhage has declined to 59% of your risk unless still smoking (2002 study). If you're a non-smoker, your risk of developing diabetes is now that of a non-smoker (2001 study).</td>
</tr>
<tr>
<td>5 to 15 years</td>
<td>Your risk of stroke has declined to that of a non-smoker.</td>
</tr>
<tr>
<td>15 years</td>
<td>Your risk of being diagnosed with lung cancer is between 39% and 58% of that for a continuing smoker (2005 study). Risk of death from lung cancer has declined by almost half if you were an average smoker (one pack per day). Risk of cancer of the mouth, throat, esophagus and pancreas have declined. Risk of developing diabetes for both men and women is now similar to that of a non-smoker (1992 study).</td>
</tr>
<tr>
<td>13 years</td>
<td>The average smoker who's able to live to age 75 has 34 fewer teeth than a non-smoker (1996 study). By year 13 after quitting, your risk of smoking-induced tooth loss has declined to that of a never-smoker (2008 study).</td>
</tr>
<tr>
<td>15 years</td>
<td>Your risk of coronary heart disease is now that of a person who has never smoked. Your risk of pancreatic cancer has declined to that of a non-smoker (2011 study). But note 2nd pancreas study making identical finding at 20 years.</td>
</tr>
<tr>
<td>20 years</td>
<td>Female excess risk of death from all-cause-related causes, including lung disease and cancer, has now reduced to that of a non-smoker (2008 study). Risk of pancreas cancer has declined to that of a non-smoker (2011 study).</td>
</tr>
</tbody>
</table>

Activity 2: Step 2

Physical addiction: nicotine’s role

- A major factor that maintains a tobacco use over time is addiction to nicotine
- Nicotine
  - Not a carcinogen
  - Liquid in its native state
  - Distilled from burning tobacco and carried on tar droplets
  - Only free (un-protonated) nicotine crosses biological membranes
  - Half-life 120 minutes
physical addiction - nicotine's role

- Nicotine has been shown to have effects on brain dopamine systems similar to those of drugs such as heroin and cocaine.
- Positive reinforcement: binds to the nicotinic receptors, causing the release of dopamine, which makes tobacco users feel good.
- The quickest delivery of nicotine: inhalation in the form of smoke.
- Tolerance: it gradually increases the number of nicotinic receptors in the brain and tobacco users need amounts of tobacco in order to achieve the same levels of satisfaction.
- Negative reinforcement: reducing withdrawal symptoms.

Elements of nicotine addiction

The cycle of nicotine addiction

- Nicotine binding causes an increase in release of dopamine
- Dopamine gives feelings of pleasure and calmness
- competitive binding of nicotine to nicotinic acetylcholine receptors causes prolonged activation, desensitization, and upregulation

Nicotine withdrawal
When receptors are empty, they make you feel uncomfortable and increase your urge to smoke

Nicotine withdrawal: Duration

<table>
<thead>
<tr>
<th>Days</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lightheadedness, Sleep disturbance</td>
</tr>
<tr>
<td>2</td>
<td>Poor concentration, Craving for nicotine</td>
</tr>
<tr>
<td>4</td>
<td>Irritability or aggression, Depression, Restlessness</td>
</tr>
<tr>
<td>10</td>
<td>Increased appetite</td>
</tr>
</tbody>
</table>

Tobacco cessation medications

- Nicotine replacement therapy (NRT): nicotine gum, nicotine patches, nicotine nasal spray, nicotine inhaler, nicotine lozenges/sublingual tablets
- Non-nicotine medications: bupropion sustained release (SR), varenicline, cytisine, clonidine, triptyline.

Activity 3: Step 3
**Brief tobacco interventions**

Brief interventions (5A’s, 5R’s) in clinical setting are
- **Feasible**: an opportunistic intervention, can be done within 3-5 minutes
- **Effective**: 40% will make quit attempt, increase quit rate by 30%
- **Efficient**: very cost effective, with the potential to reach more than 80% of the general population at least once per year.

**Role of brief intervention in tobacco cessation**

- Minimal intervention lasting less than three minutes increases overall tobacco abstinent rates
- Clinical settings that fully implement all of the 5A’s show better results than those with partial or inconsistent use of the 5A’s
- Health care providers play an important role in tobacco cessation.

**Components of 5A’s**

- Ask – systematically identify all tobacco users at every visit
- Advise – advise all tobacco users that they need to quit
- Assess – determine readiness to make a quit attempt
- Assist – assist the patient with a quit plan or provide information on specialist support
- Arrange – schedule follow-up contacts or a referral to specialist support.
Components of 5R’s

- Relevance – how is quitting most personally relevant to you?
- Risks – what do you know about the risks of smoking in that regard?
- Rewards – what would be the benefits of quitting in that regard?
- Roadblocks – what would be difficult about quitting for you?
- Repetition – repeat assessment of readiness to quit; if still not ready to quit, repeat intervention at a later date.

When is someone ready to quit

- Method 1: Ask two questions in relation to “importance” and “self-efficacy”:
  - “Would you like to be a non-tobacco user?”
  - “Do you think you have a chance of quitting successfully?”
- Method 2: Ask just one question:
  - “Would you like to quit tobacco within the next 30 days?”
- If the answer of any of above is “no”, this indicates that the tobacco user is NOT ready to quit and we should deliver the 5R’s intervention.

When do we deliver the 5R’s?

We deliver the 5R’s following the Assess stage in the 5A’s, after we have asked the following questions...

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>Not sure</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you interested in quitting tobacco use?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you think you will succeed in quitting?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Any answer in the shaded area indicates that the tobacco user is NOT ready to quit and we should deliver the 5R’s interventions.
Video screening practice on 5A’s and 5R’s

- Motivational interview for tobacco cessation
  https://www.youtube.com/watch?v=1ifH055byp4
  https://www.youtube.com/watch?v=YlzXCGH2fw

- Behavioral Health and Wellness Program, University of Colorado, Anschutz Medical Campus, School of Medicine
  https://www.youtube.com/watch?v=5LoEOcFY2GQ

- Conversations for change: The Five A’s and tobacco cessation. Behavioral Health and Wellness Program, University of Colorado, Anschutz Medical Campus, School of Medicine.

The WHO e-Learning course for training primary health care providers: brief tobacco interventions

The WHO e-Learning course “Training for primary care providers: brief tobacco interventions” is converted from Part III of WHO training package “Strengthening health systems for treating tobacco dependence in primary care”, which was published in 2013 to assist countries in taking one of their first steps towards providing comprehensive tobacco dependence treatment to all tobacco users by integrating brief tobacco interventions (brief advice) into primary care.

http://www.who.int/tobacco/quitting/training-for-primary-care-providers/en/
Module 2.3

Brief interventions for harmful alcohol use at primary health care level
WHAT’S INSIDE

- Introduction
- Learning outcomes
- Topics covered
- Competency
- Teaching and learning activities
- Background information
INTRODUCTION

Worldwide, 3.3 million deaths every year result from harmful use of alcohol, this represent 5.9 % of all deaths. It is important that primary health teams are able to record drinking history, identify people with drinking problems, and provide appropriate advice to regular drinkers about the health risks and advise them to cut down. They should also advice to the patients with a hazardous level of alcohol consumption or early signs of alcohol-related problems and urge them to cut down their consumption to an agreed, realistic lower level of drinking which may include abstinence and follow up their progress to strengthen motivation. The module contains practical training for primary health care workers to screen alcohol users and deliver brief interventions using the 5A’s and 5R’s techniques in the primary health care setting.

LEARNING OUTCOMES

At the end of the session, participants will be able to:

- Use brief intervention techniques to screen and assist individuals with hazardous and harmful drinking habits.
- Screen and refer individuals with alcohol dependence at an early stage.
- Use communication skills to motivate drinkers to address their drinking problem.

TOPICS COVERED

- Alcohol use disorders (AUD): hazardous/harmful drinking and alcohol dependence.
- Screening for problem drinking using the alcohol use disorder identification test (AUDIT) – scoring and interpretation.
- 5A’s and 5R’s techniques.
- Referral mechanisms for persons with AUD.

COMPETENCY

- Ability to identify alcohol use disorders and provide brief advice.
TEACHING AND LEARNING ACTIVITIES

Total session time: 90 minutes

Activity 1. Basics of alcohol use: 15 minutes

Step 1. Ask the participants to briefly response to the following questions. Write their responses on a flip chart/white board.

- What are the types of alcoholic drinks available in your country and locality?
- Is alcohol use a problem in your country and locality?
- Is there any safety limit to consumption of alcoholic drinks?
- What are the effects of harmful use of alcohol on physical, psychological, occupational, financial, familial and legal aspects?
- What are your experiences in managing persons with alcohol use disorders in your clinical practice?
- Under what conditions certain individuals should be advised complete abstinence?
- What resources are available at health facilities to provide services for alcohol use disorders?

Step 2. Summarize the discussion by presenting the powerpoint slides.

Activity 2. Estimating the amount of alcohol in an alcoholic drink: 20 minutes

Step 1. Start with the following statement:

- Alcohol content in a drink will depend on the volume of the container and the strength of the drink. There are wide variations in the strength of alcoholic beverages and drink sizes commonly used in countries. Therefore, it is essential to adapt drinking sizes to what is most common at the local level and to know roughly how much pure alcohol the person consumes per occasion and on average.
- Another consideration in measuring the amount of alcohol contained in a standard drink is the conversion factor of ethanol. That allows you to convert any volume of alcohol into grams. For each milliliter of ethanol, there are 0.79 of pure ethanol.

Step 2. Formula to calculate standard drink:

\[ \text{Vol. in litre} \times \% \text{ of alc.} \times 0.789 = 650 \times 8^* \]
Step 3. Calculate the alcohol content in each unit of alcoholic drinks provided in your workbook.

- 750 ml of 8% beer
- 1 can of beer (330 ml) at 5% strength
- 1 glass of wine (140 ml) at 12% strength
- 1 shot of spirit (40 ml) at 40% strength
- homebrewed/locally brewed or country liquor

Using the above formula, a bottle of beer (650ml) with 8% alcohol will come to:

\[0.650 \times 8 \times 0.789 = 4.1028\], that is 4 standard drinks.

1 peg of hard drink = 60ml (0.06 litre), therefore it will work out to be \[0.06 \times 42 \times 0.789 = 2\] standard drinks in a peg.

**One standard drink**

- 30 ml (half peg) of hard drink (42%)
- 162.5 ml (one quarter bottle) of beer (8%)
- 50 ml of arak1 (approx. 25%)
- 250 ml of 5% beer
- 72 ml of wine (18%)

**Allowable or safe limit** *(caution: it is always better to avoid alcohol at all. Drinking daily can lead to tolerance and subsequently to addiction)*:

- 3 standard drinks per day for men for not more than 5 days a week.
- 2 standard drinks per day for women not more than 5 days a week.

People who drink occasionally but in large quantity are called binge drinkers and they are at equal risk for alcohol-related health problems as habitual drinkers.

**Activity 3. Screening for alcohol use disorders:**

**Step 1. Start with following statement:**

Screening is used to identify who is at risk of having a specific health condition. However, it does not provide a diagnosis. Screening for alcohol is used to identifying individuals with alcohol use disorder or at the risk of developing alcohol use problems. Among many alcohol screening tools, in this training the AUDIT tool which is validated in many countries, will be used.

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1 Arak is a distilled alcoholic drink typically produced in the Indian Subcontinent and Southeast Asia, made from either the fermented sap of coconut flowers, sugarcane, grain (e.g. red rice) or fruit, depending upon the country of origin.
The Alcohol Use Disorder Identification Test (AUDIT) is a 10-item screening tool to assess alcohol consumption, drinking behaviours and alcohol-related problems. There is a clinician-administered and self-report version of AUDIT. Patients should be encouraged to answer the AUDIT questions in terms of standard drinks. There are also other tools such as the CAGE (cut down, angry, guilty, eye-opener) that can be used for screening AUD.

Step 2. Refer to the AUDIT tool in your workbook and discuss how to administer the tool.

The Alcohol Use Disorders Identification Test: Interview Version

Read questions as written. Record answers carefully. Begin the AUDIT by saying “Now I am going to ask you some questions about your use of alcoholic beverages during this past year.” Explain what is meant by “alcoholic beverages” by using local examples of beer, wine, vodka, etc. Code answers in terms of “standard drinks”. Place the correct answer number in the box at the right.

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
<th>Total Score</th>
<th>Score</th>
<th>Cut-off</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How often do you have a drink containing alcohol?</td>
<td>(0) Never [Skip to Qs 9-10] (1) Monthly or less (2) 2 to 4 times a month (3) 2 to 3 times a week (4) 4 or more times a week</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. How many drinks containing alcohol do you have on a typical day when you are drinking?</td>
<td>(0) 1 or 2 (1) 3 or 4 (2) 5 or 6 (3) 7, 8, or 9 (4) 10 or more</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. How often do you have six or more drinks on one occasion?</td>
<td>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. How often during the last year have you found that you were not able to stop drinking once you had started?</td>
<td>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. How often during the last year have you failed to do what was normally expected from you because of drinking?</td>
<td>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?</td>
<td>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. How often during the last year have you had a feeling of guilt or remorse after drinking?</td>
<td>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. How often during the last year have you been unable to remember what happened the night before because you had been drinking?</td>
<td>(0) Never (1) Less than monthly (2) Monthly (3) Weekly (4) Daily or almost daily</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Have you or someone else been injured as a result of your drinking?</td>
<td>(0) No (2) Yes, but not in the last year (4) Yes, during the last year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down?</td>
<td>(0) No (2) Yes, but not in the last year (4) Yes, during the last year</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If total is greater than recommended cut-off, consult User’s Manual.
Step 3. Identifying types of drinkers using AUDIT test.

Drinkers pyramid

![Drinkers Pyramid Diagram]

Step 5. Ask participants to calculate the AUDIT score and identify types of drinkers (abstainers, low-risk drinkers, high-risk drinkers, probable-alcohol dependence).

<table>
<thead>
<tr>
<th>Case</th>
<th>AUDIT score</th>
<th>Type of drinker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bahadur is a 35-year-old father of three children. He has a government job. After office, he goes to a small shop to drink and comes home drunk quite often. He is often late and has not been helpful lately guiding his children in their school assignments. He relapsed after attempting to quit many times. Now he has gone to his old habit of drinking from the day break.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Case AUDIT score Type of drinker

2. Penjor, a father of two children, is a hard-working farmer. He comes home in the evening after a day of hard labour. Before dinner, almost every day, he drinks 100 ml of whisky to get over his tiredness.

3. Pedro drinks when he meets his group of best friends. His friends usually meet about 2–3 times a year. The last meeting was two months ago when he drank six bottles of 750 ml beer in one evening. He was too drunk to drive back home. His friends helped him reach home.

4. Ms Usha drinks during social occasions. The last time she had an alcoholic drink was a bottle of beer at a friend’s house two months ago.

### Activity 4. Communicating the results of the AUDIT test:

**15 minutes**

**Step 1. Communicate AUDIT score to patients through role play:**

- Work in pairs with one becoming a patient and the other a primary health care worker.
- Use the above mentioned four cases and the results of the AUDIT scores.
- Primary health care worker will communicate the results of the AUDIT test.
## AUDIT score and its interpretation

<table>
<thead>
<tr>
<th>AUDIT score</th>
<th>Intervention</th>
<th>Actions to be considered</th>
</tr>
</thead>
</table>
| 0–7         | Alcohol education | - No intervention required  
- Individual alcohol advice to provide information about the risks of drinking  
- Patients should also be praised for their current low-risk practices and reminded that, if they do drink, they should stay within the recommended allowances  
- Patients should be reminded about the standards drinks and the limits (see above)  
- Congratulate patients for their adherence to the guidelines. |
| 8–15        | Simple advice | - Inform them that  
- They are at risk of chronic health conditions due to regular alcohol use in excess of drinking guidelines  
- They are at risk of injury, violence, legal problems, poor work performance, or social problems due to episodes of acute intoxication. |
| 16–19       | Simple advice plus brief counseling and continued monitoring | - Give brief advice  
- The specific harm(s) (both identified by the AUDIT and from the patient’s presenting symptoms) should be itemized, and the seriousness of the situation should be emphasized  
- Provide counselling based on the stage of change model (refer to Standard treatment and counseling guideline for alcohol and substance dependence). |
| 20–40       | Referral to specialist for diagnostic evaluation and treatment | - These patients should be referred to a specialist (if available) for diagnostic evaluation and possible treatment for alcohol dependence. |
Activity 5. Brief alcohol interventions in primary health care settings: 15 minutes

Step 1. Ask participants the following questions:

What can primary health workers do to support individuals with a drinking problem? Possible responses: screen and counsel; referral in case of alcohol dependence.

What are the commonest concerns and misconceptions about brief alcohol interventions in the primary health care setting. Ensure that key points listed below are discussed:

- lack of time
- inadequate training
- fear of antagonizing patients over sensitive personal issue
- alcohol is not a matter that needs to be addressed in primary health care
- alcoholics do not respond to primary health care interventions.

Step 2. Ask the participants to review the 5A’s and 5R’s brief interventions to screen harmful use of alcohol and inform them that they will need to use it in the subsequent activity.

<table>
<thead>
<tr>
<th>5A’s</th>
<th>Alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASK</strong></td>
<td></td>
</tr>
<tr>
<td>Do you ever drink alcohol?</td>
<td>Yes</td>
</tr>
<tr>
<td>If Yes:</td>
<td></td>
</tr>
<tr>
<td>◦ How often do you have an alcoholic drink?</td>
<td></td>
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<tr>
<td>◦ How many alcoholic drinks do you have on a usual day when you are drinking?</td>
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<tr>
<td><strong>ADVISE</strong></td>
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<tr>
<td>For people drinking fewer than 2 units (according to local drink strengths and commonly available sizes) per day and drinking on 5 or fewer days per week, inform them of the following:</td>
<td></td>
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<tr>
<td>◦ Use of alcohol can increase the risk of having a heart attack or stroke.</td>
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</tr>
<tr>
<td>◦ It also increases the risks of getting certain cancers and can cause damage to other parts of the body.</td>
<td></td>
</tr>
<tr>
<td>◦ Overall, the best way to avoid the health risks of alcohol use is to abstain.</td>
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<tr>
<td>◦ If you do drink alcohol, keep in mind that “less is better”.</td>
<td></td>
</tr>
<tr>
<td>◦ Avoid having more than two units on any single day and do not drink any alcohol on at least two days per week.</td>
<td></td>
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<tr>
<td>◦ Do not drink alcohol for “health” reasons.</td>
<td></td>
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<tr>
<td>◦ Do not use alcohol when you are:</td>
<td></td>
</tr>
<tr>
<td>− driving</td>
<td></td>
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<tr>
<td>− operating machinery</td>
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<tr>
<td>− pregnant or breastfeeding</td>
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<tr>
<td>− taking medications that interact with alcohol.</td>
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<tr>
<td>− living with medical conditions that are made worse by alcohol</td>
<td></td>
</tr>
<tr>
<td>− having difficulties controlling how much you drink.</td>
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</tbody>
</table>
**5A’s**

<table>
<thead>
<tr>
<th><strong>Alcohol</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>For people who drink two or more units per day, who drink on more than five days per week and/or have any indication that alcohol could potentially be a problem, say:</strong></td>
</tr>
<tr>
<td>“Your drinking habits could be harmful to your health.”</td>
</tr>
<tr>
<td>May I ask you a few more questions to have a better idea of the possible risks?”</td>
</tr>
<tr>
<td><strong>Yes</strong></td>
</tr>
</tbody>
</table>

**ASSIST and ARRANGE**

If No:

- Give brief advice. End the discussion positively by saying, “This can be a difficult issue to discuss but I am here to help you.”
- Provide health education materials and information about additional resources such as help lines, counselling, support groups.
- At the next visit, repeat the brief intervention.

If Yes:

- Give brief advice and refer for further counselling and tests (for which further training, tools and resources are required). See AUDIT test (link below). The score will determine next steps.

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**Using 5R’s in patient counselling**

<table>
<thead>
<tr>
<th>Strategies for implementation</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relevance</strong></td>
<td>Health care worker (HCW): “How is quitting most personally relevant to you?”</td>
</tr>
<tr>
<td>Encourage the patient to indicate how abstaining or reducing alcohol is personally relevant to him or her.</td>
<td>Patient (P): “I suppose alcohol is bad for my health.”</td>
</tr>
<tr>
<td>Motivational information has the greatest impact if it is relevant to a patient’s disease status or risk, family or social situation (e.g. having children in the home), health concerns, age, sex, and other important patient characteristics (e.g. prior quitting experience, personal barriers to cessation).</td>
<td></td>
</tr>
</tbody>
</table>

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1 AUDIT score levels and recommendations should be adapted to country context.
<table>
<thead>
<tr>
<th>Strategies for implementation</th>
<th>Example</th>
</tr>
</thead>
</table>
| **Risks** | Encourage the patient to identify potential negative consequences of alcohol consumption that are relevant to him or her.  
Examples of risks are:  
- Liver disease, cancers, liver failure, heart attacks and strokes, osteoporosis, long-term disability, and need for extended care. |
| | HCW: “What do you know about the risks of alcohol to your health?  
What particularly worries you?”  
P: “I know it causes liver failure. That must be awful.”  
HCW: “That’s right – the risk of liver failure is many times higher among alcoholics.” |
| **Rewards** | Ask the patient to identify potential relevant benefits of stopping alcohol consumption.  
Examples of rewards could include:  
- improved health  
- food will taste better; increase appetite  
- improved sense of smell  
- saving money  
- feeling better about oneself  
- setting a good example for children  
- having healthier babies and children  
- feeling better physically  
- performing better in physical activities. |
| | HCW: “Do you know how stopping alcohol would affect your risk of liver disease?”  
P: “I guess it would be lower if I abstain.”  
HCW: “Yes, and it doesn’t take long for the risk to decrease. But it’s important to abstain or minimize as soon as possible.” |
### Strategies for implementation

<table>
<thead>
<tr>
<th></th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roadblocks</strong></td>
<td><strong>Ask the patient to identify barriers or impediments to quitting and provide treatment (problem-solving counselling, medication) that could address barriers. Typical barriers might include:</strong></td>
</tr>
<tr>
<td></td>
<td>- withdrawal symptoms &lt;br&gt; - fear of failure &lt;br&gt; - lack of support &lt;br&gt; - depression &lt;br&gt; - enjoyment of alcohol &lt;br&gt; - being around other alcohol users &lt;br&gt; - limited knowledge of effective treatment options.</td>
</tr>
</tbody>
</table>
|  | **HCW:** “So what would be difficult about quitting for you?”<br>**P:** “Cravings – they would be awful!”  
**HCW:** “We can help with that. We will need to provide in-patient care to overcome alcohol dependence.”<br>**P:** “Does that really work?”  
**HCW:** “You still need willpower, but study shows that cessation activities under medical supervision can double your chances of quitting successfully.” |
| **Repetition** | **Repeat assessment of readiness to quit. If still not ready to quit, repeat intervention at a later date. The motivational intervention should be repeated every time an unmotivated patient visits the clinic setting.** |
|  | **HCW:** “So, now we’ve had a chat, let’s see if you feel differently. Can you answer these questions again...?”  
(Go back to the Assess stage of the 5A’s. If ready to quit then proceed with the 5A’s. If not ready to quit, end intervention positively.) |
**Activity 6. Role play using the 5A’s and 5R’s brief intervention:**

**20 minutes**

**Step 1. Divide the participants into convenient group and ask them to refer to the case study in the workbook:**

Case study: Mahesh Babu is the 35-year-old father of three children. He has a government job. After his office hours, he usually goes to a small shop to drink and comes home late in the evening often drunk. He relapsed after attempting to quit many times. He started drinking from daybreak to stabilize himself at the shop.

**Step 2. Ask groups to identify two volunteers.**

- Volunteer 1 act as Mahesh Babu.
- Volunteer 2 act as the primary health care worker.

The other participants are the observers while the two volunteers conduct the brief intervention session. Ask the observers to note the brief intervention session and provide the feedback at the end of the session addressing the following questions:

- Was the brief intervention appropriate?
- What microskills did the primary health care worker use?
- Were 5A’s adequately employed?
- How could the healthcare worker have improved the brief interventions?

**Step 3. Using 5R’s interventions to improve motivation**

- Ask volunteer 1 to continue as a client and this time to exhibit low motivation to change the habit.
- Invite the third volunteer to be the healthcare worker and use the 5R’s interventions to motivate the patient.
- The other participants are the observers. Ask the observers to note the intervention session and provide feedback at the end of the session addressing the following questions:
  - Was the brief intervention appropriate?
  - What skills did the healthcare worker use?
  - Were the 5R’s adequately employed?
  - How could the healthcare worker have improved the motivation of the patient?
Optional activity. Population-level alcohol control interventions

Step 1. Alcohol taxation, promotion and advertisement, trading and licensing restrictions, minimum age of sale, legal drinking age and drink driving law are a few common population-wide alcohol control interventions.

Step 2. Ask the participants to discuss the following questions:

- How well are these interventions implemented in their country?
- Share examples of alcohol industry’s influence on policy-making?
- List few recommendations in each area to improve the implementation of alcohol control interventions. What would you do to improve the implementation of alcohol control in your community/country?
BACKGROUND INFORMATION

Effects of high-risk drinking

High-risk drinking may lead to social, legal, medical, domestic, job and financial problems. It may also cut your lifespan and lead to accidents and death from drunk-en driving.

Role of health-care workers

- Routinely ask all adolescents and adults who consult primary health care services for any reasons about their drinking habits.
- Ask patient presenting with disorders such as hypertension and depression about their alcohol consumption.
- Record the drinking history of all patients who consume alcohol regularly.
- Inform regular drinkers of the associated health risks and advise them to cut down.
Brief interventions for harmful alcohol use at primary health care level

- Give advice to the patients with a hazardous level of alcohol consumption or early signs of alcohol-related problems, urging them to cut down their consumption to an agreed, realistic lower level of drinking (which may include abstinence) and follow up on their progress to strengthen motivation.
- Conduct brief interviews, particularly with patients with harmful alcohol consumption and alcohol-related problems, and assist them in changing their behaviour.
- Refer the patients who show signs of dependence or serious physical illness as a result of their alcohol consumption to specialized services.
- Serve yourself as a positive model.
- Screen for and respond to alcohol use disorders and refer appropriately to local services.

Harmful use of alcohol

The harmful use of alcohol is a risk factor for many negative health and social consequences. For most diseases and conditions, the risk of harm increases steadily with increasing alcohol consumption.

What is harmful use of alcohol?

Harmful use of alcohol, when defined as a public health problem, refers to “drinking that causes detrimental health and social consequences for the drinker, the people around the drinker and society at large, as well as the patterns of drinking that are associated with increased risk of adverse health outcomes” (see Box for further explanation).

Harmful use includes high-level drinking each day as well as single or repeated episodes of drinking to intoxication.

The risks related to alcohol are linked to the pattern of drinking, the amount of alcohol consumed and, sometimes, the quality of the alcohol consumed. The risk of harm from a given level of alcohol consumption varies between individuals according to factors including age, sex, gender, body mass, and contextual and social factors. The risks should, therefore, be assessed by health workers on an individual basis. There is no definition for “safe” or “non-harmful” use of alcohol. However, people are generally considered to be at lower risk for negative consequences of alcohol use if they drink no more than 2 standard drinks of alcohol per day and do not drink on at least 2 days of the week. People drinking above these levels but not yet experiencing alcohol-related harm can be described as “hazardous drinkers” (see Box 1).

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2 The word “harmful” in this module refers only to public health effects of alcohol consumption, without prejudice to religious beliefs and cultural norms.
**Box 1: “Harmful” and “hazardous” use of alcohol, and “alcohol dependence”**

“Harmful use of alcohol”, as a diagnosis, refers to a pattern of use that causes damage to physical and mental health.

“Hazardous use of alcohol” refers to a pattern of use that has not damaged the health of the individual drinker, but increases the risk of health and social consequences to the drinker and people around them.

“Alcohol dependence” is one of the health consequences of harmful use of alcohol. Alcohol dependence develops after repeated alcohol use and includes a strong desire to consume alcohol, difficulties in controlling its use, persisting in its use despite harmful consequences, a higher priority given to alcohol use than to other activities and obligations, increased tolerance, and sometimes a physiological withdrawal state. In earlier disease classifications, and sometimes in common language, alcohol dependence has been referred to as “alcoholism”. However the term “alcohol dependence” is more precise and can be more reliably defined, diagnosed and measured.

ICD-10 Classification of Mental and Behavioural Disorders (WHO, 1992)

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The alcohol content of a drink depends on the strength of the drink (% alcohol) and the volume of the container. There are wide variations in the strengths of alcoholic drinks and in the drink sizes used in different countries. Therefore, when providing health information on alcohol use, it is essential to define “a drink” according to what is most common in the local context.

**Alcohol unit calculator**

One unit of alcohol, measured as 10 g of pure alcohol, is equivalent to approximately 250 ml of beer/lager (5% alcohol) or 100 ml of wine (12% alcohol) or 30 ml of spirits (40% alcohol).

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**What are the risks of harmful use of alcohol?**

High levels of alcohol consumption and regular heavy episodic drinking are clearly associated with increased risk of cardiovascular disease. There are also indications of an increased risk among average light to moderate drinkers who have irregular heavy drinking episodes. Harmful use of alcohol damages the heart muscle, increases the risk of stroke and can cause cardiac arrhythmia. While drinking at low levels without any episodes of heavy drinking may be associated with a reduced CVD risk in some people, overall alcohol consumption is associated with multiple health risks that may outweigh potential benefits. Other health risks include: liver cirrhosis, pancreatitis, neuropathy, encephalopathy, sexually transmitted diseases, impotence, unintended pregnancy, fetal
alcohol disorders, sudden infant death syndrome, violence, suicide and unintentional injuries, e.g. motor vehicle accidents. Like tobacco, alcohol can have a marked impact on the health of those other than the alcohol user.

Brief interventions in primary care have been shown to be useful in identifying and managing people with alcohol problems. However, the 5A’s brief intervention on harmful use of alcohol in this module should be used only to screen for potential harmful use, provide basic information on the harmful effects of alcohol, and provide a link to other WHO tools.

ICD-10 Criteria for the Alcohol Dependence Syndrome

Three or more of the following manifestations should have occurred together for at least one month or, if persisting for periods of less than one month, should have occurred together repeatedly within a 12-month period:

- a strong desire or sense of compulsion to consume alcohol;
- impaired capacity to control drinking in terms of its onset, termination, or levels of use, as evidenced by: alcohol being often taken in larger amounts or over a longer period than intended; or by a persistent desire to or unsuccessful efforts to reduce or control alcohol use;
- a physiological withdrawal state when alcohol use is reduced or ceased, as evidenced by the characteristic withdrawal syndrome for alcohol, or by use of the same (or closely related) substance with the intention of relieving or avoiding withdrawal symptoms;
- evidence of tolerance to the effects of alcohol, such that there is a need for significantly increased amounts of alcohol to achieve intoxication or the desired effect, or a markedly diminished effect with continued use of the same amount of alcohol;
- preoccupation with alcohol, as manifested by important alternative pleasures or interests being given up or reduced because of drinking; or a great deal of time being spent in activities necessary to obtain, take, or recover from the effects of alcohol; and
- persistent alcohol use despite clear evidence of harmful consequences, as evidenced by continued use when the individual is actually aware, or may be expected to be aware, of the nature and extent of harm.

Additional reading resources

Management of alcohol use disorders in primary care, Iain D Smith and Caroline Woolston.


HEARTS Healthy lifestyle counseling for tobacco cessation, diet, physical activity, alcohol use and self-care to prevent cardiovascular disease.

WHO Global Strategy to Reduce the Harmful Use of Alcohol (WHO, 2010a).
Brief interventions for harmful alcohol use in primary health care level

Activity 1: Step 2

Alcohol problem

- Harmful use of alcohol is a causal factor in more than 200 diseases and injuries
- 5.1% of the global disease burden is due to the harmful use of alcohol
- Estimated 3.3 million people die from alcohol related conditions.
Effects of alcohol

Behavioural effects

Breath alcohol concentration and impairment

Brief interventions for harmful alcohol use at primary health care level
Taking alcohol use history

- **When asking about alcohol consumption:**
  - Ask about the level and pattern of consumption of alcohol, as well as any behaviours associated with alcohol use that may risk the person's health and the health of others (i.e., where, when and with whom alcohol consumption typically occurs, what triggers alcohol consumption, activities when intoxicated, financial implications, capacity to care for children, and violence towards others).
  - Ask about harms from alcohol, including:
    - accidents, driving while intoxicated
    - relationship problems
    - medical problems such as liver disease / stomach ulcers
    - legal / financial problems
    - sex while intoxicated and that is later regretted or risky
    - alcohol-related violence including domestic violence

Looking for pattern consumption and alcohol-related harm

- **Ask if the person consumes alcohol in a way that puts them at risk of harm:**
- **Drinking quantity and frequency**
  - Has consumed 5 or more standard drinks (or 60 g alcohol)* on any given occasion in the last 12 months
  - Drinks on average more than two drinks per day
  - Drinks every day of the week

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Brief interventions for harmful alcohol use at primary health care level
Talking to people about the reasons they use alcohol

- Engage the person in a discussion about their alcohol use in a way that he/she is able to talk about both the perceived benefits of it and the actual and/or potential harms, taking into consideration the things that are most important to that person in life.
- Steer the discussion towards a balanced evaluation of the positive and negative effects of alcohol by challenging overstated claims of benefits and bring up some of the negative aspects which are perhaps being understated.
- Avoid arguing with the person and try to phrase something in a different way if it meets resistance—seeking to find understanding of the real impact of alcohol in the person’s life as much as is possible for the person at that time.
- Encourage the person to decide for themselves if they want to change their pattern of alcohol use, particularly after there has been a balanced discussion of the pros and cons of the current pattern of use.
- If the person is still not ready to stop or reduce alcohol use, then ask the person to come back to discuss further.

What is a standard drink?

- A standard drink is a measure of the amount of pure alcohol consumed, usually between 8 g and 12 g. If the amount of alcohol contained in a standard drink in that country is outside these limits, the number of standard drinks may need to be adjusted.

Signs of acute intoxication of alcohol

- Smell of alcohol on the breath
- Slurred speech
- Uninhibited behavior
- Impaired level of consciousness such as seizures
Does the person have alcohol dependence?

- A strong desire or sense of compulsion to take alcohol
- Difficulties in controlling alcohol use in terms of its onset, termination or levels of use
- A physiological withdrawal state when alcohol use has ceased or been reduced, as shown by the characteristic withdrawal syndrome for alcohol; or use of the same (or a closely related) substance with the intention of relieving or avoiding withdrawal symptoms
- Evidence of tolerance, such that increased doses of alcohol are required in order to achieve effects originally produced by lower doses
- Progressive neglect of alternative pleasures or interests because of alcohol use, increased amount of time necessary to obtain or take alcohol or to recover from its effects
- Alcohol use persisting despite clear evidence of overtly harmful consequences, such as harm to the liver, depressive mood states, or impairment of cognitive functioning

Does the person have features of alcohol withdrawal?

- Alcohol withdrawal occurs following cessation of heavy alcohol consumption, typically between 6 hours and 6 days after the last drink.
- Look for:
  - Tremor in hands
  - Sweating
  - Vomiting
  - Increased pulse and blood pressure
  - Agitation
- Ask about:
  - Headache
  - Nausea
  - Anxiety

Seizures and confusion may occur in severe cases.

Alcohol abuse and alcohol dependence

- Alcohol abuse means having unhealthy or dangerous drinking habits, such as drinking every day or drinking too much at a time
- Continued abuse alcohol can lead to alcohol dependence. Alcohol dependence or alcoholism is state of physical and mental addiction to alcohol
- Alcoholism is a long-term (chronic) disease. It's not a weakness or a lack of willpower.

Brief interventions for harmful alcohol use at primary health care level
ICD-10 criteria for the alcohol dependence syndrome

• Three or more of the following manifestations should have occurred together for at least 1 month or, if persisting for periods of less than 1 month, should have occurred repeatedly within a 12-month period:
  o a strong desire or sense of compulsion to consume alcohol
  o impaired capacity to control drinking in terms of its onset, termination, or levels of use, as evidenced by: alcohol being often taken in larger amounts or
  o over a longer period than intended; or by a persistent desire to or unsuccessful
  o efforts to reduce or control alcohol use

ICD-10 criteria for the alcohol dependence syndrome

• a physiological withdrawal state when alcohol use is reduced or ceased, as evidenced by the characteristic withdrawal syndrome for alcohol, or by use of the same (or closely related) substance with the intention of relieving or avoiding withdrawal symptoms
• evidence of tolerance to the effects of alcohol, such that there is a need for significantly increased amounts of alcohol to achieve intoxication or the desired effect, or a markedly diminished effect with continued use of the same amount of alcohol

ICD-10 criteria for the alcohol dependence syndrome

• preoccupation with alcohol, as manifested by important alternative pleasures or interests being given up or reduced because of drinking; or a great deal of time being spent in activities necessary to obtain, take, or recover from the effects of alcohol
• persistent alcohol use despite clear evidence of harmful consequences, as evidenced by continued use when the individual is actually aware, or may be expected to be aware, of the nature and extent of harm.
Is withdrawal likely to be severe? Look for:

- Past episodes of severe alcohol withdrawal including delirium and seizures
- Other medical or psychiatric problems or benzodiazepine dependence
- Severe withdrawal symptoms already present only a few hours after stopping drinking

Screening for alcohol use disorder

- Several tools exist
- AUDIT tool: validated in many countries.
- CAGE (Cut down, Angry, Guilty, Eye-opener) is one of the tools

People who should not drink at all

- Children and adolescents (under legal age)
- People who cannot keep drinking to a moderate level
- Pregnant or breast feeding women
- People taking medications that can interact with alcohol
- People who are and will be driving.
Women – Pregnancy and breastfeeding

- Advise women who are pregnant or considering becoming pregnant to avoid alcohol completely.
- Advise women that consuming even small amounts of alcohol early in pregnancy can harm the developing foetus, and that larger amounts of alcohol can result in a syndrome of severe developmental problems called Foetal Alcohol Syndrome (FAS).
- Advise women who are breastfeeding to avoid alcohol completely.
- Given the benefits of exclusive breastfeeding (particularly in the first 6 months), if mothers continue to drink alcohol they should be advised to limit their alcohol consumption, and to minimize the alcohol content of the breast milk, such as by breastfeeding before drinking alcohol and not again until after blood levels fall to zero (allowing approximately 2 hours for each drink consumed, i.e. 4 hours if two drinks are consumed), or using expressed breast milk.
- Mothers with harmful substance use and young children should be offered what social support services are available, including additional postnatal visits, parenting training, and child care during medical visits.

Additional source of reference for alcohol

- mhGAP intervention guide for mental, neurological and substance use disorders in non-specialized health settings: Mental Health Gap Action Programme (mhGAP).
- Alcohol Use and Alcohol Use Disorders
  http://apps.who.int/iris/bitstream/handle/10665/44406/9789241548069_eng.pdf?sequence=1
Module 2.4

Providing brief intervention for a **healthy diet** at **primary health care level**
WHAT’S INSIDE

- Introduction
- Learning outcome
- Topics covered
- Competency
- Teaching and learning activities
- Background information
INTRODUCTION

Consuming a healthy diet throughout life helps prevent malnutrition in all its forms as well as a range of noncommunicable diseases (NCDs) and other conditions. But the increased production, marketing and availability of processed and unhealthy food as well as rapid urbanization and changing lifestyles have led to a shift in dietary patterns. People are now consuming more foods that are high in energy, fats, free sugars, salt/sodium, and many do not eat enough fruits, vegetables and high-fibre foods such as whole grains. Primary health care workers can play an effective role in providing personalized, clear and practical advice about a healthy diet. This module covers practical training on providing brief interventions to promote healthy diets at the primary health care level using the frameworks of the 5A’s and 5R’s.

LEARNING OUTCOMES

At the end of the module, participants will be able to do the following:

- Elicit an individual’s dietary history on a typical day.
- Provide dietary advice using the 5A’s and 5R’s to assist the patients to adopt healthier dietary practices based on eating patterns, locally available foods and their health status.

TOPICS COVERED

- Concepts of a healthy diet.
- Simplified dietary guidance to promote healthier diets.
- Food groups, food pyramid or food plate model.

COMPETENCY

- Provide brief advice using the 5A’s and 5R’s to patients/clients to adopt healthier diets based on standard recommendations.
**TEACHING AND LEARNING ACTIVITIES**

*Total session time:* 90 minutes

**Activity 1. General information on food:** 30 minutes

**Step 1.** Ask participants to briefly respond to the following questions. Write the responses on a flipchart or whiteboard.

- What constitutes a healthy diet?
- List commonly used food products that are high in salt, fat and sugar.
- What are the general dietary recommendations in context of noncommunicable diseases in your country?
- What can primary health care workers do to promote healthier diets in communities and among patients?

**Step 2.** Present the powerpoint slides with the following contents.

- food groups
- food guide pyramid/or food plate
- effects of diets high in salt, fat and sugar
- general recommendations for a healthy diet.

**Step 3.** Ask participants to fill in the table in the workbook to describe what a typical local menu would look like in their community.

<table>
<thead>
<tr>
<th>Meal</th>
<th>Menu</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td></td>
</tr>
<tr>
<td>Lunch</td>
<td></td>
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<tr>
<td>Snack 1</td>
<td></td>
</tr>
<tr>
<td>Dinner</td>
<td></td>
</tr>
<tr>
<td>Snack 2</td>
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</tbody>
</table>
Step 4. From the above typical menu, identify the unhealthy food items (high in salt, saturated fats and sugar). For each of these unhealthy food items, ask them to identify a healthy alternative that is available locally.

<table>
<thead>
<tr>
<th>Unhealthy food item</th>
<th>Healthy alternative</th>
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</thead>
<tbody>
<tr>
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Activity 2. Using the 5A’s and 5R’s to promote a healthy diet: 30 minutes

Step 1. Ask the participants to discuss and review the 5A’s and 5R’s brief interventions given in the workbook.

Step 2. Discuss if there are ambiguities in the protocol below. Inform them that they will be referring to the protocol in the subsequent activities.

5A’s brief intervention for a healthy diet

<table>
<thead>
<tr>
<th>5A’s</th>
<th>Fruits and vegetables</th>
</tr>
</thead>
</table>
| Ask  | How many portions of fruit and vegetables do you eat each day?  
1 portion = 1 orange, apple, mango, banana, or 3 tablespoons of cooked vegetables*.  
Provide local examples and equivalent serving sizes.  
*Potatoes, sweet potatoes, cassava or other starchy tubers or roots do not count as one of these portions.  
Advises  
Eat at least 5 portions of fruit and vegetables per day.  
Eat a variety of fruits, vegetables, legumes (lentils, beans), nuts and whole grains (unprocessed maize, millet, oats, wheat, brown rice), starchy tubers or roots (potato, yam, taro or cassava) and foods from animal sources (meat, fish, eggs and milk). Provide local examples.  
Advantages:  
• Eating a variety of these foods every day helps you to take in the right amounts of essential nutrients.  
• Eating enough healthy food helps to avoid unhealthy foods that can lead to overweight and obesity, and diseases such as hypertension, diabetes, heart attack and stroke. |
Providing brief intervention for healthy diet at primary health care level

<table>
<thead>
<tr>
<th><strong>SA’s</strong></th>
<th><strong>Fruits and vegetables</strong></th>
</tr>
</thead>
</table>
| **Assess** | **1. Are you ready to make some changes to your diet in order to include more healthy food options?**  
2. Do you think you will succeed in making the changes? |
| | **Question 1** Yes | Not sure | No  
**Question 2** Yes | Not sure | No |
| | Any answer in the shaded area indicates that the person is not yet ready to change. In this case effort needs to be made to increase the motivation for change. Answers in the white area suggest that you and the patient can move on to the next step. |
| **Assist** | Help the patient to set goals and make a plan to start introducing some changes to their eating habits. Provide practical counselling about unhealthy foods and healthier choices. For example:  
• Avoid deep fried foods.  
• Eat seasonally available fresh fruits and vegetables. Have fresh fruit available and in plain sight. Engage the patient in the conversation and allow time for them to share ideas;  
• Can you think of ways to increase the amount of fruit and vegetable you eat every day?  
• Can you think of healthier types of food that you enjoy and that you could eat instead of the less-healthy option?  
Provide social support:  
• Invite the patient to bring family members to the next visit in order to discuss healthier diet options for the whole family.  
• Provide health and nutrition education materials. |
| **Arrange** | Refer to specialist support services (dietician, nutritionist) if needed and available.  
Follow-up: decide the timeline and method and schedule the next appointment. Ask about successes and challenges.  
For those of have made the planned changes to their eating habits:  
• Congratulate them on their success.  
• For those experiencing challenges:  
  — Remind them to view the process as a learning experience and that it takes time to establish new habits  
  — Review circumstances, discuss ways to address challenges and encourage recommitment to their plan.  
  — Link with more intensive support, if available.  
• Remind all patients of any additional support and resources that are available |
Questions for a 5R’s brief intervention to motivate a person for a healthy diet ¹

<table>
<thead>
<tr>
<th>5R’s</th>
<th>What to say/do</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>What kind of effects do you think your current eating habits are having on your health and life?</td>
</tr>
</tbody>
</table>
| Risks     | What do you understand about the risks to your health due to unhealthy eating habits?  
            | Go over the list of risks associated with unhealthy diet and ask the person if they are concerned about any of these. |
| Rewards   | Can you think of any benefits that could happen if you made some changes to your eating habits?  
            | Go over the benefits of a healthy diet, specifically highlighting the ways in which healthier choices could address the concerns previously mentioned. |
| Roadblocks| Have you ever tried to change your eating habits in the past?  
            | Are there things that make it difficult to change your eating habits?  
            | Can you think of ways to reduce these difficulties?  
            | Acknowledge the challenges and encourage the person to think of various options to address them. |
| Repetition| Now that we have had a chat, let’s see if you feel differently:  
            | 1. Would you like to make changes to your eating habits to help you switch to a healthier diet?  
            | 2. Do you think you have a chance of successfully making changes to your eating habits?  
            | If the person remains unwilling to start making changes to their diet at this time, end the discussion in a positive way, assure them of your support and invite them to return for further discussion if they change their mind.  
            | Provide health education materials.  
            | At the next cardiovascular disease (CVD) follow-up visit, ask again if they feel ready to make changes to their eating habits. |

Activity 3. Role-play on delivering the brief intervention: 30 minutes

Step 1. Ask for two volunteers. The first volunteer will act as a primary health care worker and the second volunteer as a patient. Instruct the other participants to observe the session.

Step 2. Using the 5A’s, the health care worker asks questions on food consumption on a typical day. (Ensure that all the four components: fruits and vegetables, salt, fats and oils, and sugars are asked about.)

¹ HEARTS Healthy lifestyle Counselling for tobacco cessation, diet, physical activity, alcohol use and self-care to prevent cardiovascular disease. [Is this a reference to a document? If so, please give full reference and URL]
Step 3. After the ASK session, ask the participants to share the good practices and suggestions for improvement.

Check if the health care worker addresses the below questions

- How many portions of fruits and vegetables do you eat each day?
- Do you usually add salt or salty flavourings (e.g. stock cubes, soy sauce, fish sauce) to your food when eating or during cooking?
- Some foods contain hidden salt. How often do you eat any of the following? (provide local examples)
- What kind of fat or oil do you usually use for cooking and baking?
- Some foods contain a lot of fat or oil. How often do you eat any of the following? (provide local examples)
- Some drinks and snacks contain a lot of sugars. How often do you have any of the following? (provide local examples)

Step 4. Thank the health care worker volunteer and invite the third volunteer to come forward. Ask the patient volunteer to remain in the front for the role play.

ADVISE PROVIDING CLEAR, FRANK AND PERSONALIZED MESSAGE

Step 5. The third volunteer will act as a health care worker and ADVISE the patient based on the dietary history elicited in the ASK session. Instruct the other participants to observe the session.

Step 6. After the session, ask the participants to share the good practices and suggestions for improvement in the ADVISE session using the questions below:

- Was the advice clear, frank and personalized?
- List the personalized messages that were used by the health care worker to advise the patient.

Check if the health care worker advises the patient on all the four components: fruits and vegetables, salt, fats and oils, and sugars.
Step 7. Thank the third health care worker volunteer. Invite the fourth health care worker volunteer to come forward while the patient volunteer remains there for the role play.

**ASSESS READINESS TO CHANGE**

Step 8. The fourth volunteer will ASSESS the patient’s readiness to change and instruct the other participants to observe the session.

Step 9. Using the 5R’s, the health care worker assesses the patient’s readiness to change to a healthier diet.

“Patient expresses readiness to change to a healthier diet.”

**ASSIST AND ARRANGE**

Step 10. Using the 5A’s, the health care worker ASSISTS and provides practical counselling on healthier choices. (Ensure that counselling covers all the four components: fruits and vegetables, salt, fats and oils, and sugars.)

Step 11. After the session, ask the participants:

- to share the good practices observed in the ASSIST and ARRANGE sessions
- to provide suggestions for improvement in the ASSIST and ARRANGE sessions
- to set goals for dietary habits with the patient
- to assess how the health care worker encouraged the patient
- to assess how the patient’s obstacles were discussed and led to arranging a follow-up visit.

**Providing a 5R’s brief intervention to increase motivation**

Step 12. Thank the fourth volunteer and invite the fifth health care worker volunteer.

Step 13. The health care worker asks questions to assess the readiness of the patient to adopt a healthier diet.

“At this time, the patient does not show readiness to change.”
Step 14. The health care worker uses the 5R’s framework to enhance the motivation of the patient. Instruct the other participants to observe the session.

Step 15. After the session, ask the participants:

- to share the good practices observed
- to list suggestions for improvement in the 5R’s session to successfully motivate the patient.

Thank the patient volunteer and the health care worker volunteer.

Optional activity. Population-level interventions for a healthy diet

Step 1. Divide the participants into convenient groups.

Step 2. Ask the groups to discuss some of the populationwide interventions recommended to promote healthy diets.

Step 3. Distribute a few cards and ask participants to note down one population-level intervention.

Step 4. Invite the groups to post their cards on the board.

Step 5. Once all the groups have posted their responses, organize similar points under one group and summarize each cluster.

Potential messages from the group work

- regulate the marketing of unhealthy food
- regulate unhealthy food production and manufacturing
- nutritional labelling and traffic-light labelling of food
- taxation on sugar-sweetened beverages
- exclusive breastfeeding and healthy-feeding options for infants and young children
- promote healthy food as a healthy settings intervention.
Evidence suggests a relationship between diet and the incidence of certain NCDs. The NCDs most closely associated with dietary excess and imbalance include CVDs, diabetes, cancer and obesity. Many constituents of diet are associated with health risk, but it is their relative proportions that matter. Increased risk has been associated with a high proportion of dietary fat (particularly certain saturated fats), excess energy intake and high salt intake; reduced risk has been associated with a high intake of complex carbohydrates and dietary fibre.

There are several types of policy interventions to promote a healthy diet to reduce NCDs. These include the introduction of national nutrition policies and employ measures such as education, legislation and regulations. Such policies, however, require coordination between the health and agricultural policies, cooperation with the food industry in production and processing, selective price control and regulations. Second, dietary recommendations should be both consistent with good nutritional practices and likely to promote healthy eating to reduce chronic disease.

Third, education and public information in schools, workplaces and marketplaces can be used to advise the public on healthy dietary habits. Other opportunities include demonstrations on the selection of healthy foods and labelling to ensure that all food products carry clear information on ingredients and nutrients as per country contexts.

**General recommendations**

- A healthy diet helps protect against malnutrition in all its forms, as well as NCDs such as diabetes, heart disease, stroke and cancer.
- Unhealthy diet and lack of physical activity are leading global risks to health.
- Healthy dietary practices start early in life – breastfeeding fosters healthy growth and improves cognitive development, and may have longer-term health benefits, like reducing the risk of becoming overweight or obese and developing NCDs later in life.
- Energy intake (calories) should be in balance with energy expenditure. Evidence indicates that total fat should not exceed 30% of total energy intake to avoid unhealthy weight gain, with a shift in fat consumption away from saturated fats to unsaturated fats, and towards the elimination of industrial trans fats.
- Limiting the intake of free sugars to less than 10% of total energy intake is part of a healthy diet. A further reduction to less than 5% of total energy intake is suggested for additional health benefits.
- Keeping salt intake to less than 5 g per day helps prevent hypertension and reduces the risk of heart disease and stroke in the adult population.
- Use iodized salt.
Food groups (food-based pyramid)

Food groups are collections of foods with a similar amount of key nutrients. To meet the nutrient requirements essential for good health, a variety from each of the five food groups in the recommended amounts should be consumed daily. The food groups include:

- vegetable groups
- grains, beans and legumes
- fruits
- dairy (low fat for adults)
- meat, fish, eggs and other flesh foods
- water.

Food guide pyramid

The pyramid is a guideline of what to eat each day and not a rigid prescription. It helps to guide a healthy choice of food for an individual. The pyramid indicates the proportions of various food group and choices to achieve a diet that is healthy for each individual.

Additional reading resources

2. Salt reduction - key facts. 30 June 2016, World Health Organization
3. Obesity and overweight - key facts. 16 February 2018, World Health Organization
4. Promoting fruit and vegetable consumption around the world - Information sheet, World Health Organization
5. A healthy lifestyle - 12 steps to healthy eating, World Health Organization, Regional Office for Europe
6. Global Strategy on Diet, Physical Activity and Health, World Health Organization

Patient information leaflet: tips for a heart-healthy life

1. Eat right

- An unhealthy diet increases your risk of overweight and obesity, high blood pressure, heart attack, stroke, diabetes, cancer and other diseases.
- A healthy diet protects your health and helps you to live longer.
- Eat more fruits and vegetables – get your 5-a-day
  - Eat at least 5 portions of fruit and non-starchy vegetables every day.
  - 1 portion is equal to one orange, apple, mango, banana or 3 tablespoons of cooked vegetables.
  - Starchy vegetables should not be part of your 5-a-day (these include potatoes, sweet potatoes, cassava and other starchy root vegetables).
Eat fewer fatty or oily foods
- Eat less fatty meat, processed meat, fried food and baked goods.
- When cooking, use healthier vegetable oils such as olive, sunflower, safflower, soya or corn oil, instead of animal fat or palm or coconut oil.
- Boil, steam or bake rather than fry.
- Remove the fatty part of meat, including chicken skin, before cooking.
- Eat white meat (e.g. chicken) and fish, instead of red meat.
- Use low-fat versions of milk and other dairy products.

Beware of salt
- Minimize salt when eating or cooking.
- Limit flavourings that contain a lot of salt, e.g. soy sauce, fish sauce, bouillon or stock cubes.
- Limit salty foods such as salty fish or meat, salty cheese, pickles, salty snacks.
- Remember that many canned foods and bread contain salt – limit the amount you eat.

Have fewer sugary foods and sweetened drinks
- Choose fresh fruits and raw vegetables as snacks instead of sugary snacks such as cookies, cakes, candy and chocolate.
- Limit your intake of soft drinks or soda and other drinks that are high in sugars (e.g. fruit juices, cordials and syrups, flavoured milk and yogurt drinks) and instead drink water.
- Reduce sugar in your tea and coffee.
Adapt the picture of the dinner plate with local examples.


Additional information

**General dietary advice**

<table>
<thead>
<tr>
<th>Advice</th>
<th>Why?</th>
<th>How</th>
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<tbody>
<tr>
<td>The intake of free sugars should be reduced throughout the life-course.</td>
<td>Consuming free sugars increases the risk of dental caries (tooth decay). Excess calories from foods and drinks high in free sugars also contribute to unhealthy weight gain, which can lead to overweight and obesity.</td>
<td>Limit the consumption of sweetened beverages, candies, sugary snacks. Substitute with fresh fruits and raw vegetables.</td>
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<tr>
<td>Advice</td>
<td>Why?</td>
<td>How</td>
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<tr>
<td>Reduce salt consumption to less than 5 g per day.</td>
<td>High salt consumption contributes to high blood pressure, which in turn increases the risk of heart diseases and stroke.</td>
<td>Minimize addition of salt, soy sauce or fish sauce during the preparation of food. Do not have salt on the table. Limit the consumption of salty snacks. Choose products with a low sodium content.</td>
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<td>Reduce the intake of total fat to less than 30% of total energy intake. Shift fat consumption away from saturated fats to unsaturated fats and towards the elimination of industrial transfats.</td>
<td>Helps prevent unhealthy weight gain in the adult population. Also, the risk of developing NCDs is lowered by reducing saturated fats to less than 10% of the total energy intake, and transfats to less than 1% of the total energy intake, and replacing both with unsaturated fats.</td>
<td>Change how you cook – remove the fatty part of meat; use vegetable oil (avoid palm and coconut oil) and not animal oil; and boil, steam or bake rather than fry. Avoid processed foods containing transfats; and limit the consumption of foods containing high amounts of saturated fats (e.g. cheese, ice cream, fatty meat).</td>
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<tr>
<td>Eat at least 400 g (equivalent of 5 servings) of fruits and vegetables per day.</td>
<td>Reduces the risk of NCDs and helps ensure an adequate daily intake of dietary fibre.</td>
<td>Always include vegetables in your meals. Eat fresh fruits and raw vegetables as snacks. Eat fresh fruits and vegetables in season. Eat a variety of fruits and vegetables.</td>
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<tr>
<td>Infants should be breastfed exclusively during the first 6 months of life. Infants should be breastfed continuously until 2 years of age and beyond. From 6 months of age, breast milk should be complemented with a variety of adequate, safe and nutrient-dense complementary foods. Salt and sugars should not be added to complementary foods.</td>
<td>In the first 2 years of a child’s life, optimal nutrition fosters healthy growth and improves cognitive development. It also reduces the risk of becoming overweight or obese and developing NCDs later in life.</td>
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<tr>
<td>Older children/schoolchildren</td>
<td>Variety from all food groups</td>
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Providing brief intervention for healthy diet at primary health care level

Activity 1: Step 2

Food groups

- Food group is collection of foods with similar amount of key nutrients.
- To meet the nutrient requirements essential for good health, a variety from each of the five food groups daily, in the recommended amounts should be consumed.
- Food groups:
  - Vegetable groups
  - Grains, beans and legumes
  - Fruits
  - Dairy (low fats for adults)
  - Meat
  - Water.
Providing brief intervention for healthy diet at primary health care level

**Food-guide pyramid**

The pyramid is an outline of what to eat each day and not a rigid prescription. It helps to guide a healthful choice of food for an individual. The pyramid allows a choice of variety of food from various food groups to achieve the nutrients, calories to maintain or improve one’s weight.

**General recommendation**

- Healthy dietary practices start early in life – breastfeeding fosters healthy growth and improves cognitive development, and may have longer-term health benefits, like reducing the risk of becoming overweight or obese and developing NCDs later in life.
- Energy intake (calories) should be in balance with energy expenditure.
- Total fat should not exceed 30% of total energy intake to avoid unhealthy weight gain.
- Shift fat consumption away from saturated fats to unsaturated fats and towards the elimination of industrial trans fats.

**General recommendation**

- Limiting intake of free sugars to less than 10% of total energy intake. A further reduction to less than 5% of total energy intake is suggested for additional health benefits.
- Keeping salt intake to less than 5 g per day helps prevent hypertension and reduces the risk of heart disease and stroke in the adult population.
- Total fat should not exceed 30% of total energy intake to avoid unhealthy weight gain.
- Shift fat consumption away from saturated fats to unsaturated fats and towards the elimination of industrial trans fats.
Eat a heart healthy diet

- Salt (sodium chloride): less than 5g (1 teaspoon per day)
- Fruits and vegetables: 5 servings (400-500 grams) of fruits & vegetables per day
- Fatty food
  - Limit fatty meat, dairy fat and cooking oil (less than two table spoons per day)
  - Replace palm and coconut oil with olive, soya, corn, rapeseed or safflower oil
  - Replace meat with chicken (without skin)
- Fish
  - Eat fish at least 3 times per week, preferably oily fish such as tuna, mackerel, salmon.

Glycaemic index (GI)

- Glycaemic index measures the ability of a given food to raise blood sugar levels.
- Benefits of low glycaemic index diet:
  - Increase fullness
  - Decrease cravings
  - Help in weight control
  - Decrease belly fat
  - Increase energy & concentration
  - Decrease acne, dandruff & facial hair
  - Good for diabetes & heart disease.

Examples of high & low glycaemic index foods

**High GI foods**
- Most grains
- Potatoes and starchy vegetables
- Fruit juices and sweetened beverages
- Sugars, desserts and sweets.

**Low GI foods**
- Whole grains: barley, oats, quinoa
- Pulses & soy
- Most vegetables & fruits
- Low fat dairy
- Nuts & seeds.
Hydrogenation of fatty acids

Some sources of trans fats

- Biscuits, crackers
- Commercially prepared fried snacks
- Margarines

Healthy diet

- Low in glycaemic index
- High in phytochemicals - rich in vegetables including raw vegetables and fruits
- Adequate protein from pulses, soy, low fat dairy, lean meat, chicken, eggs, fish, nuts & seeds
- Moderate in salt & alcohol
- Low in sugar & fat
- Providing good fats and no hydrogenated fat
Healthy eating
- Variety: eat a variety of foods to get all the vitamins and minerals you need
- Moderation: follow the principle of moderation. Too much or too little of everything is bad. Control your portions
- Balance: the food you eat with physical activity
- Practice mindful eating, understand yourself and eat in context
- Eat less, eat better.

When should one eat?
- Eat 3-4 hours before you go to bed or at least 2 hours before bedtime
- Avoid large meals before sleeping. Big meals can disrupt sleep lead to discomfort and cause heart burn
- Avoid long gaps & do not skip meals, especially breakfast.
- Prefer small, frequent meals.

How should one eat?
- Food diary
- Pre-plate your food
- Half plate rule: at least half the plate should be vegetables & fruits
- Smaller bowls, plates, spoons, cups
- Slowly & take small bites
- Snack smart
- Stock healthy
- Favorite foods must be eaten.
How should one eat?

- Understand the difference between psychological & physiological hunger
- Avoid eating while watching television & mindless eating while studying
- Do not succumb to social pressures. Learn the art of saying ‘No’
- Limit sugar laden beverages, colas, sweets & desserts.
- Do not starve
- Stop eating when you are no longer hungry or when you are just 80% full.

Key points

- Eat less and eat well: low in calories and high on nutrients and phyto-chemicals
- Eat good carbohydrates, good fat, high quality proteins and fiber
- Prefer whole food diets: whole grains, fruits and vegetables. Include functional foods
- Limit processed or refined foods, sugars, preservatives, chemicals
- Avoid hydrogenated fats
- Count portions & carbohydrates more than calories.

What can you do on healthy diet at primary health care level

- Should have the necessary knowledge and skills to provide accurate information and advice on healthy food
- Be familiar with cultural and traditional determinants of eating pattern
- Tactful in persuading individuals and families to change deeply rooted eating habits including those that come from culture
- Be familiar with nutritional recommendations
- Offer practical suggestions and advice patients change to healthy diet
- Pay attention to special nutritional needs such as in children, pregnant women, adolescents.
Module 2.5

Promotion of physical activity in primary health care
WHAT’S INSIDE

Introduction
Learning outcomes
Topics covered
Competency
Teaching and learning activities
Background information
INTRODUCTION

Physical activity is defined as any bodily movement produced by skeletal muscles that requires energy expenditure. Globally, one in four adults and 80% of adolescents have insufficient physical activity. Insufficient physical activity is one the leading risk factors for noncommunicable diseases (NCDs) worldwide. Therefore, physical activity has significant health benefits and contributes to preventing NCDs. Primary health care workers can play an effective role in providing personalized, clear and practical advice about physical activity. This module covers practical training on providing brief interventions among physically inactive individuals at the primary health care level using the 5A’s and 5R’s.

LEARNING OUTCOMES

At the end of the session, participants will be able to do the following:

- Explain to patients the recommended levels of physical activity that are beneficial to health.
- Employ the 5A’s and 5R’s brief interventions to promote health-beneficial physical activity appropriate to the individual’s age, lifestyle and health conditions, and cultural background.

TOPICS COVERED

- Definition of physical activity and exercise.
- Benefits of physical activity.
- Age-specific physical activity recommendations.
- 5A’s and 5R’s brief interventions to promote physical activity.

COMPETENCY

To deliver brief interventions using the 5A’s and 5R’s to patients/clients to promote physical activity based on standard recommendations.
TEACHING AND LEARNING ACTIVITIES

Total session time: 90 minutes

Activity 1. Basics of physical activity: 20 minutes

Step 1. Ask the participants to form a circle.

Step 2. Invite participants to demonstrate a physical activity of their choice.

Step 3. Ask participants to briefly answer the following questions. Write the responses on a flipchart/whiteboard:

- What happened to the breathing and heart rates?
- Which groups of muscles or parts of the body were used?
- What is your understanding of some of the common terminologies used:
  - physical activity
  - physical inactivity
  - exercise.

Step 4. Ask participants to briefly respond to the following questions:

- What are the global recommendations for physical activity?
- Are there any national recommendations for physical activity in your country? If so, are they similar to or different from the global recommendations?

Step 5. Present the powerpoint slides with the following contents:

- definition of physical activity and exercise
- benefits of physical activity
- recommendations of physical activity for various age groups
- types of activities for various levels of physical activity
- role of primary health care providers in promoting physical activity.
Activity 2. Challenging myths about physical activity: 20 minutes

Picture of red and blue chair

Game

Step 1. Place two chairs in front of the group, a red and a blue chair.

Step 2. Invite two participants to take the seats.
- The red chair is the “hot seat”.
- The participant in the red hot seat will pose resistance or express unsupportive views on physical activity by reading the following challenge statements.
- The person in the blue chair will provide a counter-response to clarify and address the challenge.

Challenge statements

1. A little bit of exercise is not enough.
2. Exercise makes you tired.
3. I don’t need to lose weight so I don’t need to be physically active.
4. Being physically active is too expensive. It takes equipment, special shoes and clothes and sometimes you even have to pay to use sports facilities.
5. I’m very busy. Physical activity takes too much time.
6. Children by nature have so much energy. They hardly sit still. There’s no need to spend time or energy teaching them about physical activity. They are already so active.
7. Physical activity is for people in the “prime of life”. At my age, I don’t need to be concerned with it.
8. Physical activity is needed only in industrialized countries. Developing countries have other problems.

Answers to the challenge statements

1. A little bit of exercise is not enough. As little as 30 minutes a day on most days of the week is good for your health. Any exercise is better than none. For example, regular walking has been shown to reduce the risk of heart disease.
2. Exercise makes you tired. Although you may feel somewhat tired during an exercise session, when you’re done you usually feel more invigorated. Doing any regular physical activity is guaranteed to raise your overall energy levels and make you better able to handle everything you have to undertake during the day. If you’re having trouble concentrating at work or getting too stressed, the best remedy is a short walk or any
other physical activity to clear your mind, bump up your energy levels, and decrease your mental stress. Doing regular physical activity also helps you sleep better at night, leaving you more refreshed and energetic during the day.

(3) I don’t need to lose weight so I don’t need to be physically active. Physical activity has benefits for everyone, regardless of your shape or size. A full-body workout that includes all of the major muscle groups, cardiovascular activity and flexibility will help you manage stress, give you more energy, and improve blood pressure and cholesterol levels. Improvements to your overall health are likely to happen before you notice any significant changes to your physical appearance.

(4) Being physically active is too expensive. It takes equipment, special shoes and clothes...and sometimes you even have to pay to use sports facilities. It only takes 30 minutes of moderate-intensity physical activity five days per week to improve and maintain your health.

However, this does not mean that physical activity must always be performed for 30 minutes at a time. The activity can be accumulated over the course of the day: a 10-minute brisk walk three times a day; or 20 minutes in the morning and 10 minutes later in the day.

These activities can be incorporated into your daily routine – at work, school, home or play. Simple things like taking the stairs, riding a bike to work or getting off the bus two stops before your final destination and then walking the rest of the way can accumulate over the day and can form an important part of your regular daily activities.

Even if you are very busy, you can still fit in 30 minutes of physical activity into your daily routine to improve your health.

(5) I’m very busy. Physical activity takes too much time! Physical activity can be done almost anywhere and does not necessarily require equipment. Carrying groceries, wood, books or children are good complementary physical activities, as is climbing the stairs instead of using the elevator. Walking is perhaps the most practised and most highly recommended physical activity and is absolutely free. Some urban areas have parks, waterfronts or other pedestrian areas that are ideal for walking, running or playing. It is not imperative to go to a gym, pool or other special sports facility to be physically active.

(6) Children by nature have so much energy. They hardly sit still. There’s no need to spend time or energy teaching them about physical activity. They are already so active. Each day children and youth aged 5–17 years should accumulate at least 60 minutes of moderate- to vigorous-intensity physical activity to ensure healthy development. However, physical activity levels are decreasing among young people in countries around the world, especially in poor urban areas.

This decline is largely due to increasingly common sedentary ways of life. For example, fewer children walk or cycle to school and excessive time is devoted to watching television, playing computer games, and using computers and mobile devices, often at the expense of time and opportunities for physical activity and sports. Physical education and other school-based physical activities have also been decreasing.

Importantly, patterns of physical activity and healthy lifestyles acquired during childhood and adolescence are more likely to be maintained throughout the lifespan. Consequently,
improving physical activity levels in young people is imperative for the future health of all populations.

(7) Physical activity is for people in the “prime of life”. At my age, I don’t need to be concerned with it. Regular physical activity has been shown to improve the functional status and quality of life of older adults. It is recommended that adults aged 65 years and above do at least 150 minutes of moderate-intensity aerobic physical activity throughout the week.

Many noncommunicable diseases (NCDs: cardiovascular disease, osteoarthritis, osteoporosis, hypertension, falls) prevalent in older adults can benefit from participation in regular physical activity. Physical activity has also been shown to improve mental health and cognitive function in older adults and has been found to contribute to the management of disorders such as depression and anxiety. Active lifestyles often provide older persons with regular occasions to make new friends, maintain social networks and interact with other people of all ages.

(8) Physical activity is needed only in industrialized countries. Developing countries have other problems. Physical inactivity is now identified as the fourth leading risk factor for global mortality. Importantly, 80% of deaths from common NCDs occur in low- and middle-income countries. Therefore, NCDs associated with physical inactivity are a significant public health problem in most countries around the world.

Levels of inactivity are high in virtually all developed and developing countries. In rapidly growing large cities of the developing world, physical inactivity is an even greater problem. Urbanization has resulted in several environmental factors that discourage participation in physical activity, particularly in the transport and occupational domains. In rural areas of developing countries, sedentary pastimes (e.g. watching television) are also becoming increasingly popular.

Activity 3. Using the 5A’s and 5R’s brief interventions to promote physical activity: 20 minutes

Step 1. Ask participants the following questions. Write the responses on a flipchart/whiteboard.

- How do you promote physical activity among patients in health facilities?
- What challenges do you face in promoting physical activity in your practice?
- What role can you play in promoting physical activity in health facilities and communities?

Step 2. Divide participants into convenient groups.

Step 3. Ask participants to carefully go through the brief intervention in the workbook. Ask if there are any points for clarification that need to be discussed.
In the past week, on how many days have you been physically active for a total of 30 minutes or more? For example: walking, cycling, cleaning, gardening, climbing stairs, dancing or playing sport.

Adapt examples to local context.

All adults should do at least 2½ hours (150 minutes) of physical activity per week. This can be spread over short sessions throughout the day and week, starting from as little as 10 minutes per session.

Being more active can start in small ways which are part of daily life. This can include going for a walk, playing with children, gardening and domestic chores. Adapt examples to local context.

Advantages of physical activity:
- Reduces the risk of developing hypertension, diabetes, heart attack, stroke and cancer
- Can help to control blood pressure, cholesterol and diabetes
- Helps with weight loss and weight control
- Helps to prevent and manage depression.
- Some physical activity is better than none.

1. Are you ready to start being more physically active?
2. Do you think you will be able to succeed in increasing your activity levels?

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>Not sure</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1</td>
<td>Yes</td>
<td>Not sure</td>
<td>No</td>
</tr>
<tr>
<td>Question 2</td>
<td>Yes</td>
<td>Not sure</td>
<td>No</td>
</tr>
</tbody>
</table>

Any answer in the shaded area indicates that person is not yet ready to change. In this case, the effort needs to be made to increase motivation for change.

Answers in the white area suggest that you and the patient can move on to the next step.
<table>
<thead>
<tr>
<th><strong>5A’s</strong></th>
<th><strong>Physical activity</strong></th>
</tr>
</thead>
</table>
| Assist   | Help the patient to develop a plan to start increasing physical activity. Provide practical counselling.  
  - Help the patient to identify areas of their daily life where they could start to increase their physical activity levels.  
  - Help to identify activities that they would enjoy doing.  
  - Help to identify possible challenges and suggest how to overcome them.  
  - Provide social support.  
  - Encourage the patient to talk with family, friends and work colleagues about their efforts to increase physical activity levels.  
  - Provide health education materials and information on additional resources.  
  - These could include contact details for organizations such as walking groups and activity clubs.  
| Adapt to local context.  
| Provide (if available) or advise on devices to help motivate or monitor activity e.g. a pedometer. |
| Arrange  | Refer to specialist support services if needed and available.  
| Follow-up: decide the timeline and method and schedule the next appointment. Ask about successes and challenges.  
For those who have become more physically active:  
  - Congratulate them on their success.  
  - For those experiencing challenges:  
    - Remind them to view the process as a learning experience and that it takes time to establish new habits.  
    - Review circumstances, discuss ways to address challenges and encourage recommitment to their plan.  
    - Link with more intensive support if available.  
| Remind all patients of any additional support and resources that are available. |

**5R’s interventions for to help people who are not ready to increase physical activity at this time**

<table>
<thead>
<tr>
<th><strong>5R’s</strong></th>
<th><strong>What to say/do</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevance</td>
<td>What kind of effects do you think your current low level of physical activity is having on your health and life?</td>
</tr>
</tbody>
</table>
| Risks    | What do you understand about the risks of being physically inactive for your health?  
|          | Go over the list of risks of a low level of physical activity and ask the person if they are concerned about any of these. |
Promotion of physical activity in primary health care

5R’s | What to say/do
---|---
**Rewards** | Can you think of any benefits to you if you made some changes to your physical activity level? Go over the benefits of having a physically active life, specifically highlighting the ways in which healthier choices could address the concerns previously mentioned.

**Roadblocks** | Have you ever tried to be more physically active in the past? Are there things that make it difficult to change your physical activity level? Can you think of ways to reduce these difficulties? Acknowledge the challenges and encourage the person to think of various options to address them.

**Repetition** | Now that we have had a chat, let’s see if you feel differently:
1. Would you like to make changes to your physical activity level to help you achieve a healthier life?
2. Do you think you have a chance of successfully making changes to your physical activity level?
If the person remains unwilling to start making changes to their physical activity level at this time, end the discussion in a positive way, assure them of your support and invite them to return for further discussion if they change their mind.
Provide health education materials.
At the next follow up visit, ask again if they feel ready to make changes to their physical activity level.

**Activity 4. Role-play: 5A’s and 5R’s interventions:** 30 minutes

Providing 5A’s brief intervention to increase physical activity

**ASK THE LEVEL OF PHYSICAL ACTIVITY**

Step 1. Ask for two volunteers. The first volunteer will act as a primary health care worker and the second volunteer as a patient.

Step 2. Instruct other participants to observe the session.

Step 3. Ask the health care worker to use the above algorithm and ask questions about the level of physical activity on a typical day, adapting the examples to local context.
Step 4. After the session, ask the participants to share the good practices observed and suggestions for improvement in the ASK session. Thank the health care worker volunteer.

**ADVISE PROVIDING A CLEAR, FRANK AND PERSONALIZED MESSAGE**

Step 5. Ask the patient volunteer to stay in the role play and invite the third volunteer to come forward.

Step 6. Ask the third volunteer to advise the patient to improve physical level activity based on the information elicited in the ASK session.

- Instruct other participants to observe the session.
- Using the algorithm, the health care worker provides clear, frank and personalized advice on improving the level of physical activity. (If the patient is achieving the recommended level of physical activity, encourage them to continue.)
- After the session, ask the participants:
  - to note the good practices and provide suggestions for improvement in the ADVISE session;
  - to determine if the advice provided was clear, frank and personalized;
  - to list the personalized messages that were used well by the health counsellor to advise the patient.

Step 7. Thank the health care worker volunteer and ask the patient volunteer to remain in the front.

**ASSESS READINESS TO CHANGE**

Step 8. Invite the fourth volunteer to come forward.

Step 9. Ask the fourth volunteer to ASSESS the level of motivation for improvement of physical activity using the above algorithm.

Step 10. Instruct other participants to observe the session.

- Using the algorithm, the health care worker assesses readiness to make changes to a healthier physical activity level.
- Patient expresses the readiness to increase the physical activity level.
ASSIST AND ARRANGE

Step 11. Ask the patient to continue the role play.

Step 12. Invite the fifth health care worker volunteer. Using the algorithm, the health care worker ASSISTS and provides practical counselling on physical activity.

Step 13. After the session, ask the participants:
- to share the good practices observed in the ASSIST and ARRANGE sessions;
- to provide suggestions for improvement in the ASSIST and ARRANGE sessions.

Step 14. Thank the fifth health care worker volunteer and invite a sixth volunteer to come forward.

Step 15. Ask the patient volunteer to stay in the role play.

Step 16. Ask the participants to discuss the following questions:
- What goals were set for physical activity with the patient?
- How did the health-care worker encourage the patient?
- How were patient’s obstacles discussed, which led to the health-care provider making arrangements for the follow-up visit?

PROVIDING 5’RS BRIEF INTERVENTION TO INCREASE MOTIVATION

Step 17. Ask the patient volunteer to continue to role play.

Step 18. Invite the sixth health care worker volunteer. The health care worker asks questions to assess the readiness of the patient to improve physical activity level.
- This time, the patient does not show readiness to change.
- The health care worker uses the 5R’s framework to enhance the motivation of the patient.
- Instruct the other participants to observe the session.
Step 19. After the session, ask the participants:

- to share the good practices observed;
- to list suggestions for improvement in the 5R’s session to successfully motivate the patient.

Step 20. Thank the patient volunteer and health care worker volunteer.

Activity 5. Populationwide interventions to promote physical activity

Step 1. Discuss the existing initiatives in your communities to improve physical activity.

Step 2. Ask participants to propose innovative initiatives to promote physical activity in their communities. Describe how they would ensure maximum participation and support from the communities.
Physical activity recommendation

**Physical activity in a day for 30 minutes or more**

At least 30 minutes of moderate physical activity should be achieved in a day. Physical activity may include walking or cycling for recreation or to get to and from places, gardening, and exercise or sport that lasts for at least 10 minutes.

The intensity of physical activity must be high enough to increase the heart rate, make you feel warmer and make you breathe a little faster. The “walkie talkie” test is a good way of measuring intensity. If you are walking at a moderate intensity you would be able to carry on a conversation, taking a few extra breaths between sentences, but you would not be able to sing.

**150 minutes of moderate physical activity over the course of the week**

Adults should accumulate at least 150 minutes of moderate physical activity over the course of each week. This can be achieved in a number of ways, such as:

- 30 minutes of moderate physical activity on most days of the week
- a two-and-a-half hour walk or cycle ride at the weekend
- a combination of activity options totalling a minimum of 150 minutes.

The term “physical activity” should not be mistaken for “exercise”. Exercise is a subcategory of physical activity that is planned, structured, repetitive and purposeful in the sense that the improvement or maintenance of one or more components of physical fitness is the objective. Physical activity includes exercise as well as other activities that involve bodily movement and are done as part of playing, working, active transportation, house chores and recreational activities.

Increasing physical inactivity is a societal and not just an individual problem. Therefore it demands a population-based, multisectoral, multidisciplinary and culturally relevant approach.

At the individual level, physical activity should be recommended based on the individual’s health condition and initial level of fitness. For example, people who are sedentary or physically inactive should start slowly but regularly, and gradually build up their fitness.

The levels of physical activity are defined by four components: frequency, intensity, time (duration) and type (FITT).
What is moderate-intensity and vigorous-intensity physical activity?

- **Intensity of physical activity**
  - Intensity refers to the rate at which the activity is being performed or the magnitude of the effort required to perform an activity or exercise. It can be thought of “how hard a person works to do the activity”.
  - The intensity of different forms of physical activity varies between people. The intensity of physical activity depends on an individual’s previous exercise experience and their relative level of fitness. Consequently, the examples given below are provided as a guide only and will vary between individuals.

<table>
<thead>
<tr>
<th>Moderate-intensity physical activity</th>
<th>Vigorous-intensity physical activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requires a moderate amount of effort and noticeably accelerates the heart rate</td>
<td>Requires a large amount of effort and causes rapid breathing and a substantial increase in heart rate</td>
</tr>
<tr>
<td>Examples of moderate-intensity exercise include:</td>
<td>Examples of vigorous-intensity exercise include:</td>
</tr>
<tr>
<td>Brisk walking</td>
<td>Running</td>
</tr>
<tr>
<td>Dancing</td>
<td>Walking/climbing briskly up a hill</td>
</tr>
<tr>
<td>Gardening</td>
<td>Fast cycling</td>
</tr>
<tr>
<td>Housework and domestic chores</td>
<td>Aerobics</td>
</tr>
<tr>
<td>Traditional hunting and gathering</td>
<td>Fast swimming</td>
</tr>
<tr>
<td>Active involvement in games and sports with children/walking domestic animals</td>
<td>Competitive sports and games (e.g. traditional games, football, volleyball, hockey, basketball)</td>
</tr>
<tr>
<td>General building tasks (e.g. roofing, thatching, painting)</td>
<td>Heavy shovelling or digging ditches</td>
</tr>
<tr>
<td>Carrying/moving moderate loads (&lt;20 kg)</td>
<td>Carrying/moving heavy loads (&gt;20 kg)</td>
</tr>
</tbody>
</table>

**Additional reading resources**

2. Global action plan on physical activity 2018–2030: more active people for a healthier world. World Health Organization, 2018

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Promotion of physical activity in primary health care

Activity 1: Step 5

Definitions: physical activity and exercise

- Physical activity: any bodily movement produced by skeletal muscles that requires energy expenditure
- Exercise: planned, structured, repetitive, and aims to improve or maintain one or more components of physical fitness.
Types of activities for various levels of physical activity

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</table>

Examples of moderate-intensity exercise include:
- Brisk walking
- Dancing
- Gardening
- Housework and domestic chores
- Traditional hunting and gathering
- Active involvement in games and sports with children/walking domestic animals
- General building tasks (e.g., roofing, thatching, painting)
- Carrying/moving moderate loads (<20kg)

Examples of vigorous-intensity exercise include:
- Running
- Walking/climbing briskly up a hill
- Fast cycling
- Aerobics
- Fast swimming
- Competitive sports and games (e.g., traditional games, football, volleyball, hockey, basketball)
- Heavy shoveling or digging ditches
- Carrying/moving heavy loads (>20kg)

Benefits of physical activities

- Reduces body weight
- Reduces blood pressure
- Raises HDL ("good") cholesterol
- Reduces the risk of cardiovascular diseases, diabetes and some cancers
- Improves psychological well-being, including gaining more self-confidence and higher self-esteem.

Physical activity recommendations

**Children and adolescents aged 5–17 years**

- Should do at least 60 minutes of moderate to vigorous-intensity physical activity daily
- Physical activity of amounts greater than 60 minutes daily will provide additional health benefits
- Should include activities that strengthen muscle and bone, at least 3 times per week.
## Physical activity recommendations

**Adults aged 18–64 years**

- Should do at least 150 minutes of moderate-intensity physical activity throughout the week, or do at least 75 minutes of vigorous-intensity physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.
- For additional health benefits, adults should increase their moderate-intensity physical activity to 300 minutes per week, or equivalent.
- Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

## Physical activity recommendations

**Adults aged 65 years and above**

- Should do at least 150 minutes of moderate-intensity physical activity throughout the week, or at least 75 minutes of vigorous-intensity physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.
- For additional health benefits, they should increase moderate-intensity physical activity to 300 minutes per week, or equivalent.
- Those with poor mobility should perform physical activity to enhance balance and prevent falls, 3 or more days per week.
- Muscle-strengthening activities should be done involving major muscle groups, 2 or more days a week.

## Primary health care worker role

- Health worker should include counselling and health education on physical activity in their practice.
- Discuss physical activity with the patients and risks associated with physical inactivity at every consultation.
- Use 5 A’s technique to discuss about physical activity and assist clients to make plans for physical activity.
Module 2.6

Addressing **overweight and obesity** in primary health care
WHAT’S INSIDE

Introduction
Learning outcomes
Topics covered
Competency
Teaching and learning activities
Background information
INTRODUCTION

Overweight and obesity, as well as their related noncommunicable diseases (NCDs), are largely preventable. Supportive environment and communities are fundamental in shaping people’s choices, by making healthier foods and regular physical activity the easiest choice (the choice that is the most accessible, available and affordable), and therefore preventing overweight and obesity. Primary health care workers can play an effective role in providing personalized, clear and practical advice about healthy diet and physical activity. This module covers practical training on providing brief interventions among obese and overweight individuals at the primary health care level using the 5A’s and 5R’s.

LEARNING OUTCOMES

At the end of the session, participants will be able to do the following:

- Describe the environmental and lifestyle drivers of overweight and obesity.
- Classify overweight and obesity in adults and children.
- Provide guidance to individuals to prevent or manage overweight and obesity.

TOPICS COVERED

- Environmental and lifestyle drivers for overweight and obesity.
- Definitions of overweight and obesity in adults and children.
- Prevention of overweight and obesity in adults and children.

COMPETENCY

Deliver brief interventions using the 5A’s and 5R’s to manage overweight and obesity in adults and children.
Addressing overweight and obesity in primary health care

TEACHING AND LEARNING ACTIVITIES

Total session time: 60 minutes

Activity 1. Environmental and lifestyle drivers of overweight and obesity: 10 minutes

Ask participants the following questions and write the responses on the flipchart or whiteboard.

- What factors are responsible for the rise in overweight and obesity in the population?
- What are the problems related to overweight and obesity?
- What can be done to combat overweight and obesity in the population?

Activity 2. Prevention of obesity: 20 minutes

Step 1. Divide the participants into convenient groups.

Step 2. Ask a few groups to argue for and others against the following statement:

“Preventing obesity is a personal responsibility.”

Step 3. Note the key points for and against the statement on the flipchart whiteboard.

Step 4. Summarize the key points with key messages.

Possible summary message

Obesity is the end result of the intricate interactions of biology, behaviour and environment. Recent hypotheses by the scientific community suggest that the current obesity epidemic is being driven largely by environmental factors (e.g. high-energy/high-fat foods, fast food consumption, watching television (sedentary lifestyle), eating “super-sized” portions, etc.) rather than biological ones. Individuals are bombarded with images and offers of high-fat, high-calorie, highly palatable, convenient and inexpensive foods.

Furthermore, the physical demands of our society have changed, resulting in an imbalance between energy intake and expenditure. Today’s stressful lifestyles compound the effects of environmental factors by impairing weight loss efforts and promoting fat storage. Combating the obesity epidemic demands environmental and social policy changes, particularly in the areas of portion size, reduced accessibility to low-cost foods that are high in fat, salt and sugar, and availability of healthy foods, and promotion of physical activity.
Step 5. Present the powerpoint slides with the following contents:

- burden and definition of overweight and obesity
- causes of overweight/obesity and challenges in management at the individual level
- role of the primary health care worker in managing overweight and obesity.

Activity 3. 5A’s brief intervention for overweight and obesity: 20 minutes

Step 1. Divide the participants into convenient groups.

Step 2. Ask participants to calculate the body mass index (BMI).

Step 3. Ask participants to go through the brief interventions algorithm and discuss if there are ambiguities.

<table>
<thead>
<tr>
<th>5A's</th>
<th>Overweight and obesity†</th>
</tr>
</thead>
</table>
| ASK  | Ask the patient’s permission to speak about overweight and obesity, and reduce the stigma and barrier to talk about obesity.  
(Don’t assume that just because we think weight is an issue that they think weight is an issue. This is important because body weight is a sensitive topic for most owing to embarrassment, fear, blame and stigma, and weight bias exists among physicians, dietitians, nurses and psychologists.)  
Research suggests that patients prefer the term weight.¹  
- “Would it be alright if we discussed your weight?”  
- Are you concerned about the effect your weight may have on your health or your quality of life? |
| ASSESS | Assess the health status, BMI, waist circumference, hip circumference, waist–hip ratio.  
Assess the key drivers (root causes) of obesity in the patient (socioeconomic, cultural, mood, depression, anxiety, body image, medication).  
Stage the BMI category.  
Assess readiness-to-change behaviours and barriers to weight loss. |
| ADVISE | Advise on the risks of obesity.  
Explain the benefits of modest weight loss and the need for long-term strategies.  
"Now that we have a better understanding of your situation, can I recommend a plan of action to improve things?”  
Discuss lifestyle and treatment options.  
Advise on their individual risk and lifestyle modification and risk factor reduction. |
Addressing overweight and obesity in primary health care

<table>
<thead>
<tr>
<th>5A’s</th>
<th>Overweight and obesity†</th>
</tr>
</thead>
</table>
| AGREE | Agree on:  
- the lifestyle modification programme for weight loss and reduction of risk factors;  
- the outcomes of treatment.  
It is better to focus on real health benefits or the quality of life of patients rather than weight loss goals.  
Patients may have unrealistic weight loss expectations and are discouraged when these unrealistic goals cannot be achieved. Suggest patients attempt to achieve a “best” weight that is achievable and sustainable while still enjoying life.²  

*Setting goals surrounding weight management behaviour – and not the weight itself – might help patients achieve a meaningful weight loss as, ultimately, it will be behaviour changes that will get them there.*  |
| ASSIST | Refer to other services that may be needed and available.  
Assist in arranging follow-up visits.  
Address facilitators (e.g. motivation, support) and barriers (e.g. social, medical, emotional and economic barriers) that can make weight management challenging. |


**Activity 4. Prevention of childhood obesity:** 10 minutes

**Step 1. Ask participants to discuss the below questions regarding the prevention of childhood obesity. Write the responses on the flipchart or whiteboard:**

- What are the causes of childhood obesity?  
- What activities can be conducted to prevent childhood obesity in primary health care settings?

**Possible key message**

Today, obesity causes a broad range of health problems among children that were not previously seen until adulthood. These include high blood pressure, type 2 diabetes and elevated blood cholesterol levels. There are also psychological effects: obese children are more prone to low self-esteem, negative body image and depression. And excess weight at a young age has been linked to higher and earlier death rates in adulthood.

Obese children are more likely to be obese adults. Successfully preventing or treating overweight in childhood may help to reduce the risk of heart disease, adult obesity and other complications.

Physical inactivity is a major risk factor for developing heart disease, stroke, high blood pressure, overweight/obesity and diabetes. **Inactive children are likely to become inactive adults.**
BACKGROUND INFORMATION

Key facts

- Worldwide, obesity has more than doubled since 1980.
- In 2014, more than 1.9 billion adults 18 years and older were overweight. Of these, over 600 million were obese.
- 39% of adults aged 18 years and older were overweight in 2014, and 13% were obese.
- Most of the world’s population lives in countries where overweight and obesity kill more people than underweight.
- An estimated 41 million children under the age of 5 years were overweight in 2016.
- Obesity is preventable.

What are overweight and obesity?

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health.

Body mass index (BMI) is a simple index of weight-for-height that is commonly used to classify overweight and obesity in adults. It is defined as a person’s weight in kilograms divided by the square of the height in metres (kg/m²). BMI provides the most useful population-level measure of overweight and obesity as it is the same for both sexes and for all ages of adults. However, it should be considered a rough guide because it may not correspond to the same degree of fatness in different individuals.

Although overweight and obesity represent different degrees of health risks, no distinction is made between them. For practical purposes, obesity is defined in terms of a BMI, which is not a direct measure of fatness but a measure of proportional weight. It is calculated for an individual by applying the formula:

\[
\text{BMI} = \frac{\text{weight (kg)}}{\text{height (m)}^2}
\]

Adults

For adults, WHO defines overweight and obesity as follows:

- overweight is a BMI greater than or equal to 25;
- obesity is a BMI greater than or equal to 30.

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Addressing overweight and obesity in primary health care

- **BMI International Classification:**

<table>
<thead>
<tr>
<th>Category</th>
<th>BMI Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt;18.5 kg/m²</td>
</tr>
<tr>
<td>Normal</td>
<td>18.5–24.9 kg/m²</td>
</tr>
<tr>
<td>Overweight/pre-obese</td>
<td>25.0–29.9 kg/m²</td>
</tr>
<tr>
<td>Obese</td>
<td>≥30.0 kg/m²</td>
</tr>
</tbody>
</table>

- For most people, BMI is an indicator of the amount of body fat. It is used as a screening tool to identify whether an adult has a healthy weight.

For children, age needs to be considered when defining overweight and obesity. For children and teenagers, BMI is evaluated using age- and gender-specific charts that take into account the different growth patterns for gender. Weight and the amount of fat in the body differ for boys and girls and those levels change as they grow taller and older. A separate BMI percentile calculator can be used for children and teenagers, which takes a child’s age and gender into consideration.

**Children**

For children, age needs to be considered when defining overweight and obesity. For children and teenagers, BMI is evaluated using age- and gender-specific charts that take into account the different growth patterns for gender. Weight and the amount of fat in the body differ for boys and girls and those levels change as they grow taller and older. A separate BMI percentile calculator can be used for children and teenagers, which takes a child’s age and gender into consideration.

**Children under 5 years of age**

For children under 5 years of age:

- overweight is weight-for-height greater than 2 standard deviations above the WHO Child Growth Standards median; and
- obesity is weight-for-height greater than 3 standard deviations above the WHO Child Growth Standards median.

**Children aged between 5 and 19 years**

Overweight and obesity are defined as follows for children aged between 5 and 19 years:

- overweight is BMI-for-age greater than 1 standard deviation above the WHO Growth Reference median; and
- obesity is greater than 2 standard deviations above the WHO Growth Reference median.
Addressing overweight and obesity in primary health care

http://www.who.int/growthref/cht_bmifa_girls_z_5_19years.pdf?ua=1

http://www.who.int/growthref/cht_bmifa_boys_z_5_19years.pdf?ua=1
What causes obesity and overweight?

The fundamental cause of obesity and overweight is an energy imbalance between calories consumed and calories expended. Globally, there has been:

- an increased intake of energy-dense foods that are high in fat, starch and sugar; and
- an increase in physical inactivity due to the increasingly sedentary nature of many forms of work, changing modes of transportation and increasing urbanization.

Changes in dietary and physical activity patterns are often the result of environmental and societal changes associated with development and lack of supportive policies in sectors such as health, agriculture, transport, urban planning, environment, food processing, distribution, marketing and education.

What are the common health consequences of overweight and obesity?

Raised BMI is a major risk factor for noncommunicable diseases such as:

- cardiovascular diseases (CVDs, mainly heart disease and stroke)
- diabetes
- musculoskeletal disorders (especially osteoarthritis – a highly disabling degenerative disease of the joints)
- some cancers (including endometrial, breast, ovarian, prostate, liver, gallbladder, kidney and colon).

The risk for these NCDs increases with increases in BMI.

Childhood obesity is associated with a higher chance of obesity, premature death and disability in adulthood. But in addition to increased future risks, obese children experience breathing difficulties, increased risk of fractures, hypertension, early markers of CVD, insulin resistance and psychological effects.

Obesity

Abdominal obesity is associated with increased risk of CVDs and diabetes. Abdominal obesity, commonly known as belly fat or clinically as central obesity, is the accumulation of abdominal fat or visceral fat resulting in an increase in waist size. There is a strong correlation between central obesity and CVD.

Visceral fat, also known as organ fat or intra-abdominal fat, is located inside the peritoneal cavity, packed in between the internal organs and torso, as opposed to subcutaneous fat which is found underneath the skin, and intramuscular fat, which is found interspersed in the skeletal muscle.
Visceral fat is composed of several adipose depots, including mesenteric, epididymal white adipose tissue (EWAT) and perirenal fat. An excess of visceral fat is known as central obesity, the “pot belly” or “beer belly” effect, in which the abdomen protrudes excessively. This body type is also known as “apple shaped”, as opposed to “pear shaped”, in which fat is deposited on the hips and buttocks.

**Facing a double burden of disease**

Many low- and middle-income countries are now facing a “double burden” of disease.

- While these countries continue to deal with the problems of infectious diseases and undernutrition, they are also experiencing a rapid upsurge in NCD risk factors such as obesity and overweight, particularly in urban settings.
- It is not uncommon to find undernutrition and obesity coexisting within the same country, the same community and the same household.

Children in low- and middle-income countries are more vulnerable to inadequate prenatal, infant and young child nutrition. At the same time, these children are exposed to high-fat, high-sugar, high-salt, energy-dense and micronutrient-poor foods, which tend to be lower in cost but are also lower in nutrient quality. These dietary patterns, in conjunction with lower levels of physical activity, result in sharp increases in childhood obesity while undernutrition issues remain unsolved.

**How can overweight and obesity be reduced?**

Overweight and obesity, as well as their related NCDs, are largely preventable. Supportive environments and communities are fundamental in shaping people’s choices, by making the choice of healthier foods and regular physical activity the easiest choice (the choice that is the most accessible, available and affordable), and therefore preventing overweight and obesity.

At the individual level, people can:

- limit energy intake from total fats, starches and sugars;
- increase consumption of fruit and vegetables, as well as legumes, whole grains and nuts;
- engage in regular physical activity (60 minutes a day for children and 150 minutes spread through the week for adults).

Individual responsibility can have its full effect only where people have access to a healthy lifestyle. Therefore, at the societal level, it is important to support individuals in following the recommendations above, through sustained implementation of evidence-based and population-based policies that make regular physical activity and healthier dietary choices available, affordable and easily accessible to everyone, particularly to the poorest individuals. An example of such a policy is a tax on sugar-sweetened beverages.

**Population-based approach to overweight and obesity reduction**

- ensuring the availability of healthy food choices and supporting regular physical activity practices in the workplace.
The food industry can play a significant role in promoting healthy diets by:

- reducing the fat, sugar and salt content of processed foods;
- ensuring that healthy and nutritious choices are available and affordable to all consumers;
- restricting marketing of foods high in sugars, salt and fats, especially those foods aimed at children and teenagers.

### Steps to measure waist circumference (WC)

#### Tool
- Non-stretchable flexible measuring tape

#### Important point to keep in mind
- WC should be taken in a standing posture.

#### Process steps
- Remove any layers of clothing over the waist. If the individual is unwilling to remove clothing, the measurement can be taken over the thinnest layer of clothing.
- The individual stands straight looking in front with the abdomen (stomach) relaxed, arms at the side and feet fairly close together (about 12–15 cm) with their weight equally distributed across both feet.
- You will stand in front, facing the subject. Find the midpoint between the lowest rib/bony point in front and top of the hip bone in the back. Waist circumference can also be measured across the umbilical line (at the navel).
- The person should be asked to breathe normally. At the time of reading the measurement they should be asked to breathe out gently.
- Place the tape firmly in a horizontal position making sure the measuring tape is parallel to the floor and not folded or twisted.
- Record the reading at the end of normal expiration/breathing.
- The tape should be loose enough to allow one finger to be placed between the tape and the person’s body but the tape should fit firmly but comfortably around the waist. The tape should not squeeze the skin.
- Look at the place on the tape where the zero end meets the other end of the tape measure. The location of this meeting point is the waist measurement.
- Record the measurement in cm to the nearest 0.0 or 0.5 cm in the individual’s card or your register. Example: if the exact measurement is 85.7 cm, it should be recorded as 85.5 cm and if it is 85.9 cm, then the reading should be recorded as 86 cm.

### Physical activity helps with the following:

- controlling weight,
- reducing blood pressure,
- raising HDL (“good”) cholesterol,
Addressing overweight and obesity in primary health care

- reducing the risk of diabetes and some kinds of cancer,
- improving psychological well-being, including gaining more self-confidence and higher self-esteem.

**How to promote physical activity in children**

- Physical activity should be increased by reducing sedentary time (e.g. watching television, playing computer video games or talking on the phone).
- Physical activity should be fun for children and adolescents.
- Parents should try to be role models for active lifestyles and provide children with opportunities for increased physical activity.

**Healthy diet for children**

Breastfeeding is the ideal nutrition and sufficient to support optimal growth and development for the first 6 months after birth. Thereafter, babies should be given nutritious complementary foods and breastfeeding should be continued up to the age of 2 years or beyond.

- Energy (calories) should be adequate to support growth and development and to reach or maintain the desirable body weight.
- Eat foods low in saturated fat, transfat, cholesterol, salt (sodium) and added sugars.
- Choose a variety of foods to get enough carbohydrates, protein and other nutrients.
- Eat only enough calories to maintain a healthy weight for your height and build. Kids should be physically active for at least 60 minutes a day.
- Serve whole-grain/high-fibre breads and cereals rather than refined grain products. Look for “whole grain” as the first ingredient on the food label and make at least half your grain servings whole grain.
- Serve a variety of fruits and vegetables daily, while limiting juice intake.
- Serve fat-free and low-fat dairy foods.
- Don’t overfeed. Estimated calories needed by children range from 900/day for a 1-year-old to 1800 for a 14–18-year-old girl and 2200 for a 14–18-year-old boy.

**Additional reading resources**


Addressing overweight and obesity in primary health care

Activity 2: Step 5

Shapes of things to come?
### Where are we going wrong?

<table>
<thead>
<tr>
<th>High carbohydrates &amp; high glycaemic diet</th>
<th>Unhealthy snacking &amp; late dinners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar sweetened products</td>
<td>Super sized portions</td>
</tr>
<tr>
<td>High meat content</td>
<td>Heavy marketing, easy availability and cheap junk food</td>
</tr>
<tr>
<td>Poor quality fats</td>
<td>Belly and the brain</td>
</tr>
<tr>
<td>Easy access to poor quality junk food</td>
<td>Hospitality</td>
</tr>
</tbody>
</table>

### Causes of overweight/obesity

- Overeating
- Lack of physical activity
- Genetic
- Abnormalities of hypothalamus and endocrine function (pathological obesity).

### Health consequences of overweight/obesity

- Raises level of low density lipoprotein (LDL)
- Elevates blood pressure
- Increases risk for cardiovascular diseases, cancers, diabetes.
Addressing overweight and obesity in primary health care

Many risk factors coexist in the same individual

Assessment of obesity: BMI

- BMI International Classification: (for adults)
  - Underweight: <18.5 Kg/m²
  - Normal: 18.5–24.9 Kg/m²
  - Overweight/pre-obese: 25.0–29.9 Kg/m²
  - Obese: > 30.0 Kg/m²
- For children
  - Obese: Body mass index (BMI) > 2 standard deviations above the WHO growth standard median
  - Overweight: BMI > 1 standard deviation above the WHO growth standard median
  - Underweight: BMI < 2 standard deviations below the WHO growth standard median.

Primary health care worker role

- Assess weight and height for their patients, and calculate BMI
- Educate and reassure patients of recommended BMI level
- Alert about eating disorders and abnormal BMI values
- Educate on health risks of overweight and inter relationship with other health risks (Eg, smoking and eating habits).
Module 2.7

Understanding the health impacts of household air pollution at the primary health care level

>10 µm
2.5-10 µm
0.5-2.5 µm
**WHAT’S INSIDE**

- Introduction
- Learning outcomes
- Topics covered
- Competency
- Teaching and learning activities
INTRODUCTION

Globally, 3.8 million deaths were attributable to household air pollution (HAP) in 2016, almost all of them in low- and middle-income countries (LMICs). The South-East Asia and Western Pacific regions of WHO bear most of the burden, with 1.5 and 1.2 million deaths, respectively. The diseases included in the assessment are acute lower respiratory infection (ALRI), lung cancer, chronic obstructive pulmonary disease (COPD), ischaemic heart disease and stroke. Noncommunicable diseases (NCDs) account for 73% of these deaths.

The aim of this module is to train primary health care workers to make them aware of the health impacts of HAP. It also aims to train them to effectively communicate the health risks associated with HAP to the people who seek care at their centres, and advise individuals and communities, on a scientific basis, of the need to move to cleaner fuels in order to mitigate the health risks associated with HAP.

LEARNING OUTCOMES

At the end of the session, participants should be able to do the following:

- Understand the potential sources of HAP and its hazards, and identify those individuals who are at risk.
- List the diseases that are influenced by particulate matter (PM) from HAP.
- Use communication skills to explain the importance of reducing exposure to HAP.

TOPICS COVERED

- Introduction to air pollution.
- Sources of HAP.
- Key pollutants from the burning of biomass fuels.
- PM (sources, size) and PM toxicology.
- Cardiovascular disease, chronic respiratory disease (e.g. COPD), lung cancer, childhood pneumonia, low birth weight, asthma, cataract and other diseases linked to exposure to HAP.
COMPETENCY

Ability to identify people who come to primary health centres and who are at risk from exposure to HAP and explain to them the importance of moving to cleaner fuels in order to protect their health.

TEACHING AND LEARNING ACTIVITIES

Total session time: 90 minutes

Activity 1. Introducing HAP: 45 minutes

Step 1. Assess the participants’ background knowledge on air pollution and HAP by discussing the following:

- What they understand by the term “air pollution” and whether they can differentiate between ambient (or outdoor) air pollution and household (indoor) air pollution

  Why would HAP be a matter of concern? How might smoke coming from burning wood and other forms of biomass harm humans?

In the discussions, emphasize some of the key points arising from step 1 with some of the following key messages:

Many people do not understand that HAP is a risk factor for many NCDs. People, especially women, may often complain about headache and eye irritation when cooking, but they never realize the smoke from the burning fire, to which they are exposed day after day, can lead to premature death and life-threatening chronic diseases.

Some people may see the smoke coming from wood as a normal part of burning something, and part of tradition and therefore harmless. Others may think that because it comes from the burning of materials such as wood or animal dung it is “natural” or “organic” because it is not manufactured. Few people understand that the burning of any organic matter, be it wood, animal dung or crop residue, is incomplete at temperatures found in fires and produces harmful pollutants such as carbon monoxide (CO) and fine particulate matter that are detrimental to human health.

Step 2. Ask the participants:

What are the health consequences of the use of unclean fuels? What are the plausible disease-causing mechanisms of HAP?
Many trainees would answer that the health consequences of exposure to HAP are eye irritation, headache, cough and other minor ailments, and a small minority might even add COPD.

After appreciating the answers given by the trainees, ask the participants to list down the diseases that are causally linked with PM and CO, and further explain how PM and CO are postulated to be producing those diseases.

Step 3. Ask the participants the following:

What are the different substances burned in the house that could be sources of HAP?

Ask the participants to identify the cleaner fuels from among wood, dung, coal, kerosene, liquefied petroleum gas (LPG), electric and solar stoves.

Asking this question to the trainees is necessary for judging any a priori assumptions that they may have. Trainers can then explain why they are not considered to be clean fuels.

Summarize with the following message:

Some people, even when they understand that burning wood or animal dung is dirty, may think that coal, charcoal and kerosene have been processed in some way to clean them up. On the contrary, coal contains many impurities such as arsenic, fluoride, mercury, lead and selenium, which are not destroyed on combustion. Kerosene use can result in particulate levels that far exceed WHO air quality guidelines and is burned in a wide range of devices for lighting and heating. The presence of a wick in many devices causes a slower burn with dirtier smoke and release of toxins such as CO, and oxides of sulfur and nitrate. Household use of kerosene has also been associated with an increased incidence of burns and scalds, and accidental poisoning when ingested.

A range of solid fuel stoves can be used, with and without chimneys, some used in the open and some indoors. Not all stoves marketed as “improved” or “clean” actually deliver the improvements in emissions needed to protect health. Only LPG, electricity and solar energy are considered as clean fuels.

Step 4. Ask the participants:

How do we know that the air inside our home is polluted?

Summarize with the following message:

Many trainees would say that there is a lot of smoke inside the house if biomass fuel is being used for cooking or heating, and that is how one can appreciate that the air inside the home is polluted. However, the trainers can further explain about how PM and CO, which are present in the smoke, can be quantitatively measured.
Step 5. Ask the participants:

How much would you think the PM levels are inside the house when biomass fuel is used for cooking?

Summarize:

Show the WHO indoor air quality guideline and also the estimated exposure levels for family members who cook with biomass fuels.

Step 6. Ask the participants:

What can be done to prevent or minimize exposure to HAP?

Ask the trainees to come up with their own answers quickly. Some might say cooking outside (if the weather allows it) or making a vent to the biomass stove or increasing the ventilation inside the kitchen by having more windows or doors, etc. might help. Some might even say switching over to cleaner fuels like electricity or LPG would solve the problem.

Now, explain to them that completely switching to cleaner fuels is a good solution and it would be even better if everybody in that community switches to the use of cleaner fuel. (Show evidence as to why reducing exposure to 50% will not even work as far as human health is concerned.) However, explain to them why this is not possible in the near future as unless economic conditions improve many cannot afford cleaner fuels. However, in some countries, Government are aggressively promoting cleaner fuels through various schemes to protect the health of the citizens.

Step 7. Summarize the above discussion by presenting powerpoint slides containing on HAP.

Activity 2. Communicating the health risks of HAP: 20 minutes

Role-play one

Context: Two women are presenting at the primary health care facility with some respiratory symptoms.

Step 1. Ask participants to act in the role play as the above women. Request the first one to act as a woman who cooks with biomass and the second one as a woman who cooks with cleaner fuel (e.g. liquefied petroleum gas).

Step 2. Request another volunteer among the participants to communicate with clear and concise message regarding the health risks associated with cooking with biomass.
Role-play two

*Case of child presenting at the health centre*

*Context:* A baby girl of 2 years who has been brought by her mother to the PHC several times during the past 1 year for the treatment of ALRI.

**Step 1.** Ask for two volunteers; one to act as the patient's mother at the PHC and another as a primary health care worker, while the remaining participants observe the session. Ask the acting mother to pose as a person who cooks with biomass fuel in her household.

**Step 2.** Ask the health worker to tell the patient the possible health risks of HAP on her daughter's health and advise her to avoid HAP.

The possible contents of the message are given below:

Apart from giving general advice related to improving nutrition, personal hygiene and sanitation, health-care workers can assess the HAP at patients' homes by asking a simple question – what fuel is she using for cooking? If biomass fuel is being used, as in this case, the risk of ALRI can be effectively communicated subsequently.

The health-care worker could show comparative pollution levels in the house of the mother who cooks with biomass and the other mother who cooks with cleaner fuel. This can be done by showing two pictures, one of a smoke-filled house that uses biomass and a relatively smokeless house that uses cleaner fuel. Then communicate the risk for ALRI faced by the girl whose mother cooks with biomass compared to the other girl whose mother cooks with cleaner fuel.

The health-care worker can tell her that research has shown that the air quality levels inside her house are several fold higher than the WHO guideline and that the increased level of smoke is detrimental to the lungs, which probably predisposes her daughter to ALRI. The evidence for this comes from research studies done across LMICs. Finally, the health-care worker can discuss the options for moving to cleaner fuels or reducing HAP, such as improving ventilation to further reduce the chances of COPD for her.

Role-play three

*A woman with chronic cough*

*Context:* A woman aged 40 years has been visiting the PHC a few times during the past 6 months for the treatment of frequent cough. She uses firewood for cooking. The health-care worker suspects that she might develop COPD. The health-care worker wants to discuss the health risk for COPD.
Step 1. Ask for two volunteers, one to act as a patient at the PHC and another to act as a primary health care worker while the remaining participants observe the session. Ask the acting patient to pose as a person who cooks with biomass fuel in her household.

Step 2. Ask the health-care worker to tell the patient the possible impacts of HAP on her health and advise her to avoid HAP.

Facilitator’s explanatory notes

The health-care worker should show comparative pollution levels in the house of a woman who cooks with biomass and the other woman who cooks with cleaner fuel. This can be done by showing two pictures, a smoke-filled house where biomass is used and relatively a clear house where cleaner fuel is used. Then communicate the health risk for COPD to the woman who uses biomass as compared to the other woman who uses a cleaner fuel by the following method.

The health-care worker can tell her that research across LMICs has shown that the air quality levels inside her house are severalfold worse than the WHO guideline and that the increased level of smoke is detrimental to the lungs, which probably predisposes her to frequent cough that can lead to COPD. Finally, the health-care worker can discuss the options of switching to cleaner fuels or reducing HAP, such as by improving ventilation to further reduce her chances of developing COPD.

The facilitator may optionally use the following material to further increase her or his understanding on HAP risks associated with various diseases. The first table gives the expected PM2.5 exposure levels for different types of persons staying in a house when biomass is used for cooking. The table also shows the WHO indoor air quality guideline, which is the expected level of pollution that is not harmful to human beings.

The second table shows the relative risks of HAP for various diseases. Given the large number of people who still rely on biomass for cooking and heating, even a twofold increase in the risk for such diseases would mean a huge public health impact.

Table 1: Comparison between the expected PM2.5 exposures for families cooking with biomass fuel and the WHO indoor air quality annual mean for PM2.5

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean PM$_{2.5}$ (95% CI)</th>
<th>WHO IAQ Annual mean for PM$_{2.5}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children</td>
<td>285 µgm/m$^3$ (201, 405)</td>
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</tr>
<tr>
<td>Women</td>
<td>337 µgm/m$^3$ (238, 479)</td>
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</tr>
<tr>
<td>Men</td>
<td>204 µgm/m$^3$ (144, 290)</td>
<td></td>
</tr>
</tbody>
</table>

PM$_{2.5}$: particulate matter <2.5 microns in diameter; 95% CI: 95% confidence intervals; Women, resp. men, refer to adult women, resp. men aged ≥25 years. Children refer to children under 5 years. IAQ: indoor air quality

Source: Adapted from Burden of disease from household air pollution for 2012, WHO
Table 2: Expected relative risks for selected diseases for various family members when exposed to PM$_{2.5}$ due to cooking with biomass fuel

<table>
<thead>
<tr>
<th>Disease</th>
<th>RR (95% CI) women</th>
<th>RR (95% CI) men</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALRI</td>
<td>2.9 (2.0–3.8) for children</td>
<td></td>
</tr>
<tr>
<td>COPD</td>
<td>2.3 (1.7–3.1)</td>
<td>1.9 (1.2–3.1)</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>2.3 (1.5–2.8)</td>
<td>1.9 (1.4–2.3)</td>
</tr>
<tr>
<td>IHD</td>
<td>(1.4–2.2)</td>
<td>(1.4–2.2)</td>
</tr>
<tr>
<td>Stroke</td>
<td>(1.4–2.4)</td>
<td>(1.3–2.4)</td>
</tr>
</tbody>
</table>

PM$_{2.5}$: particulate matter <2.5 microns in diameter; 95% CI: 95% confidence intervals.
RR: Relative risks; CI: Confidence interval; ALRI: Acute lower respiratory disease; COPD: Chronic obstructive pulmonary disease; IHD: Ischaemic heart disease. Women, resp. men, refer to adult women, resp. men aged ≥25 years. Children refer to children under 5 years.

For stroke and IHD, there is an age-gradient for the relative risks, but presented here are the 95% confidence interval over their predicted values from the integrated exposure response functions over all ages.

Source: Adapted from Burden of disease from household air pollution for 2012, WHO.

**Activity 3. Community-level interventions to improve household air quality: 25 minutes**

**Step 1.** Divide the participants into convenient groups.

**Step 2.** Ask each group to discuss the following:

- Identify situations where fuels such as wood, animal dung and kerosene are typically used in a community – how frequently and the location
- Propose feasible options for the community to minimize exposure from harmful HAP.
- What are some of the sources of support available in the community for moving to cleaner fuels?
Step 2. Ask each group to make a quick summary of the discussions.

Facilitator’s explanatory notes

This could identify everyday use of biomass fuel during festivals, heating in winter, etc. – each situation could then be discussed to see how to minimize exposure.

Primary health care workers need to educate communities on the risk of poor household air quality and suggest options and advocate for switching from solid fuels to cleaner and efficient fuels and energy technologies such as LPG, electricity, solar and smokeless stoves.

Additional reading resources

2. WHO indoor air quality guidelines: household fuel combustion

Pre- and post-tests

Pre-test

(1) Humans have been using wood fire to cook food ever since they learnt to make fire artificially. Given that wood is a natural product, do you think the smoke coming from the wood when it is burnt does not cause harm to human health? Explain your answer.

(2) What do you think are the sources of household air pollution?

(3) What do you think are the key diseases associated with burning wood, animal dung or crop residues in the house as a source of energy?

Post-test

(1) Under what circumstances do you think household air pollution would contribute to the levels of outdoor air pollution? Explain.

(2) As a primary health care worker, what could be your role in improving household air quality?

(3) What do you think are the reasons for people not switching to cleaner fuels like LPG, electricity and solar? Please give reasons for your answers.

(4) Which are some of the stakeholders who could be approached for getting support to move towards the use of clean fuel?
Understanding the health impacts of household air pollution at the primary health care level

Activity 1: Step 7

What is air pollution?

- Natural versus anthropogenic
  - Natural – Volcanoes, forest fires
  - Man made – Anthropogenic – Industrial, Vehicular
- Outdoor versus indoor
  - Outdoor (or Ambient) air pollution – e.g. industrial, vehicular, burning of waste
  - Indoor air pollution – e.g. tobacco smoking by household members inside the house, smoke coming out of cook stoves,
  - Household air pollution is also a part of indoor air pollution. However, it specifically refers to air pollution inside the house due only to household activities like cooking, heating and lighting etc.
Understanding the health impacts of household air pollution at the primary health care level

Outdoor air pollution

Household air pollution

- Till recent times, the pollution from household sources have not been given the attention that it warranted
- Till 150 years ago the entire world used solid fuels for cooking and heating (biomass and coal)
- In South-East Asia, in 2016 60% of the population are still reliant on use of polluting fuels for cooking purposes.

Household air pollution definition

- **Household air pollution (HAP)**
  - Air pollution due to household cooking

- **Key pollutants**
  - Particulate matter (PM$_{2.5}$ or PM$_{1.5}$)
  - Carbon monoxide (CO)
Particulate matter (PM)

- PM affects more people than any other pollutant.
- It is a complex mixture. The major components of PM are:
  - Sulfates, nitrates, ammonia, sodium chloride, black carbon, mineral dust and water.
- It consists of a complex mixture of solid and liquid particles of organic and inorganic substances suspended in the air.
- Vary in size (10 µg/m³ or 2.5 µg/m³), composition, and origin.

Particulate matter size


PM – size matters

- PM$_{10}$: Coarse particles (2.5–10 micrometres) deposited in the upper respiratory tract and large airways
- PM$_{2.5}$: Fine particles (< 2.5 micrometres) may reach terminal bronchioles and alveoli

Source: http://www.environment-assured.com/pm25/
Household air pollution and health

- Around 3 billion people around the world still cook with unclean fuels and technologies.
- Each year close to 4 million people die prematurely from illness attributable to HAP.
- Close to half the premature deaths due to pneumonia among children <5 years are caused by the PM inhaled from HAP.
- HAP contributes significantly to non-communicable disease burdens including stroke, ischaemic heart disease, COPD and lung cancer.
- Fuel gathering consumes considerable time for women and children and takes away children from educational activities.


Global burden of disease due to HAP 2016

Household air pollution is the world’s leading environmental health risk.

- Ischaemic heart disease, Pneumonia, Chronic obstructive pulmonary disease, Stroke and Lung cancer contribute the biggest burdens.

- Evidence of links between HAP and low birth weight, tuberculosis, cataract, nasopharyngeal and laryngeal cancer are also significant.

Without a substantial policy change, the total number of persons lacking access to clean fuels and technologies will remain largely unchanged to 2030.


Deaths per capita attributable to HAP in 2016, by region

HAP: Household air pollution; Afr: Africa; Amr: America; Emr: Eastern Mediterranean; Eur: Europe; Sas: South-East Asia; Wpr: Western Pacific; LMIC: Low and middle-income; HIC: High-income.

Source: Burden of Disease from household air pollution for 2016. 19 April 2018, World Health Organization.
Understanding the health impacts of household air pollution at the primary health care level

Access to clean household energy for countries in the WHO South-East Asia Region (2016)

Biologically plausible mechanisms of PM

- Oxidative stress and inflammation – infiltration of PM2.5 deep into the lung
- Endothelial dysfunction – vasoconstriction
- PAHs present in PM can induce DNA damage and mutagenic effects – neoplasms – lung cancer
- Hemodynamic changes - changes in blood pressure, heart rate and rhythm.

Carbon monoxide (CO)

- CO has a greater binding affinity than oxygen
- When CO is inhaled it replaces O₂ in the blood by displacing O₂ and forms carboxyhaemoglobin (COHb)
- CO also binds with myoglobin in muscle tissue.
- High levels of carboxyhaemoglobin/myoglobin cause poor oxygenation of cells/tissues (tissue hypoxia)
- Short term health effects - headache, dizziness, vomiting, and nausea.
- High levels cause unconsciousness and death
- Long term exposure to moderate and high levels of CO has been linked with increased risk of heart disease.
Understanding the health impacts of household air pollution at the primary health care level

Assessing exposures from household air pollution

Sources: [http://islandbreath.blogspot.com](http://islandbreath.blogspot.com); [http://www.who.int](http://www.who.int)

Some different household cooking fuels and technologies

Opportunities for measuring exposure to HAP

http://www.who.int/indoorair/interventions/antiguamod22.pdf
Understanding the health impacts of household air pollution at the primary health care level

Different techniques used for measuring exposures to HAP

Expected PM$_{2.5}$ exposures for families cooking with biomass fuel and the WHO indoor air quality annual mean for PM$_{2.5}$

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PM$_{2.5}$ - Particulate matter ≤ 2.5 microns in diameter; 95% CI - 95% confidence intervals; IAQ: Indoor air quality

Levels of exposure reduction needed to bring about health benefits

Understanding the health impacts of *household air pollution* at the primary health care level
Understanding the health impacts of *household air pollution* at the primary health care level

### Critical role of health professionals

- Be informed about HAP  
- Recognize HAP exposures and relation to health conditions  
- Research and publish  
- Prescribe solutions, educate families and communities  
- Educate colleagues and students  
- Advocate to policy and decision-makers.

### Interventions to reduce HAP

- **Switch to alternative fuels**  
  - Liquid petroleum gas (LPG), Biogas, Electricity, Solar power  
- **Avoid the use of kerosene**  
- **Ensure proper ventilation** during cooking. Eaves spaces and extraction through smoke hoods, opening windows & doors will be a partial help  
- **Keep children away** from smoking hearths.  
- **Keep pregnant women away** from smoking hearths  
- **Encourage interventions by communities and local agencies**  
  - Resources and information regarding relevant government and non-profit programmes to help reduce exposure and provide clean fuels  
  - NGOs to advocate on the benefits moving away from dirty fuels  
  - Assistance to family members to stop tobacco smoking to reduce additional household exposures.
Module 3.1*

Prevention and management of **cardiovascular diseases**
in **primary health care**

*This module will be updated when the risk (R) module of the HEARTS Technical Package is finalized.*
WHAT’S INSIDE

- Introduction
- Learning outcomes
- Topics covered
- Competency
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- Background information
INTRODUCTION

A large proportion of people with high cardiovascular risk remains undiagnosed. Those diagnosed have insufficient access to treatment. When a diagnosis is made, it is frequently at a late stage of the disease, when people become symptomatic and are admitted to hospitals with acute myocardial infarction, stroke or other complications, and when costly high-technology interventions are required for treatment. Improved access to effective interventions at the primary health care level will have the greatest impact on halting and reversing the progression of the disease and preventing complications such as heart attack, stroke, kidney disease, heart failure, amputation and blindness. This module has been prepared for primary health care workers to assess the 10-year risk of cardiovascular diseases (CVDs) through the WHO/International Society of Hypertension (ISH) risk chart, and improve early diagnosis, management and appropriate/timely referral of patient with CVDs.

LEARNING OUTCOMES

At the end of the session, participants will be able to do the following:

- Explain the basic pathophysiology and symptoms of CVDs (coronary heart disease and stroke).
- Explain the rationale and apply the WHO/ISH risk chart for patient management.
- Describe the basic principles of management of CVDs at the primary health care level and ensure timely referral to a higher centre.

TOPICS COVERED

- Concept, rationale and goal of cardiovascular risk assessment.
- WHO/ISH risk chart and risk score for patient management.
- Criteria for conducting CVD risk assessment.
- Limitation of CVD risk assessment.
- Pathophysiology and risk factors of CVDs.
- Types of CVDs (coronary heart disease [CHD], cerebrovascular disease, peripheral vascular disease).
- Approach to the assessment of chest pain at the primary health care level.

COMPETENCY

Ability to calculate CVD risk and interpret the meaning of 10-year CVD risk.
TEACHING AND LEARNING ACTIVITIES

Total session time: 120 minutes

Activity 1. Basics of common CVDs: 15 minutes

Step 1. Ask participants the following questions and write the responses on a flipchart/whiteboard.

- Coronary heart disease
- Stroke and transient ischaemic attack (TIA)
- Hypertension.

Step 2. Present the powerpoint slides with the following contents.

- Basic pathophysiology
- Types of common CVDs
- Other CVDs.

Activity 2. Concept, rationale and goal of cardiovascular risk assessment: 15 minutes

Step 1. Ask the participants:

- to list the main risk factors for CVD
- to describe the primary interventions to reduce CVD risk.

Step 2. Present the powerpoint slides with the following contents.

- Importance of CVD risk assessment and early detection
- Concept, rationale and goal of cardiovascular risk assessment.

Activity 3. WHO/ISH CVD risk charts: 20 minutes

Step 1. Refer to the workbook and discuss the following case.

You have two patients in the clinic on a Monday afternoon, with enough resources to treat only one patient with medications. Which of these patients do you treat first and why?
**Risk-based management: case study**

<table>
<thead>
<tr>
<th>Ms Bao</th>
<th>Mr Kamao</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 years old</td>
<td>50 years old</td>
</tr>
<tr>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>Non-smoker</td>
<td>Smoker</td>
</tr>
<tr>
<td>Not diabetic</td>
<td>Not diabetic</td>
</tr>
<tr>
<td>Systolic BP = 159mmHg</td>
<td>Systolic BP = 138mmHg</td>
</tr>
<tr>
<td>Total Cholesterol = 4mmol/L</td>
<td>Total Cholesterol = 7mmol/L</td>
</tr>
</tbody>
</table>

**Step 2.** Ask the participants to identify the similarities and dissimilarities, and ask them which patient they would want to treat and why.

*Key points:* Patients at higher risk should get treatment first. To evaluate risk appropriately, there is a need to consider all risk factors. For Ms Bao, the single risk factor is elevated BP. For Mr Kamao, multiple risk factors include male gender, smoking, high systolic BP and high cholesterol.

**Step 3.** Tell them look at the WHO/ISH prediction charts.

**Step 4.** Calculate the risk score.

**Step 5.** Discuss the answer using the risk chart.

**Step 6.** Summarize the session.
Figure 1: WHO/ISH risk prediction chart for SEAR D. 10-year risk of a fatal or non-fatal cardiovascular event by gender, age, systolic blood pressure, total blood cholesterol, smoking status and presence or absence of diabetes mellitus.

This chart can only be used for countries of the WHO Region of South-East Asia, sub-region D, in settings where blood cholesterol can be measured (see Table 1).
Activity 4. Using a risk-based approach to CVD management: 30 minutes

Step 1. Divide participants into convenient groups.

Step 2. Ask groups to work on the following case studies in the workbook and assess:

(i) the CVD risk;

(ii) provide a treatment plan.

Case 1. A 50-year-old female, non-smoker, non-diabetic with a systolic BP (SBP) of 170 mmHg and total blood cholesterol 6.5 mmol/L visits the clinic. Risk prediction (10-year risk of fatal or non-fatal cardiovascular events) is 20–<30%.

Case 2. A 62-year-old male, a smoker and diabetic, visits the clinic. His recent fasting blood sugar value is 180 mg/dL and cholesterol is 7 mmol/L. His blood pressure is 160/88 mmHg.

Case 3. A 65-year-old male, smoker, without diabetes but with an SBP of 160 mmHg and total blood cholesterol of 7.5 mmol/L comes to the clinic.

Case 4. A 55-year-old female, non-smoker and diabetic, comes to the clinic. Her recent fasting blood sugar is 200 mg/dL and cholesterol is 8 mmol/L. Her blood pressure is 150/88 mmHg.

Step 3. Invite volunteers from each group to present the cases and discuss with the whole group.

Activity 5. Patient communication on the basics of CVDs: 15 minutes

Step 1. Invite two participants, one will role-play as a patient and other one as a health-care provider.

Step 2. The patient will ask questions as described in the exercises below and the health-care provider is expected to answer the patient correctly in simple language.

Exercise 1: Knowledge of the cardiovascular system (CVS)

A patient has asked you to explain why the heart is referred to as a pump. In your own words, please describe the structure and function of the different components of the CVS such as blood, blood vessels and the heart itself. Be sure to explain how blood flows through the various chambers of the heart and through the rest of the body.
The heart has four chambers (two atria and two ventricles). The atria receive incoming blood from the body (right atrium) and lungs (left atrium). Blood then travels actively and passively to the ventricles (more muscular chambers) that pump blood to the lungs (right) and body (left).

- The right side of the heart receives deoxygenated blood from the body (via two veins – the inferior vena cava and superior vena cava) and pumps the blood to the lungs via the pulmonary arteries.
- The left side of the heart receives oxygenated blood from the lungs via the pulmonary veins and pumps to the rest of the body via the aorta.

Exercise 2: Knowledge of CVD

Some patients may think that CVD is present only when someone has a heart attack. Please provide a short description of the different types of CVD such as acute coronary syndrome, angina and congestive heart failure (CHF), and some of the common signs and symptoms of these diseases. Try to keep your explanation to the level of a patient and simplify scientific concepts.

- CVD may be present long before a patient has a heart attack. This is because the build-up of plaque in the arteries supplying the heart occurs over time due to risk factors.
- Angina and heart attack (myocardial infarction) are clinical manifestations of coronary heart disease (CHD). Stroke, CHF and peripheral vascular disease (PVD) are other manifestations of atherosclerotic disease.
- Some common signs and symptoms of CVDs are chest pain, shortness of breath, fatigue and leg pain due to poor blood supply to the limbs.

Exercise 3: Atherosclerosis as the underlying pathology of CVDs

Patients need to understand that the immediate cause of heart attack and stroke is accumulation of plaque within the vessel walls over a prolonged period of time. Explain to the patient in a simple and clear manner how atherosclerosis leads to CVD. Make sure that you describe the development of atherosclerosis and how it causes CVD.

- Atherosclerosis is a condition that affects the arteries and leads to plaque formation. Plaque is made up of cholesterol deposits and other processes, with inflammation playing an important role.
- Acute coronary syndrome (heart attack) and acute stroke are usually due to rupture of plaque, which leads to thrombosis, with partial or complete obstruction of the artery.
**Activity 6. History-taking related to CVD, stroke and kidney disease: 15 minutes**

Step 1. Ask participants to work in pairs and take the patient’s history related to CVD, stroke and kidney disease using the questionnaire below.

**Questionnaire to investigate probable angina/heart attack, stroke/TIA, diabetes and hypertension**

**Angina or heart attack**

1. Have you ever had any pain or discomfort or any pressure or heaviness in your chest?
2. If so, do you get the pain in the centre or left side of the chest or left arm? Or do you get sudden epigastric pain or shortness of breath? If no, no need to ask the next 5 questions; if yes, proceed to the next question.

Ask the following questions:

3. Do you get it when you walk at an ordinary pace on level ground or when you walk uphill or hurry?
4. Do you slow down if you get the pain while walking?
5. Does the pain go away if you stand still or if you take a tablet under the tongue?
6. Does the pain go away in less than 10 minutes?
7. Have you ever had severe chest pain across the front of your chest lasting for half an hour or more?
If the answer to questions 3 or 4 or 5 or 6 or 7 is yes, the patient may have angina or may have had a heart attack and needs referral.

**Stroke and TIA**

8. Have you ever had any of the following: difficulty in talking, weakness of the arm and/or leg on one side of the body or numbness on one side of the body?

   - [ ] Yes
   - [ ] No

If the answer to question 8 is yes, the patient may have had a stroke or TIA and needs referral

**Diabetes**

Diabetes (high level of blood sugar) is not a CVD but it increases the risk of developing heart attack and stroke. For this reason, a patient with diabetes is at high risk. It is mandatory to ask ALL patients if they have been diagnosed as having diabetes.

9. Has your doctor ever told you that your level of blood sugar is high? Are you taking any medication for diabetes?

If the answer to question 9 is yes, the patient may have diabetes and needs further evaluation and management.

**Hypertension**

10. Do you have high blood pressure? Are you taking medications?

If the answer to question 10 is yes and the blood pressure is elevated, the patient needs further evaluation and management.

### Current history

- Ask the reason for today’s visit.
- Ask specifically about:
  - Chest pain/tightness
  - Breathlessness
  - Palpitations
  - Headache; dizziness; vision problems
  - Difficulty in talking
  - Weakness of an arm and/or a leg
  - Numbness on one side of the body
  - Swelling of the feet and lower legs
  - Swelling of the face; puffiness of the eyes
  - Increased thirst; increased urination/nocturia
  - Unexplained loss of weight
  - Cough
  - Fever
  - Sexual problems
  - Women: currently pregnant or breastfeeding
- Ask if there are any other issues the patient would like to discuss.
- Have you had any pain or discomfort or any pressure or heaviness in your chest?
- Do you get the pain in the centre or left side of the chest or left arm?
- Do you get it when you walk uphill or hurry?
- Do you slow down if you get the pain while walking?
- Does the pain go away if you stand still or if you take a tablet under the tongue?
- Does the pain go away in less than 10 minutes?
- Have you ever had severe chest pain across the front of your chest lasting for 30 minutes or more?
### Previous medical history
- Heart attack/angina/other heart diseases
- Stroke/TIA
- Kidney disease
- Other illnesses (specifically, conditions that can affect control of diabetes mellitus and hypertension, e.g. TB, HIV)
- Hospitalizations
- Episodes needing urgent medical care
- Allergies
- Diabetes

### Family history
Parent, brother or sister with premature* cardiovascular disease (heart attack, stroke, angina, TIA), diabetes or kidney disease  *Occurring before 55 years in males and 65 years in females

### Medicines
- Current medications (all medications, including over-the-counter/herbal/traditional remedies/recreational drugs)
- Adherence to medications
- Side-effects

### Risk factors (questions to be adapted to the local context)
#### Tobacco
- Have you used tobacco during the past 12 months
- Were you regularly exposed to secondhand tobacco smoke in the past 12 months?

#### Alcohol
- Did you drink any alcohol in the past 30 days? If yes, how often and how many units per day?

#### Diet
- Do you eat at least 5 servings of fruit and vegetables (excluding starchy root crops) daily? (1 serving = ½ cup cooked vegetables or 1 cup raw vegetables; one orange, apple, banana, mango)
- Do you eat red meat, fried foods, canned or other processed foods on most days?
- Do you eat fish at least 3 times per week?
- Do you have sugary drinks (soda, juice, sweetened milk) on most days?

#### Physical activity
- Do you do physical activity of moderate intensity for at least 30 minutes per day on 5 days of the week or for 2.5 hours per week?
- Do you spend more than 5 hours sitting down every day?
1. **A risk of 20–<30% means which of the following?**

   (a) Level of risk low
   (b) Level of risk moderate
   (c) Level of risk high
   (d) Level of risk very high

2. **When do the coronary arteries primarily receive blood flow?**

   (a) During inspiration
   (b) During diastole
   (c) During expiration
   (d) During systole

3. **Which of the following ages is indicated to assess for CVD risk in primary health care?**

   (a) Any patient above 18 years of age
   (b) Any patient above 30 years of age
   (c) Any patient above 40 years of age
   (d) Any patient above 50 years of age

4. **Which of the following conditions most commonly results in CAD?**

   (a) Atherosclerosis
   (b) Diabetes mellitus
   (c) Myocardial infarction
   (d) Renal failure

5. **Atherosclerosis impedes coronary blood flow by which of the following mechanisms?**

   (a) Plaques obstruct the vein
   (b) Plaques obstruct the artery
   (c) Blood clots form outside the vessel wall
   (d) Hardened vessels dilate to allow the blood to flow through
6. **Which of the following risk factors for coronary artery disease cannot be corrected?**

   (a) Cigarette smoking  
   (b) Diabetes mellitus  
   (c) Heredity  
   (d) Hypertension

7. **The condition where plaque builds up in the arteries of your body is called:**

   (a) Hypotension  
   (b) Hypertension  
   (c) Valvular stenosis  
   (d) Atherosclerosis

8. **Modifiable risk factors that increase the risk of acute myocardial infarction include all of the following, except:**

   (a) Hypertension  
   (b) Smoking  
   (c) Food allergies  
   (d) Lack of physical activity

9. **Symptoms of heart attack can include:**

   (a) Pressure in the chest  
   (b) Dizziness, arm pain  
   (c) Palpitations, shortness of breath  
   (d) All of the above

10. **Female, 52 years old, presented to your centre with chest pain. What is your provisional diagnosis, further evaluation and management?**

11. **Male, 48 years old, known hypertensive, presented to your centre with difficulty in speaking. What is your provisional diagnosis, further evaluation and management?**
Frequently asked questions on use of country-specific WHO CVD risk charts

1. **What are CVD risk prediction charts?**

   The risk of an individual having a heart attack or a stroke depends on risk factors such as age, sex, smoking status and levels of blood pressure, blood cholesterol and blood glucose. The risk prediction charts provide a simple way of calculating the approximate combined risk due to all these risk factors. It is expressed as a 10-year risk of developing a heart attack or stroke.

2. **How were the WHO CVD risk prediction charts developed?**

   The charts were developed by developing country-specific risk equations based on the average risk factor profile (average rates of blood pressure, blood cholesterol etc.) and rates of cardiovascular events (average rates of heart attacks and strokes) in the population. The risks of non-fatal and fatal heart attack and non-fatal and fatal stroke were modelled and combined to predict individual risk.

3. **How can these charts be used to improve the effectiveness of CVD risk management?**

   Using these risk prediction charts, an individual can be classified as being at high, intermediate or low risk for heart attack or stroke in the following 10 years. If an individual has high CVD risk, the guidelines recommend more intensive counselling and treatment, often including medications. This is because it is urgent to lower the individual’s risk in order to prevent a heart attack or stroke. On the other hand, if risk is low, interventions may be less intensive, such as general counselling for healthy lifestyle.

4. **Why were the charts updated?**

   Data on risk factor prevalence and cardiovascular mortality changes over time. Thus, if the charts are not updated, they may no longer reflect a country’s current risk status. Furthermore, given the country-to-country variation within each of the 14 WHO epidemiological sub-regions on the previous set of charts used, country-specific rather than regional charts were developed in the update in order to increase accuracy.

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1 HEARTS: Technical package for cardiovascular disease management in primary health care
5. **How will these guidelines and charts help low- and middle-income countries in particular?**

The main problem in low- and middle-income countries is the shortage of health care resources. Nonetheless, even with limited resources, effective action can be taken to prevent heart attacks and strokes if resources are used for population-wide, cost-effective interventions, targeting those who are in imminent danger of heart attack or stroke.

6. **Why is treating risk factors such as raised blood pressure and blood lipids cost effective for low- and middle-income countries but only if interventions target high-risk individuals?**

Currently, individuals are often treated based on the presence or absence of a single CVD risk factor such as high blood pressure or high blood lipids. This approach works when these risk factors are markedly elevated. Otherwise, although the approach appears simple, it can result in committing a patient with only a small CVD risk to many years of drug therapy or, conversely, neglecting to treat those with an overall higher risk. Further, the single risk factor approach does not take into account the continuous relationship between blood pressure, blood glucose, blood cholesterol and CVD risk.

The single risk factor approach is not cost effective or affordable for many low- and middle-income countries, and patients from lower socioeconomic categories. For example, in a hypothetical population of 1 billion (about 500 million adults) with a 20% prevalence of hypertension, about 100 million people will require treatment. If the annual cost of providing treatment is a modest US$ 20 per person per year, about US$ 2 billion will be required annually to provide medicines for hypertension alone. In reality, the prevalence of hypertension as well as the cost of drugs to treat it is often even higher.

7. **What are the limitations of these charts?**

Due to paucity of data, estimates from several cohort studies have been used to determine CVD incidence and mortality. Thus it is possible that in some areas, CVD risk may be over- or underestimated.

8. **Are the alternative BMI charts only for use when cholesterol cannot be measured?**

The alternative BMI charts are meant to be used only in settings where assay of cholesterol is not possible. These charts are less accurate than those used when information about a patient’s cholesterol is available. Nonetheless, they provide an option for classifying a patient based on their risk of having a heart attack or stroke. The charts can be used as a screening tool for identifying individuals who require further investigations.
9. **If the charts are not perfect, is it safe to use them?**

While the charts are not perfect because of the paucity (quantity and quality) of data available, they are safe to use for the purpose of broad risk stratification that will guide risk management.

10. **When can treatment decisions be made without the charts?**

These charts may underestimate the risk in certain patients such as those with:

- persistently raised blood pressure $\geq 160/100$ mmHg; or
- blood cholesterol $\geq 8$ mmol/l; or
- established ischemic heart disease; or
- diabetes with renal disease.

All patients in these categories need intensive lifestyle interventions and appropriate drug therapy. They do not need risk stratification using charts for treatment decisions.

11. **What are WHO’s recommendations for individuals who want to decrease their risk of CVD?**

Stop tobacco use. Maintain a healthy body weight through daily physical activity and a healthy diet, including a regular intake of fruits and vegetables. Maintain healthy blood pressure, blood glucose and blood cholesterol levels according to medical advice. If medicines have been recommended, take them as prescribed by a health-care worker.

**Additional reading resources**

Prevention and management of cardiovascular diseases in primary health care

Activity 1: Step 2

Blood supply to heart and brain

Coronary arteries

Cerebral arteries
Atherosclerosis - underlying process of CVDs

Risk factors for CVDs

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>Risk factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metabolic risk factors</td>
<td>High blood pressure</td>
</tr>
<tr>
<td>(Down stream)</td>
<td>High blood cholesterol</td>
</tr>
<tr>
<td></td>
<td>Heart disease</td>
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<tr>
<td></td>
<td>Diabetes or high level of sugar in blood</td>
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<td></td>
<td>Overweight and obesity</td>
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<tr>
<td></td>
<td>Previous history of heart attack or stroke</td>
</tr>
<tr>
<td>Behavioural risk factors</td>
<td>Smoking</td>
</tr>
<tr>
<td></td>
<td>Heavy alcohol consumption</td>
</tr>
<tr>
<td></td>
<td>Unhealthy diet</td>
</tr>
<tr>
<td></td>
<td>Physical inactivity</td>
</tr>
<tr>
<td>Age and sex, family history</td>
<td>The risk of heart disease increases for men after age 45 and for women after age 55 (or after menopause)</td>
</tr>
<tr>
<td></td>
<td>The risk of stroke increases with age and males are at higher risk compared to females.</td>
</tr>
</tbody>
</table>

Cardiovascular diseases

**CVDs due to atherosclerosis**
- Ischaemic heart disease or coronary artery disease
- Cerebrovascular disease (e.g. stroke)
- Diseases of the aorta and arteries, including hypertension
- Peripheral vascular disease (PVD)

**Other CVDs**
- Heart failure
- Congenital heart disease
- Rheumatic heart disease
- Cardiomyopathies (diseases of the heart muscle)
- Cardiac arrhythmias.
Activity 2: Step 2

Rationale of cardiovascular risk assessment

- Risk-based treatment involves identification of those at high risk from combination of multiple risk factors.
- CVD risk assessment helps to:
  - Identify individuals at high risk that can benefit from intensive primary prevention efforts (counselling and drug therapy).
  - Motivate such individuals to comply with treatment
  - Goal is to decrease events in high-risk individuals through appropriate management

Multiple risk factors

Risk Factors CO-EXIST & cumulative effects of multiple factors may be SYNERGISTIC.
Prevention and management of 
cardiovascular diseases
in primary health care

Why is risk based management important?

Risk-based management goals and objectives
Goal:
Prevent first or recurrent heart attacks and strokes in people with CVD risk factors
Sub-goals:
• Reduce individual cardiovascular risk level
• Prevent or slow the progression of target organ damage
• Minimize complications

Risk based management objectives
• Quit tobacco use or do not start the habit
• Reduce alcohol consumption to less than 4 units per day
• Achieve physical activity level of at least 150 minutes per week or 30 minutes on 5 days per week (through leisure activities, daily tasks or work-related activity)
• Maintain health BMI and waist circumference or reduce to healthier level
• Control blood pressure
• Control blood glucose
• Lower total blood cholesterol and LDL cholesterol
• Take antiplatelet therapy if necessary
How to estimate CVD risk

- A 10-year CVD risk is defined according to:
  - Age
  - Sex
  - Smoking status (current smokers OR those who quit smoking less than 1 year before the assessment)
  - Blood pressure (*measured*)
  - Total cholesterol (*measured*)
  - Diabetes status (previously diagnosed OR a fasting plasma glucose concentration >7.0 mmol/l (126 mg/dl))
  - History of CVD (heart attack, chest pain from heart disease or stroke)

- Using WHO/ISH risk prediction chart

How do you use the charts to assess cardiovascular risk?

- Before applying the chart to estimate the 10-year cardiovascular risk of an individual, the following information is necessary:
  - Presence or absence of diabetes
  - Gender
  - Smoker or non-smoker
  - Age
  - Systolic blood pressure
  - Total blood cholesterol (if in mg/dl divide by 38 to convert to mmol/l)

Risk levels

- The colour of the cell indicates the 10-year risk of combined myocardial infarction and stroke risk (fatal and non-fatal) as shown below.

- 10-year combined myocardial infarction and stroke risk (fatal and non-fatal)
  - Green <10%
  - Yellow 10% to <20%
  - Orange 20% to <30%
  - Red 30% to <40%
  - Deep Red >40%

Prevention and management of cardiovascular diseases in primary health care
Conditions in which CVD risk may be higher than indicated by the charts

- already on antihypertensive therapy
- premature menopause
- approaching the next age category or systolic blood pressure category
- obesity (including central obesity)
- sedentary lifestyle
- family history of premature coronary heart disease (CHD) or stroke in first degree
- relative (male < 55 years, female < 65 years)
- raised triglyceride level (>2.0 mmol/l or 180 mg/dl)
- low HDL (high density lipoprotein) cholesterol level (<1 mmol/l or 40 mg/dl in males, <1.3 mmol/l or 50 mg/dl in females)
- raised levels of C-reactive protein, fibrinogen, homocysteine, apolipoprotein B or Lip(a), or fasting glycaemia, or impaired glucose tolerance
- microalbuminuria (increases the 5-year risk of diabetes by about 5%) (36, 83, 85)
- raised pulse rate
- socioeconomic deprivation.
Module 3.2

Management of hypertension at primary health care
WHAT’S INSIDE

Introduction
Learning outcomes
Topics covered
Competency
Teaching and learning activities
Background information
INTRODUCTION

Worldwide, every year, hypertension accounts for 9.4 million deaths out of 17 million cardiovascular deaths. It is also responsible for at least 45% of deaths due to heart disease and 51% of deaths due to stroke. Despite this, detection of hypertension and evidence-based treatment is suboptimal and further, only a minority of patients reach their target levels of hypertension in the South-East Asia Region. This module is prepared to support primary health care workers for early diagnosis management and ensuring appropriate/timely referral of patients with hypertension.

LEARNING OUTCOMES

At the end of the session, participants will be able to do the following:

- Define hypertension and describe the basic pathophysiology, signs and symptoms of hypertension.
- Describe screening, cardiovascular disease (CVD) risk assessment and management of hypertension.
- Use evidence-based guidelines for case management and referral.

TOPICS COVERED

- Pathophysiology, risk factors, diagnosis, signs and symptoms.
- Classification of hypertension and hypertensive emergencies.
- Evidence-based guidelines for the management of hypertension and its complications.
- Patient communication and education for self-care in hypertension.

COMPETENCY

Ability to screen, diagnose and manage patients with hypertension using evidence-based guidelines.
TEACHING AND LEARNING ACTIVITIES

Total session time: 120 minutes

Activity 1. Understanding hypertension: 15 minutes

Step 1. Ask participants to briefly respond to the following questions. Write the responses on a flipchart/whiteboard:

- What is hypertension, its classification and pathophysiology?
- What are the risk factors, signs and symptoms, and complications?
- What can they do to prevent and manage hypertension?

Step 2. Present the powerpoint slides with the following contents:

- Pathophysiology
- Diagnostic criteria
- Sign and symptoms
- Complications and target organ damage.

Activity 2. Measuring blood pressure: 15 minutes

Step 1. Provide an instrument for measuring the blood pressure (BP) and ask participants to measure and document each other’s BP.

Step 2. Observe the measurement process for correctness and review the correct way of measuring the BP.

Step 3. Ask the participants to re-measure each other’s BP following the correct method strictly.

Note. Observe trainees practise and verify, and reflect whether the trainees are measuring the BP correctly.

Step 4. Discuss the difficulties in correctly measuring BP and ways to overcome them.
MEASURING THE BLOOD PRESSURE
Measuring the BP is a key part of assessing total CVD risk and determining treatment for high BP, as necessary.

Materials needed
(1) Stethoscope
(2) Digital blood pressure cuff (sphygmomanometer)

Steps
(1) Position the patient: sitting posture
(2) Follow the steps below, select an appropriate size and apply the cuff:
   - Remove or roll up clothing on the arm (make sure rolled up clothing is not tight).
   - Place the left or right arm of the patient on the table with the palm facing upward.
   - Use a universal cuff, or select the appropriate cuff size for the participant using the following table:

<table>
<thead>
<tr>
<th>Arm circumference (cm)</th>
<th>Cuff size</th>
</tr>
</thead>
<tbody>
<tr>
<td>17–22</td>
<td>Small (S)</td>
</tr>
<tr>
<td>22–32</td>
<td>Medium (M)</td>
</tr>
<tr>
<td>&gt;32</td>
<td>Large (L)</td>
</tr>
</tbody>
</table>

Position the cuff above the elbow so that the lower band is positioned 1–2 cm above the elbow.
   - Wrap the cuff snugly on the arm and securely fasten.
   - Keep the cuff at heart level during measurement.

Procedure for cuff
Follow the steps below or refer to the operating instructions included with the device to measure the BP of the patient.

(1) Apply the cuff (as described above).
(2) Put the stethoscope earpieces in the ear and set the chest piece of the stethoscope to the bell.
(3) Palpate the pulse at either brachial or radial artery. Take a pulse count for one full minute.
(4) Pump up the pressure and inflate the cuff until unable to feel the pulse.
(5) Continue to inflate the cuff 30 mmHg beyond this point.
(6) Apply the bell of the stethoscope to the right antecubital fossa.
(7) Listen for pulse sounds while deflating the cuff slowly.
(8) Record the systolic blood pressure (SBP) when a pulse is first audible.
(9) Record the diastolic blood pressure (DBP) when the pulse sound disappears.
(10) Deflate the cuff fully and let the arm rest for 2 minutes (between each reading).
(11) To obtain two readings, repeat steps 2–10.
Using a digital blood pressure monitor

In some primary health care centres, there may be a digital BP monitor for use. Follow the instructions below to take the BP measurement with a digital BP monitor:

- Switch the monitor on.
- The monitor will start measuring when it detects the pulse. The systolic and diastolic BP readings should be displayed within a few moments (systolic above and diastolic below).
- Switch the monitor off, but leave the cuff in place.
- Wait for 3 minutes, and then repeat above steps twice more.

Diagnosing high blood pressure

It is very important that you learn to measure the BP correctly. A difference of a few points will determine whether you are making a correct diagnosis or not.

Most people with raised BP have no symptoms. Raised BP is diagnosed if there are two raised readings at least 1 week apart with:

- SBP ≥140 mmHg and/or
- DBP ≥90 mmHg.

If only systolic or diastolic BP is raised, manage according to the higher number.

If the BP is greater than 140/90 mmHg, you may be required to initiate treatment for high BP, depending on the level of risk.

Activity 3. General management of hypertension: 15 minutes

Step 1. Ask participants the following questions and write the responses on a flipchart/whiteboard:

- What are your experiences and routine practices with BP monitoring and management of hypertension?
- Do you use any guidelines for hypertension management; if yes, which one?
- When do you refer a hypertensive patient to a higher level of care?
- What are the common obstacles to hypertension management in your clinic?
- What kind of support can help to overcome those obstacles?

Step 2. Discuss the evidence-based guidelines provided in the workbook. How have the protocols been adopted for your countries. Make sure to discuss the initiation dose, intensification dose and change or addition of drug classes’ concepts.
Activity 4. Case management of hypertension: 60 minutes

Step 1. Divide the participants into convenient groups. Assign few cases given below to each group.

Step 2. Ask the participants to refer to the workbook for the evidence-based guidelines and case scenarios and develop a hypertension management plan, including lifestyle modification and self-care advice.

Case 1. A 45-year-old man comes to the clinic for screening. He is a smoker, with no known history of hypertension or diabetes. His BP measured for the first time is 145/80 mmHg.

Q 1. Is he hypertensive?

Q 2. What is your next management plan?

Answers

A 1. No

- Need to recheck BP after 5 minutes of resting.
- Need 2 visits 1–4 weeks apart to confirm hypertension.

A 2. At the moment, one-time BP measurement is not an indication for treatment.

If second-time BP measurement >140/90 mmHg, you can start antihypertensive medication.

- Ask about smoking and his perception of smoking and willingness to quit smoking.
- Other risks can be assessed, such as the waist circumference and body mass index (BMI).

Case 2. A 50-year-old man comes to the clinic for screening. He is a smoker, with no known history of hypertension or diabetes.

BP- 145/90 mmHg (first-time measurement)

BP- 150/90 mmHg (second-time measurement)

Q 1. Is he hypertensive?

Q 2. What is your next management plan?

Answer

- A 1. Yes
- A 2. Use the treatment protocol:
  - You can give the first-line drug based on your national protocol.
  - Ask about the general health and illness.
  - Ask about smoking: the amount and willingness to quit
  - Check also the other risk factors such as BMI and waist circumference.
  - Plan for lifestyle modification.
Case 3. A 60-year-old lady comes to the clinic for screening. No relevant past medical history.
BP- 170/100 mmHg (first-time measurement)
BP- 160/100 mmHg (second-time measurement)
Q. What is your next management plan?
Answer
Start with combination therapy (use evidence-based guidelines). Check and assess the CVD risks and communicate the risk.

Case 4. A 55-year-old lady, known hypertensive for 5 years, reports taking amlodipine 5 mg daily, regularly. Clinic BP 170/100 mmHg.
Q 1. What can be the causes of uncontrolled hypertension in this patient?
Q 2. What is your suggested management plan based on the evidence-based guidelines?
Q 3. Provide justification for the suggested management plan.
Answer
A1. The underlying cause/s can be: non-adherence to medicines, high dietary salt intake, any recent stress, overweight and obesity, cardiac disease and kidney disorders.
A2. Assess drug adherence, target organ damage and complications. Refer to the evidence-based guidelines to develop a management plan for this patient.
A3. Possible justification points:
- If the patient is adherent to medicines, increase the dose of amlodipine to 10 mg or add enalapril 5 mg (once daily) in the evening and follow up after one month.
- In case she has other underlying causes, evaluate, counsel on lifestyle modifications and refer if needed.

Case 5. A 65-year-old man, known hypertensive for 5 years, takes amlodipine (5 mg) and enalapril (5 mg) daily. He is a chronic smoker but has no diabetes. Now, he suffers from left-sided chest pain on exertion. BP 150/100 mmHg. What is your next management plan?
Answer
- Assess medication adherence. If he is taking medicines regularly increase the dose of calcium-channel blockers (CCB) amlodipine to 10 mg daily or angiotensin-converting enzyme inhibitors (ACE-I) enalapril to 10 mg daily.
- Calculate the 10-year cardiovascular risk by using WHO/International Society for Hypertension (ISH) risk prediction chart. If more than 30%, add atorvastatin and aspirin.
- Advise smoking cessation.
If the patient complains of chronic cough, change enalapril to angiotensin II receptor blockers (ARBs) (losartan/telmasartan).

Refer for further assessment and treatment of chest pain (e.g. ECG) and follow up the case after referral.

**Case 6.** A 70-year-old male with hypertension and diabetes for 10 years presents at the clinic. He is on amlodipine 10 mg (OD), metformin 500 mg (BD) and gliclazide 80 mg (BD). Complains of weakness lasting for 30 minutes on the left side of the body this morning. What will you do next?

**Answer.** Refer (probable diagnosis: transient ischaemic attack [TIA]/stroke). Assess the patient and refer for further evaluation.

**Case 7.** A 70-year-old male, with hypertension and diabetes for 10 years, visits the clinic. His current clinical parameters are BP 160/90 mmHg, random blood sugar (RBS) 250 mg/dL. He is currently taking amlodipine 10 mg (OD)/enalapril 10 mg BD, metformin 1000 mg (BD) and gliclazide 160 mg (BD). What will you do next?

**Answer.** Refer if BP > 140/90 mmHg even after taking full dose of 2 or 3 antihypertensive medicines and/or if RBS > 200 mg/dL with maximum dose of antidiabetic drugs. Assess about other CVD risks and communicate to the patient.

**Case 8.** A 55-year-old male has diabetes and hypertension for 15 years.

Current medication: metformin 500 mg (BD), gliclazide 80 mg (BD), amlodipine 10 mg (OD) and enalapril 5 mg (OD).

He complains of a puffy face and reduced urine output. What is your management plan?

**Answer.** Referral (diagnosis: chronic kidney disease).

**Case 9.** Ms Diva is on lisonopril 20 mg OD and chlorthalidone 12.5 mg OD for 2 years. Her current BP is 138/84 mmHg.

- Identify any issues with the treatment regimen.
- What treatment correction should have been done to make the treatment evidence based?
- Would you change the treatment regimen for the patient?

**Answers.** There are no issues. Just reinforce lifestyle and medication adherence.

**Case 10.** A 27-year-old female, a mother of 2 children, in her second trimester came for a routine check-up. The health worker checked her parameters; BP 170/120 mmHg. The health worker provides hydrochlorthiazide 25 mg OD.

Discuss whether the line of management is acceptable as per the evidence-based protocol.

**Answer.** Because of pregnancy hydrochlorthiazide is not recommended. Labetalol 50 mg BD can be given. Refer to the higher centre.
Case 11. Mrs Bhavna aged 62 years is a known case of hypertension, diabetes and hypothyroidism from the past 10 years. She had myocardial infarction (MI) 1 year back and she is currently taking the following medicines:

(1) Tab. thyroxine 150 µg once daily
(2) Tab. amlodipine 10 mg twice daily
(3) Tab. metformin 1 g once daily
(4) Tab. aspirin 150 mg once daily
(5) Tab. rosuvastatin 10 mg once daily

Her current BP is 140/90 mmHg and FBS is 140 mg/dL.

Q1. What is wrong with her current prescription?

Q2. Write a management plan for this patient based on her current values.

Answers

A1. As she has a history of MI it is preferable to prescribe an ACE-inhibitor and beta-blocker instead of a CCB (i.e. amlodipine), irrespective of the BP.

A2

(1) Tab. thyroxine 150 µg once daily
(2) Tab. atenolol 25 mg once daily
(3) Tab. losartan 50 mg once daily
(4) Tab. metformin 500 mg thrice daily
(5) Tab. aspirin 150 mg once daily
(6) Tab. rosuvastatin 10 mg once daily

Step 3. Ask each group to summarize and present the management plan.

Step 4. Discuss common issues and challenges in the management of hypertension.

Facilitator’s explanatory note

During the discussion, stimulate the participants to listen to the other groups with different case scenarios so that they can learn from each other.

Step 5. Summarize and conclude the session with emphasis on evidence-based management of hypertension, follow up and appropriate referral when needed.
1. **At what BP values given below will you diagnose hypertension?**
   (a) 110/80 mmHg
   (b) 136/91 mmHg
   (c) 130/80 mmHg
   (d) 145/95 mmHg.

2. **What are the main risk factors for hypertension?**
   (a) Age
   (b) Physical activity
   (c) Gender
   (d) High salt intake
   (e) Alcohol.

3. **What are the complications of hypertension?**
   (a) Urinary tract infection
   (b) Myocardial infarction
   (c) Transient ischaemic attack
   (d) Dementia
   (e) Hepatitis.

4. **When and in whom do you screen for hypertension?**
   (a) Adults aged 40 years and above
   (b) Pregnant women
   (c) Diabetic patients
   (d) Any adult patient aged 40 years and above attending the clinic
   (e) All of the above.

5. **Which of the below is NOT the referral criteria for hypertension?**
   (a) Blood pressure 140/90 mmHg
   (b) Uncontrolled hypertension with a maximum dose of 2–3 drugs
   (c) Acute MI
   (d) Stroke
   (e) Chronic kidney disease (CKD).

**Additional reading resources**

Evidenced-based protocol, HEARTS technical package.
Management of hypertension at primary health care

**Classification of hypertension**

The classification can be used according to the protocol/guideline of each country.

All adults should be screened for high BP. The treatment protocols provided are used if the patient is known to have hypertension or is newly diagnosed with hypertension when presenting at the health-care facility.

1.1 When to measure blood pressure

Measuring the BP is the only way to diagnose hypertension, as most people with raised BP have no symptoms.

BP measurements should be conducted on adults during routine visits to primary health care facilities, including all adults at first presentation to the facility and, if found to be normal, periodically thereafter (e.g. every 1–2 years). Every patient with elevated BP readings requires immediate follow up, according to the protocol.

BP measurement is particularly important in adults who:

- have had a prior heart attack or stroke
- have diabetes have CKD
- are obese
- use tobacco
- have a family history of heart attack or stroke.

1.2 How to measure blood pressure

Effective treatment algorithms for hypertension are dependent on accurate BP measurement. The following advice should be followed for measuring the BP:

Use the appropriate cuff size (use a large cuff if the arm circumference >32 cm). At the initial evaluation, the BP should be measured in both the arms; if the readings are different, the arm with the higher reading should be used for measurements thereafter. The patient should be sitting with the back supported, legs uncrossed, bladder empty, relaxed for 5 minutes and not talking. It is preferable to take at least two readings 1–2 minutes apart, and use the average of these measurements. If the first reading is high (SBP ≥130 mmHg and/or DBP ≥80 mmHg), repeat after at least 2 minutes. Calculate the average of the last two readings. BP can be measured by either a conventional sphygmomanometer using a stethoscope or by an automated electronic device. The electronic device, if available, is preferred because it provides more reproducible results and is not influenced by variations in technique or by the bias of the observers.

1 From HEARTS technical package
If the primary health care facility has electricity or regular access to batteries, then consider an automated validated BP device with a digital reading. If the primary health care facility has no electricity or batteries, then a manual BP cuff will have to be used with a stethoscope.

1.3 Diagnosing hypertension

In general, the diagnosis of hypertension should be confirmed at an additional patient visit, usually 1–4 weeks after the first measurement. In general, hypertension is diagnosed if, on two visits on different days, SBP on both days is $\geq 140$ mmHg and/or DBP is $\geq 90$ mmHg.

(Patients at high risk for cardiovascular disease [CVD] and those with SBP above 160 or DBP above 100 mmHg may need immediate treatment based on an assessment done on one day.)

1.4 Treatment of hypertension

**Who should receive hypertension treatment?**

Hypertension treatment is indicated for adults diagnosed with hypertension as defined above (SBP $\geq 140$ and/or DBP $\geq 90$ mmHg). In addition, for patients with diabetes, high CVD risk or prior CVD, some experts recommend starting antihypertensive medication at a lower threshold (e.g. SBP $\geq 130$ mmHg and/or DBP $\geq 80$ mmHg).

Lifestyle counselling (healthy diet, physical activity, smoking cessation, etc.) is a critical component of good hypertension management and is often recommended as a first step for patients with stage I hypertension who do not have other CVD risk factors. However, in settings where people do not regularly visit the doctor, people who are recommended only lifestyle modification may not return for re-evaluation and the needed treatment, resulting in uncontrolled hypertension and associated complications. (See Healthy Lifestyle Counselling module for more information on lifestyle counselling.)

**What medications should be used to treat hypertension?**

There are four main classes of antihypertensive medications: angiotensin-converting enzyme (ACE) inhibitors, angiotensin-receptor blockers (ARBs), calcium-channel blockers (CCBs), and thiazide and thiazide-like diuretics. Any of these four classes of antihypertensive medications may be used unless there are specific contraindications. Proper treatment of hypertension often requires a combination of hypertension medications.

The sample protocols provided in Section 1.2 give clear options for the dosage of medications as well as which medications should be used for first-line treatment. Countries, jurisdictions within countries or health systems should select one algorithm and define specific drugs and dosages. Whichever treatment protocol option is chosen must be rigorously followed and there must be adequate training of all health-care workers involved in its implementation.
Notes on specific hypertension medications

- Pregnant women and women of childbearing age not on effective contraception should not be given ACE inhibitors, ARBs and thiazide/thiazide-like diuretics; CCBs should be used. If not controlled with increase in the dose of medication, refer to a specialist.

- Beta-blockers are not recommended as first-line therapy. If a heart attack has been diagnosed within the previous 3 years, or there is atrial fibrillation or heart failure, then a beta-blocker should be added to the starting dose of antihypertensive medication. Patients with angina may also benefit from treatment with a beta-blocker.

Treatment targets

For most patients, BP is considered to be controlled when the SBP ≤ 140 mmHg and DBP ≤ 90 mmHg. However, for patients with diabetes or a high risk of CVD, some experts recommend lower targets: SBP ≤ 130 mmHg and DBP ≤ 80 mmHg.

Other treatment considerations

- If the patient has had a prior heart attack or stroke, or the person is otherwise at high risk of CVD, start a statin at the same time as starting antihypertensive medication. (Statins should not be used in women who are or who may become pregnant.)

- If the patient has had a prior heart attack or stroke, start low-dose aspirin.

- The hypertension protocols included in this module serve well for initiation and maintenance of successful treatment. If there is treatment failure or a major medical event intervenes, then referral to a specialist will be needed.

- If the patient is already on another medication regimen, BP is controlled to the target level, and the medications the patient is taking are accessible and affordable, there is no reason to change the regimen.

- If the patient feels faint on standing, check the BP while standing. If low (particularly below 90 mmHg systolic or 60 mmHg diastolic), reduce the dose or stop one or more medications.

Treatment adherence

Adherence to treatment is critical for BP control. If antihypertensive medication is being prescribed, the following are critical to ensuring adherence:

- Teach the patient how to take the medications at home.

- Explain the difference between medicines for long-term control (e.g. of BP) and medicines for quick relief (such as for headache).

- Explain the reason for prescribing the medicine(s).

- Show the patient the appropriate dose.

- Explain how many times a day the patient should take the medication and at what time, and adopt the following simple steps to help them to adhere to the guidelines:
  - Label and package the tablets.
  - Check the patient’s understanding before the patient leaves the health centre.
Wherever possible, use once-daily dosages of all medications, to be given at the same time each day. For example, patients can take all medications at one time after brushing the teeth in the morning.

- Explain the importance of:
  - Keeping an adequate supply of medications safely at home
  - Taking the medicines regularly as advised, even if there are no symptoms.
- Explain the potential adverse effects of the medications and what to do if the patient experiences them.

### 1.5 Sample hypertension treatment protocols

The following pages outline possible protocols for managing hypertension, each with a different starting medication. All are acceptable options. It is not possible to present a single option that would be universally acceptable in all regions, countries and locales, because of differences in efficacy and tolerability of different medications in different population groups. Each country should select and then adapt the option that best suits their circumstances.

The following sample hypertension protocols have been endorsed by the:

- World Hypertension League and the International Society of Hypertension
  1. Diuretic as first-line treatment
  2. CCB as first-line treatment
  3. ACE-I or ARB as first-line treatment
  4. ACE-I or ARB + CCB as first-line treatment
  5. CCB + diuretic as first-line treatment
  6. ACE-I or ARB+ diuretic as first-line treatment

The following sample protocol has been endorsed by the:

- World Heart Federation
  7. Use of BP-lowering drugs in patients with ischaemic CVD

The following sample hypertension protocols have been adapted and endorsed by:

- Resolve to Save Lives
  8. Adapted example: CCB as first-line treatment
  9. Adapted example: telmisartan 40 mg/amlopidine 5 mg single-pill combination regimen
HYPERTENSION PROTOCOL

Diuretic as first-line treatment

**Management of hypertension at primary health care**

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### DRUGS AND DOSES

<table>
<thead>
<tr>
<th>Class</th>
<th>Medication</th>
<th>Starting dose</th>
<th>Intensication dose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diuretic</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thiazide-like</td>
<td>chlorothalidone**</td>
<td>12.5 mg</td>
<td>25 mg</td>
</tr>
<tr>
<td></td>
<td>indapamide SR</td>
<td>1.5 mg</td>
<td>stay at 1.5 mg</td>
</tr>
<tr>
<td>ACE inhibitor**</td>
<td>lisinopril</td>
<td>20 mg</td>
<td>40 mg</td>
</tr>
<tr>
<td>(angiotensin-converting-enzyme inhibitor)</td>
<td>ramipril</td>
<td>5 mg</td>
<td>10 mg</td>
</tr>
<tr>
<td></td>
<td>perindopril</td>
<td>4–5 mg</td>
<td>8–10 mg</td>
</tr>
<tr>
<td>ARB**</td>
<td>losartan</td>
<td>50 mg</td>
<td>100 mg</td>
</tr>
<tr>
<td>(angiotensin receptor blocker)</td>
<td>telmisartan</td>
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<td>80 mg</td>
</tr>
<tr>
<td>CCB (calcium channel blocker)</td>
<td>amlodipine</td>
<td>5 mg</td>
<td>10 mg</td>
</tr>
</tbody>
</table>

* Or other BP target, as determined by clinical factors. If BP ≥160 or ≥100, start same day. If 140–159 or 90–100, check on a different day and if still elevated, start.

** Consider increase to intensification dose of diuretic. Hypokalaemia more common using intensification dose of diuretic – consider increased lab monitoring.

† Consider optional switch of steps 3 and 4 (ACE-I) with steps 5 and 6 (CCB).

‡ ACE-I or ARB according to local guidelines/costs/intolerance to ACE-I; ACE-inhibitors cause chronic cough in approximately 10% of patients. Neither ACE-I nor ARBs should be given to pregnant women.

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### PROVISION FOR SPECIFIC PATIENTS

**THIS PROTOCOL IS CONTRAINDICATED FOR WOMEN WHO ARE OR COULD BECOME PREGNANT.**

- Manage diabetes as indicated by national protocol.
- Aim for BP <130/80 for people at high risk, such as individuals with diabetes, CAD, stroke, or CKD.

---

### LIFESTYLE MANAGEMENT ADVICE

FOR ALL PATIENTS

- Stop all tobacco use, avoid secondhand tobacco smoke.
- Drink no more than two units of alcohol per day and do not drink on at least two days of the week.
- Increase physical activity to equivalent of brisk walk 150 minutes per week.
- If overweight, lose weight.
- Eat heart-healthy diet:
  - Eat a low-salt diet.
  - Eat ≥5 servings of vegetables/fruit per day.
  - Use healthy oils (e.g., olive, safflower).
  - Eat nuts, legumes, whole grains and foods rich in potassium.
  - Limit red meat to once or twice a week at most.
  - Eat fish or other food rich in omega 3 fatty acids (e.g., flax seeds) at least twice a week.
  - Avoid added sugar from cakes, cookies, sweets, fizzy drinks and juice.

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* These are suggested examples of medications based on scientific evidence, once-daily suitability, common usage, and availability.

† Before initiating and several weeks after starting ACE-I, ARBs or diuretics, consider checking serum creatinine and potassium.

§ If neither diuretic agent is available, hydrochlorothiazide can be used (25 mg starting, 50 mg full) or indapamide (1.25 mg starting, 2.5 mg full) can be used.
HYPERTENSION PROTOCOL

CCB as first-line treatment

**Management of hypertension at primary health care**

**STEP 1**
SCREEN ALL ADULTS

**STEP 2**
IF BP ≥ 140 or ≥ 90°
PRESCRIBE starting dose of CCB**

**STEP 3**
IF still ≥ 140 or ≥ 90
ADD starting dose of ACE-I or ARB***

**STEP 4**
IF still ≥ 140 or ≥ 90
INCREASE to full dose of ACE-I or ARB

**STEP 5**
IF still ≥ 140 or ≥ 90
INCREASE to full dose of CCB

**STEP 6**
IF still ≥ 140 or ≥ 90
ADD thiazide-like diuretic

**STEP 7**
IF still ≥ 140 or ≥ 90°
CHECK that patient has been taking drugs regularly and correctly – IF this is the case, REFER patient to a specialist

**PROVISION FOR SPECIFIC PATIENTS**

- Manage diabetes as indicated by national protocol.
- Aim for BP < 130/80 for people at high risk, such as individuals with diabetes, CAD, stroke, or CKD.

**LIFESTYLE MANAGEMENT ADVICE FOR ALL PATIENTS**

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  Eat a low-salt diet.
  Eat ≥ 5 servings of vegetables/fruit per day.
  Use healthy oils (e.g., olive, safflower).
  Eat nuts, legumes, whole grains and foods rich in potassium.
  Limit red meat to once or twice a week at most.
  Eat fish or other food rich in omega 3 fatty acids (e.g., flax seeds) at least twice a week.
  Avoid added sugar from cakes, cookies, sweets, fizzy drinks and juice.

**DRUGS AND DOSES‡**

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* Or other BP target, as determined by clinical factors. If BP ≥ 160 or ≥ 100, start same day. If 140-159 or 90-100, check on a different day and if still elevated, start.
** Consider statin use. Consider increasing to intensification dose CCB before introducing ACE-ARB.
*** ACE-I or ARB according to local guidelines/costs/intolerance to ACE-I. ACE-Inhibitors cause chronic cough in approximately 10% of patients. Neither ACE-I nor ARBs should be given to pregnant women.
† Consider optional switch of steps 3 and 4 (ACE-I) with step 6 (thiazide-like diuretic).
‡ These are suggested examples of medications based on scientific evidence, once-daily suitability, common usage, and availability.
§ Before initiating and several weeks after starting ACE-I, ARBs or diuretics, consider checking serum creatinine and potassium.
* If neither diuretic agent is available, hydrochlorothiazide can be used (25 mg starting, 50 mg full or indapamide (1.25 mg starting, 2.5 mg full) can be used.

Management of hypertension at primary health care
HYPERTENSION PROTOCOL
ACE-I or ARB* as first-line treatment

**PROVISION FOR SPECIFIC PATIENTS**

* THIS PROTOCOL IS CONTRAINDICATED FOR WOMEN WHO ARE OR COULD BECOME PREGNANT.
  * Manage diabetes as indicated by national protocol.
  * Aim for BP <130/80 for people at high risk, such as individuals with diabetes, CAD, stroke, or CKD.

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</tbody>
</table>

* ACE-I or ARB according to local guidelines/costs/intolerance to ACE-I. ACE-inhibitors cause chronic cough in approximately 10% of patients. Neither ACE-I nor ARBs should be given to pregnant women.
** Or other BP target, as determined by clinical factors. If BP ≥160 or ≥100, start same day. If 140-159 or 90-100, check on a different day and if still elevated, start.
*** Consider statin use.
† Consider optional switch of steps 4 and 5 (CCB) with step 6 (thiazide-like diuretic).
† † Consider increase to intensification dose diuretic. Hypokalaemia more common using intensification dose diuretic—consider increased lab monitoring.
† † † These are suggested examples of medications based on scientific evidence, once-daily suitability, common usage, and availability.
† † † † Before initiating and several weeks after starting ACE-I, ARBs or diuretics, consider checking serum creatinine and potassium.
† † † † † If neither diuretic agent is available, hydrochlorothiazide can be used (25 mg starting, 50 mg full) or indapamide (1.25 mg starting, 2.5 mg full) can be used.
HYPERTENSION PROTOCOL
ACE-I or ARB\* + CCB as first-line treatment

**PROVISION FOR SPECIFIC PATIENTS**

- **THIS PROTOCOL IS CONTRAINDICATED FOR WOMEN WHO ARE OR COULD BECOME PREGNANT.**
  - Manage diabetes as indicated by national protocol.
  - Aim for BP <130/80 for people at high risk, such as individuals with diabetes, CAD, stroke, or CKD.

**LIFESTYLE MANAGEMENT ADVICE FOR ALL PATIENTS**

- Stop all tobacco use, avoid secondhand tobacco smoke.
- Drink no more than two units of alcohol per day and do not drink on at least two days of the week.
- Increase physical activity to equivalent of brisk walk 150 minutes per week.
- If overweight, lose weight.
- Eat heart-healthy diet:
  - Eat a low-salt diet.
  - Eat ≥5 servings of vegetables/fruit per day.
  - Use healthy oils (e.g. olive, safflower).
  - Eat nuts, legumes, whole grains and foods rich in potassium.
  - Limit red meat to once or twice a week at most.
  - Eat fish or other food rich in omega 3 fatty acids (e.g., flax seeds) at least twice a week.
  - Avoid added sugar from cakes, cookies, sweets, fizzy drinks and juice.

**DRUGS AND DOSES**

<table>
<thead>
<tr>
<th>Class</th>
<th>Medication</th>
<th>Starting dose</th>
<th>Intensification dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE inhibitor*</td>
<td>lisinopril</td>
<td>20 mg</td>
<td>40 mg</td>
</tr>
<tr>
<td></td>
<td>ramipril</td>
<td>5 mg</td>
<td>10 mg</td>
</tr>
<tr>
<td></td>
<td>perindopril</td>
<td>4-5 mg</td>
<td>8-10 mg</td>
</tr>
<tr>
<td></td>
<td>losartan</td>
<td>50 mg</td>
<td>100 mg</td>
</tr>
<tr>
<td></td>
<td>telmisartan</td>
<td>40 mg</td>
<td>80 mg</td>
</tr>
<tr>
<td>ARB*</td>
<td>amlodipine</td>
<td>5 mg</td>
<td>10 mg</td>
</tr>
<tr>
<td>CCB (calcium channel blocker)</td>
<td>chlorothalidone** or indapamide SR**</td>
<td>12.5 mg</td>
<td>25 mg</td>
</tr>
<tr>
<td>diuretic**</td>
<td></td>
<td>1.5 mg</td>
<td>stay at 1.5 mg</td>
</tr>
</tbody>
</table>

* ACE-I or ARB according to local guidelines/costs/intolerance to ACE-I. ACE-inhibitors cause chronic cough in approximately 10% of patients. Neither ACE-I nor ARBs should be given to pregnant women.

** Or other BP target, as determined by clinical factors. If BP ≥160 or ≥100, start same day. If 140-159 or 90-100, check on a different day and if still elevated, start.

*** Consider statin use.

\* The two medications can be used as two free agents or as a single pill combination (SPC), accordingly.

† Consider increase to intensification dose diuretic. Hypokalaemia more common using intensification dose diuretic—consider increased lab monitoring.

‡ These are suggested examples of medications based on scientific evidence, once-daily suitability, common usage, and availability.

§ Before initiating and several weeks after starting ACE-I, ARBs or diuretics, consider checking serum creatinine and potassium.

‖ If neither diuretic agent is available, hydrochlorothiazide can be used (25 mg starting, 50 mg full) or indapamide (1.25 mg starting, 2.5 mg full) can be used.
**HYPERTENSION PROTOCOL**

**CCB + diuretic as first-line treatment**

1. **SCREEN ALL ADULTS**
2. **IF BP ≥ 140 or ≥ 90**
   - **PRESCRIBE starting dose of CCB with thiazide-like diuretic**
3. **IF still ≥ 140 or ≥ 90**
   - **INCREASE to full dose of CCB with thiazide-like diuretic**
4. **IF still ≥ 140 or ≥ 90**
   - **ADD starting dose of ACE-I or ARB**
5. **IF still ≥ 140 or ≥ 90**
   - **INCREASE to full dose of ACE-I or ARB**
6. **IF still ≥ 140 or ≥ 90**
   - **CHECK that patient has been taking drugs regularly and correctly – IF this is the case, REFER patient to a specialist**

**PROVISION FOR SPECIFIC PATIENTS**

- Manage diabetes as indicated by national protocol.
- Aim for BP < 130/80 for people at high risk, such as individuals with diabetes, CAD, stroke, or CKD.

**LIFESTYLE MANAGEMENT ADVICE FOR ALL PATIENTS**

- Stop all tobacco use, avoid secondhand tobacco smoke.
- Drink no more than two units of alcohol per day and do not drink on at least two days of the week.
- Increase physical activity to equivalent of brisk walk 150 minutes per week.
- If overweight, lose weight.
- Eat heart-healthy diet:
  - Eat a low-salt diet.
  - Eat ≥ 5 servings of vegetables/fruit per day.
  - Use healthy oils (e.g. olive, safflower).
  - Eat nuts, legumes, whole grains and foods rich in potassium.
  - Limit red meat to once or twice a week at most.
  - Eat fish or other food rich in omega 3 fatty acids (e.g., flax seeds) at least twice a week.
  - Avoid added sugar from cakes, cookies, sweets, fizzy drinks and juice.

**DRUGS AND DOSES**

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<td>amlodipine</td>
<td>5 mg</td>
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<tr>
<td>Thiazide-like diuretic</td>
<td>chlorothalidone</td>
<td>12.5 mg</td>
<td>25 mg</td>
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<tr>
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<td>1.5 mg</td>
<td>stay at 1.5 mg</td>
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<tr>
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<td>lisinopril</td>
<td>20 mg</td>
<td>40 mg</td>
</tr>
<tr>
<td>(angiotensin-convert enzyme)</td>
<td>ramipril</td>
<td>5 mg</td>
<td>stay at 10 mg</td>
</tr>
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<td>perindopril</td>
<td>4–5 mg</td>
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</tr>
<tr>
<td>ARB</td>
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<td>50 mg</td>
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</tr>
<tr>
<td></td>
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<td>40 mg</td>
<td>stay at 80 mg</td>
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These are suggested examples of medications based on scientific evidence, once-daily suitability, common usage, and availability.
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HYPERTENSION PROTOCOL

ACE-I or ARB* + diuretic as first-line treatment

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<td>ARB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>chlorthalidone** or indapamide SR**</td>
<td>12.5 mg</td>
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☆ If neither diuretic agent is available, hydrochlorothiazide can be used (25 mg starting, 50 mg full) or indapamide (1.25 mg starting, 2.5 mg full) can be used.
### HYPERTENSION PROTOCOL

**Use of BP-lowering drugs in patients with ischaemic CVD**

#### Step 1: Screen All Adults
- CHD
- Cerebrovascular Disease

#### Step 2: Irrespective of BP
- **PRESCRIBE statin**
- **ACE-inhibitor** (ACE-I) **β-blocker aspirin (low dose)**

#### Step 3: After one month
- REVIEW blood pressure: IF BP ≥130 or ≥80
- ADD starting dose CCB
- ADD starting dose ACE-I

#### Step 4: After one month
- REVIEW blood pressure: IF BP still ≥130 or ≥80
- INCREASE to full dose of CCB
- INCREASE to full dose of ACE-I

#### Step 5: After one month
- REVIEW blood pressure: IF BP still ≥130 or ≥80
- ADD thiazide-like diuretic
- ADD starting dose CCB

#### Step 6: After one month
- REVIEW blood pressure: IF BP still ≥130 or ≥80
- INCREASE to full dose of CCB

#### Step 7: Check that patient has been taking drugs regularly and correctly — IF this is the case, REFER patient to a specialist

### Provision for Specific Patients
- Manage diabetes as indicated by national protocol.
- Aim for BP <130/80 for people at high risk, such as individuals with diabetes, CAD, stroke, or CKD.
- People with history of atrial fibrillation or heart failure and cerebrovascular disease:
  - Add beta blocker with initial treatment

### Lifestyle Management Advice for All Patients
- Stop all tobacco use, avoid secondhand tobacco smoke.
- Drink no more than two units of alcohol per day and do not drink on at least two days of the week.
- Increase physical activity to equivalent of brisk walk 150 minutes per week.
- If overweight, lose weight.
- Eat heart-healthy diet:
  - Eat a low-salt diet.
  - Eat ≥2 servings of vegetables/fruit per day.
  - Use healthy oils (e.g., olive, safflower).
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<td>amlodipine</td>
<td>5 mg</td>
<td>10 mg</td>
</tr>
</tbody>
</table>

---

* Ischaemic Stroke/TIA/Myocardial infarction ≥1 month ago.
** ACE inhibitors cause chronic cough in approximately 10% of patients. If not tolerated, give an ARB. Neither ACEI nor ARBs should be given to pregnant women.
† When BP <140/90, ACE inhibitor and β-blocker should be added unless symptoms preclude.
‡ Consider increasing to intensification dose of thiazide-like diuretic before further titration. Hypokalaemia more common using intensification-dose diuretic — consider increased lab monitoring.

* These are suggested examples of medications based on scientific evidence, once-daily suitability, common usage, and availability.

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Management of hypertension at primary health care

Activity 1: Step 2

What is blood pressure?

The pressure of the blood on the walls of the arteries, dependent on the energy of the heart action, the elasticity of the walls of the arteries, and the volume and viscosity of the blood.

Ref: Dorland's medical dictionary
**Arterial blood pressure**

*Arterial blood pressure* is the lateral pressure exerted by the blood on the arterial walls. It oscillates during each cardiac cycle between a maximum called systolic BP and a minimum called diastolic BP.

**Systolic BP**
- It is the maximal pressure exerted by the blood on the arterial walls during ventricular contraction (ejection of blood from the left ventricle into the aorta).

**Diastolic BP**
- It is the minimal pressure exerted by the blood on the arterial walls during ventricular relaxation (just before ventricular systole and ejection of blood).

**What is high blood pressure? – various definitions**

- A BP level that increases the vascular risk in patients sufficient to require intervention is labelled hypertension
- BP at and above 140/90 mmHg in an adult above age of 18 years is hypertension
- The threshold ‘at which the benefits of action (i.e., therapeutic intervention) exceed those of inaction’
- “Hypertension should be defined in terms of blood pressure level above which investigation and treatment do more good than harm” *(Evans and Rose, 1971).*

**Hypertension risk factors**

<table>
<thead>
<tr>
<th>Non-modifiable</th>
<th>Modifiable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age</td>
<td>1. Diet</td>
</tr>
<tr>
<td>2. Gender</td>
<td>2. Physical inactivity</td>
</tr>
<tr>
<td>3. Race</td>
<td>3. Obesity</td>
</tr>
<tr>
<td>4. Genetic factors</td>
<td>4. Alcohol in excess</td>
</tr>
<tr>
<td></td>
<td>5. Stress</td>
</tr>
<tr>
<td></td>
<td>6. Obstructive sleep apnea</td>
</tr>
</tbody>
</table>

*Conditioning factors* - Socio-economic factors
Physiological determinants of blood pressure

- Myocardial contractility
- Stroke volume
- Size of the vascular compartment
- Heart rate
- Arterial pressure
- Cardiac output
- Peripheral resistance
- Vascular structure
- Vascular function

Systems contributing and targets of high BP

- Vasodilatation
- Vasocostriction
- Vascular growth
- Inflammation
- Platelet aggregation

- Adrenal kidney
- Sympathetic activation
- Water retention
- Aldosterone
- Na⁺ reabsorption
- Efficient arterial vasocostriction
- Catecholamine release
- Glycogenolysis
- Apg synthesis
- Angiotensinogen (Ang)

- Brain
- Positive fluid balance
- Vasoconstriction
- Inotropic effects
- Chronic effects
- Hypertrophy

RAAS and BP control

- Blood Pressure
- Blood Volume
- Dietary Sodium

- Angiotensinogen
- Renin
- Angiotensin I
- ACE
- Angiotensin II
- Vasocostriction
- Allosterone
- +Salt/Water retention

- Blood Pressure
Management of hypertension at primary health care

**Autonomic nervous system**
- The autonomic nervous system maintains cardiovascular homeostasis via pressure, volume and chemoreceptor signals.
- Adrenergic reflexes modulate blood pressure over the short term.
- Adrenergic function, in concert with hormonal and volume-related factors, contributes to the long-term regulation of arterial pressure.

**Vascular mechanisms**

**Renin-Angiotensin-Aldosterone System (RAAS)**
Secondary causes of systolic and diastolic hypertension

<table>
<thead>
<tr>
<th>Renal</th>
<th>Pheochromocytoma, renal cysts (including polycystic kidney disease), renal tumors (including renal cell carcinoma), obstructive uropathy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renovascular</td>
<td>Atherosclerosis, aortic aneurysm, fibromuscular dysplasia</td>
</tr>
<tr>
<td>Obstructive sleep apnea</td>
<td></td>
</tr>
<tr>
<td>Adrenal</td>
<td>Primary aldosteronism, Cushing syndrome, pheochromocytoma</td>
</tr>
<tr>
<td>Aortic coarctation</td>
<td></td>
</tr>
<tr>
<td>Pheochromocytoma/echinococcus</td>
<td></td>
</tr>
<tr>
<td>Neurogenic</td>
<td>Psychogenic, demyelinating syndrome, familial dysautonomia, polyneuropathies (acute polyneuropathy, lead poisoning), acute increased intracranial pressure, acute spinal cord section</td>
</tr>
<tr>
<td>Miscellaneous endocrine</td>
<td>Hypothyroidism, hyperthyroidism, acromegaly</td>
</tr>
<tr>
<td>Medications</td>
<td>High-dose estrogens, adrenal steroids, diuretics, appetite suppressants, cyclosporine, tricyclic antidepressants, nonselective ACE inhibitors, angiotensin II receptor blockers, nonsteroidal anti-inflammatory agents, corticosteroids</td>
</tr>
<tr>
<td>Mendelian forms of hypertension</td>
<td></td>
</tr>
</tbody>
</table>

Staging of hypertension

<table>
<thead>
<tr>
<th>Staging</th>
<th>ISH/ASH</th>
<th>BIHS</th>
<th>JNC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>&lt;120 mm Hg systolic and &lt;80 mm Hg diastolic</td>
<td>–</td>
<td>&lt;120 mm Hg systolic and &lt;80 mm Hg diastolic</td>
</tr>
<tr>
<td>Prehypertension</td>
<td>120 - 139 mm Hg systolic or 80 - 89 mm Hg diastolic</td>
<td>–</td>
<td>120 - 139 mm Hg systolic or 80 - 89 mm Hg diastolic</td>
</tr>
<tr>
<td>Stage 1</td>
<td>140 - 159 mm Hg systolic or 90 - 99 mm Hg diastolic</td>
<td>Clinic blood pressure (BP) is 140/90 mm Hg or higher and APTM or HBP average is 135/85 mm Hg or higher</td>
<td>140 - 159 mm Hg systolic or 90 - 99 mm Hg diastolic</td>
</tr>
<tr>
<td>Stage 2</td>
<td>&gt;160 mm Hg systolic or &gt;100 mm Hg diastolic</td>
<td>Clinic BP is 160/100 mm Hg or higher and APTM or HBP average is 150/95 mm Hg or higher</td>
<td>&gt;160 mm Hg systolic or &gt;100 mm Hg diastolic</td>
</tr>
<tr>
<td>Stage 3</td>
<td>(Severe HTN) Clinic BP is 180 mm Hg or higher or Clinic diastolic BP is 110 mm Hg or higher</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Signs and symptoms

- Most commonly there is no symptom in hypertension
- Few common symptoms are:
  - Headache
  - Blurred vision
  - Dizziness
  - Shortness of breath
  - Nose bleeding
Complications

- Heart failure
- Coronary artery disease
- Stroke
- Chronic kidney disease
- Peripheral artery disease

Diagnosing hypertension

The diagnosis of hypertension should be confirmed at an additional patient visit, usually 1 to 4 weeks after the first measurement. In general, hypertension is diagnosed if, on two visits on different days:

- systolic blood pressure on both days is ≥140 mmHg and/or
- diastolic blood pressure on both days is ≥90 mmHg.

Hypertension treatment

Who should receive hypertension treatment?

- Hypertension treatment is indicated for adults diagnosed with hypertension, as defined in previous slide (SBP ≥140 mmHg and/or DBP ≥90 mmHg)
- Patients with SBP ≥160 mmHg or DBP ≥100 mmHg may be indicated for immediate treatment based on one assessment.

Treatment targets:

SBP <140 mmHg and DBP <90 mmHg.
Specific treatment consideration

- Pregnant women and women of childbearing age not on effective contraception should not be given ACE inhibitors, ARBs, or thiazide/thiazide-like diuretics; CCBs should be used. If not controlled with intensification dose of medication, refer to specialist.
- Beta blockers are not recommended as first-line therapy.
- If there is a prior heart attack or stroke, or the person is otherwise at high risk of CVD, start a statin at the same time as starting antihypertensive medication.

Specific treatment consideration

- If the patient is already on another medication regimen, blood pressure is controlled to the target level, and the medications the patient is taking are accessible and affordable, there is no reason to change the regimen.
- If the patient feels faint on standing, check blood pressure while standing. If the systolic blood pressure is consistently less than 110 mmHg in a patient on medical treatment, consider reducing the dosage or number of medications used.
Module 3.3

Management of type 2 diabetes in the primary health care level
WHAT’S INSIDE

Introduction
Learning outcomes
Topics covered
Competency
Teaching and learning activities
Background information
INTRODUCTION

Diabetes is a chronic, metabolic disorder characterized by raised levels of blood glucose (or blood sugar), which leads to serious damage to the heart, blood vessels, eyes, kidneys and nerves over the time. The starting point for living well with diabetes is an early diagnosis, as the longer a person lives with undiagnosed and untreated diabetes, the worse their health outcomes are likely to be. This module has been prepared for primary health care workers to enable them to make an early diagnosis, manage and refer patients with diabetes appropriately and in a timely manner. This module includes the pathophysiology, signs and symptoms, diagnosis and management of diabetes. It also contains details of the basic clinical examinations, prevention strategies for diabetes, blood glucose measurement with a glucometer and insulin use techniques.

LEARNING OUTCOMES

At the end of the session, participants will be able to do the following:

- Explain the basic pathophysiology, signs and symptoms of type 2 diabetes.
- Describe the management of type 2 diabetes, including suspicion and recognition of hypoglycaemia and hyperglycaemic symptoms.
- Prescribe first-line drugs for diabetes according to the evidence-based guidelines.
- Provide advice on drug adherence and self-care to prevent/delay diabetic complications.

TOPICS COVERED

- Risk factors, pathophysiology, signs and symptoms and types of diabetes.
- Screening and diagnostic tests.
- Organizing screening and early detection.
- Pharmacological management and lifestyle modification.
- Complications of diabetes (diabetic foot, diabetic retinopathy and renal complications) and their prevention.
- Diabetic emergencies and hyperglycaemic conditions.
- Patient communication for self-care.
COMPETENCY

- Ability to screen, diagnose and manage diabetes using the evidence-based guidelines and communicate effectively with patients to enable self-care.

TEACHING AND LEARNING ACTIVITIES

Total session time: 140 minutes

Activity 1. Understanding diabetes and its diagnosis: 25 minutes

Step 1. Ask a participant to share a case story of diabetes he/she has managed in his/her practice.

- How was the case diagnosed, managed and followed up?

Step 2. Ask the participants to share their responses to the following questions and note them on a flipchart/whiteboard:

- What is screening for diabetes?
- What are the pros and cons of opportunistic and organized screening of diabetes?
- What are diagnostic criteria of diabetes?
- Discuss the challenges of adhering to diagnostic criteria in a tertiary hospital versus a remote (primary) health centre.

Step 3. Present the powerpoint slides with the following contents:

- types of diabetes, risk factors, signs and symptoms
- diabetes screening
- diagnostic criteria of diabetes.

Step 4. Review the case story and discuss the questions that follow.

A 50-year-old female who suffered from thirst, polyuria and weight loss came to a rural primary health care centre. The health worker, suspecting diabetes, tested for blood sugar with a glucometer, the only test available at the laboratory facility in the health centre. Her random blood sugar was 230 mg/dL. The nearest hospital with a laboratory facility is a 2-hour drive from the health center.

- If you were the health-care provider, what would you do to establish her diagnosis?
- If the same patient lived and presented at the nearest hospital, would the steps for confirming the diagnosis differ? Explain.
Discussion points

Since the random blood sugar is >200 mg/dL, it may be practical to advise the patient to come for a repeat fasting blood sugar test to confirm. If her fasting blood glucose is >126 mg/dL, the patient can be diagnosed as having diabetes. If the patient lived and presented at the nearest hospital, she could be advised to undergo a fasting plasma glucose and an oral glucose tolerance test.

Activity 2. Demonstration of the use of a glucometer: 15 minutes

Step 1. Present the powerpoint slides on how to use a glucometer.

Step 2. Ask two participants to volunteer to demonstrate the blood test using a glucometer.

Step 3. Ask the other participants to note down the mistakes in the technique.

Step 4. Discuss the other participant’s points and explain how to improve it.

Step 5. Emphasize on the key issues.

Activity 3. Management of diabetes using the evidence-based guidelines: 30 minutes

Step 1. Divide the participants into convenient groups. Provide the evidence-based guidelines on diabetes management to all participants.

Step 2. Ask the groups to read the guidelines and discuss the key messages and ambiguities in the guidelines.

Step 3. Invite the groups to come forward to explain the key messages and ambiguities.

Step 4. Present the powerpoint slides on the management of diabetes.
**TEST **ADULTS who have symptoms of diabetes with fasting or random plasma glucose (FPG or RPG), Test adults who are 40+ years old with BMI >25 with FPG

- **FPG ≥ 7 mmol/L and <18 mmol/L or RPG ≥ 11.1 mmol/L and <18 mmol/L**
  - Counsel on diet and physical activity
  - **REVIEW IN 3 MONTHS**
  - **IF GOAL NOT ACHIEVED**
  - BEGIN METFORMIN
  - 500 mg once daily. Counsel on diet and physical activity and adherence at ALL visits

- **FPG/RPG > 18 mmol/L (325 mg/dl)**
  - **TEST urine ketones**
  - **IF KETONES ≥ 2+**
  - **REFER** to higher level of care
  - **IF KETONES < 2+**
  - **BEGIN** gliptin 80 mg bid & counsel on diet modification, physical activity and adherence to medicines

- **SCREENING FOR CHRONIC COMPLICATIONS**
  - **• Measure blood pressure at every scheduled visit, review medication as per hypertension protocol**
  - **• REFER** for dilated-pupil retinal exam upon diagnosis, and every two years thereafter, or as per ophthalmologist recommendation
  - **• Examine feet for ulcers at every visit. REFER to higher level of care if ulcer present**
  - **• Assess risk of lower limb amputation annually (foot pulses, sensory neuropathy by monofilament, presence of healed or open ulcers, calluses). REFER to higher level of care if ulcer present or pulse absent**
  - **• Test for proteinuria annually. REFER to higher level of care if positive.**

- **MANAGEMENT OF ACUTE COMPLICATIONS**
  - **Severe hypoglycaemia** (plasma glucose < 50 mg/dl or 2.8 mmol/l) or signs
    - If conscious, give a sugar-sweetened drink
    - If unconscious, give 20–50 ml of 50% glucose (dextrose) IV over 1–3 minutes.
  - **Severe hyperglycaemia** (plasma glucose > 18 mmol/l (325 mg/dl) and urine ketone 2+ or signs and symptoms of severe hyperglycaemia
    - Intravenous drip 0.9% NaCl 1 litre in 2 hours; continue at 1 litre every 4 hours, REFER to hospital.

- **REVIEW IN 3 MONTHS**
  - **IF GOAL NOT ACHIEVED**
  - Increase dose to 1000 mg 1x daily

- **REVIEW IN 2–3 MONTHS**
  - **IF GOAL NOT ACHIEVED, ADD** gliptin 80 mg 1x daily. Counsel on hypoglycaemia at all subsequent visits

- **REVIEW IN 3 MONTHS**
  - **IF GOAL NOT ACHIEVED**
  - Dose to 80 mg 2x daily

- **REVIEW IN 3 MONTHS**
  - **IF GOAL NOT ACHIEVED, DESPITE** adherence to medication, healthy diet and physical activity, REFER to higher-level health care facility for starting insulin

**Goal for glycaemic control**

<table>
<thead>
<tr>
<th>Fasting</th>
<th>Plasma glucose**</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 7.0 mmol/l (126 mg/dl)</td>
<td></td>
</tr>
</tbody>
</table>

*refer to table on diagnostic values for other tests which can be used to diagnose diabetes.
**If they are more affordable than insulin, DPP4 inhibitors, SGLT2 inhibitors or pioglitazone can be used before insulin in cases of treatment failure with metformin and glitazones. Introduce and titrate insulin treatment according to local practices.
***HbA1c should be used where available. Consider less stringent glycaemic control in patients with frequent severe hypoglycaemia, advanced complications, serious comorbidities and/or limited life expectancy.
Step 5. Ask the participants to refer to diabetes management protocol and complete the management plan for the exercise provided in the workbook.

<table>
<thead>
<tr>
<th>Case study</th>
<th>Management plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 52–year-old female newly diagnosed diabetes with a fasting sugar of 150 mg/dL</td>
<td>• Initial assessment of the patient (history and physical examination), calculate 10-year CVD risk score, lifestyle modification, start with metformin 500 mg once daily (titrate the dose according to the treatment guidelines)</td>
</tr>
</tbody>
</table>
| A 60-year-old diabetic male on metformin 1000 mg bd. On his recent visit, his random blood sugar (RBS) was 300 mg/dL. | • Calculate 10-year CVD risk score  
• Lifestyle modification  
• Add sulphonylurea |
| A 70-year-old male with hypertension and on diabetes treatment for 10 years. His recent blood pressure was 170/100 mmHg and fasting blood sugar (FBS) was 100 mg/dL. Drug history – amlodipine 10 mg once daily, metformin 500 mg 8 hourly. | • calculate 10-year CVD risk score  
• Diabetes with comorbidities  
• His blood pressure is not controlled (add enalapril 5 mg once daily (refer to the hypertension guidelines)  
• His blood sugar is controlled but reduce the dose of metformin to twice daily because of old age. |

Activity 4. Comprehensive foot examination: 15 minutes

(If possible, participants should be informed in advance to come appropriately prepared for possible foot examination)

Step 1. Ask about the importance and frequency of foot examination recommended for a diabetic patient.

Step 2. List the responses on a flipchart /whiteboard.

Step 3. Present the powerpoint slides on how to conduct a foot examination and calculate the risk score.

Step 4. Divide participants into pairs and ask them to examine each other’s feet and do the risk score (supervised by facilitator).

Step 5. Summarize the activity by explaining the dos and don’ts for prevention of diabetes foot.
Activity 5. Patient education, prevention and management of diabetic emergencies: 30 minutes

Step 1. Ask the participants to read the case below.

Case study 1
A 50-year-old male with diabetes for 1 year came to the clinic with a fasting blood sugar of 150 mg/dL. He is taking metformin 500 mg 12 hourly.

- Discuss the possible cause of uncontrolled diabetes.
- How would you manage the complications of diabetes?

Step 2. Ask the participants to prepare a comprehensive checklist for providing advice to the patient on preventing the complications of diabetes.

Step 3. Invite two volunteers to act as a patient and a health worker. The health worker uses the checklist to provide advice.

Step 4. Summarize the role-play by emphasizing the key points on the prevention and management of diabetic emergencies through powerpoint slides on the management of complications of diabetes.

NOTE: The facilitator should cover the following:
- diet (advise dietary modification)
- compliance (advise drug adherence)
- infection and stress conditions (find out and treat)
- drugs causing hyperglycaemia, e.g. steroids (stop)
- add gliclazide 80 mg once daily and titrate after one week if not controlled.

Case study 2
A 68-year-old lady with diabetes for 3 years came to the clinic with a reduced level of consciousness and a random blood sugar of 50 mg/dL.

Discuss the diagnosis and management of the above case.

Answers of case 1 and case 2
Case study 1

If symptomatic (nausea, vomiting, abdominal pain, rapid breathing), urine ketones > +2– i/v drip
0.9% Nacl 1 litre in 2 hours; continue at 1 litre every 4 hours, refer to a higher centre

If symptomatic, ketones < +2– start with gliclazide 80 mg bd, counsel on diet modification, physical
activity and medicine adherence, reassess in 3–5 days. If there is no improvement, refer to a higher
level of care. If improved, continue gliclazide, diet modification, physical activity and review after
2 or 3 months.

Case study 2

Severe hypoglycaemia (plasma glucose <50 mg/dL or 2.8 mmol/L or signs):

  If conscious, give a sugar sweetened drink (15 gm of carbohydrate such as sugar, honey,
sweetened juice).

  If unconscious, give 25 mL of 50% glucose(dextrose) iv over 1–3 minutes, reassess in 15 minutes;
if still low, 10% dextrose water drip.
1. **What are the signs and symptoms of diabetes?**
   (a) polyuria
   (b) weight gain
   (c) thirst
   (d) vision changes
   (e) diarrhoea

2. **What are the risk factors for diabetes?**
   (a) first-degree relative with diabetes
   (b) hypertension
   (c) malaria
   (d) malnutrition
   (e) overweight

3. **What are the complications of diabetes?**
   (a) kidney damage (nephropathy)
   (b) eye damage (retinopathy)
   (c) constipation
   (d) heart damage (coronary heart disease)
   (e) brain damage (stroke)

4. **What are the diagnostic criteria of diabetes?**
   (a) urine sugar +3
   (b) fasting blood sugar >100 mg/dL
   (c) fasting blood sugar >126 mg/dL
   (d) random blood sugar >140 mg/dL
   (e) random blood sugar >200 mg/dL

5. **What are the first-line drugs for managing diabetes?**
   (a) metformin
   (b) gliclazide
   (c) pioglitazone
   (d) sitagliptin
   (e) acarbose
BACKGROUND INFORMATION

**What is diabetes?**

Diabetes is a disorder in which the body does not produce or properly use the hormone insulin. The body needs insulin to convert sugar, starches and other foods into energy. Impairment of insulin secretion and its action in the body leads to abnormally elevated levels of glucose in blood, a condition classically termed as diabetes.

**What are the different “types” of diabetes?**

**Classification of diabetes**

The classification of diabetes includes four clinical categories:

- Type 1 diabetes, due to β-cell destruction, usually leading to absolute insulin deficiency;
- Type 2 diabetes, due to a progressive insulin secretory defect in the background of insulin resistance;
- Gestational diabetes mellitus, which is diabetes diagnosed during pregnancy that is not clearly overt diabetes;
- Other specific types of diabetes due to other causes, e.g. genetic defects in β-cell function, genetic defects in insulin action, diseases of the exocrine pancreas (such as cystic fibrosis), and drug- or chemical-induced diabetes (such as in the treatment of HIV/AIDS or after organ transplantation).

**Type 1 diabetes (T1DM).** This usually occurs in younger people, children and adolescents. The diagnosis of T1DM can be made throughout childhood but it is more likely below 15 years of age. The onset is usually acute and severe, and insulin is required for survival. Type 1 diabetes results from autoimmune destruction of the beta cells in the pancreatic islets. A family history of diabetes is rare in T1DM. The presence of features of associated autoimmunity (autoimmune disorders, vitiligo) and absence of obesity and acanthosis nigricans are characteristics of T1DM. In addition, the urine of T1DM patients with uncontrolled hyperglycaemia may be positive for ketone bodies.

**Type 2 diabetes (T2DM).** This is the commonest type of diabetes. It usually occurs after the age of 40 years. T2DM was previously known as non-insulin-dependent diabetes mellitus. The onset is usually insidious and may be mild to severe. A family history is usually positive and strong. Obesity, metabolic syndrome and acanthosis nigricans are usually seen in these patients and there is no evidence of autoimmunity. Further, there is no insulin dependence till late in the course of illness.

**Gestational diabetes:** Gestational diabetes develops during pregnancy (gestation). Gestational diabetes causes high blood sugar that can affect pregnancy and the baby’s health. Expectant women can help control gestational diabetes by eating healthy foods, exercising and, if necessary, taking medication.

In gestational diabetes, the blood sugar usually returns to normal soon after delivery. However, they have a very high risk of developing type 2 diabetes within the next 5–10 years.
**Blood sugar tests** are taken to measure raised blood sugar levels, which are a risk factor for diabetes. Increased blood glucose or hyperglycaemia is the most common sign of diabetes. Diabetes is an important risk factor for cardiovascular disease (CVD).

**Blood cholesterol tests** are taken to measure the total cholesterol and high-density lipoprotein (HDL) cholesterol levels. High levels of cholesterol in the blood are also a risk factor for CVD.

**Type 2 diabetes mellitus: management**

Management of T2DM should be initiated as soon as the diagnosis is established even if the patient is asymptomatic. Initial assessment and management of the patient has to be carried out at the community health centre (CHC) level or at the secondary care level. Management of T2DM comprises initial assessment, initial management and follow-up visits. Each of these components is elaborated here.

1. **Initial assessment.** Individuals suspected of having T2DM need to be subjected to risk assessment, which includes:
   - history and physical examination;
   - assessment of blood glucose level;
   - presence of CVD risk factors (lipid profile); and
   - end-organ damage (urine for protein/ECG/ fundus examination of the eye).

Assessment of the history and physical examination of the patient is elaborated in the table.

<table>
<thead>
<tr>
<th>History (ask for)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms of hyperglycaemia</td>
</tr>
<tr>
<td>Duration since onset of symptoms</td>
</tr>
<tr>
<td>Precipitating factors like recent infections, stress,</td>
</tr>
<tr>
<td>change in dietary habits or physical activity level</td>
</tr>
<tr>
<td>Symptoms of micro-/macrovascular complications: visual</td>
</tr>
<tr>
<td>disturbances, oedema, breathlessness, angina, intermittent</td>
</tr>
<tr>
<td>claudication, numbness, paraesthesia</td>
</tr>
<tr>
<td>Hypertension, pre-existing cardiovascular diseases</td>
</tr>
<tr>
<td>Drug history</td>
</tr>
<tr>
<td>Diet</td>
</tr>
<tr>
<td>Physical activity type and frequency</td>
</tr>
<tr>
<td>Family history of diabetes</td>
</tr>
<tr>
<td>- Diabetes and complications</td>
</tr>
<tr>
<td>- Age at onset</td>
</tr>
<tr>
<td>- Cardiovascular disease</td>
</tr>
</tbody>
</table>

Management of **type 2 diabetes** in the primary health care level
### Physical examination (look for)

<table>
<thead>
<tr>
<th>Examination Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Body mass index</td>
</tr>
<tr>
<td>Waist circumference, waist–hip ratio</td>
</tr>
<tr>
<td>Acanthosis nigricans</td>
</tr>
<tr>
<td>Blood pressure</td>
</tr>
<tr>
<td>Peripheral pulses</td>
</tr>
<tr>
<td>Feet: calluses, ulcers, prominent veins, oedema, injuries</td>
</tr>
<tr>
<td>Fundus (retinal) examination</td>
</tr>
<tr>
<td>Cardiovascular system</td>
</tr>
<tr>
<td>Peripheral nervous system</td>
</tr>
<tr>
<td>Thyroid</td>
</tr>
</tbody>
</table>

Acanthosis nigricans is a brown-to-black, poorly defined, velvety hyperpigmentation of the skin, usually present in the posterior and lateral folds of the neck, the axilla, groin, umbilicus and other areas. This occurs due to insulin spillover (from excessive production due to obesity or insulin resistance) into the skin, which results in its abnormal growth, and the stimulation of colour-producing cells.

(2) **Initial management** includes:
- Pharmacotherapy for the management of hyperglycaemia and any other comorbid condition, e.g. high blood pressure, dyslipidaemia, etc.;
- Therapeutic lifestyle management; and
- Patient education and counselling for drug adherence and self-care.

**Type 2 diabetes mellitus: principles of management**

Lifestyle management (diet and physical activity) accompanied by drug therapy or insulin is the cornerstone of diabetes management. Apart from this other concurrent complications should be addressed. The basic principles in the management of T2DM are as follows:

1. Modify the lifestyle: diet and physical activity
2. Reduce insulin resistance through reduction in weight, specifically reduction of fat mass
3. Pharmacological treatment (if inadequate control): metformin/sulfonylureas
(4) Treatment of high blood pressure:

Angiotensin-converting enzyme (ACE) inhibitors or angiotensin-receptor blockers (ARBs), calcium-channel blockers such as amlodipine and diuretics such as hydrochlorothiazide

For details, refer to the section on hypertension.

(5) Lipid control with statins.

Pharmacotherapy

- Biguanides (Metformin)
  - Mechanism of action: insulin sensitizer

Dose

The dose of metformin varies from 250 mg to 2000 mg/day. Since patients may complain of nausea and gastric irritation, the dose can be administered after a major meal. The dose of metformin can be titrated based on blood glucose monitoring at intervals of 2–4 weeks. Currently the preferred approach is to start the patient on metformin and increase the dose to at least 1 g/day. If despite this dose optimum glucose control is not achieved, a sulphonylurea should be added.

Advantages

- no weight gain; some patients may experience weight loss. Hence, metformin is useful in the large majority of patients who are overweight
- no hypoglycaemia
- for monotherapy in obese patients
- can be combined with other antihyperglycaemic agents, including insulin.

Contraindications

- renal diseases (creatinine ≥1.5 mg% in men; creatinine ≥1.4 mg% in women)/hepatic disease
- cardiac/respiratory insufficiency; other hypoxic condition
- severe infections
- alcohol abuse
- history of lactic acidosis
- use of I/V radiographic contrast media
- ketoacidosis
  - temporarily withhold: surgery, acute illness

Caution: phenformin is a banned drug and is not recommended.
Management of type 2 diabetes in the primary health care level

Side-effects

Nausea, vomiting, diarrhoea, abdominal pain, taste disturbance, anorexia

- Sulphonylureas

Glibenclamide

- The dose of glibenclamide varies from 2.5 to 15 mg/day given in one or two divided doses. The dose can be titrated based on blood glucose monitoring at intervals of 1–2 weeks.
- General rule: the glucose-lowering effect plateaus after half the maximum recommended dose.
- Approved indications: monotherapy; in combination with metformin and insulin
- Caution: hypoglycaemia can occur most likely among the elderly, those with worsening renal function and those with irregular meal schedules.

Glicazide

Dosage: initially 40–80 mg daily, adjusted according to the response, up to 160 mg as a single dose, with breakfast, higher divided doses, maximum 320 mg daily

Contraindications: in ketoacidosis, acute porphyria, pregnancy, breastfeeding

Side-effects: gastrointestinal disturbances (nausea, vomiting, diarrhoea and constipation), hypoglycaemia, weight gain, disturbance in liver function (cholestasis, hepatitis and hepatic failure). Rarely allergic skin reaction.

Metformin is presented here as the first-line drug in the treatment of diabetes.

Sulfonylurea is recommended as the second-line treatment, and human insulin as the third-line treatment. Patients may require two or three drugs. Although there are other drug classes to treat diabetes, including thiazolidinediones (TZDs), DPP-4 inhibitors, SGLT2 inhibitors and GLP-1 receptor agonists, these medicines tend to be more costly, with limited evidence of superior effectiveness. They may, however, be considered in rare cases when treatment with metformin, sulfonylurea and insulin is not possible.

Screening for albuminuria and urine ketones

Urine protein (albuminuria). About a third of those with diabetes also have kidney-related diseases. A test that measures the amount of protein in your urine, called microalbuminuria, will show varying amounts of albumin (the main protein in your blood) in urine. Without treatment, kidneys could be damaged and eventually fail.

Urine ketones. People with diabetes are at risk for a ketone build-up in their blood. If left untreated, people with type 1 diabetes are at risk for developing a condition called diabetic ketoacidosis (DKA). It is also possible for people with type 2 diabetes to experience DKA in certain circumstances as well; however, it is rare.
Urine sample collection

Screening for urine albumin (or protein) can be done using a test strip or the urine can be transported to a laboratory for analysis.

Materials required

- Plastic container with lid pre-labelled with patient ID, name, age and sex of the participant;
- Zip-closable plastic bag.

The urine samples will need to be shipped to a previously identified location that is in possession of an analyser, and the results transmitted back to the PHC after analysis.

Additional reading resource

2. ADA 2017 guideline for diabetes
3. HEARTS evidence based treatment protocol
Management of type 2 diabetes in the primary health care level

Activity 1: Step 3

What is diabetes?

- Impairment of insulin secretion and action in the body leads to abnormally elevated levels of glucose in blood, a condition classically termed as diabetes.
- Chronic progressive disease
- Damages heart, blood vessels, kidney, nerves
- Preventable to a large extent
Types of diabetes

- Type 1 (10%): Exact cause unknown, it is due to β-cell destruction, leading to absolute insulin deficiency; more likely below 30 years of age; requires insulin for survival
- Type 2 (>90%): due to an inadequate insulin secretory response on the background of insulin resistance
- Gestational diabetes
- Other specific types (less common)

Diabetes risk factors

- First-degree relative with diabetes
- History of gestational diabetes
- History of CVD
- Hypertension
- Dyslipidaemia
- Overweight (South-East Asians develop diabetes at lower BMI)
- Physical inactivity (Exercise less than 3 times/week)
- Polycystic ovarian syndrome
- Age
- Race/ethnicity

Diabetes symptoms

- Polyuria (excessive production or passing of urine)
- Polyphagia (excessive hunger)
- Polydipsia (excessive thirst)
- Unexplained weight loss
- Vision changes
- Fatigue
**Diabetes screening criteria (WHO PEN)**

- Age 40+ years and above
- who are overweight (BMI >25) or obese (BMI >30) (or follow national guidelines)
- Waist circumference (>90cm in women, >100cm in men)
- Known hypertension
- History of premature CVD in first degree relatives
- History of DM or kidney disease in first degree relatives

**Diabetes diagnosis**

- Use fasting plasma glucose to screen and diagnose diabetes.
- Criteria for the diagnosis of diabetes

  Fasting plasma glucose $\geq 126$ mg/dL (7.0 mmol/l)
  or
  2-h plasma glucose $\geq 200$ mg/dL (11.1 mmol/l) during an OGTT
  or
  HbA1c $\geq 6.5\%$ (48 mmol/mol)

  Classic diabetes symptoms random plasma glucose
  200 mg/dL (11.1 mmol/l)

**Diagnosing diabetes on point-of-care devices (only if lab measurement not available, WHO-PEN)**

- Point of care devices report capillary plasma value
- fasting $\geq 7.0$ mmol/l
  Or/and
- 2-hour after oral glucose 75g load $\geq 12.2$ mmol/l*
  Or/and
- Random $\geq 12.2$ mmol/l*

  *A positive test should be repeated on another day if there are no symptoms or obvious metabolic decompensation

  Diagnostic cut off points in venous plasma (laboratory) are different from the capillary plasma value for 2-hour post-load ($\geq 11.1$ mmol/l) and random values ($\geq 11.1$ mmol/l)
Gestational Diabetes diagnosis

To do Oral Glucose Tolerance test (OGTT)
A. At 24-28 weeks gestation in women not previously diagnosed with overt diabetes
B. 75-g OGTT; Measure plasma glucose at fasting and at 1 and 2 hours.
C. GDM diagnosed when plasma glucose exceeds:
   - Fasting: 92 mg/dL (5.1 mmol/l)
   - 1h: 180mg/dL(10.0mmol/l)
   - 2h: 153 mg/dL (8.5 mmol/l)

Activity 2: Step 1

How to use glucometer

- What you need to test your blood glucose
  - Glucometer
  - Lancet device
  - Vial of test strips
  - Lancets

- Before you start
  - You may need to set the date and time on the meter
  - Wash and dry your hands thoroughly with warm water.
  - Insert a new test strip into your meter. Place the end of the strip with the 3 contact bars as far into the meter as it can go.
  - Your meter will turn on automatically and display a number code.
  - Check the code to make sure it matches the number code on the vial of test strips.
Management of type 2 diabetes in the primary health care level

How to use glucometer

- Step 1: Get a blood sample
- Step 2: Apply blood to strip
- Step 3: Read the result: Your meter will count down and display the result of your blood glucose level.
- For accurate measurement follow below instructions:
  - Participant has to be in a fasting state for at least eight hours (participant can have water in fasting period but not tea)
  - Puncture either middle or ring finger
  - Do not squeeze the finger take blood
  - Do the control solution test regularly

Activity 3: Step 4

Monitoring glycaemic control

- Two primary techniques available for health providers and patients to assess effectiveness of management plan on glycemic control
- HbA1C

<table>
<thead>
<tr>
<th>HbA1c</th>
<th>&lt;7.0% (&lt;53 mmol/mol)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preprandial capillary plasma glucose</td>
<td>80–130 mg/dL* (4.4–7.2 mmol/L)</td>
</tr>
<tr>
<td>Peak postprandial capillary plasma glucose</td>
<td>&lt;180 mg/dL* (&lt;10.0 mmol/L)</td>
</tr>
</tbody>
</table>
Management of type 2 diabetes in the primary health care level

**Warning about oral hypoglycaemic agent (OHA)**

- **Metformin**
  - Side Effects: nausea, vomiting, diarrhoea
  - Contraindication:
    - if serum creatinine > 1.5 mg/dL → omit metformin
    - if serum creatinine cannot be measured → look for presence of oedema / puffy face → indication to omit metformin.

- **Gliclazide**
  - Side Effect: weight gain, hypoglycemia

**Guidance on prescribing insulin**

- **Step 1**: If A1C ≥ 7.0% (or FPG ≥ 130 mg/dl)
  - After a trial of metformin 1000 mg twice per day plus gliclazide 80 mg twice per day
  - Initiate bedtime basal insulin (or NPH) starting at 10 units/day or 0.1–0.2 units/kg.

- **Step 2**: Adjust basal insulin dose:
  - Increase 10–15% or 2–4 units/day every three days based on fasting finger sticks until goal is reached. Goal is FPG 70–130 mg/dl (3.9–7.2 mmol/l)
  - For hypoglycaemia (FPG ≤ 70 mg/dl), decrease dose by 4 units or 10–20%

- **Step 3**: IF A1C ≥ 7.0% (or FPG ≥ 130) for more than 3 months after initiation of basal insulin:
  - Consider short-acting insulin or regular before meals or refer to a specialist for multiple daily injections.

**Control of blood pressure**

- Hypertension treatment is indicated when SBP ≥ 130 and/or DBP ≥ 80 mmHg

- **Medication adherence**
  - Assess adherence and discuss barriers at every visit.
  - Reconcile clinician’s medication list with patients list, adjust dose, and eliminate unneeded medications.
  - Prescribe once-daily medications, less expensive generics, and longer-lasting supplies of medicine whenever possible.
  - Provide tools such as pill boxes and medication logs to help patients remember to take their medications.
Checklist for preventing of diabetes complications

- Every 3-6 months the patient should have a physical review by a physician
- Test plasma glucose levels
- Test glycosylated haemoglobin levels (HbA1c) (if facilities are readily available)
- Examine feet for sensations and circulation; also for calluses, dryness, sores, infections, injuries
- Check blood pressure
- Help the patient to give up tobacco, if he/she continues to use tobacco
- Reinforce life style measures – increase physical activity level and improve diet

Referral criteria

- Newly diagnosed DM for further investigation
- Any proteinuria
- DM with blood glucose > 14 mmol/l despite maximal metformin with or without sulphonylurea
- Newly diagnosed DM with urine ketones 2+ or in lean persons of < 30 years (suspected with diabetic ketoacidosis)
- Patients with plasma glucose levels ≥ 18 mmol/l (325 mg/dl) and all patients with suspected DKA or HHS
- DM with severe infection and/or foot ulcers
- DM with recent deterioration of vision or no eye exam in 2 years

Clinical practice recommendations

- HbA1c measurements every three to six months; every six months if stable on unchanged treatment
- Blood pressure at every visit, treatment as per hypertension protocol
- Fasting lipid panel annually if available
- Weight and BMI at every visit
- Foot exam for amputation risk annually, or every visit if high-risk
- Aspirin for patients with CVD
Clinical practice recommendations

- Annual urine protein dipstick (microalbuminuria dipstick if available to calculate albumin to creatinine ratio) and serum creatinine measurement (GFR calculation) for CKD screening.
- Dilated pupils retinal exam every two years if treatment available
- Diabetes self-management education to reinforce treatment goals
- Provide counselling around lifestyle change, including diet, physical activity and smoking cessation

Prevention of blindness and lower limb amputation

- Diabetic retinopathy is a cause of loss of vision worldwide
- Recommendation: Person with type 2 diabetes should be screened for diabetic retinopathy by an ophthalmologist every two years
- Diabetes is the leading cause of non-traumatic lower limb amputation
- Lifetime risk of developing foot ulcers in person with diabetes is 15%
- What should be done?
- Patient education on foot hygiene, nail cutting, treatment of calluses, appropriate foot wear
- Assess risk of feet ulcers (inspection, pin-prick sensation)

Activity 4: Step 3
Management of type 2 diabetes in the primary health care level

**Foot examination**
- It includes:
  - History
  - Inspection of foot for deformity or ulcer
  - Neuropathy assessment through monofilament test, tuning fork test, and ankle reflex
  - Palpation of pulse

**Patient history**

**Foot inspection (abnormal finding)**

<table>
<thead>
<tr>
<th>Inspection</th>
<th>Neurological assessment</th>
<th>Vascular assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bone fracture</td>
<td><em>Hematoma, swelling, tenderness, discoloration</em></td>
<td><em>Avascular necrosis, AVF</em></td>
</tr>
<tr>
<td>Edema</td>
<td><em>Pitting, non-pitting</em></td>
<td><em>Aneurysm, AVF</em></td>
</tr>
<tr>
<td>Cellulitis</td>
<td><em>Redness, warmth, pain, sx with cellulitis</em></td>
<td><em>Aneurysm, AVF</em></td>
</tr>
<tr>
<td>Necrosis</td>
<td><em>Necrotic tissue, gangrene</em></td>
<td><em>Aneurysm, AVF</em></td>
</tr>
<tr>
<td>Ulcers</td>
<td><em>Healing, non-healing</em></td>
<td><em>Aneurysm, AVF</em></td>
</tr>
<tr>
<td>Circulatory changes</td>
<td><em>Edema, cyanosis</em></td>
<td><em>Aneurysm, AVF</em></td>
</tr>
</tbody>
</table>
Monofilament test

Sites to be tested with monofilament test

Use of monofilament for neuropathy

Tuning fork test

- The tuning fork should be applied perpendicularly with constant pressure
- If the patient is unable to sense the vibrations on the big toe, the test is repeated more proximally (malleolus and tibial tuberosites)

Palpation of arteries

- Palpation of dorsal pedis: Feel in the middle of the dorsum of the foot just lateral to the tendon of extensor hallucis longus (extensor tendon of the great toe)
- Posterior tibial artery: Midway between medial malleolus and tendon calcaneus
Foot examination screening assessment sheet

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot ulcer</td>
<td></td>
</tr>
<tr>
<td>Risk factors for foot ulceration</td>
<td></td>
</tr>
<tr>
<td>Monofilament undetectable</td>
<td></td>
</tr>
<tr>
<td>Cotton wool undetectable</td>
<td></td>
</tr>
<tr>
<td>Tibial posterior artery absent</td>
<td></td>
</tr>
<tr>
<td>Dorsal pedis artery absent</td>
<td></td>
</tr>
<tr>
<td>Foot deformity</td>
<td></td>
</tr>
<tr>
<td>Loss of joint mobility</td>
<td></td>
</tr>
<tr>
<td>Signs of abnormal pressure such as callus</td>
<td></td>
</tr>
<tr>
<td>Discouragement on dependency</td>
<td></td>
</tr>
<tr>
<td>Poor foot hygiene</td>
<td></td>
</tr>
<tr>
<td>Inappropriate footwear</td>
<td></td>
</tr>
<tr>
<td>Previous ulcer/amputation</td>
<td></td>
</tr>
</tbody>
</table>

Foot care advise to patient

- Inspect your feet daily for cracks, blisters, infections. You may be able to see a problem before you feel it. If you can't see the bottoms of your feet easily, use a mirror. A magnifying glass also may help you see better. If you can't check your feet, have someone else to do it.
- Cleanse your feet daily as you bathe or using warm water and mild soap. Dry your feet with a dry and don't use hot water. As may not be able to feel the hotness of the water.
- Moisturize dry skin by using oil. If it causes redness or irritation, discontinue its use and inform your doctor. If you are currently using a or lotion that keeps your skin soft and of cracks, continue using it.
- Clip toe nails straight across. Use a nail cutter and not scissors.

Foot care advise to patient

- Always wear on your feet (socks, slippers, shoes) to protect them - even in your house.
- Choose soft shoes. Let them a size bigger than what you feel is appropriate. Wear
- Treat minor breaks in the skin promptly. Cleanse the area with soap and water, dry, and cover with clean gauze. Observe for signs of infection such as redness, swelling, warmth, pain or drainage.
- Don't put weight on the foot that has an injury.
- See your doctor to check your feet during your regular for diabetes care. Take off shoes and at every visit.
Management of type 2 diabetes in the primary health care level

Activity 5: Step 4

Emergencies in diabetes

- Severe hypoglycemia
  - Loss of consciousness and coma, and life threatening
- Hyperglycemic emergencies (diabetic ketoacidosis/DKA)
  - Characterized by fluid and electrolyte depletion and hyperglycaemia, acidic breathing (rapid, deep, sign, pauseless breathing), Urine ketone body > +2
  - At PHC usually difficult to diagnose but learn to suspect and refer

Hypoglycaemia (iatrogenic complication)

- **Symptoms**: Dizziness, sweating, hunger, convulsion, irrational behavior, unconsciousness, convulsions
- **Sign**: PG < 70 mg/dl (3.9 mmol/l)
- **Treatment**: drink 1-2 teaspoons of sugar (if the patient is able to swallow) or IV 50% glucose (2) ampules stat
- **Severe hypoglycaemia**: Unconscious diabetic patients on hypoglycaemic agents and/or blood glucose ≤50 mg/dl (2.8 mmol/l)
- **Treatment**: 20 to 50ml of 50% glucose (dextrose) over 1 to 3 minutes. If not available substitute with any hypertonic glucose solution. Provide food as soon as the patient can ingest food safely.
Hyyperglycaemic emergencies

**Diabetic ketoacidosis (DKA)**
- Frequent symptoms: nausea, vomiting, abdominal pain
- Plasma glucose >=13.9 mmol/l (250 mg/dl) but can be lower
- Blood pH <7.30, urine ketone body >2
- Acidotic breathing (rapid, deep, pauseless breathing) in severe DKA
- Sensorium changes range from alert to stupor/coma

**Hyperosmolar hyperglycaemic state**
- Plasma glucose usually >=33.3 mmol/l (600 mg/dl)
- Sensorium seriously altered (stupor, coma)
- Blood pH 7.3 (no acidosis), urine ketones negative

**Treatment of DKA and HHS**
- Urgent referral to hospital with infusion of isotonic saline (0.9% NaCl) at a rate of 1000 ml in the first 2 hours, continue with 1000 ml every 4 hours

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**Patient education topic to be covered in initial and follow up visit**

<table>
<thead>
<tr>
<th>Initial Visits</th>
<th>Follow-up Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is Diabetes?</td>
<td>Importance of Glycaemic Control</td>
</tr>
<tr>
<td>Why does it occur?</td>
<td>Prevention of Complications</td>
</tr>
<tr>
<td>Lifestyle measures: Diet, Exercise</td>
<td>Foot Care (see box 5.1.3)</td>
</tr>
<tr>
<td>Detailed lifestyle advice</td>
<td>Newer modalities of treatment</td>
</tr>
<tr>
<td>Use of Oral Drugs</td>
<td>Marriage Counseling</td>
</tr>
<tr>
<td>Advice on identifying signs and symptoms of hypoglycaemia and hyperglycaemia and their management</td>
<td>Pre-conceptional counseling regarding the importance of good glucose control prior to pregnancy</td>
</tr>
<tr>
<td>Patient should be informed about the importance of factors other than glucose control: cholesterol, blood pressure, stopping smoking/tobacco, etc.</td>
<td></td>
</tr>
</tbody>
</table>

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**Dietary advise for diabetes**

- The dietary recommendations for people with diabetes are the same as for non-diabetics - a healthy diet
- Eat plenty of vegetables
- Have sufficient fibre in your diet
- Cut down on sugar
- Cut down on processed meat
- Eat fish regularly
- Cut down on energy dense, processed food - such as crisps, cakes, biscuits and pastries
- Cut down on alcohol
- Cut down on salty processed foods
Physical activity for diabetes

The recommendations for people with diabetes would be the same as for people without and be compatible with the person’s physical condition.

- 30 minutes exercise/day
- (can break to 10 minutes each)
- 5 days/week
- Total 150 minutes

Additional slides

Use of insulin injection

- Gather your insulin supplies
- Prepare the insulin vials
- Inject air into the insulin vial
- Draw up the insulin
- Check the syringe for air bubbles
- Remove the needle from the vial
Insulin storage

- **Insulin** that is not in use should be stored in the refrigerator.
- If refrigeration is not possible, it can be kept at room temperature [15-25 degrees C] for 28 days.
- The in use vial may be kept at room temperature [15-25 degrees C] for 28 days.
- Do not store your insulin near extreme heat or extreme cold.
- Never store insulin in the freezer, direct sunlight, or in the glove compartment of a car.
- Check the expiration date before using, and don't use any insulin beyond its expiration date.
- Examine the bottle closely to make sure the insulin looks normal before you draw the insulin into the syringe.
Module 3.4

Prevention of stroke in primary health care
WHAT’S INSIDE

Introduction
Learning objectives
Topics covered
Competency
Teaching and learning activities
Background information
INTRODUCTION

Acute cerebrovascular diseases or strokes are the consequence of an alteration of blood flow in the brain, which causes a transient or permanent deficit of the functioning of one or several areas of the brain. Primary health care workers can help in stroke prevention and management through lifestyle advice, educating the community member about warning signs of stroke, and stroke rehabilitation in patient having suffered a stroke.

LEARNING OBJECTIVES

At the end of the session, participants will be able to:

- Identify patients with suspicion of acute stroke and make appropriate referrals.
- Provide support for follow-up secondary prevention.

TOPICS COVERED

- Types of stroke.
- Recognition of stroke.
- Steps for clinical and neurological work-up.
- Referrals and use of management algorithm for suspicion of acute stroke.
- Secondary prevention.

COMPETENCY

- Improved skills for recognition of acute stroke and providing urgent referrals to higher centres using the stroke protocol.
TEACHING AND LEARNING ACTIVITIES

Total session time: 90 minutes

Activity 1. Introduction to stroke: 10 minutes

Step 1. Write the words “cardiovascular” and “cerebrovascular” on a flip chart. Ask participants if they see a similarity between the two words and what do they think it means.

Facilitator’s note: [cerebro means “related to the brain”, vascular means “related to the blood vessels”].

Step 2. Present the powerpoint slides with the following contents:

- definition and type of stroke
- burden and risk factors of stroke
- neurovascular anatomy of brain.

Activity 2. Steps for clinical and neurological work-up for suspected stroke: 15 minutes

Step 1. Ask the participants whether they know anyone who has had a stroke and survived.

What symptoms did this person have?

- Did this person or the family know that he or she was having a stroke?
- Did this person get treatment immediately?
- Did the stroke change the person’s life?
- How did the stroke affect the life of the family members?

Step 2. Give participants time to share their stories and ask questions about stroke.
Step 3. Present the powerpoint slides with warning signs and symptoms.

Message

Stroke is a medical emergency. The longer the normal blood flow to the brain is reduced, the greater the chance for damage. For each minute of delay 1.2 km of nerve fibres are damaged in the affected brain. Diagnostic tests (CT/ MRI scan) should be done as soon as possible and if medicines to dissolve or treat clots are needed and available they should be started within 4.5 hours of experiencing the stroke for the greatest chance of recovery. In stroke care, the term golden hour is used to designate the hour immediately following the onset of stroke symptoms and the reason it is “golden” is that stroke patients have a much greater chance of surviving and avoiding long-term brain damage if they arrive at the hospital and receive treatment within that golden hour.

Activity 3. Case studies on stroke: 20 minutes

Step1. Refer to the case studies below and briefly discuss on the questions that follow.

(1) Sarah, a 55-year-old lady on irregular treatment for hypertension, is brought to the health centre with the complaint that she had felt a numbness in her right leg followed by difficulty in walking. She notices that her right hand is also weak. Could Sarah be having a stroke? As the health care provider (HCP), what would you ask and what examination would you do for this patient?

(2) Desilva has been presented to the health centre with slurred speech and giddiness. He also feels numbness and heaviness on his left side. He feels his symptoms are due to a side-effect of his diabetes medicines and did not take the morning dose. Could he be having a stroke? As the HCP what would you tell him?

(3) Maria, a 40-year-old smoker comes to the health-care worker to get some medicine because she noticed some weakness in her left hand when she awoke. She also felt that her mouth is a little deviated to one side. She is sure the weakness must be because of the position of the hand while sleeping and wanted to go back soon to finish some important work in the office. As the HCP, do you notice any warning signs of a stroke? What examination will you do and what advice would you give her?

(4) Anurak presented with sudden headache and loss of consciousness. His blood pressure level is 220/100 mmHg. Would he be having a stroke? If so, what type of stroke could be suspected?
Activity 4. Practicing the use of algorithm for suspicion of stroke: 20 minutes

Step 1. Divide the participants into convenient groups and ask them to discuss the algorithm

Management of suspicion of acute stroke in primary health centre (PHC)

<table>
<thead>
<tr>
<th>Event</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient with symptoms of suspected stroke</td>
<td>Suspicions: Sudden onset neurological deficit. Weakness/numbness of the face, arm or leg, especially on one side of the body. Blurred or deceased vision in one/both eyes or double vision. Difficulty speaking or understanding. Dizziness, loss of balance or coordination, sudden headache, loss of consciousness.</td>
</tr>
<tr>
<td>History: risk factors</td>
<td>Risk factors: Stroke or other previous vascular illness, smoking, high BP &amp; DM. Look for FAS: Facial weakness, Arm weakness, and Speech problems.</td>
</tr>
<tr>
<td>Time of onset of symptoms</td>
<td></td>
</tr>
<tr>
<td>Examine (FAS)</td>
<td></td>
</tr>
<tr>
<td>Suspicions of acute stroke</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Treat as per diagnosis</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes, maybe ≤ 4.5 hrs</td>
</tr>
<tr>
<td>Yes, maybe ≤ 4.5 hrs</td>
<td>Yes, maybe &gt; 4.5 hrs to 3 days</td>
</tr>
<tr>
<td>Yes, onset of symptoms 4 days to 7 days</td>
<td>Onset of symptoms &gt; 7 days</td>
</tr>
<tr>
<td>High risk patient (recurrent TIA or patient on anticoagulant therapy)</td>
<td></td>
</tr>
<tr>
<td>Actions till transfer:</td>
<td>Transfer to hospital with stroke unit/neurology services</td>
</tr>
<tr>
<td>Make, patient lie down on the side with their head supported</td>
<td></td>
</tr>
<tr>
<td>Loosen any restrictive clothing that could cause breathing difficulties.</td>
<td></td>
</tr>
<tr>
<td>Check respiratory function, heart rate, BP, check glucose &amp; O₂ saturation if feasible.</td>
<td></td>
</tr>
<tr>
<td>If sugar is ≤60 mgs give intravenous 50% dextrose.</td>
<td></td>
</tr>
<tr>
<td>Activation emergency services/ arrange ambulance for immediate transfer</td>
<td></td>
</tr>
<tr>
<td>Risk factors: Stroke or other previous vascular illness, smoking, high BP &amp; DM. Look for FAS: Facial weakness, Arm weakness, and Speech problems.</td>
<td></td>
</tr>
</tbody>
</table>

Transient Ischaemic Attack (TIA): The neurological symptoms and signs has resolved by the time of the visit and usually does not last for more than one hour.

STROKE: Possible TIA or stable stroke of at least 48 hours’ evolution. It includes patients who come when the symptoms have already resolved and they have lasted for <24 hours (suspicion of TIA) and patients with stroke who are stable and come to the health centre, 48 hours after the onset of symptoms.
Step 2. Discuss the management of the following case scenarios using the algorithm for suspicion of acute stroke.

**Scenario 1:** A 60-year-old male smoker presents himself to the health centre with complaints of weakness in the left side of the body. He says it started with a feeling of numbness two hours ago and now he feels some difficulty while talking as well. Develop a management plan for this patient using the management algorithm for suspicion of acute stroke.

**Scenario 2:** A 50-year-old diabetic female comes to the health centre for a check-up of her blood sugar. She states that she had sudden onset weakness of left arm with slurring of speech three days ago. She didn’t come then because she recovered very soon and felt quite normal since. What are the steps in the management of this patient using the management algorithm for suspicion of acute stroke?

Step 3. Ask the participants to refer to workbook for case studies

**Additional case studies**

**Case 1: Presentation to a Primary health centre (PHC)**

**History:**
A 52-year-old male was found (by his relative) to have sudden trouble speaking, and difficulty in moving his right arm and leg with drooping of right side of the face at 11 a.m. He is brought to the PHC at 12 noon. He has a history of high blood pressure and blood sugar in the past but is on medication irregularly.

**Examination:**
His BP was 180/100 mmHg with a heart rate of 98/min. On examination there was drooping of right side of the face with deviation of angle of mouth to the left side. He was not able to move his right arm and leg and his speech was not clear.

**Clinical diagnosis:** Acute stroke: right hemiplegia (face, arm and leg weakness) with dysarthria.

**Management:**
Call ambulance service and transfer the patient to a district hospital with CT scan facility or a stroke centre with facilities for thrombolysis treatment. In PHC apart from the BP measurement a quick blood sugar test can be done. This is to exclude hypoglycaemia (low sugar) which can present like stroke.

**Explanation:**
This patient’s clinical symptoms are right facial droop, paralysis of right side of body and dysarthria. The acronym “FAST” (F-face, A-arm, S-speech and T-time) is a simple test to find out whether a patient has a stroke or not. This is the most common presentation of stroke.

This patient needs an urgent brain CT scan to exclude intracerebral haemorrhage. If there is no haemorrhage and the patient is in the 0-4.5 hours window period he may be eligible to receive intravenous recombinant tissue plasminogen activator (IVtPA). Hence the patient has to be transferred to a centre with these facilities.
Case 2: Presentation to a PHC

History

A 55-year-old lady presents with sudden headache, vomiting, giddiness and loss of balance on walking for two hours. She has a history of high blood pressure and high cholesterol. She was taking medications regularly till one week ago.

Examination

Her BP was 190/100 mm Hg and the heart rate was 101/minutes. On clinical examination she was not able to sit because of severe giddiness. Examination of eye movements showed nystagmus and her speech was not clear. She became less responsive to questions during the examination.

Clinical diagnosis: Acute stroke (probably cerebellar or posterior circulation stroke)

Management

Establish an IV access. Call 108/100 ambulance service and transfer the patient to a district hospital with CT scan facility or a stroke centre with facilities for thrombolysis treatment. In PHC apart from the BP measurement a quick blood sugar testing can be done. This is to exclude hypoglycaemia (low sugar) which can present like stroke.

Explanation

This patient’s clinical symptoms are headache, vomiting, giddiness and imbalance. These symptoms are suggestive of a stroke affecting the posterior part of the brain such as cerebellum and medulla.

This patient needs an urgent brain CT scan to exclude intracerebral haemorrhage. If there is no haemorrhage and the patient is within the 0–4.5 hours window period he may be eligible to receive intravenous recombinant tissue plasminogen activator (IV tPA). Hence the patient has to be transferred to a centre with these above facilities.

Activity 5. Follow-up care and secondary prevention of stroke at PHC: 20 minutes

Step 1. Start with the following statement.

One out of 4 people who recover from their first stroke will have another stroke within 5 years. Two types of medicine are commonly given to prevent a second stroke.

Anticoagulants. These medicines are blood thinners that prevent the blood from clotting and causing a stroke.

Antiplatelet agents. Platelets are blood cells that help the blood to clot, when blood vessels are injured. Antiplatelet medicines prevent platelets from causing a clot in blood vessels.
Step 2. Ask the groups to discuss the secondary prevention of stroke in the following cases.

Case 3: Presentation to a PHC (secondary prevention of stroke and long-term care)

History

A 60-year-old male developed left-side weakness of the face, arm and leg one month ago. He was admitted in a district hospital and was diagnosed to have an ischemic stroke based on the CT scan. He was found to have high blood pressure, high blood sugar and high cholesterol during the admission. He was discharged after one week. He was able to stand with support at the time of discharge and was unable to lift his left arm. He was able to swallow and take food orally.

He comes to the PHC for his post-one-month follow-up. His current medications are tablet aspirin 75 mg daily, tablet amlodipine 5 mg daily, tablet metformin 500 mg twice a day and tablet atorvastatin 10 mg per day. His relatives reported that he has lost interest in speaking to others and cries frequently. He also repeatedly tells his relatives that he will not improve and fears another stroke soon.

Examination

His BP is 160/90 mmHg and HR was 82/minute and regular. His blood sugar was 120 mg/dl. On examination he is able to lift his left upper limb but the grip is still weak. He needs support with a stick for walking. He also has drooping of the left side of face.

Clinical diagnosis: Ischaemic stroke with residual left-side hemiparesis and post-stroke depression

Management

- Tab aspirin 75 mg per day, increase tab amlodipine to 5 mg twice a day, and continue tablet atorvastatin 10 mg per day and tab metformin 500 mg twice a day. He is advised to take the pills regularly
- He is advised to reduce salt intake in his diet and not to eat food rich in fat, sugar and high carbohydrates
- He is counselled that he is improving from the stroke and is started on tab sertraline 50 mg daily for depression
- He is advised to continue active and passive exercises suggested by the physiotherapist.

Explanation

This patient had an ischaemic stroke one month ago and he is recovering. He has residual left hemiparesis but has developed symptoms of depression. Post-stroke depression is common which needs to be addressed since it can hamper the stroke recovery.

He is advised about diet, medications (compliance) and encouraged to continue physiotherapy

His BP medication tablet amlodipine is increased since his BP is not under control. He needs control of BP, blood sugar, cholesterol to prevent another stroke. Antiplatelet drug (aspirin) has to be continued.
Case 4: Presentation to a PHC (secondary prevention of stroke and long-term care)

History: A 48-year-old male developed sudden imbalance, loss of consciousness and vomiting six weeks ago. He was admitted in a district hospital immediately after his symptoms and his BP was 220/120 mmHg at the time of admission. His CT scan head showed a haemorrhage in the left cerebellum. He had a history of high blood pressure for seven years and didn’t take medications. He had a ST elevated myocardial infarction (STEMI) years ago and was on irregular treatment. He remained in the hospital for three weeks before being discharged.

Examination

His BP is 130/80 mmHg and HR was 90/minute and regular. On examination he is able to walk with a walking stick and is unsteady without support. His current medications include tablet telmisartan 40 mg daily.

Clinical diagnosis: Haemorrhagic stroke with residual ataxia; hypertension, coronary artery disease (CAD).

Management

- He is advised to continue tablet telmisartan 40 mg daily.
- He is advised to take the pills regularly.
- He is started on tablet aspirin 75 mg daily for CAD.
- He is advised to reduce salt intake in his diet and not to eat food rich in fat and carbohydrates.
- He is advised to continue gait therapy suggested by the physiotherapist.

Explanation

This patient developed cerebellar haemorrhage. The risk factor for stroke was uncontrolled hypertension. In addition he has a previous history of CAD. His BP is under control but he is not on antiplatelet therapy for CAD. His stroke happened six weeks ago it is relatively safe to start him on antiplatelet therapy even though he has had brain haemorrhage. He is advised about diet, medications (compliance) and encouraged to continue gait therapy.

Case 5: Presentation to a PHC (secondary prevention of stroke and long-term care).

History

An 85-year-old year old male developed sudden weakness in the right side of the body with inability to speak six months ago. He was managed in a medical college hospital and was diagnosed to have ischaemic stroke. He had a history of high blood pressure. He was discharged after 15 days. He remained disabled and needed support for all activities of daily living. He used to cry frequently after his stroke and had lost interest in watching TV. He was able to swallow and eat food with the left hand. Sometimes he had urinary and faecal incontinence.

Examination

His BP was 140/80 mmHg and HR was 72/minute and regular. On examination he was in a wheel chair and not able to speak or move the right side of his body.

His current medications include tablet amlodipine 5 mg twice a day and tablet aspirin 75 mg once a day.
Clinical diagnosis: Ischaemic stroke with residual right-side hemiplegia and aphasia, along with depression.

Management

- He is advised to continue tablet amlodipine 5 mg twice a day and tab aspirin.
- He is started on tablet sertraline 50 mg once a day.
- He is advised to reduce salt intake in his diet and not to eat food rich in fat and high carbohydrates.
- His relatives are advised few home care tips:
  - During sleep he has to be made to change sides every two or three hours to avoid having bed sores.
  - Soft materials such as pillows must be placed under his bony prominences when he sleeps.
  - Help him to time his bladder emissions, faecal incontinence and use diapers at night.
  - Passive exercises should be done every day for a few hours to prevent joint contractures.

Explanation

This patient probably had a severe ischaemic stroke and has severe disability. He has not made any recovery since the time of the stroke. Besides medications he needs long-term care at home. The home care must help prevent bed sores, develop bladder control and assist with passive exercises. This will prevent long-term complications of stroke such as bedsores and urinary infections.

Practical exercise: Ask participants to role play the FAST tool assuming they are conducting stroke awareness in a community near the health facility.

Activity 6. Promoting stroke awareness to community:

20 minutes

Step 1. Review the Ludhiana model of stroke prevention in community in northern India.

The Ludhiana model: A successful model of how frontline health care workers can identify stroke patients and organize referrals in the rural community: The frontline health care workers (ASHAs, ANMs, anganwadi workers) in 94 villages of Ludhiana district were trained by research staff to recognize stroke patients in the rural community. If the patient is in the golden hour of 4.5 hours the health care workers request the relatives to call 108 ambulance and the patients reach the government district hospital/CMC hospital where CT scan facility and clot dissolving drug is available. Subsequently the health care workers are being trained to monitor the BP and blood sugar levels of patients regularly with the provision of medicines in PHCs.

Step 2. Compare the similarity and dissimilarity of the model with the services available in your communities. Propose a community level intervention on stroke prevention.
1. Which of the following is a warning sign of stroke?
   (a) gradual weakness of body
   (b) facial droop
   (c) drooling of saliva
   (d) stammering of speech.

2. Which of the following is not a type of stroke?
   (a) ischaemic
   (b) haemorrhagic
   (c) TIA
   (d) epilepsy.

3. What is the leading risk factor for stroke?
   (a) smoking
   (b) physical inactivity
   (c) hypertension
   (d) diabetes.

4. If you come across someone with sudden loss of speech and weakness in the right upper limb, what would you do?
   (a) consult a local healer
   (b) refer to a local hospital
   (c) refer to a hospital with CT scan
   (d) give antithromolytic agent and refer.
Warning signs for stroke

Since the brain controls the whole body, the symptoms of a stroke can be wideranging depending upon which part of the brain is affected. A stroke has few classic early warning signs. The word “stroke” comes from the idea of receiving a strike or a blow. Most of these signs appear suddenly. A person may be suspected to be suffering from a stroke in the presence of one or more of the following signs:

- sudden numbness or weakness of the face, arm or leg, especially on one side of the body
- sudden confusion, trouble in speaking or understanding (slurring or not being able to think of or form words)
sudden trouble in seeing in one or both eyes (blurred or blocked vision)
sudden trouble walking, dizziness or loss of balance
sudden severe headache which may be accompanied by altered consciousness

**Risk factors for stroke**

<table>
<thead>
<tr>
<th>Non-modifiable risk factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Incidence of stroke doubles every 10 years from the age of 55 onwards.</td>
</tr>
<tr>
<td>Gender</td>
<td>More frequent in women (probably due to larger number of older women).</td>
</tr>
<tr>
<td>Family history</td>
<td>Family history associated with a greater risk of stroke.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Modifiable risk factors</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior stroke</td>
<td>Risk of a recurrent ischaemic stroke is high the first year after having suffered a TIA.</td>
</tr>
<tr>
<td>Alcohol, tobacco, drugs</td>
<td>A high consumption of alcohol, consumption of tobacco/drugs increases risk.</td>
</tr>
<tr>
<td>Sedentary</td>
<td>Physical activity is associated with a lower risk of vascular episodes.</td>
</tr>
<tr>
<td>Obesity</td>
<td>General and abdominal obesity are associated with an increased risk of stroke.</td>
</tr>
<tr>
<td>High blood pressure (BP), diabetes mellitus (DM), metabolic syndrome, dyslipidemia</td>
<td>High BP is the most important risk factor together with age. Diabetes and metabolic syndrome also increase the vascular risk. Cholesterol levels are associated with vascular risk although the relationship with stroke is more controversial.</td>
</tr>
<tr>
<td>Oral contraceptives, Hormone Therapy</td>
<td>Both oral contraceptives and hormone therapy increase the risk.</td>
</tr>
<tr>
<td>Cardiac causes of stroke</td>
<td>Atrial fibrillation is a risk factor, especially in people over 75, with high BP, cardiac insufficiency, DM or prior ischaemic stroke. In patients with no other risk factors, the probability of stroke is 2% a year. In acute myocardial infarction (AMI), stroke is presented as a complication in 0.75%–1.2% of cases. Pathologies with left ventricular ejection fraction below 30% also present a higher stroke risk. Mechanical heart valve prostheses present a high risk of thrombosis, while the biological ones present a lower risk. The presences of other valvular diseases are also associated with a greater risk.</td>
</tr>
<tr>
<td>Asymptomatic stenosis of carotid artery</td>
<td>The risk of stroke is situated at 2%–3% per year and 5% for the most serious stenosis.</td>
</tr>
</tbody>
</table>
Prevention of stroke

The best treatment for stroke is prevention – 80% of strokes are preventable.

People can do much to reduce their risk of stroke, even though some risk factors such as age and being male or female obviously cannot be controlled. Everyone should check their blood pressure, blood sugar and cholesterol levels and treat these conditions as advised by a doctor. People who smoke should quit; people who drink heavily should reduce alcohol intake; and people who do not exercise regularly should start. A person who has had a previous stroke is at risk of having another one. One should eat healthy, be more active, and follow the doctor’s advice for medicines and other lifestyle changes including giving up tobacco and alcohol products.

Several types of medicine help prevent stroke, and your doctor may advise you to take one or more of them depending on the risk factors:

- Blood pressure-lowering medicines might be needed if blood pressure is high.
- Cholesterol-lowering medicines might be needed if blood cholesterol is high and by those who already have had a stroke irrespective of cholesterol levels.
- Insulin and oral diabetes medicines might be needed for persons with diabetes to reduce high levels of blood sugar.

Two types of medicine are commonly given to prevent a second stroke:

- Anticoagulants: These medicines are blood thinners that prevent the blood from clotting and causing a stroke.
- Antiplatelet agents. Platelets are blood cells that help the blood clot when blood vessels are injured. Antiplatelet medicines prevent platelets from causing a clot in blood vessels.

How does stroke affect the person?

The human brain has different areas that control how the body moves and feels. When a stroke damages a certain part of the brain, that part may not work as well as it did before. Depending on the part of the brain that is affected and how much brain tissue is damaged, a person might have problems with seeing, sleeping, moving parts of the body, controlling the bladder or bowels, fatigue, seizures, memory and depression.

A person who has had a stroke and has survived may have physical problems or other disabilities from the stroke. He or she may recover from the stroke completely or only partially. While 50% to 70% of stroke survivors regain some functional independence, 15% to 30 % are seriously disabled. But given time, the brain can slowly recover and regain previously lost ability. This is why stroke rehabilitation is very important. A person who has had a stroke is likely to face emotional problems in addition to the physical ones.

Disabilities caused by stroke include:

- Paralysis or inability to move (usually limited to one side of the body).
- Vision problems.
- Memory loss.
Difficulty talking or understanding what others are saying.

Change in behaviour, such as asking question after question over and over.

A stroke survivor may cry easily or may have sudden mood swings, often for no clear reason. A person can suffer from depression and have mood swings as a result of the stroke-related brain damage.

A person may also react with anger, depression, or withdrawal as damage from the stroke changes him or her from an independent person on whom others have leaned for support to a highly dependent person who feels that he or she is a burden to family and friends.

Rehabilitation, depending on the disability, may require the support of many different specialized health professionals such as physiotherapists, speech therapists, etc.

The four main types of therapy include:

- Physical therapy: A person who has a problem with movement (for example, cannot walk, cannot move the arms, or cannot keep his or her balance) will need physical therapy.

- Occupational therapy: A person who has lost memory or knowledge will need occupational therapy to relearn activities basic to daily living, such as bathing and dressing.

- Speech therapy: A person who has difficulty with speech (for example, who cannot move the tongue, lips or jaw properly to form words) will need speech therapy.

- Emotional support therapy: People who have a stroke often become depressed, anxious, frustrated or angry. They can be helped with “talk therapy” (talking to a mental health care provider or social worker). Depression can also be treated with medicines.

What community health care workers can do to help community members who are at risk for stroke or have had a stroke:

- Help people make better lifestyle choices:
  - Teach people to stop smoking, get regular physical activity, and lose weight (if they are overweight).
  - Help people choose a diet with plenty of vegetables, fruits and whole grain products that is low in fat, saturated fat, trans fat and cholesterol.
  - Help community members learn how to reduce their intake of sodium.

Learn and teach relaxation exercises.

- Educate and remind people to keep their blood pressure and blood sugar under control, importance of regularly taking their blood pressure, cholesterol lowering and diabetes medicines.

- Educate community on the warning signs of stroke, and to act in time if someone is having a stroke.
For those who have had a stroke, all the above plus:

- Link patients to follow-up care (stroke rehabilitation) for vision, memory, speech or movement problems.
- Link patients to community resources if they need support to obtain medicines or other supplies, equipment and services.
- Support people who are worried about their disability and dependence on others.
- Support caregivers by providing information, linking them to caregiver resources, and helping them communicate with members of the health-care team.
- Encourage stroke survivors and their caretakers to get help for managing stress and depression.
- Educate stroke survivors and their caretakers on the importance of regularly taking their medications (blood thinners, blood pressure and cholesterol and diabetes medicine) in order to prevent another stroke.
Prevention of stroke in primary health care

Activity 1: Step 2

Definitions

• Cerebrovascular disease: abnormality of the brain resulting from pathological process of the blood vessels

• Stroke (WHO): rapidly developing clinical signs of focal or global disturbance of cerebral function lasting more than 24 hours or leading to death with no apparent cause other than that of vascular origin

• Transient ischaemic attack (TIA): rapidly developing clinical signs of focal or global disturbance of cerebral function lasting less than 24 hours.
Types of strokes

Ischaemic (~85%)
Ischemic stroke
Intracerebral Haemorrhage (~15%)
Hemorrhagic stroke
Subarachnoid Haemorrhage (~5%)
Others

Stroke burden (GBD:2013)

- In 2013, 25.7 million stroke survivors (71% with Ischaemic stroke, IS), 6.5 million deaths from stroke (51% died from IS), 113 million DALYs due to stroke (58% due to IS)
- 10.3 million new strokes (67% IS).

Different lobes of brain

Parietal Lobe
Occipital Lobe
Frontal Lobe
Temporal Lobe
Cerebellum
Brainstem

Prevention of stroke in primary health care
Prevention of stroke in primary health care

Different lobes functions

- Motor Cortex: movement
- Sensory Cortex: pain, heat, and other sensations
- Frontal Lobe: judgment, foresight, and voluntary movement
- Parietal Lobe: comprehension of language
- Temporal Lobe: hearing
- Broca's Area: speech
- Occipital Lobe: primary visual area
- Wernicke's Area: speech comprehension
- Brainstem: swallowing, breathing, heartbeat, wakefulness center, and other involuntary functions
- Cerebellum: coordination

Functions of different parts of lobe

- Left central: language
- Right: recognition
- Brain areas: walking, breathing, movement

Blood supply of brain: Circle of Willis

- Anterior Communicating Artery
- Anterior Cerebral Artery
- Middor Cerebral Artery
- Posterior Communicating Artery
- Posterior Cerebral Artery
- Basilar Artery
- Anterior Inferior Cerebellar Artery
- Vertebral Artery
Modifiable risk factors

- Hypertension
- Diabetes
- Coronary heart disease
- Smoking
- Alcohol
- Obesity
- Hyperlipidemia
- Rheumatic heart disease.

Non-modifiable risk factors

- Race/ethnicity
- African Americans - 3 fold risk
- Higher prevalence of HT, DM, CAD, low socioeconomic status
- Hispanic Americans
- Heredity
- Paternal & maternal history of stroke - increased risk among the offspring
- Age
- Male gender.

Activity 2: Step 3
Stroke warning signs and symptoms

- Sudden weakness in one side of the body
- Sudden numbness in one half of the body
- Sudden difficulty in speaking or understanding speech
- Sudden trouble seeing in one or both eyes
- Sudden loss of consciousness
- Sudden trouble walking, dizziness or loss of balance
- Sudden severe headache with no known cause.

Test to assess stroke

- Facial weakness - Ask the person to smile showing their teeth? Does one side of the face droop or is the person's smile uneven or lopsided?
- Arm weakness - Ask the person to raise both arms. Can the person raise both arms? Does one arm drift downward?
- Speech problems - Can the person speak clearly and understand what you say? Ask the person to repeat a simple sentence and see whether the person able to correctly repeat the words?

Facial drop

Is there drooping of one side of face?
Prevention of stroke in primary health care

**Arm weakness**

Is there weakness in one arm?

**Slurring Speech**

Is the speech slurred or strange?

I ca...
sp..

**Acute stroke care pathway**
Module 3.5

Prevention of rheumatic heart disease (RHD)

Group A Streptococcus → Group A Streptococcal Infection → Acute Rheumatic Fever → Rheumatic Heart Disease
WHAT’S INSIDE

Introduction
Learning objectives
Topics covered
Competency
Teaching and learning activities
Background Information
INTRODUCTION

Group A streptococcal infections of the throat, if not inadequately treated, can lead to acute rheumatic fever which can cause rheumatic heart disease (RHD) and acute glomerulonephritis. Each year, nearly half a million people die from RHD. Almost exclusively, the people who die of RHD live in low- and middle-income countries or in vulnerable communities in high-income countries. About 30% of sore throats in children and 5% in adults are bacterial, usually due to Group A streptococcus (GAS), the bacteria which causes rheumatic heart disease and acute glomerulonephritis. Adequate primary treatment of bacterial sore throats or tonsillitis can prevent rheumatic heart disease. Primary prevention of rheumatic heart disease begins in a primary health care facility with best practice sore throat treatment.

LEARNING OBJECTIVES

At the end of the session, participants will be able to:

- Suspect, diagnose and treat streptococcal infection among individuals presenting with sore throat.
- Suspect and refer rheumatic fever (RF) and rheumatic heart disease (RHD) cases to a higher health facility for confirmation and further management.
- Provide follow-up of RF/RHD cases for secondary prevention.

TOPICS COVERED

- Suspicion and referrals of RF and RHD cases to higher health facility.
- Differential diagnosis of sore throat.
- Algorithm for sore throat management.
- Follow-up RF and RHD cases for adherence to secondary prophylaxis.
- Patient communication.

COMPETENCY

- Be able to suspect, diagnose, treat/refer streptococcal pharyngitis and communicate to patients to prevent RHD.
TEACHING AND LEARNING ACTIVITIES

**Total session time:** 100 minutes

**Activity 1. Approaches for prevention and control of RF and RHD:** 20 minutes

Step 1. Divide the participants into convenient groups.

Step 2. Ask the groups to discuss the following conditions that describe the current epidemiological situation in the country:

1. Is sore throat common among children and adolescents in your country?
2. Is RF and RHD still a public health priority in your country?

Step 3. Ask few groups to share their responses on the condition in the table provided below.

<table>
<thead>
<tr>
<th>Conditions</th>
<th>What are the causes?</th>
<th>What are its implications?</th>
<th>What can we do to address this condition?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sore throat</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rheumatic fever</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rheumatic heart disease</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Step 4. Present the powerpoint slides with following contents:

- Global and regional burden of RF and RHD
- Approaches for the prevention and control of RF and RHD
  - Streptococcal infection and pathogenesis of RHD
  - Diagnosis and management of streptococcal sore throat
  - Diagnosis of acute RF and RHD
  - RHD in pregnancy.

**Activity 2. Sore throat examination** 15 minutes

*Material required for examination: Tongue depressor and torch*

Important: examiner will need to wash hands before and after the procedure.
Step 1. Present powerpoint slides containing the steps for sore throat examination.

Step 2. Invite participants to share the practical problems in conducting the sore throat examination.

Activity 3. Management of sore throat when culture and testing is not available: 25 minutes

Primary health care facilities may not have testing facilities for streptococcus or referring to a higher centre may not always be feasible due to distances and other logistics challenges.

Step 1. Ask participants how to handle sore throat when culture or testing is not available.

Step 2. Discuss the clinical criteria to estimate risk for streptococcus pharyngitis using the simple tool below.

A. Determine the patient’s total sore throat score by assigning points to the following criteria:

<table>
<thead>
<tr>
<th>McIsaac criteria</th>
<th>Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature &gt;38 degree Celsius</td>
<td>1</td>
</tr>
<tr>
<td>No cough</td>
<td>1</td>
</tr>
<tr>
<td>Tender anterior cervical adenopathy</td>
<td>1</td>
</tr>
<tr>
<td>Tonsillar swelling or exudate</td>
<td>1</td>
</tr>
<tr>
<td>Age 3–14 years</td>
<td>1</td>
</tr>
<tr>
<td>Age 15–44 years</td>
<td>0</td>
</tr>
<tr>
<td>Age &gt;=45 years</td>
<td>-1</td>
</tr>
</tbody>
</table>

TOTAL SCORE ....../5

B. If score equals 4 or more then the patient should be treated with antibiotic (see the algorithm).

If patient do not meet the above criteria, recommend paracetamol or look for other causes.

If sore throat or fever persists, refer to higher health facility.
Management of sore throat with GAS infection

Patient with sore throat

Is throat culture or rapid strep antigen test available?

NO

Rapid strep test available

NO

Throat culture

YES

Follow McIsaac criteria:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp $&gt; 38,^\circ C$</td>
<td>1</td>
</tr>
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<td>1</td>
</tr>
<tr>
<td>Age 15–44 years</td>
<td>0</td>
</tr>
<tr>
<td>Age $&gt; 45$ years</td>
<td>-1</td>
</tr>
<tr>
<td><strong>Total score</strong></td>
<td>.../5</td>
</tr>
</tbody>
</table>

Score of 4 or more

YES

Treat with penicillin. Advise that others in household with sore throat undergo testing

NO

Reassure, prescribe paracetamol and treat for upper respiratory tract infection. Advise to return if not better.

YES

Test and wait for the result

NO

Negative: prescribe paracetamol. Advise to return if not better in one week

YES

Secondary prophylaxis

<table>
<thead>
<tr>
<th>Condition of patient</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of rheumatic fever but no carditis and no heart valve disease</td>
<td>Until 18 years of age and at least five years after the last attack</td>
</tr>
<tr>
<td>Rheumatic fever with documented carditis</td>
<td>At least until 25 years of age or 10 years after last attack (whichever is longer)</td>
</tr>
<tr>
<td>Chronic carditis</td>
<td>At least until the age of 40 years, maybe better than 'lifetime'</td>
</tr>
<tr>
<td>With artificial valves</td>
<td>Lifetime</td>
</tr>
</tbody>
</table>
Activity 4. Administering injection benzathine penicillin: 10 minutes

The materials required are syringe, drug, spirit and mannequin.

Step 1. Demonstrate the steps for unwrapping the syringe, fitting the needle and dissolving the injection benzathine penicillin as shown in the demonstration slide.

After this, demonstrate the steps for injecting benzathine penicillin into a dummy. Always give a test dose intradermally before giving the actual dose.

Step 2. Clean the upper outer quadrant of the gluteal region with spirit and let it dry.

Step 3. Insert the needle at 90 degrees to the body.

Step 4. Push slowly for half a minute.

Step 5. Present the powerpoint slides on the reactions due to penicillin and its management.

Activity 5. Patient communication: 15 minutes

Step 1. Engage the participants to do the role play with one participant acting as primary health care provider and another acting as patient. Ask participants to refer to the workbook for diagnosis of sore throat, RF and RHD.

Role play 1: Primary health care provider inquiring about sore throat.

Primary health care provider will ask the patient about his/her symptoms and will arrive at diagnosis and treatment. He/she should explain how streptococcus sore throat occurs and how it leads to RF and RHD.

Role play 2: Primary health care provider inquiring about RF.

Primary health care provider will ask the patient about his/her symptoms and will arrive at diagnosis. Explain that it is important to consult the doctor early so that if there is anything of concern, it gets detected early and can be managed. Listen carefully to patient’s fears/concerns and offer your help if he/she needs it and refer accordingly. He/she should explain how strep sore throat occurs and how it leads to RF and RHD.

Primary health care provider will fill the important information in the referral card.
Role play 3: Primary health care provider inquiring about rheumatic heart disease.

Primary health care provider should inform the patient that there seems to be an abnormality in his/her heart going by the symptoms and that it requires the urgent attention of a doctor. Advise patient to attend appropriate health facility as early as possible, where he/she can undergo further investigation including ECG and echocardiography. Explain that it is important to consult a doctor soon so that if there is any disease of concern, it can get detected early and treated successfully. Listen patiently to his/her fears/concerns and offer your help if he/she needs it.

Role play 4: Diagnosed RF/RHD patient counselling for regular secondary prophylaxis and how to record it.

The primary health care provider will ask the patient about his/her treatment compliance. The patient will explain his/her issues and reasons for not being able to go for secondary prophylaxis regularly. The primary health care provider will counsel the patent for regular secondary prophylaxis emphasizing that it is important to prevent streptococcus sore throat. He/she should explain how strep sore throat occurs and how it leads to RF and RHD, and how repeated attacks of strep sore throat may worsen the existing disease.

- Discuss with the participants how communications can be improved.
- Provide RF/RHD brochures to participant in order to educate further.

Activity 6. Supporting adherence with secondary prophylaxis:

15 minutes

Step 1. Ask participants to discuss how to improve adherence with secondary prophylaxis (injection penicillin) among RHD patients.

Step 2. Ask few volunteers to share their ideas to improve adherence with secondary prophylaxis.

Facilitator’s explanatory notes

Some of the responses may include the following.

- Memory cues for patients
- Text messaging and phone calls.
- Maintainence of RF and RHD register
Pre- and post-tests

1. Which of the following groups of streptococcal infections can lead to rheumatic fever (RF)?
   (a) Group A
   (b) Group C
   (c) Group G
   (d) Group B.

2. The dose of injection Benzathine penicillin used for treatment of child weighing <30 kg and having streptococcal pharyngitis is
   (a) 600 000 units
   (b) 2 400 000 units
   (c) 1 200 000 units
   (d) 2 000 000 units.

3. In a rheumatic heart disease patient injection benzathine penicillin is given as secondary prophylaxis
   (a) Once in 10 days
   (b) Once in 2 weeks
   (c) Once in three weeks
   (d) Daily.

4. Which of the following laboratory test is most useful in the diagnosis of rheumatic fever (RF):
   (a) Blood culture
   (b) ASO (anti-streptolysin O)
   (c) RBC count
   (d) Urine culture.

5. Site of injection benzathine penicillin is
   (a) Abdomen
   (b) Right arm
   (c) Left arm
   (d) Gluteal region.
BACKGROUND INFORMATION

Children and adolescents have frequent attacks of sore throat. Some of the sore throats are caused by Group A beta haemolytic streptococcus (GAS) which may lead to rheumatic fever and rheumatic heart disease (RHD). The likelihood of rheumatic fever is ten times higher during epidemics of streptococcal sore throat. The consequences of RF and RHD include continuing damage to the heart, increasing disability, repeated hospitalizations and premature death. RHD is a common preventable chronic disorder of the heart among children and adolescents.

Magnitude of the problem of RF/RHD

Globally, about 470,000 new cases of RF and 282,000 cases of RHD occur each year; and approximately 233,000 people die due to RHD. Most of this disease burden lies in developing countries. In developed countries, the burden of RF/RHD had declined during the second half of the last century, but outbreaks of RF have been reported even from developed countries during the 1980s and 1990s.

How can RF/RHD be prevented?

Preventive measures can be categorized as under:

- Prevention of risk factors such as poor living conditions, overcrowding, etc. (termed as primordial prevention).
- Improved living conditions reduce likelihood of epidemics of streptococcal infections.
- Detection of streptococcal pharyngitis among children followed by adequate treatment with appropriate antibiotics (termed as primary prevention).
- Early diagnosis and management of rheumatic fever/rheumatic heart disease, and administration of penicillin regularly to prevent recurrences of GAS infection to prevent further occurrence of RF/RHD (termed as secondary prevention).
- Management of RHD by medical and surgical intervention (termed as secondary prevention).

Primary prevention: Group A streptococcal infections of the throat, if inadequately treated, or not treated can lead to acute rheumatic fever which can cause rheumatic heart disease. Appropriate treatment of sore throats (pharyngitis/tonsillitis) can prevent rheumatic fever and rheumatic heart disease.
## Diagnosis and treatment of streptococcal sore throat

### Health centres and hospitals

Apply the clinical and/or bacteriological criteria to diagnose sore throat cases among children and adolescents

<table>
<thead>
<tr>
<th></th>
<th>Streptococcal pharyngitis</th>
<th>Non-streptococcal pharyngitis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>5–15 years</td>
<td>all ages</td>
</tr>
<tr>
<td><strong>Mode of onset</strong></td>
<td>sudden</td>
<td>more gradually</td>
</tr>
<tr>
<td><strong>Initial symptoms</strong></td>
<td>sore throat with pain or swelling</td>
<td>mild sore throat</td>
</tr>
<tr>
<td><strong>Fever</strong></td>
<td>high grade &gt;38° c</td>
<td>not so high</td>
</tr>
<tr>
<td><strong>Characteristics of streptococcal sore throat</strong></td>
<td>redness, tenderness of anterior cervical lymph nodes, hyperaemia, petechiae, scaby, erosion on the edges of the nostrils</td>
<td>redness of the pharynx, cough, hoarseness of voice, watery nasal secretions and conjunctivitis</td>
</tr>
</tbody>
</table>

### Injectable benzathine penicillin

A single injection of intramuscular benzathine benzylpenicillin (BPG), a long-acting repository form of the antibiotic, is the most effective treatment in eradicating group A streptococci, probably due to its long duration of action. It can also be used for mass prophylaxis. For each injection of BPG, a test dose of 0.1 cc is given intradermal first and the patient is made to wait for half an hour.

For patient weighing under 30 kg, use BPG 600 000 units x 1 dose IM

For patient weighing 30 kg and over, use BPG 1 200 000 units x 1 dose IM

### Symptomatic treatment
When to refer to hospital?

Clinical features which may suggest the infant or child is suffering from a serious condition include:

- stridor or respiratory distress
- muffled voice
- drooling
- torticollis
- asymmetric pharyngeal swelling
- grey white pharyngo-tonsillar membrane
- bruising, petechial or other rash.
- toxic appearance
- dehydration
- cervical lymphadenopathy > 2 cms
- child with persistent fever > 48 hours
- trismus
- hot potato voice.

How to diagnose acute rheumatic fever?

Acute RF should be suspected when a child, adolescent or young adult presents with fever and joint pain, rashes, abnormal movement or heart murmur. Such a patient should be referred to hospital for blood testing (ASO, ESR, CRP, throat swab). The guidelines for clinical diagnosis of RF as per the Jones Criteria are given below. The presence of two major criteria, or one major and two minor criteria, indicates a high probability of acute rheumatic fever, if supported by evidence of preceding Group A streptococcal infection.

The following conditions do not require to be supported by evidence of preceding Group A streptococcal infection:

- isolated carditis
- isolated chorea
- rheumatic recurrence.
Revised Jones Criteria (2015); American Heart Association and World Heart Federation for moderate and high risk populations

**Initial episodes of ARF:** Two major or one major + two minor criteria

**Recurrent episodes of ARF:** Two major, one major + two minor, or three minor

**Essential criteria:** Previous evidence of group A beta haemolytic streptococcal infection*

**Major criteria**
- Carditis: clinical or subclinical (echocardiography)
- Arthritis: polyarthritis, or monoarthritis
- Polyarthralgia
- Chorea
- Erythema marginatum
- Subcutaneous nodules

**Minor criteria**
- Mono or polyarthralgia
- Fever (>38.0 °C)
- ESR ≥ 30 mm in the first hour and/or CRP ≥ 3.0 mg/dL
- Prolonged PR interval, after accounting for age variability (unless carditis is a major criterion)

*ASO: A four-fold rise in titre at a gap of three weeks or a titre of >250 units is significant/ a positive culture for streptococcal Group A infection/positive rapid strept. antigen test

Antibiotic regimens for secondary (continuous) prophylaxis for RF/RHD

<table>
<thead>
<tr>
<th>Mode of administration</th>
<th>Penicillin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intramuscular</td>
<td>Benzathine benzyl penicillin, single injection once in three weeks*</td>
</tr>
<tr>
<td></td>
<td>- for children &lt;30kg: 600 000 units</td>
</tr>
<tr>
<td></td>
<td>- for children ≥30kg and adults: 1 200 000 units</td>
</tr>
<tr>
<td>Oral*</td>
<td>Phenoxyethyl penicillin 250 mg twice daily</td>
</tr>
</tbody>
</table>

* In special circumstances or for high-risk patients (e.g. during epidemics or when environmental conditions are not conducive), one injection may be given every three weeks.

b For patients who are allergic to penicillin, erythromycin 250 mg is recommended twice daily.
How to diagnose rheumatic heart disease?

Symptoms
- palpitation
- dyspnea
- easy fatigability
- cough
- chest pain
- haemoptysis.

Signs
- prominent precordial pulsations
- heart murmurs, both systolic and diastolic
- diastolic murmur of mitral stenosis exaggerated by activity.

Note: Indications for referral of the following categories of patients to secondary/tertiary care centres:
- symptomatic RHD
- asymptomatic patients with clinical evidence of severe heart valve disease
- pregnancy in RHD patients irrespective of symptoms.

How to diagnose RHD in pregnancy?
Commonest cardiac lesion in pregnancy is rheumatic in origin, and of these mitral stenosis is most common (approximately around 80%).

Signs and symptoms
- dyspnea and fatigue
- cough
- diastolic murmur
- signs of heart failure indicates severe disease
- irregular rhythm suggests atrial fibrillation.

Criteria for diagnosis
- presence of diastolic murmur
- cardiac enlargement
- loud systolic murmur with a thrill
- presence of arrhythmia.

Refer the pregnant woman case with suspected heart disease to hospital.
Instructions for referral of RF/RHD patients

The referral card should be used by the primary health worker for referring high-risk cases to the PHC. It includes children with history of repeated sore throat (one or more than one sore throat episode per month) and children with complaints suggestive of RF/RHD (pain in joints, breathlessness, pain in chest, swelling in feet, etc.)

- The primary health care worker will examine the child and enter his/her remarks and diagnosis.
- The PHC worker will also mark the reason why a referral is being made and write his/her name and date of referral in the space provided at the end of all the three parts of a referral card.

Additional reading resource

Prevention of rheumatic heart disease (RHD)

Activity 1: Step 4

Rheumatic heart disease – An overview

- RHD is damage to the heart that remains after the acute rheumatic fever (ARF) episode has resolved
- RHD is caused by an episode or recurrent episodes of ARF where the heart has become inflamed
- The heart valves, most commonly, the mitral and aortic valves can be damaged
- Over time, the valves may become stretched and scarred – normal blood flow is interrupted
- This may result in the need for cardiac surgery.
Prevention of rheumatic heart disease (RHD)

Burden of Group A Streptococcal (GAS) diseases

- Approximately 616 million new cases of GAS pharyngitis occur each year.
- GAS diseases are responsible for over 500,000 deaths each year.

Strep Throat $\rightarrow$ Acute rheumatic fever (ARF) $\rightarrow$ Rheumatic heart disease (RHD)

Natural history of disease if adequate secondary prevention is not given

Example age timeline (years)

Which valves are affected?

- **Mitral** valve is affected in over 90% of cases of RHD.
  - Mitral regurgitation most commonly found in children & adolescents.
  - Mitral stenosis represents longer term chronic disease, commonly in adults.
  - Most common complication of mitral stenosis is atrial fibrillation.

- **Aortic** valve next most commonly affected.
  - Often occurs with disease of the mitral valve.
  - Stenosis tends to develop as a long term complication of aortic regurgitation.

- **Tricuspid** and **pulmonary** valves are much less commonly affected.
  - Usually affected in very severe RHD when all valves are affected.
### Signs and symptoms

Symptoms of RHD may not develop for many years
- A murmur but no symptoms suggests mild or moderate disease
  - Patients may not realise they need medical help; may think symptoms are normal
- Symptoms usually suggest more severe disease

Symptoms depend upon the type and severity of disease e.g.,
- Breathlessness with exertion or when lying down flat
- Waking at night feeling breathless
- Tiredness
- Leg swelling (peripheral oedema)
- Palpitations if atrial fibrillation or other rhythm problem develops

Sudden onset of symptoms may occur
- New ARF episode with carditis
- Pregnancy/labour
- Rupture of valve chord.

### How is RHD diagnosed?

- Using echocardiography (ultrasound of heart)
- Required for
  - anyone who has had ARF
  - anyone in high risk group with a murmur even if they never had known ARF
  - for investigation of breathlessness etc
- RHD needs to be detected early, before symptoms start
- Listening to the heart with the stethoscope is not accurate
- RHD can be present even when you can’t hear a murmur.

### What if early diagnosis is missed?

- ARF is often not diagnosed
- May miss the opportunity to start secondary prophylaxis and to prevent further ARF and progression to RHD
- RHD may become more advanced, and start causing symptoms
- Extra demands on the heart may make the RHD come to light
  - Pregnancy or labour
  - High-level physical exertion.
Does ARF always lead to RHD?

No. RHD is more likely if:
- Heart is affected in ARF (carditis)
- ARF is severe
- ARF occurs at a young age
- Recurrent ARF episodes occur

However, you can’t accurately predict who will go on to develop recurrent ARF and RHD
- hence everyone who has had ARF, even if there was no carditis, needs secondary prophylaxis with long-term penicillin.

Global burden of RHD

Number of Cases: 3,319,949,000
Number of Deaths: 3,194,000

Source: Global Burden of Disease (GBD) 2015 estimates

RHD geographic distribution: DALYs
Prevention of rheumatic heart disease (RHD)

**Causal pathway and preventive strategies**

- **Causal pathway**
  - Group A Streptococcal Transmission
  - Group A Streptococcal Infection
  - Acute Rheumatic Fever
  - Rheumatic Heart Disease
  - Cardiac failure
  - Stroke
  - Endocarditis
  - Death

- **Preventive Strategies**
  - Primordial prevention
    - Housing, hygiene
    - Vaccine (unavailable)
  - Primary prevention
    - Treatment of streptococcal infection
  - Secondary prevention
    - Inj. Benzathine Penicillin
  - Tertiary care
    - Medication: heart failure
    - Valve surgery
    - Anti-coagulation

**Tertiary care**

- Medical management of heart failure
- Surgery for valve repair/replacement
- Huge burden of RHD cases; limited facilities for follow-up; monitoring of anticoagulants
- High cost of prosthetic valves

**Tertiary prevention of RHD**

- Rheumatic heart disease
  - Prevention
  - Treatment
  - Clinical management
- No RHD
- RHD
- Death
Secondary prevention and prophylaxis

- Coordinated programme using registry of patients
- More cost effective than primary prevention
- Ensuring compliance to secondary prophylaxis - challenging task
- Secondary prophylaxis:
  - Benzathine penicillin G (BPG):
    - I. M. injections every 3 weeks
    - Dose: 600 000 IU (<30 Kg), 1 200 000 IU (≥30 Kg).
  - Phenoxyethyl penicillin
  - Erythromycin

Duration of secondary prophylaxis

<table>
<thead>
<tr>
<th>Condition of patient</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of rheumatic fever but no carditis and no heart valve disease</td>
<td>Until 18 years of age and at least five years after the last attack</td>
</tr>
<tr>
<td>Rheumatic fever with documented carditis</td>
<td>At least until 23 years of age or 10 years after last attack (whichever is longer)</td>
</tr>
<tr>
<td>Chronic carditis</td>
<td>At least until the age of 40 years, maybe better than ‘lifetime’</td>
</tr>
<tr>
<td>With artificial valves</td>
<td>Lifetime</td>
</tr>
</tbody>
</table>

Primordial prevention

- Improve quality of primary health care
- Improve socio-economic status of the poorer strata
- Ensure proper housing to reduce overcrowding
- Address malnutrition
- Strep vaccine (not yet available)
Primary prevention

- Awareness in community about treatment of sore throat
- Improve access to primary health-care
- Antibiotic treatment of GAS pharyngitis – single intramuscular injection of benzathine penicillin
- Training health providers - early diagnosis and treatment of strep pharyngitis
- Antibiotic therapy.

Tertiary prevention of RHD

Treatment of heart failure:
- Heart failure medication
- Valve repair
- Valve replacement

1. Medications  2. Repair  3. Replacement

Tertiary prevention of RHD

Management of arrhythmias
- Arrhythmia management
  - Ablation
  - Medication – digoxin
  - Anticoagulation

Prevention of rheumatic heart disease (RHD)
Tertiary prevention of RHD

Prevention of endocarditis

- Brushing teeth twice daily
- Dental review 6 monthly
- Endocarditis prophylaxis at time of dental procedures

Maternal mortality due to RHD

- Several studies confirm RHD as a significant cause of maternal deaths.
- In Senegal, 36% of pregnant women with RHD admitted to a tertiary cardiac department died during pregnancy, at an average age of 29 years.
- In South Africa, 41% of indirect obstetric deaths were found to be associated with heart disease, overwhelmingly from RHD.
- In Brazil, 33% of women who died of heart disease during pregnancy had RHD.


Why does RHD get worse in pregnancy?

- Normal pregnancy:
  - 30-50% increase in blood volume
  - Increase in heart rate by 10-15 beats per minute
    - therefore ‘hyperdynamic circulation’; major extra cardiac work needed.
  - Labour – further major increase in cardiac work needed
- If heart capacity is reduced due to RHD, then breathlessness and heart failure can occur

Prevention of rheumatic heart disease (RHD)
Pregnancy: careful planning, careful management

- Contraception to allow for careful planning
- Education: risks for mother/risk for baby
- Advice/decision on anticoagulation

Role of the primary health care workers

- Coordinate the RHD care plan
  - Secondary prophylaxis
  - Specialist medical and dental appointments
  - Oral medications - making sure prescriptions are up to date, support adherence, monitor for side effects
  - Make sure INRs checked for patients on warfarin

- Support, educate, encourage
  - Improve health literacy for patients and their families

- Understand the psychological consequences of being labelled with a chronic disease in childhood/adolescence

Role of a RHD Register in RHD care
Objectives of register-based prevention programme

1. Ensure success of secondary prophylaxis by
   • Providing lists of people for secondary prophylaxis
   • Identifying when secondary prophylaxis is not being delivered and feeding information back to clinic

2. Facilitate coordination of ongoing care by
   • Generating regular reports to enable recall and review
   • Ensuring that patients are not lost to follow-up
   • Facilitating health education

3. Provide epidemiological data:
   • To monitor ARF/RHD incidence / prevalence
   • For program evaluation

Take-home messages

Prevent RHD from occurring
Prevent existing RHD from getting worse
Diagnose RHD early, before it starts causing symptoms
Through repeated education sessions with the patient and their family, make sure the patient understands that
   • RHD is very serious, but there are good treatment options
   • Further worsening can be minimised with regular secondary prophylaxis
   • Having a valve replaced doesn't mean that secondary prophylaxis can be stopped

Activity 2: Step 1
Examination of sore throat

- Always examine in good light or shade tone
- Fix the head with left hand
- Use tongue depressor
- Ask the child to open his mouth wide
- Look for:
  - Integument of hands
  - Redness or intense red purple colour of post wall of throat/basal & uvula
  - Patch yellow exudate in posterior wall of throat anterior tonsil

Steps of taking throat swab

**DO:**
- Collect swab material from both tonsil and pharynx
- Examine in good light using tongue depressor

**DON'T:**
- Do not touch / touch mouth, tongue or face by swab

Sending the throat swab in a filter paper

Unwrapping of filter paper
- Do not touch the filter paper by hand
- Use forceps
- Do not touch the strip of filter paper which faces the filter paper

Sending the filter paper
- Do not touch the filter paper by hand
- Handle with care
- Address to your supervisor/provincial staff or mail to its place

Activity 4: Step 1

Prevention of rheumatic heart disease (RHD)
Reactions arising out of fear/nervousness

- Reaction following administration of injection Benzathine penicillin is a rare event particularly in the children in the age group of 5-15 years
- Though some children may present with certain symptom arising due to the fear of injection or very rarely-due to a true reaction
- This is not a true reaction but a nervous reaction but a nervous reaction arising out of fright. It is characterized by feeling of fainting, face turning pale, sweating and weak or rapid pulse
- Therefore, skin testing for penicillin sensitivity in children is not a necessary feature of the programme.

Prevention of rheumatic heart disease (RHD)
Prevention of rheumatic heart disease (RHD)

Skin testing for penicillin sensitivity

- Prepare the injection with 3 ml of distilled water as in 2:3
- Draw out 0.1 ml of this solution diluting this further with 1 ml distilled water
- In the left fore-arm introduce one drop subcutaneously (to be demonstrated in the training) as to raise a wheat
- Circle this area and put the time on the fore-arm
- Wait for 10-15 minutes and if there is no festing, itching at site of the test, sweating, feeling of apprehension or any other unusual symptoms, the person is not sensitive to penicillin and can be given the injection
- In case of doubt repeat on the other arm with double strength test dose.

Management

- Ask the patient to lie down, loosen the clothes the and reassure him/her.
- Talk to the patients and allay his/her fears, by explaining that the condition is transient and he/she would be alright in 10-15 minutes. In case the condition does not improve, seek help.
- It is important to realize that all the symptoms may not be present in cases of a reaction.
- Presence of one or more signs or symptoms should raise doubt and the MPW should takes necessary action.
- Reactions are not common and should not discourage their continued use whenever indicated.

True reactions due to penicillin

Immediate reactions
Occur within 30 seconds to two hours after the administration of inj. penicillin. Characterised by:
- Feeling of fainting
- Itching all over the body or at site of injection
- Rashes all over the body
- Sudden pain or swelling on any part of the body particularly on face or below the eyes
- Difficulty in breathing

Delayed or late reactions
Occur 5-15 days after the administration of injection Benzathine penicillin. The features are:
- Generalized or localized rashes on body
- Fever
- Pain in joints
- Difficulty in breathing
Principles in management of anaphylaxis

- Key to successful resuscitation is anticipation and the preparedness for this eventuality.
- It is life threatening but is imminently reversible.
- Success depends on the promptness in detection and instituting treatment.
- The key drug is Adrenalin and not steroids.
- Occasional patient will need intubation for airway management.

Out patient facility

- Personnel: at least one nurse trained in cardiac resuscitation in addition to the physician.
- Drugs:
  - Adrenalin (1:1000) loaded in 2 ml syringe
  - Adrenalin (1:10,000) loaded in 10ml syringe
- Venous access: before the test dose is administered is ideal
- Volume replacement: normal saline, Haemaccel, Haestril-6%, 10%

Steps of resuscitation in severe anaphylaxis

- Administer adrenalin:
  - Adults:
    - 0.5 ml of 1:1000 adrenalin-IM
    - 3 to 5 ml of 1:10,000 adrenalin-IM or IV
  - Children:
    - 0.1 ml/kg of 1:1000 adrenalin-IM
    - 0.01 ml/kg of 1:10,000 adrenalin-IV
- Repeat dose can be given at 5 minute interval.
- Administer volume: 1 to 2 liters in adults and 20-40 ml/kg in children intravenously. Colloids are better than crystalloids in the setting of leaky capillaries
- CPR should be initiated as when necessary.
Steps of resuscitation

- Intravenous adrenalin can produce severe ventricular arrhythmias. Best route in unmonitored patients is IM route.
- Best site would be lateral thigh and can even be given over light clothing to save time.
- Bronchospasm: adrenalin, steroids, salbutamol inhalation, IV aminophylline.
- Angioneurotic edema: adrenalin, antihistaminic.
- Pulmonary edema: difficult to manage, will need ventilation, diuretics are contraindicated.
Module 3.6

Managing COPD and asthma
<table>
<thead>
<tr>
<th>WHAT’S INSIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
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<tr>
<td>Learning outcomes</td>
</tr>
<tr>
<td>Topics covered</td>
</tr>
<tr>
<td>Competency</td>
</tr>
<tr>
<td>Teaching and learning activities</td>
</tr>
<tr>
<td>Additional information</td>
</tr>
</tbody>
</table>
INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a progressive life threatening lung disease that causes breathlessness (initially with exertion) and predisposes a person to exacerbations and serious illness. The Global Burden of Disease study reports 251 million cases of COPD globally in 2016. Globally, it is estimated that 3.17 million deaths were caused by the disease in 2015 (that is, 5% of all deaths globally in that year). More than 90% of COPD deaths occur in low and middle income countries. In 2012, nearly 1.5 million people died due to chronic respiratory disease in the South-East Asia Region (SEA Region). Chronic respiratory disease causes 10.8% of total deaths and 18% of noncommunicable disease (NCD) deaths in the SEA Region. This module has been prepared for primary health care providers to be able to diagnose and manage asthma and COPD.

LEARNING OUTCOMES

At the end of the session, participants will be able to do the following:

- Explain the burden, risk factors, pathophysiology, signs and symptoms of COPD and asthma.
- Describe the differential diagnosis of COPD and bronchial asthma, and overlap symptoms.
- Provide treatment and self-care advice to COPD and asthma patients.

TOPICS COVERED

- Pathophysiology, signs and symptoms of COPD and asthma.
- Approach to a patient with chronic cough, wheezing, chest tightness and difficulty in breathing.
- COPD and asthma overlap (ACOS) symptoms.
- Management of COPD and asthma in adults and children.
- Use of peak expiratory flowmeter.
- Use of metered-dose inhalers and other aerosol delivery equipment (nebulizers).
- Self-care in COPD and asthma.

COMPETENCY

- Ability to diagnose and manage COPD and asthma using the evidence-based guidelines and communicate effectively with patients to enable self-care.
TEACHING AND LEARNING ACTIVITIES

Total session time: 180 minutes

Activity 1. Burden, pathophysiology, signs and symptoms of COPD and asthma: 20 minutes

Step 1. Ask participants the following questions and write their responses on a flipchart/whiteboard.

- How do you approach a patient with chronic cough, wheezing, chest tightness and/or breathlessness or difficulty in breathing in your clinical practice?
- How do you investigate, diagnose and treat such a patient?
- What services are provided at your health facility to manage COPD and asthma?
- How can COPD and asthma services be improved in your health facility?
- What can you do to reduce or prevent COPD and asthma in the health facility catchment area?

Step 2. Present the powerpoint slides with the following contents.

- Burden and risk factors of chronic respiratory diseases (COPD and asthma)
- Approach to the assessment of patients with cough, wheezing, chest tightness, difficulty in breathing and breathlessness
- Pathophysiology, signs and symptoms of COPD, asthma, and asthma COPD overlap symptoms (ACOS)
- History-taking and diagnosis of COPD and asthma
- Management of COPD and asthma (stable and exacerbations).

Step 3. Demonstrate breath sounds using a video (if possible, examine a real patient with COPD and asthma and identify hyperinflation, rhonchi/crepitations).

Key message: The hyperinflation features will include low-placed diaphragm, absent cardiac dullness, hyperresonant notes on percussion and diminished air entry. Explain about rhonchi (continuous musical sound) and crepitations (interrupted sounds as if air is passing through water or rubbing-of-hair sounds). If training occurs in clinic settings show a real patient with these findings.
Activity 2. Use of a peak flowmeter: 10 minutes

Step 1. Present the powerpoint slides that describe the steps in using a peak flowmeter.

Step 2. Ask participants to practise the use of a peak flowmeter in groups.

Step 3. Observe the pitfalls in the process and explain how to improve them.

Activity 3. Bronchodilator reversibility test: 10 minutes

Step 1. Present the powerpoint slides that describe the steps to conduct a bronchodilator reversibility test and its interpretation.

Step 2. Refer to the workbook for case studies.

Case study 1. Mr Thapa undergoes peak flowmetry. His pre-bronchodilator value was 120 L/min; after 15 minutes of inhaling two puffs of salbutamol the value was 160 L/min. Calculate and comment on its reversibility.

Answer: Increase in PEFR= (160–120) = 40 L/min.

Increase in % = 40/120 X 100 = 33%

It is reversible and the probable diagnosis is bronchial asthma (not COPD).

Case study 2. Mr Hussain undergoes peak flowmetry. His pre-bronchodilator value was 120 L/min; after 15 minutes of inhaling two puffs of salbutamol the value was 130 L/min. Calculate and comment on its reversibility.

Answer: Increase in PEFR= (130–120) = 10 L/min.

Increase in % =10/120 X 100 = 8%

It is irreversible and the probable diagnosis is COPD.
**Activity 4. Diagnosis of COPD and asthma: 25 minutes**

**Step 1. Start with the following statement.**

We have already discussed about COPD and asthma, their burden, pathophysiology and various symptoms. Since COPD and asthma will have almost similar symptoms and they are two different diseases, it is important for participants to be able to distinguish between the two. However, there are other conditions that can produce similar symptoms. Can anybody name some of the other chest diseases that can produce such symptoms and hence can be confused with COPD/asthma?

*Note down participants’ responses on a flipchart/whiteboard.*

*Talk about the differential diagnosis and explain to the participants how to distinguish/exclude them.*

Chronic cough can be due to:

- COPD
- Asthma
- Lung cancer
- Tuberculosis
- Bronchiectasis
- Left ventricular failure
- Interstitial lung diseases
- Cystic fibrosis
- Idiopathic cough
- Chronic allergic rhinitis
- Upper airways cough syndrome
- Postnasal drip
- Gastro-oesophageal reflux
- Drugs like ACE inhibitors

**Step 2. Refer to the workbook for COPD and asthma protocol and discuss the protocol in groups.**

**Step 3. Ask the groups to come forward and explain the key messages of the protocol.**

Emphasize that tuberculosis must always be excluded when there is a history of cough for more than two weeks by two sputum smear examinations or other tests as per the national TB diagnostic guidelines.
### WHO PEN Protocol

#### ASK

Asthma and COPD can both present with cough, difficulty in breathing, tightness in the chest and/or wheezing. Therefore, ask about these symptoms.

#### DIAGNOSIS

<table>
<thead>
<tr>
<th>The following features make a diagnosis of asthma more likely:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- previous diagnosis of asthma;</td>
</tr>
<tr>
<td>- symptoms since childhood or early adulthood;</td>
</tr>
<tr>
<td>- history of hay fever, eczema and/or allergies;</td>
</tr>
<tr>
<td>- intermittent symptoms with asymptomatic periods in between;</td>
</tr>
<tr>
<td>- symptoms worse at night or early morning;</td>
</tr>
<tr>
<td>- symptoms triggered by respiratory infection, exercise, weather changes or stress; and</td>
</tr>
<tr>
<td>- symptoms respond to salbutamol.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The following features make a diagnosis of COPD more likely:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- previous diagnosis of COPD;</td>
</tr>
<tr>
<td>- history of heavy smoking, i.e. &gt;20 cigarettes per day for &gt;15 years;</td>
</tr>
<tr>
<td>- history of heavy and prolonged exposure to burning fossil fuels in an enclosed space, or high exposure to dust in an occupational setting;</td>
</tr>
<tr>
<td>- symptoms started in middle age or later (usually after the age of 40 years);</td>
</tr>
<tr>
<td>- symptoms worsened slowly over a long period of time;</td>
</tr>
<tr>
<td>- long history of daily or frequent cough and sputum production, often starting before shortness of breath; and</td>
</tr>
<tr>
<td>- symptoms that are persistent with little day-to-day variation.</td>
</tr>
</tbody>
</table>

#### TEST

Measure peak expiratory flow rate (PEFR) (details described in activity 2)

- Give two puffs of salbutamol and measure again in 15 minutes.
- If the PEFR improves by 20%, a diagnosis of asthma is very probable.
- A smaller response makes a diagnosis of COPD more likely.
- Do an ECG, if available (especially if the diagnosis is uncertain/ possibility of cardiac cause).
Step 4. Ask participants to go through the case study in the workbook.

Ms Raina, aged 22 years, presented to the clinic with a history of cough during change of seasons over the past 5 years. The cough lasts for a few days and subsides on its own. She also has whistling sounds in her chest, sneezing, running nose and blocked nose with each change of season. On further enquiry she says that her older brother also has similar symptoms and he uses inhalers. She is a non-smoker. What will be your clinical diagnosis? And what are the next steps?

Answer

Diagnosis: bronchial asthma. Depending on the response, which will be interactive, ask the participants giving the correct answer why they think it is asthma. During the interaction, emphasize the points supporting the diagnosis of asthma and not COPD.

Next steps: a clinical examination of the chest may reveal rhonchi. However, its absence will not rule out asthma as the case may be in remission (normal). It is important to measure PEFR and demonstrate reversibility to support the diagnosis.

Activity 5. Assessment of severity of asthma and management: 20 minutes

Step 1. Start with following statement.

Once you have listened to the history of and clinically examined the patient, found a low PEFR that shows reversibility, a diagnosis of asthma can be confirmed. However, before prescribing medicines, the severity of the asthma should be assessed as the choice of drug depends on severity.

Step 2. Present the powerpoint slide on assessment of asthma severity. Ask participants to refer to the workbook for the asthma severity protocol.

WHO PEN protocol 3.1 of Asthma severity

<table>
<thead>
<tr>
<th>ASK</th>
<th>Is asthma well controlled or uncontrolled?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Asthma is considered to be well controlled if the patient has:</td>
</tr>
<tr>
<td></td>
<td>◦ daytime asthma symptoms and uses a beta-agonist two or fewer times per week;</td>
</tr>
<tr>
<td></td>
<td>◦ night-time asthma symptoms two or fewer times per month;</td>
</tr>
<tr>
<td></td>
<td>◦ no or minimal limitation of daily activities;</td>
</tr>
<tr>
<td></td>
<td>◦ no severe exacerbation (i.e. requiring oral steroids or admission to hospital) within a month;</td>
</tr>
<tr>
<td></td>
<td>◦ PEFR, if available, above 80% predicted.</td>
</tr>
<tr>
<td></td>
<td>If any of these markers are exceeded, the patient is considered to have uncontrolled asthma.</td>
</tr>
</tbody>
</table>
After the diagnosis and severity of asthma are confirmed, the next step is to decide about management.

**Step 3.** Divide the participants into convenient groups and ask each group to go through the protocol in the workbook.

**Step 4.** Ask the groups to explain the key messages of the protocol.

### Management of asthma

<table>
<thead>
<tr>
<th>TREAT</th>
<th>Increase or decrease treatment according to how well asthma is controlled using a step-wise approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1.</td>
<td>Inhaled salbutamol prn (as needed)</td>
</tr>
<tr>
<td>Step 2.</td>
<td>Inhaled salbutamol prn (as needed) plus low-dose inhaled beclometasone, starting with 100 µg twice daily for adults and 100 µg once or twice daily for children. <em>(Budesonide in doses as shown in the chart below can replace beclometasone.)</em></td>
</tr>
<tr>
<td>Step 3.</td>
<td>Same as Step 2, but give higher doses of inhaled beclometasone, 200 µg or 400 µg twice daily. <em>(Budesonide in doses as shown below can replace beclometasone.)</em></td>
</tr>
<tr>
<td>Step 4.</td>
<td>Add low-dose oral theophylline to Step 3 treatment (assuming long-acting beta-agonists and leukotriene antagonists are not available) + LABA <em>(fermoterol and budesonide combination).</em></td>
</tr>
<tr>
<td>Step 5.</td>
<td>Add oral prednisolone, but in the lowest dose possible to control symptoms (nearly always less than 10 mg daily). At each step, check the patient’s adherence to treatment and observe their inhaler technique.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>REFER</th>
<th>Review asthma control every 3–6 months and more frequently when treatment has been changed or asthma is not well controlled.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refer to a specialist:</td>
<td></td>
</tr>
<tr>
<td>⊗ when asthma remains poorly controlled;</td>
<td></td>
</tr>
<tr>
<td>⊗ when the diagnosis of asthma is uncertain;</td>
<td></td>
</tr>
<tr>
<td>⊗ when regular oral prednisolone is required to maintain control.</td>
<td></td>
</tr>
</tbody>
</table>

*Note: (i) Budesonide can replace beclometasone and vice versa. If LABA can be feasible, it should get a place in the management.*
Management of COPD

<table>
<thead>
<tr>
<th>ASSESS</th>
<th>Assess severity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Moderate – if breathless with normal activity</td>
</tr>
<tr>
<td></td>
<td>Severe – if breathless at rest</td>
</tr>
<tr>
<td></td>
<td>Measure PEFR and oxygen saturation</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TREAT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inhaled salbutamol, two puffs as required, up to 4 times daily;</td>
</tr>
<tr>
<td></td>
<td>If symptoms are still troublesome, consider low-dose oral theophylline;</td>
</tr>
<tr>
<td></td>
<td>If ipratropium inhalers are available, they can be used instead of, or added to, salbutamol, but they are more expensive.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADVICE</th>
<th>COPD – Advice to patients and families</th>
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<tbody>
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<tr>
<td></td>
<td>Keep the area where meals are cooked well ventilated by opening windows and doors.</td>
</tr>
<tr>
<td></td>
<td>Cook with wood or carbon outside the house, if possible, or build an oven in the kitchen with a chimney that vents the smoke outside.</td>
</tr>
<tr>
<td></td>
<td>Avoid working in areas with occupational dust or high air pollution – using a mask may help, but it needs to have an appropriate design and provide adequate respiratory protection.</td>
</tr>
</tbody>
</table>

**Activity 6. Side-effects of commonly used drugs: 15 minutes**

Step 1. Ask participants to discuss the common side effect of the commonly used medicines for COPD and asthma. Invite few participants to share to the whole group.

**Facilitator’s explanatory notes**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Possible side-effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salbutamol</td>
<td>Tremor, tachycardia</td>
</tr>
<tr>
<td>Theophylline</td>
<td>Nausea, vomiting, tachycardia</td>
</tr>
<tr>
<td>Prednisolone</td>
<td>Gastritis, high blood glucose, high blood pressure, swelling of face and obesity</td>
</tr>
<tr>
<td>Inhaled steroids (beclomethasone or budesonide)</td>
<td>Oral thrush, hoarseness</td>
</tr>
</tbody>
</table>
Activity 7. Childhood asthma: 15 minutes

Step 1. Ask the participants about their experiences in diagnosing and managing childhood asthma.

Step 2. Summarize their responses and highlight the symptoms and management of childhood asthma below:

- recurrent wheezing or cough, including during sleep or with triggers such as activity, laughing, crying or exposure to tobacco smoke or air pollution;
- shortness of breath with exercise, laughing or crying;
- not running, playing or laughing at the same intensity as other children; tires earlier during walks (wants to be carried);
- past or family history of allergic disease (atopic dermatitis or allergic rhinitis); asthma in first-degree relatives;
- prolonged cough in infancy, and cough without cold symptoms is associated with later parent-reported physician-diagnosed asthma, independent of infant wheeze;
- clinical improvement during 2–3 months of treatment and worsening when treatment is stopped.

Key points to consider in the management of childhood asthma:

- Inhaled short-acting beta-agonists (SABAs) may not be effective in all children who experience wheezing episodes.
- Oral bronchodilator therapy is not recommended (slower onset of action, more side-effects). For children with intermittent viral-induced wheeze and no interval symptoms, if as-needed SABA is not sufficient, consider intermittent inhaled corticosteroids (ICS).
- Due to the risk of side-effects, ICS should be considered only if the physician is confident that the treatment will be used appropriately.
- Those who have more symptoms may be given regular inhalers and inhaled corticosteroids. Leukotriene antagonists such as montelukast may also be helpful.
- The basic principles of asthma management are similar to that in adults, such as proper use of inhalers and referral to specialists.
Activity 8. Managing acute exacerbation of bronchial asthma: 20 minutes

Step 1. While the above-mentioned management protocol is suitable for stable asthma, in case of frequent exacerbations the approach will be different.

Step 2. Refer to the workbook for the protocol and discuss it in groups.

WHO PEN protocol 3.1 Management of exacerbation of asthma

<table>
<thead>
<tr>
<th>ASSESS</th>
<th>Assess severity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Severe:</td>
</tr>
<tr>
<td></td>
<td>- Inability to complete sentences in one breath</td>
</tr>
<tr>
<td></td>
<td>- Respiratory rate more than 25 breaths/minute (adult)</td>
</tr>
<tr>
<td></td>
<td>- Heart rate ≥110 beats/minute (adult)</td>
</tr>
<tr>
<td></td>
<td>- PEFR 33–50% best or predicted</td>
</tr>
<tr>
<td></td>
<td>Very severe:</td>
</tr>
<tr>
<td></td>
<td>- Altered consciousness level, exhaustion, arrhythmia, hypotension, cyanosis, silent chest, poor respiratory effort</td>
</tr>
<tr>
<td></td>
<td>- SpO2 &lt;92%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TREAT</th>
<th>First-line treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prednisolone 30–40 mg for 5 days for adults and 1 mg per kg for 3 days for children or longer if necessary until they have recovered;</td>
</tr>
<tr>
<td></td>
<td>Salbutamol in high doses by metered dose inhaler (MDI) and spacer (e.g. four puffs every 20 minutes for 1 hour) or by nebulizer;</td>
</tr>
<tr>
<td></td>
<td>Oxygen, if available, and if oxygen saturation levels are low (below 90%)</td>
</tr>
<tr>
<td></td>
<td>Reassess at intervals depending on severity.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Second-line treatment to be considered if the patient is not responding to first-line treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Increase frequency of dosing via MDI and spacer or by nebulizer, or give salbutamol by continuous nebulization at 5–10 mg per hour if appropriate nebulizer available;</td>
</tr>
<tr>
<td></td>
<td>For children, nebulized ipratropium, if available, can be added to nebulized salbutamol.</td>
</tr>
</tbody>
</table>
Management of an exacerbation of COPD

TREAT
- Antibiotics should be given for all exacerbations.
- For severe exacerbations, give oral prednisolone 30–40 mg for around 7 days.
- Give high doses of inhaled salbutamol by nebulizer or metered doses inhaler with spacer (e.g. four puffs every 20 minutes for 1 hour) or by nebulizer.
- Oxygen, if available, should be given by a mask that limits the concentration to 24–28%.

Things to remember

Exacerbation of COPD
- An exacerbation of COPD is defined as an acute worsening of respiratory symptoms that will require additional therapy.
- Exacerbations of COPD can be precipitated by several factors. The most common cause is respiratory tract infection.
- The goal for the treatment of exacerbations of COPD is to minimize the negative impact of the current exacerbation and to prevent subsequent events.
- Short-acting inhaled beta2-agonists, with or without short-acting anticholinergics, are recommended as the initial bronchodilators to treat an acute exacerbation.

The exacerbations can be

1. **Mild, no respiratory failure:** respiratory rate: 20–30 breaths per minute; no use of accessory respiratory muscles; no changes in mental status; hypoxaemia improved with supplemental oxygen given via Venturi mask 28–35% inspired oxygen (FiO₂); no increase in PaCO₂ (partial pressure of carbon dioxide).

2. **Moderate, acute respiratory failure – non-life-threatening:** respiratory rate: >30 breaths per minute; use of accessory respiratory muscles; no change in mental status; hypoxaemia improved with supplemental oxygen via Venturi mask 25–30% FiO₂; hypercarbia, i.e. PaCO₂ increased compared with baseline or elevated 50–60 mmHg.

3. **Severe, acute respiratory failure – life-threatening:** respiratory rate: >30 breaths per minute; use of accessory respiratory muscles; acute changes in mental status; hypoxaemia not improved with supplemental oxygen via Venturi mask or requiring FiO₂ > 40%; hypercarbia, i.e. PaCO₂ increased compared with baseline or elevated > 60 mmHg or the presence of acidosis (pH < 7.25).

Management of exacerbations
- Short-acting inhaled beta2-agonists (salbutamol), with or without short-acting anticholinergics (ipratropium bromide) are the initial bronchodilators for acute treatment of a COPD exacerbation. They can be given by nebulization.
• Maintenance therapy with long-acting bronchodilators should be initiated as soon as possible before hospital discharge.

• Systemic corticosteroids can improve lung function (FEV1), oxygenation and shorten recovery time and duration of hospitalization. Duration of therapy should not be more than 5–7 days in a dose of 30 mg per day.

• Antibiotics can shorten recovery time, reduce the risk of early relapse, treatment failure, and duration of hospitalization. Duration of therapy should be 5–7 days. Amoxycillin is the first drug of choice in a dose of 500 mg thrice daily.

• Methylxanthines (theophyllines) are not recommended due to poor side-effect profiles.

If the patient has severe exacerbation (moderate with acute respiratory failure) or severe form of the disease, refer to a higher centre for further management with non-invasive ventilation.

Complications of COPD

Respiratory failure and cor pulmonale with right heart failure are important complications of COPD.

Respiratory failure: look for blue discoloration of the fingers, lips or tongue. Flapping tremors, headache, altered mentation – patient will need oxygen therapy and if not improving, refer to a higher centre. High-flow oxygen may be harmful; hence low concentration of oxygen (28–32%) should be given carefully.

Right heart failure: look for swelling of the ankles, raised neck veins, tender hepatomegaly, loud second heart sound (S2) and cardiac murmurs. Give oxygen and diuretics (frusemide 40 mg daily).

Pneumothorax: air sacs may rupture and air may collect in the pleural space. The patient will complain of sudden-onset chest pain and breathlessness. Confirm by chest X-ray. Insertion of a chest tube is needed.

Activity 9. Prevention and other interventions: 10 minutes

Step 1. Refer to the workbook for the prevention protocol and discuss prevention strategies.

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### Asthma – Advice to patients and families/caregivers

#### Regarding prevention:
- Avoid cigarette smoke and trigger factors for asthma, if known.
- Avoid dusty and smoke-filled rooms.
- Avoid occupations that involve agents capable of causing occupational asthma.
- Reduce dust as far as possible by using damp cloths to clean the furniture.
- Sprinkle the floor with water before sweeping or cleaning the blades of fans.
- Regularly minimize the number of soft toys in the sleeping area.
- It may help to eliminate cockroaches from the house (when the patient is away) and shake and expose mattresses, pillows, blankets, etc. to sunlight.

#### Regarding treatment, ensure that the patient or parent:
- knows what to do if the asthma deteriorates
- understands the benefit of using inhalers rather than tablets, and why
- knows that adding a spacer is helpful
- is aware that inhaled steroids take several days or even weeks to be fully effective.

### Additional interventions strategies include:
- patient education about the disease, chronicity, causes, need for medications
- physical activity
- influenza vaccination to all patients with COPD
- pneumococcal vaccination (PCV13 and PPSV23) for all patients >65 years of age and younger patients with significant comorbid conditions, including chronic heart and lung disease
- good nutrition in patients
- end-of-life and palliative care approach
- inhaled steroids take several days or even weeks to be fully effective and gargle after the use of inhalers.
Activity 10. Demonstration of metered dose inhaler/or other aerosol delivery equipment: 10 minutes

Step 1. Show a video on the use of a metered dose inhaler or live demonstration.

- Explain the mechanism of functioning of aerosol delivery: metered dose inhaler, spacers and nebulizers.

  - Other precautions
    - Avoid the use of different types of inhaler devices if possible.
    - Check the technique at every opportunity – “Can you show me how you use your inhaler at present?”
    - Shake the inhaler before use.
    - Identify errors in inhaler use technique.
      - Give a physical demonstration to show how to use the inhaler correctly.
      - Check again (up to 2–3 times).
    - Recheck the inhaler technique frequently, as errors often recur within 4–6 weeks.
    - Confirm by asking
      - Can you demonstrate the correct technique for the inhalers you prescribe?
      - Brief inhaler technique training improves asthma control.
    - If the patient is not able to use a metered dose inhaler properly despite repeated demonstrations, consider using a spacer.
    - Check for the expiry date and that the inhaler device is not empty.
    - Ask the patient to rinse the mouth after using each steroid inhaler to prevent oral fungal infection (if not using a spacer).

- Many patients often use the inhaler incorrectly leading to poor control. Thus, emphasize that the correct technique of use of inhalers is very important.

Activity 11. Case studies: 20 minutes

Step 1. Ask participants to refer to the workbook for the following case studies and write the diagnosis, potential cause and treatment based on the protocol.
Step 2. Invite a volunteer to present the case study.

Case study 1
A 25-year-old female with known asthma for 10 years is on inhaler treatment.
- She has a history of a running nose and sneezing with blocked nose for 12 years.
- She takes one puff of the inhaler twice daily.
- Despite that she continues to wheeze and cough.
- She reported to the emergency twice during the past one month.
- The cough increases at night and she has disturbed sleep almost daily.
- She has to take salbutamol inhaler four times per week.
- Measurement of PEFR is less than 50% of her personal best.

Diagnosis: A case of uncontrolled asthma
Justification:
- she has night symptoms almost daily
- requires salbutamol more often
- continues to be symptomatic despite inhalers
- reported to emergency twice
- lung function less than normal despite therapy.

Potential cause of her uncontrolled asthma
- The inhalation technique is inadequate – check it*.
- The dose may be inadequate (she is taking only one puff twice daily).
- She may need additional medication.
- She is not taking any medication for allergic rhinitis.
- She may have a complication like ABPA (allergic bronchopulmonary aspergillosis).

*For all patients, ask them to take inhalers in front of the health-care provider to assess the correctness of the technique.

Case study 2
A 22-year-female, known asthmatic for 10 years with allergic rhinitis for 13 years, mother is a known asthmatic.
- taking inhaled long-acting bronchodilator plus inhaled corticosteroid combination in adequate doses two puffs twice daily
- inhalation techniques checked during each visit by the nurse
- also takes monteleukast 10 mg daily
no nasal symptoms
had taken salbutamol 200 micrograms once in past week
PEFR is 400 L/min
no night awakening; no other chest symptom
no emergency visit, continues her daily routine activities.

Diagnosis: a case of adult controlled asthma

Justification:
- adequate doses two puffs twice daily
- inhalation techniques checked during each visit by the nurse
- also takes monteleukast 10 mg daily, no nasal symptom
- had taken rescue salbutamol 200 micrograms only once during past one week.
- PEFR is 400 L/min – normal for her
- no night awakening; no other chest symptom
- no emergency visit, continues her daily routine activities.

Case study 3
A 24-year-old female, known asthmatic for 8 years, was on combination (LABA+ steroid) inhaler therapy with adequate control (no symptoms, normal daily activities, no night symptoms).
- developed acute viral upper respiratory tract infection (URTI) (fever, sore throat, cough, yellow sputum, sneezing, running nose, headache and myalgia) for 3 days
- cough and wheeze reappeared, night symptoms increased, no relief despite taking 12 puffs of salbutamol inhaler and the above steroid and LABA inhaler eight doses
- patient reported to emergency.
- On examination: tachypnoea (increased respiratory rate of 32/min); tachycardia (increased heart rate 132/min), accessory muscles of respiration are working, severely breathless, pulsus paradoxus of 26 mmHg; unable to complete sentences, mild blue discoloration of fingers and tongue
- chest had bilateral wheeze, oxygen saturation of 87%; PEFR 60 L/min.

Diagnosis: a case of exacerbated asthma

Management of the case
The patient should be nebulized with one respule of salbutamol continuously for three doses and then 6-hourly; oxygen inhalation, encouraged to drink enough liquids, oral prednisolone 40 mg/day. Within the next 24 hours she improved gradually and during the next 5 days her chest became normal. Her respiratory rate and heart rate settled down to normal, oxygen saturation was 96% and
Managing COPD and asthma

Case study 4

Patient is a 55-year-old male smoker smoking 12 hand-rolled cigarettes per day for the past 23 years.
- complained of gradually progressive breathlessness and productive cough of 4 years
- these symptoms occurred during the winter seasons
- he had increased purulence of sputum twice during the past 1 year.
- On examination the chest was hyperinflated and there were bilateral basal crepitations.

Diagnosis: a case of COPD. Discuss why it is not bronchial asthma and what investigations should be done?

Case study 5

A 36-year-old female with history of wheezing, cough with expectoration for the past 5 years.
- She was using cowdung cake as fuel for her household cooking and heating.
- She was a non-smoker and a homemaker.
- On clinical examination, she had bilateral rhonchi and bilateral basal crepitations.
- She had no significant relief on inhaled bronchodilators and anti-inflammatory drugs.

Diagnosis: a case of asthma–COPD overlap syndrome.

Justification: it has features of both COPD and asthma.

Case management: she will need both short-acting bronchodilators (salbutamol and ipratropium combination) as and when needed. She will need also a combination of LABA + steroid inhalers. Additional tiotropium bromide will also be required.

Case study 6

A 35-year-old male had a history of childhood pneumonia.
- Since then he had repeated attacks of cough with copious mucopurulent expectoration of about 1–2 cups.
- It increases on lying down on the left side.
- He has coarse crepitation on auscultation.
- Chest X-ray showed cystic dilatations on both sides – more on the right side
1. **What are the differences between asthma and COPD?**
   (a) Asthma is reversible and COPD is irreversible.
   (b) COPD is reversible and asthma is irreversible.
   (c) Wheeze is not heard in asthma.
   (d) COPD symptoms are more during the night and early morning.

2. **What precautions should be used in inhaler technique?**
   (a) Check for the expiry date and check that the inhaler device is not empty.
   (b) Rinse your mouth after the use of a steroid inhaler.
   (c) Breathe out completely before taking the inhaler.
   (d) You should breathe in fast after the puff.

3. **Which of the following is not true for peak flowmeter?**
   (a) It is used to test the reversibility.
   (b) It should be done in lying position and should be done only once.
   (c) Marker should be moved to the bottom of the numbered scale before the test.
   (d) It can be used to monitor the response to the treatment.

4. **Which of the following is true about the reversibility test?**
   (a) It is done to monitor bronchial obstruction.
   (b) If the increase in PEFR is 20% or more after salbutamol it is a case of COPD.
   (c) One puff of salbutamol is enough to conduct the test.
   (d) Inhaler can be used before 8 hours of the test.
**ADDITIONAL INFORMATION**

**Other tests for COPD**
- Do a blood test (blood sugar, lipid profile) and a chest X-ray to rule out other causes of symptoms.
- Do a sputum examination to rule out tuberculosis if there is a history of cough for 2 weeks or more and expectoration or blood in the sputum.
- Calculate the body mass index (BMI) to find out if the patient has a healthy weight for the height. This is important because COPD could be managed better if the patient is not underweight or overweight.

Other information required to give a better picture of the severity of COPD severity:
- how often the symptoms flare up or there is chest infection
- how short of breath the patient feels during everyday activities
- whether the oxygen level is significantly lower

**Spirometry**

Lung function is assessed by spirometry. This involves blowing hard into a machine which measures lung capacity and how quickly the patient can empty the lungs. This is called the forced expiratory volume in one second, often shortened to FEV1.

Your doctor will use a spirometer to measure how narrow your airways are. But this only covers one aspect. Someone with slightly narrowed airways can be more breathless than someone with very narrow airways, depending on their level of fitness and the exact way in which COPD has damaged their lungs.
Unacceptable

Normal Tracing of Spirometry

Managing COPD and asthma
Managing COPD and asthma

Activity 1: Step 2

Burden of CRD (asthma and COPD)

- Chronic Respiratory Diseases (CRDs) include chronic obstructive pulmonary disease (COPD), bronchial asthma, bronchiectasis, occupational lung disorders, interstitial lung diseases, post-tubercular sequel and others.
- Global burden of COPD and asthma is about 500 million and have greatest public health significance.
- No standard National Guidelines are available in most countries of the region except in one or two.
- High burden of tuberculosis is another important issue of the region which needs to be excluded in each of these case.
Risk Factors of CRD (asthma and COPD)

- For COPD:
  - Smoking, and air pollution (both indoor and ambient)
  - Occupations, particularly dusty environments, mining, agriculture
- For asthma
  - Genetic factors
  - Family history
  - Allergens,
  - Maternal smoking
  - Pollution

What is asthma?

- Asthma is an obstructive airways disease when there is limitation to the airflow.
- Common symptoms are wheezing, shortness of breath, chest tightness and cough that vary over time (Intermittent).
- The characteristic feature of the disease is the variability of the airway obstruction that becomes normal either spontaneously or with treatment — The obstruction is reversible.
- Saying: “Not all that wheezes is asthma. And not all asthmatics wheeze”.

Some asthma triggers

- GERD (reflux from esophagus)
- Post nasal drip (due to allergies)
- Down feathered comforters/down
- Pollens, mold, house dust mite
- Pets (in bedroom)
- Isocyanides
- Cotton dust/wood dust
- Solvents
- Aspirin sensitivity (rarely) known as Samter’s triad
What is COPD?

- Chronic obstructive pulmonary disease, or COPD, describes a group of lung conditions that make it difficult to empty air out of the lungs because your airways have been narrowed.
- COPD includes two conditions – chronic bronchitis and emphysema.
- Most common symptoms include dyspnea, cough and/or sputum production.
- COPD may be punctuated by periods of acute worsening of respiratory symptoms, called exacerbations.
**Pathology of COPD**

**COPDs and bronchial asthma**

- COPDs (Emphysema and bronchitis):
  - Have damaged air sacs in their lungs, which can lead to hyperinflation, or the inability of the lungs to return to their normal shape after expelling air.
- Bronchial asthma:
  - Asthma is a respiratory condition that comes with spasms in the bronchi of the lungs that make it difficult to breathe.

**What is ACO (asthma-COPD overlap)?**

- Many patients with symptoms of chronic airways disease have features of both asthma and COPD. This has been called asthma-COPD overlap (ACO).
- It is characterized by persistent airflow limitation with several features usually associated with asthma and several features usually associated with COPD.
What’s the difference between COPD and asthma?

- To differentiate asthma and COPD recall some basic pathophysiology
- Both COPD and asthma have a level of expiratory air flow obstruction
- Asthma: reversible expiratory air flow
- COPD: Irreversible expiratory air flow.

### Difference between asthma and COPD

<table>
<thead>
<tr>
<th>History</th>
<th>Asthma</th>
<th>COPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous History</td>
<td>Diagnosis of asthma known</td>
<td>Diagnosis of COPD known</td>
</tr>
<tr>
<td>Direct of symptom</td>
<td>Since childhood or early adulthood</td>
<td>Onset in middle age (40-60) or later</td>
</tr>
<tr>
<td>History</td>
<td>Seasonal allergies, known triggers of symptoms</td>
<td>History of heavy smoking for more than 15 years, exposure to second-hand dust</td>
</tr>
<tr>
<td>Symptoms</td>
<td>Intermittent symptoms with exacerbations periods in-between worse at night, early morning, triggered by exercise, weather changes, seasonal allergies, removal of wall traction or other bronchodilators</td>
<td>Worsened over a long period of time, long history of frequent cough and sputum production before shortness of breath, persistent with little day-to-day variation</td>
</tr>
<tr>
<td>Baseline</td>
<td>Usually normal, II between exacerbations</td>
<td>Decreased breath sounds, hyperinflation, hyperreactive airways, nasal stuffiness, poor for breathing</td>
</tr>
</tbody>
</table>

### History and examination

- Ask if breathlessness is brought on by anything, how the daily life is affected and other questions about general health.
- Ask how frequently there are exacerbations/hospitalizations.
- Ask about history of smoking, type of product, quantity, duration.
- Whether the patient is exposed to dust, fumes or chemicals.
- Clinical examination of the chest (respiratory system) to see evidence of hyperinflation, crepitations.
Activity 2: Step 1

Demonstration of PEFR using peak flow meter

- Spirometer is the better option for measurement of lung function which measures both FVC, and FEV1 and calculate their ratio.
- PEFR although not a replacement of spirometer, can be used to assess reversibility.
- A peak flow meter is a small device that helps to monitor respiratory conditions such as asthma by measuring maximum.
- Airflow out of your lungs. Peak flow meters are most helpful in assessing moderate to severe persistent asthma.

Purpose of measure of PEFR

- To demonstrate the obstruction
- Reversibility
- To monitor the response to therapy
- Demonstration of variability between morning and evening
- Warn about impending exacerbation during test.
Activity 3: Step 1

Bronchodilator reversibility test

- Ask the patient not to take any bronchodilator drug/inhalers for at least 8 hrs
- In the morning ask him to take light breakfast
- Take Base-line PEFR (highest value of three readings)
- Give 2 puffs of salbutamol (each puff of 200 µg)
- Repeat PEFR after 15 minutes and calculate the increase in % as below:
  - \((\text{Observed value} - \text{baseline value}) \times 100 / \text{Baseline value}\)

Diagnosis of COPD

- In addition to the pattern of symptoms, a lung function test (spirometry) is used for diagnosis and regular check ups
- Gold standard, but not always available at PHC level
- Measures FEV1 and FVC
  - FEV1: forced expiratory volume in 1 sec: Normal: 4 L
  - FVC: forced vital capacity: Normal: 5 L
- FEV1/FVC ratio is calculated to diagnose obstruction:
  - FEV1/FVC = 4L/5L = 0.8 Normal
  - FEV1/FVC = 1.8L/3.2L = 0.56 Obstructive disease

Managing COPD and asthma
Assess degree of airflow limitation for COPD with spirometry tests (based on post bronchodilator FEV1)

Patients with FEV1/FVC < 0.70

Mild COPD: FEV1 ≥ 80% predicted
Moderate: 50% ≤ FEV1 < 80% predicted
Severe: 30% ≤ FEV1 < 50% predicted
Very severe: FEV1 ≤ 30% predicted

Asthma severity assessment

<table>
<thead>
<tr>
<th>Components</th>
<th>Inadequately controlled (any one)</th>
<th>Adequately controlled (all should be present)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daytime symptoms or use of rescue medication</td>
<td>More than twice a week</td>
<td>Twice or less in a week</td>
</tr>
<tr>
<td>Night time symptoms/awakening</td>
<td>Any</td>
<td>None</td>
</tr>
<tr>
<td>Limitation of activities</td>
<td>Any</td>
<td>None</td>
</tr>
<tr>
<td>Pulmonary function (if available)</td>
<td>FEV1 &lt;80% of predicted or PEF &lt;80% of personal best</td>
<td>FEV1 &gt;80% of predicted or PEF &gt;80% of personal best</td>
</tr>
</tbody>
</table>

Symptoms and signs of acute exacerbation of asthma

- Severely breathless,
- Accessory muscles of respiration are working (neck muscles, chest and abdominal muscles),
- Pulsus paradoxus (if you know how to measure it)
- PEFR 33-50% of best or predicted
- Respiratory rate > 25 breaths/minute (adult)
- Inability to complete sentences in one breath
- Exhaustion, hypotension, cyanosis (blue colouration of lips, tongue and finger tips), silent chest, poor respiratory effort, altered conscious level
### Assess severity of acute exacerbation of asthma

<table>
<thead>
<tr>
<th>Mild or moderate</th>
<th>Severe</th>
<th>Life-threatening</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Talks in phrases,</td>
<td>• Talks in words,</td>
<td>• Drowsy</td>
</tr>
<tr>
<td>• prefers sitting to lying,</td>
<td>• sits hunched forwards,</td>
<td>• Confused</td>
</tr>
<tr>
<td>• not agitated</td>
<td>• agitated</td>
<td>• silent chest</td>
</tr>
<tr>
<td>• Respiratory rate increased</td>
<td>• Respiratory rate &gt;30/min</td>
<td>(Any one of the above)</td>
</tr>
<tr>
<td>• Accessory muscles not used</td>
<td>• Accessory muscles in use</td>
<td></td>
</tr>
<tr>
<td>• Pulse rate 100–120 bpm</td>
<td>• Pulse rate &gt;120 bpm</td>
<td></td>
</tr>
<tr>
<td>• O₂ saturation (on air) 90–95%</td>
<td>• O₂ saturation &lt;90%</td>
<td></td>
</tr>
<tr>
<td>• PEF &gt;50% predicted or best</td>
<td>• PEF ≤50% predicted or best</td>
<td></td>
</tr>
</tbody>
</table>

### Approach to patient with asthma/COPD

- **Patient presenting with hoarseness, wheezing, chest tightness, cough and/or sputum production**
- **Features suggesting another alternative diagnosis**
- **Evaluate and treat for**
  - Detailed history on symptoms, risk factors, and triggers; relevant physical examination
  - Possible asthma/COPD
  - Spirometry
  - Assess asthma control or COPD severity
  - Institute empiric therapy
  - Patient education
  - Schedule follow-up visit

- **If cough/sputum for ≥2 weeks**
  - **Test options for acute exacerbation**
    - Negative
    - Positive
    - Treat as tuberculosis
Early detection and referral of suspected oral cancers in primary health care
## WHAT’S INSIDE

- Introduction
- Learning outcomes
- Topics covered
- Competency
- Teaching and learning activities
INTRODUCTION

Head and neck cancer is the sixth most common cancer in the world. Of these, oral cancer is the most common cancer among males in much of the South and South-East Asia (SEA) regions. Most cancers of the oral cavity, and many cancers of the oropharynx are attributable to tobacco smoking, smokeless tobacco use in its various forms, chewing of betel quid with or without tobacco, and excessive consumption of alcohol, often in subjects whose diets lack multivitamins and minerals. These risk factors are highly prevalent in the Region. Sexually transmitted human papillomavirus (HPV) infections are a growing cause of some oral, and of most, cancers of the oropharynx. Therefore, primary prevention and early detection by frontline health-care workers can significantly contribute to reducing mortality from oropharyngeal cancer.

LEARNING OUTCOMES

At the end of the training module, participants will be able to do the following:

1. Identify persons/population groups at high risk for oral cancer and arrange appropriate habit cessation/counselling.
2. Identify oral cancers and oral potentially malignant lesions through simple, visual examination of the mouth by differentiating them from non-cancer lesions.
3. Use the algorithm for early detection and referral of suspected oral cancer in primary health care.

TOPICS COVERED

- Symptoms and signs of oral potentially malignant lesions and oral cancers (with images).
- Technique for visual examination of the mouth at the primary health care level.
- Communication with the at-risk patient and his/her family on the implications of his/her lifestyle and/or oral condition. Education of the individual, family and community on how to prevent oral cancer.

COMPETENCY

Ability to identify oral potentially malignant lesions and refer appropriately and counsel patients at high risk for oral cancer or those diagnosed with it.
TEACHING AND LEARNING ACTIVITIES

Session time: 90 minutes

Activity 1. Basic pathophysiology of oral potentially malignant lesions and oral cancers: 20 minutes

Step 1. Ask participants to recall any previous experience of patients with lesions of the soft tissues of the mouth.

Step 2. Stimulate participation and test their current knowledge by asking some leading questions.

- Share a personal experience of managing a patient with a complaint of a persistent ulcer, swelling or painful area in the mouth.
- Was there a situation where you suspected cancer?
- How common is oral cancer in your community?
- What are the specific risk factors for oral cancer prevalent in the communities with which you interact?
- When was the last time you referred someone to a dentist or a doctor for a review?
- Have you ever suggested to anyone to quit tobacco use and what was the experience like?
- Do you have any idea of the amount of alcohol consumed in your community?
- To what extent is malnutrition a problem in your community?
- How common is cancer of the uterine cervix in your community? This could increase the risk of oral and oropharyngeal cancer among both men and women because almost all cervical cancers and some head and neck cancers are caused by the same HPV.

Step 3. Summarize the responses into signs and symptoms of oral potentially malignant lesions and oral cancers. Write them on a flipchart/whiteboard.

Step 4. Present the powerpoint slides with the following contents.

- Epidemiology of oral cancer and its implications
- Etiology of oral cancer and oral potentially malignant lesions
- What constitutes a high-risk group
- Normal anatomical features of the mouth
- Potentially malignant and malignant lesions of the oral cavity.
Activity 2. Visual and tactile oral examination: 15 minutes

Step 1. Explain the procedure for visual examination of the mouth using powerpoint slides.

Step 2. Show a video of how to conduct a visual and tactile examination of the mouth.

Step 3. Invite volunteers to practise examination of the mouth (optional).

Activity 3. Protocol for early detection and referral of persons with suspected oral cancer: 15 minutes

Step 1. Present the powerpoint slides on screening and its importance.

Step 2. Ask the participants to refer to the workbook for a protocol for early detection of OPMD and oral cancer. Ensure knowledge of local pathways for referral.

Step 3. Discuss the protocol in groups.

Activity 4. Case studies: 15 minutes

Case 1. Mr Raj, 35 years old, who is a habitual betel nut user for the past 5 years, complains of pain while opening the mouth. On examination it was found that the teeth were stained, there were a few white patches in the mouth and leathery changes in the inner lining. What is the suspected diagnosis and management strategy?

Answer: Probable submucous fibrosis

Advise tobacco cessation using the 5A’s approach, mouth opening exercises and diet counselling, and arrange a referral for further evaluation.

Case 2. Ms Rani, 45-year-old female, visits the clinic with a complaint of a non-healing ulcer for the past 2 weeks. On oral examination, a red velvety patch with a few white patches is seen. What is the diagnosis and advice to be given to the patient?

Answer: Probable diagnosis: erythroplakia. Assess the history of tobacco and betel quid use and if positive, suggest that she avoid its use. Refer the patient to a higher centre for biopsy as erythroplakia has a high chance of malignant transformation.
Early detection and referral of suspected oral cancers in primary health care

Protocol for early detection and referral of persons with suspected oral cancer

When to use the protocol in the clinical setting:
- People using or with history of tobacco use (smoking or smokeless)
- People using or with history of areca nut consumption
- Patients presenting with the symptoms and signs listed below

Ask and look for:

Symptoms and signs:
- Patch of whitish or reddish discoloration of the mucosa
- Non-healing ulcer lasting >2 weeks
- Oral hairy leukoplakia (roughening of the lateral or undersurface of the tongue and/or floor of the mouth)
- Submucous fibrosis (hardening of the inside of the cheeks and soft palate, difficulty in speaking, biting, swallowing or other movement of the mouth or tongue)
- Visible mass
- Unexplained persistent bleeding anywhere in the mouth
- Unexplained loss of sensation in the mouth, tongue, cheek or throat

Risk factors:
- Age >30 years
- Tobacco use (chewing tobacco or smoking)
- Chewing areca nut or betel quid
- Alcohol use
- Multiple sexual partners or partner with cancer of the uterine cervix

Oral visual examination
- For any abnormality on oral visual examination, including but not limited to:
  - Change in colour - red/white patch
  - Appearance of white fibrous bands
  - Change in texture of the mucosa
  - Thickening of the cheek
  - Ulcer

If any symptoms, signs or risk factors are present

Any abnormality on oral visual examination

Arrange/refer for detailed assessment by a dentist/dental surgeon/doctor for further management

Advise:
- Advise to avoid tobacco use, areca nut chewing and quit/moderate alcohol use
- Any history of habitual tobacco or alcohol use - refer for cessation assistance to physician/primary health care worker, counsellor or nearest cessation service
- Advise elimination of local irritants and risk reduction
- Encourage sexual hygiene

Normal findings

Review earlier if symptoms occur
Activity 5. Good hygiene practices and oral self-examination: 20 minutes

Step 1. Present the powerpoint slides on good hygiene practices and oral self-examination for suspected lesions or with risk factors (video on oral self-examination for oral cancer).

Step 2. Ask for any clarification from participants.

Pre- and post-tests (10 minutes)

Refer to the powerpoint slides for pre- and post-test exercises.

Additional reading resources


10. Strengthening human resource for health in South-East Asia: time for action and commitment. New Delhi: WHO Regional Office for South-East Asia; 2015.


Early detection and referral of suspected oral cancers in primary health care

Activity 1: Step 4

Oral cancer – SEAR overview

- Incident cases of oral cavity cancer were highest in South Central Asia (40.9% of all incident cases).
- Country wise Age Standardized Rates of oral cavity cancer showed a highest of 27.2 new cases per 100 000 in Papua New Guinea followed by Maldives and Sri Lanka respectively.
- In South-East Asia about 66 000 individuals die due to cancer of the lip and oral cavity every year.

Early detection and referral of suspected oral cancers in primary health care

**Signs and symptoms**
- A sore in mouth that doesn’t heal or increases in size
- Persistent pain in mouth
- Lumps or white, red or dark patches inside mouth
- Non-healing extraction socket
- Difficulty chewing, swallowing, speaking or moving tongue
- Changes in voice
- Difficulty in opening mouth, moving jaw, or swelling or pain in jaw
- Thickening of cheek
- Difficulty in tolerating spicy foods
- Excessive salivation

**On a scale, in increasing order of pain/difficulty**

**Risk factors**
- Tobacco
- Areca nut/betelnut
- Alcohol (with or without tobacco)
- Malnutrition
- Physical irritants: sharp teeth
- Viruses- HPV
- Oral candidiasis
Early detection and referral of suspected oral cancers in primary health care

How tobacco affects

- Tobacco smoke contains more than 4000 carcinogens
- Smokeless tobacco is found to have at least 28 carcinogens (chewing/snuff).

Healthy mouth

Variations in structure and appearance of normal mucosa
Leukoderma

Fordyces granules

Linea alba

Early detection and referral of suspected oral cancers in primary health care
Early detection and referral of suspected oral cancers in primary health care.

Parotid papilla

Anterior floor of mouth

Foliate papillae
Early detection and referral of suspected oral cancers in primary health care

Incisive papilla and palatal rugae

Oral potentially malignant lesions

Typical tobacco chewer’s mouth
Early detection and referral of suspected oral cancers in primary health care

**Signs of oral cancer**

- It is characterized by white patch on the buccal mucosa or any place in the mouth and is adjacent to the place where the tobacco quid is kept
- Cannot be removed by rubbing
- Surface of lesion – Smooth & homogeneous, fissured, corrugated, verrucoid, nodular or speckled.

**Leukoplakia (homogenous)**

**Non homogeneous leukoplakia**

- A non homogeneous leukoplakia is a lesion that has a mixture of white and red patches as seen in the picture
- Compared to the homogeneous type, it is more dangerous and shows an increased chance of turning malignant.
Proliferative verrucous leukoplakia

- A more serious type of leukoplakia, seen more commonly in women is the proliferative verrucous leukoplakia
- It has a lower correlation with the tobacco/alcohol habit
- As seen in the picture, it is noticed in sites like the palate and it is generally idiopathic in nature.
- 70 to 80% of the times, this type of leukoplakia may turn malignant.

Erythroplakia

- Characterized by red velvety patch which is not associated with any trauma or inflammation
- May present with or without leukoplakia
- Malignant transformation is highest among all
- Over 90% of cases show dysplasia, in situ carcinoma or invasive carcinoma.

Oral submucous fibrosis (OSF / OSMF)

- Malignant transformation rate: 2-8 %
- Reduced mouth opening, burning sensation, difficulty in opening mouth
- Blanching, inelastic & fibrous bands palpable
- Dysphagia.
Early detection and referral of suspected oral cancers in primary health care

**Oral lichen planus (reticular)**
- It consists of raised, thin, white lines that connect arcuate patterns, producing a lacework of reticular appearance (Wickham’s striae)
  - Most common type, usually bilateral
- Buccal mucosa and buccal vestibule
  - Tongue and Gingiva > palate
- Malignant transformation: Between 0.3 to 3% Erosive and Atrophic forms have a higher chance of transforming into squamous cell carcinoma.

**Tobacco pouch keratosis**
- Associated with Smokeless tobacco
- Caused by the effect of tobacco and lime
- Usually disappears after stopping the habit.

**Palatal changes in smokers palate**
- Caused by the effect of tobacco smoke and heat
- High risk of malignant transformation in reverse smokers.
Actinic cheilitis

- Caused by prolonged cumulative exposure to UV light of the sun
- Has risk for malignant transformation
- It commonly occurs in the corner of the mouth.

Check list of high risk group

- Ulcer for more than 3 weeks
- Leukoplakia > 2cm in size
- Non homogenous leukoplakia (white lesion with erosions)
- Lesion on tongue and floor of mouth
- Leukoplakia not associated with tobacco/arecanut habit (idiopathic leukoplakia)
- Consumption of betel nut, smoking and smokeless tobacco
- Female gender
- Alcohol with tobacco habit (increases risk 30 times)
- Leukoplakia with candidial infection
- HPV infection.

Activity 2: Step 1
Steps in oral examination

- Ask the individual to rinse mouth
- Wash hands
- Wear a mouth mask
- Wear gloves if available
- Make the patient sit in an area with ample day light/use a hand held torch
- Begin the step wise oral examination (video screening).

Technique for oral visual examination

Extra oral
  - Inspection
  - Palpation

Intraoral
  - Inspection
  - Palpation

Equipment for oral examination

1. Hand held torch
2. Wooden spatula
3. Gloves
4. Mouth Mask
5. Mouth Mirror and Probe
Early detection and referral of suspected oral cancers in primary health care

Activity 3: Step 1

Importance of screening in oral cancer

- Early detection of and down staging of oral cancer
- (reduction in mortality and morbidity, reduced cost of treatment, improved QOL)
- Early detection of OPMDs and preventing malignant transformation by habit cessation
- Identification of high risk individuals for oral cancer and other NCDs
- Increasing Oral Cancer awareness in the general population and health care workers.

Harms of oral cancer screening

- Screening tests can have false positive results
- Screening tests can have false negative results
- Over diagnosis is possible (sometimes cancers are slow growing and would not have harmed the person in his or her lifetime)
- Simply finding cancer at an early stage is not enough to justify if it does not decrease in mortality and morbidity from cancer compared with clinical detection of symptomatic disease.
Early detection and referral of suspected oral cancers in primary health care

Who should be screened?

- Every individual (woman or man) over 30 years should be screened
- Those who use tobacco in any form and/or alcohol
- Screening should be done once every 5 years
- More frequent for high risk group.

Screening methods for oral cancer

- Questionnaires
- Oral Examination
- Mouth self examination
- Biopsy and histopathological examination.

Roles and responsibilities of primary care workers

- Home visits
- Active mobilization and navigation services
- Organizing the venue for screening
- History taking
- Risk assessment
- Screening and oral visual examination
- Behavioural intervention for identified risks
- Encourage community participation
- Support and care
- Referral advice
- Oral health education
- Educate about mouth self examination
- Oral health promotion
- Documentation and compilation of patient.
Activity 5: Step 1

Oral hygiene measures

- Question on the most common oral problems
- Do you have bad breath?
- Do your gums bleed on brushing?
- Do you have a tooth ache?
- Do you experience burning sensation in the mouth?
- Do you have pain while chewing?
- Do you have pain in the jaw?
- Do you have hypersensitivity to hot/cold substances?
- Does food get stuck between teeth on chewing?

Common questions about general health

- Are you under medication for any systemic problem?
- Are you a known diabetic?
- Are you on anti hypertensive medication currently?
- Was there any episode of excessive bleeding when you had an injury or when a dental extraction was done?
- Are you on blood thinners?
- Were you operated for any heart problem before?
- Report on any other illness?
Advice on oral hygiene

Show tooth brushing video

Mouth self examination

- Most areas in oral cavity are easily accessible for self examination
- Recommended for high risk persons with history of tobacco and alcohol
- 34% had clinical pathology
- 6% had new or recurrent oral cancer
- Sensitivity 33%
- Specificity 54%
- Education and training of patients in identifying lesions is required
- Increases awareness and responsibility among patients.
Early detection and referral of suspected oral cancers in primary health care

Pre- and post-tests questions

**Exercise 1**

On a scale, in increasing order of pain / difficulty, Oral Cancer symptoms can be described as below:

- **Persistent pain / Breathing</p>"Breathing / Pus</p>"Infection / Change in voice**
- **Swelling in jaw / Excessive salivation**
- **Difficulty in chewing / Swallowing / speaking**
- **Asymptomatic**

There are other possible reasons that the above symptoms may be present.

Figure 1: Signs and Symptoms of Oral Cancer

**Exercise 2**

Name the condition seen in the picture
Early detection and referral of suspected oral cancers in primary health care

**Exercise 3**
Name the condition seen in the picture

A. Leukoplakia  
B. Erythroplakia  
C. Leukoedema  
D. Linea Alba

**Exercise 4**
Name the condition seen in the picture

A. Leukoplakia  
B. Erythroplakia  
C. Lichen Planus  
D. Linea Alba

**Exercise 5**
Identify the condition
**Exercise 6**

*Algorithm for Referral / Management of individuals with potentially malignant lesions*

- Individuals with the presenting symptoms of oral cancer / potentially malignant lesions
- Tobacco + Alcohol
- Tobacco Cessation Services
- Alcohol Detoxification
- Other risks

*Fill the missing link in the referral pathway*

- Based on the available common diagnosis of potentially malignant disease
- Medical Management and assessment for the presence of dysplasia
  - Regress
  - Referral
  - Follow up every year

*Early detection and referral of suspected oral cancers in primary health care*

**Exercise 7**

*Name at least 3 items from the checklist for symptoms and signs of oral cancer*

**Exercise 8**

*Name the labeled structure*

- A. Oral Ulcer
- B. Parotid Papilla
- C. Abscess

Early detection and referral of suspected oral cancers in primary health care
Early detection and referral of suspected oral cancers in primary health care

Which of the following interventions are required urgently?

A. Grinding of sharp teeth
B. Tobacco cessation counselling
C. Referral for biopsy
D. Diet counselling

The lesion is likely to be

A. Oral submucous fibrosis
B. Non-homogenous leukoplakia
C. Erosive oral lichen planus
D. Candidial leukoplakia

The lesion is likely to be

A. Homogenous leukoplakia
B. Non homogenous leukoplakia
C. Verrucous leukoplakia
D. Candidial leukoplakia
Module 3.8

Assessment and referral of suspected breast cancer at primary health care
WHAT’S INSIDE

Introduction
Learning objectives
Topics covered
Competency
Teaching and learning activities
Background information
INTRODUCTION

Breast cancer is one of the most common forms of cancer among women in both developed and less developed regions of the world. The incidence of breast cancer is increasing rapidly in the less developed world due to increase in life expectancy, urbanization and the adoption of fast-paced lifestyles. While minor risk reduction may be achieved with prevention, these strategies cannot eliminate the majority of breast cancers that develop in low- and middle-income countries where the disease is largely diagnosed at a very late stage. Therefore, early diagnosis is the cornerstone for improving breast cancer outcomes and survival. This module provides information about (i) breast cancer risk factors, signs and symptoms; (ii) how to perform clinical examination of the breast; and (iii) referral criteria for women with suspected breast cancer at primary health care using the WHO PEN algorithm.

LEARNING OUTCOME

At the end of the session, participants will be able to:

- Comprehend the concepts of screening and early diagnosis methods for breast cancer.
- Apply the risk factors, signs and symptoms of breast cancer for early identification of patients with breast lumps.
- Examine the breast and identify any suspected breast cancer lesions.

TOPICS COVERED

- Basic information about breast cancer.
- Risks factors for breast cancer.
- Signs and symptoms of breast cancer.
- Technique of clinical breast examination.
- Appropriateness of breast cancer screening.
- Use of algorithm for early detection of breast cancer.
- Patient communication on breast awareness and cancer.
COMPETENCY

- Ability to evaluate woman with breast complaints and manage suspected breast cancer using the algorithm.

TEACHING AND LEARNING ACTIVITIES

Total session time: 90 minutes

Activity 1. Identifying normal breast and suspected breast cancer: 15 minutes

Start with following statement: If breast cancers are identified at an early stage, more effective treatment can be used and the risk of death from breast cancer can be reduced. Although some risk reduction might be achieved with prevention, these strategies cannot eliminate the majority of breast cancers that develop in low- and middle-income countries. Therefore, early detection in order to improve breast cancer outcome and survival remains the cornerstone of breast cancer control.

Step 1. Present the powerpoint slides with the following contents.

- basic information about breast cancer
- risk factors for breast cancer
- signs and symptoms of breast cancer.

Step 2. Show the presentation with pictures of:

- normal breast with asymmetry, including accessory breast, inverted nipple,
- possible breast cancer: lump, depression, erythema, skin thickening (peau d’orange), recent nipple retraction (turning inward), scaliness around the nipple, nipple discharge, ulceration.

Step 3. Ask the participants to identify and describe the abnormality in each picture.
**Activity 2. Performing clinical breast examination:** 30 minutes

Step 1. Perform a group practice with breast model.

Step 2. Each participant has to perform breast examination and lymph nodes with breast model.

Step 3. Observe the participants when they perform breast examination with the model and record the result of each participant for pre-test.

Step 4. Show the presentation slides with short video for the technique of clinical breast examination (CBE).

Step 5. Perform a group practice session with breast model.

Step 6. Each participant has to perform breast examination with breast model.

Step 7. The trainer has to observe the participants when they perform breast examination with the model and record the result of each participant for post-test.

Step 8. Explain the shortcomings of each participant’s technique of CBE and how to improve this technique.

**Activity 3. Managing woman with suspected breast cancer:** 20 minutes

Step 1. Show the protocol for assessment and referral of women with suspected breast cancer at the primary health care level.

Step 2. Emphasize to the participants that referral of women with small breast lumps may lead to diagnosis of “early breast cancer”.
## Protocol for assessment and referral of women with suspected breast cancer at primary health care

**Women who present with the following persistent and unexplained signs and symptoms seeking consultation at a PHC:**

(a) Breast lump or any change in the shape or consistency of the breast

(b) Breast lump that enlarges and/or is fixed and hard

(c) Other breast problems (i.e. eczematous skin changes, nipple retraction, peau d’orange, ulceration, unilateral nipple discharge – particularly bloody discharge, lump in the axilla) with or without palpable lump.

- Assess signs and symptoms (i.e. history, intensity, duration, progression)
- Identify relevant breast cancer risk factors (including age, family history of breast or ovarian cancer, previous history of breast cancer, chest irradiation)
- Clinical examination of both breasts, axillae and neck (supraclavicular and infra-clavicular regions)
- Differential diagnosis: benign breast diseases (e.g. fibroadenoma, fibroadenosis, mastitis, abscess).

### Flowchart:

- **Presenting with (a)**
  - Risk reduction advice and follow-up after menstrual period
  - At follow-up visit: If (b) or (c)

- **Women 30 years and above**
  - Presenting with: (a) + relevant risk factors, Or (b) or (c)
  - Refer immediately to a next level health facility with appropriate services for imaging and/or tissue sampling for diagnosis

### Note:

Referral of women with small breast lumps may lead to diagnosis of ‘early breast cancer’.
Activity 4. Breast cancer screening: 10 minutes

Present the powerpoint with the following contents.

- defining cancer screening compared with early diagnosis
- difference between screening in breast cancer and cervical cancer
- breast self-examination (BSE), clinical breast examination (CBE) and mammography (MMG)
- use of mammogram: its benefits and risks.

Activity 5. Patient communication on breast health and cancer: 15 minutes

Engage the participants to do the role play with one participant acting as primary health care provider and one participant acting as patient.

- Role play 1: Primary health care provider informing the patient with normal breast findings following CBE.
  Primary health care provider informs the patient and her breasts were found to be normal. Health care provider encourages the patient to be conscious of how their breasts normally look and feel, so that she can recognize any abnormality. Patient has to be advised that if she finds abnormalities in her breast she should return for an examination.
  Message: According to IARC’s review of data in a recent monograph, there is “inadequate” data to support routine breast self-examination. Woman can be taught about breast awareness, but not self-examination as a screening method.

- Role play 2: Primary health care provider informing the patient with breast lump following CBE.
  Primary health care provider should inform the patient that there is an abnormality in her breast. Breast lump may be benign or malignant and need further investigation. Patient should be told that it is important to consult a doctor soon so that if there is any issue of concern, it is detected early and cured. Listen patiently to her fears/concerns and offer her help.

- Role play 3: Primary health care provider informing the patient with advanced breast cancer (such as ulceration).
  Talking to a patient with advanced breast cancer can be difficult as the very word “cancer” is expected to make her anxious and depressed. Primary health care provider should inform the patient that there is a severe abnormality in her breast that requires the urgent attention of a doctor. Advise her to attend the appropriate health facility as early as possible, where she may have to undergo further investigation. Explain that it is important to consult a doctor soon so that if there is any disease that is of concern, there is a better opportunity for successful treatment. Listen patiently to her fears/concerns and offer your help if she needs it.
Discuss with participants how the communication could be improved.
Provide breast cancer brochures to participants in order to further educate people.

Pre- and post-tests

Breast model examination form

<table>
<thead>
<tr>
<th>Correct</th>
<th>Incorrect</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use pads of middle three fingers to examine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Circular motion with three levels of depth: superior, medium, deep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. All parts of the breast must be completely examined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Examine at the nipple and areola area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Describe three or more abnormal finding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. **Which statement is true?**

(a) Breast cancer is one of the most common types of cancer among women and is the leading cause of death by cancer.

(b) Men don’t get breast cancer.

(c) All women have a risk of developing breast cancer.

(d) The majority of women who develop breast cancer have a positive family history.

2. **Which statement is false?**

(a) Breast cancer can be prevented by reducing risk factors.

(b) Breast cancer can be detected in the early stages.

(c) Breast cancer is curable in the early stages.

(d) Most breast lumps are cancerous.

3. **Based on WHO PEN algorithm, what is the appropriate management for women who present with the breast lump?**

(a) When the primary health care provider detects breast lumps, the patient has to immediately be referred to the next-level health facilities with appropriate services in every case.

(b) When the primary health care provider detects breast lumps in a 24-year-old woman, she has to be followed up after the menstrual period.

(c) When the primary health care provider detects breast lumps in a 30-year-old woman, she has to be immediately referred to the next-level health facility with appropriate services.

(d) When the primary health care provider detects fixed and hard breast lumps in a 21-year-old patient, she has to be followed up after the menstrual period.

4. **Which statement is true?**

(a) Mammography is the only screening tool for breast cancer that can reduce specific mortality.

(b) Organized breast cancer screening must be offered for early detection with mammography in every country.

(c) Clinical breast examination can reduce breast cancer mortality.

(d) Breast self-examination is effective for breast cancer screening.
5. **What should the primary health care provider communicate with a 35-year-old women who are presented with breast lump?**

(a) Most breast lumps are non-cancerous, don’t worry about it

(b) There are different types of breast lumps. You should go to appropriate health facilities for further investigations as soon as possible

(c) Most breast lumps are cancerous. You should go to appropriate health facilities for further investigation and treatment

(d) There is abnormality in your breast. You should go to the appropriate health facility when it is convenient.
BACKGROUND INFORMATION

Breast cancer burden

Breast cancer is the most frequent cause of cancer among women, impacting over 1.5 million women each year, and also causes the greatest number of cancer-related deaths among women. In 2015, 571,000 women died from breast cancer, or approximately 15% of all cancer deaths among women. While breast cancer rates are higher among women in more developed regions, rates are increasing in nearly every region globally.

Breast cancer survival rates vary greatly worldwide, ranging from 80% or over in North America, Sweden and Japan to around 60% in middle-income countries and below 40% in low-income countries (Coleman et al., 2008). The low survival rates in less developed countries can be explained mainly by the lack of early detection programmes, resulting in a high proportion of women presenting with late-stage disease, as well as by the lack of adequate diagnosis and treatment facilities.

Breast cancer risk factors

Several risk factors for breast cancer have been well documented. However, for the majority of women presenting with breast cancer it is not possible to identify specific risk factors (IARC, 2008; Lacey et al., 2009).

A familial history of breast cancer increases the risk by a factor of two or three. Some mutations, particularly in BRCA1, BRCA2 and p53 result in a very high risk for breast cancer. However, these mutations are rare and account for a small portion of the total breast cancer burden.

Reproductive factors associated with prolonged exposure to endogenous estrogens, such as early menarche, late menopause, late age at first childbirth are among the most important risk factors for breast cancer. Exogenous hormones also exert a higher risk for breast cancer. Oral contraceptive and hormone replacement therapy users are at higher risk than non-users. Breastfeeding has a protective effect (IARC, 2008, Lacey et al., 2009).

The contribution of various modifiable risk factors, excluding reproductive factors, to the overall breast cancer burden has been calculated by Danaei et al. (Danaei et al., 2005). They conclude that 21% of all breast cancer deaths worldwide are attributable to alcohol use, overweight and obesity, and physical inactivity. This proportion was higher in high-income countries (27%), and the most important contributor was overweight and obesity. In low- and middle-income countries, the proportion of breast cancers attributable to these risk factors was 18%, and physical inactivity was the most important determinant (10%).

The differences in breast cancer incidence between developed and developing countries can partly be explained by dietary effects combined with later first childbirth, lower parity, and shorter breastfeeding (Peto, 2001). The increasing modes of adoption of Western lifestyle habits in low- and middle-income countries is an important determinant in the increase of breast cancer incidence in these countries.
Breast cancer control

Raising general public awareness on breast cancer and the mechanisms for its control as well as advocating for appropriate policies and programmes are key strategies of population-based breast cancer control.

Prevention

Control of specific modifiable breast cancer risk factors as well as effective integrated prevention of noncommunicable diseases which promotes healthy diet, physical activity and control of alcohol intake, overweight and obesity, could eventually have an impact in reducing the incidence of breast cancer in the long term.

Early detection

Early diagnosis strategies focus on providing timely access to cancer treatment by reducing barriers to care and/or improving access to effective diagnosis services. The goal is to increase the proportion of breast cancers identified at an early stage, allowing for more effective treatment to be used and reducing the risks of death from breast cancer. Although some risk reduction may be achieved with prevention, these strategies cannot eliminate the majority of breast cancers that develop in low- and middle-income countries. Therefore, early detection in order to improve breast cancer outcome and survival remains the cornerstone of breast cancer control (Anderson et al., 2008).

There are two early detection methods:

- early diagnosis or awareness of early signs and symptoms in symptomatic populations in order to facilitate diagnosis and early treatment, and
- screening – that is the systematic application of a screening test in a presumably asymptomatic population. It aims to identify individuals with an abnormality suggestive of cancer.

A screening programme is a far more complex undertaking than an early diagnosis programme (WHO, 2007). In the vast majority of less developed regions, early diagnosis of breast cancer should be prioritized over breast cancer screening (WHO, 2014).

Irrespective of the early detection method used, central to the success of population-based early detection is careful planning and a well organized and sustainable programme that targets the right population group and ensures coordination, continuity and quality of actions across the whole continuum of care. Targeting the wrong age group, such as, younger women with low risk of breast cancer, could lead to a lower number of breast cancers found per woman screened and, therefore, reduce its cost-effectiveness. In addition, targeting younger women would lead to a greater evaluation of benign tumours causing unnecessary overload of health-care facilities due to the use of addition diagnostic resources (Yip et al., 2008).

Mammography screening

Mammography screening is the only screening method that has proven to be effective, though the studies evaluating mammography were all done in high-income countries with well-resourced health systems. Although there is evidence that organized population-based mammography
screening programmes can reduce breast cancer mortality by around 20% in the screened group versus the unscreened group across all age groups, in general there appears to be a narrow balance of benefits compared with harms, particularly in younger and older women. A WHO position paper on mammography screening concluded that in well-resourced settings women aged 50–69 should undergo organized, population-based mammography screening if pre-specified conditions on programme implementation are met. In limited resource settings with weak health systems, mammography is not cost-effective, and early detection should focus on diagnosis at early stage through improved awareness. For women aged 40–49 years or 70–75 years, WHO recommends systematic mammography screening only in the context of rigorous research and in well-resourced settings. There is uncertainty about the magnitude of the harms, particularly overdiagnosis and overtreatment. Mammography screening is very complex and resource intensive and no research on its effectiveness has been conducted in low-resource settings.

Breast self-examination

There is no evidence on the effect of screening through breast self-examination. However, the practice of breast awareness has been seen to empower women, taking responsibility for their own health. Therefore, breast awareness is recommended for improving the rate of early diagnosis of breast cancer among women at risk.

Clinical breast examination (CBE)

It is an examination of both breasts performed by a trained health professional. CBE can be used as a diagnostic test in a woman who has a breast lump or as a screening test in a woman during a screening programme. CBE seems to be a promising approach for low-resource settings and could be implemented depending on the evidence from ongoing studies. Research is underway to evaluate CBE as a low-cost approach to breast cancer screening that can work in less affluent countries. Promising preliminary results show that the age-standardized incidence rate for advanced-stage breast cancer is lower in the screened group compared with the unscreened group (Sankaranarayanan, 2011).

Since screening requires substantial investment and carries significant potential personal and financial costs, the decision to proceed with screening should be pursued only after (i) basic breast health services including effective diagnosis and timely treatment are available to an entire target group; (ii) its effectiveness has been demonstrated in the region; and (iii) resources are available to sustain the programme and maintain quality.

Additional reading resources

Lacey JV Jr. et al. (2009). Breast cancer epidemiology according to recognized breast cancer risk factors in the Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial Cohort. BMC Cancer, 9, 84.


Assessment and referral of suspected breast cancer at primary health care

Activity 1: Step 1 and 2

Basic information about breast cancer

- Most common cancer in women
- Male breast cancer is about 1% of breast cancer
- Most common cause of cancer death in women worldwide
- Breast cancer survival rates vary greatly worldwide (over 80% to below 40%).
Assessment and referral of suspected breast cancer at primary health care

Risk factors

Non-modifiable risks
- Woman
- Age
- Family history of breast and ovarian cancers in first degree relatives
- Benign breast disease
- Menarche/Menopause, LMP
- History of radiation to chest area

Modifiable risks
- Parity, age at first child birth, history of breast-feeding
- History and duration of hormonal use (oral contraceptives before age 20)
- Alcohol drinking
- Smoking
- Obesity

Signs and symptoms of breast cancer

- Lump or mass
- Depressed
- Erythema
- Skin thickening (peau d'orange)
- Recent nipple retraction (turning inward)
- Scaliness around the nipple
- Nipple discharge
- Ulceration

Normal breast
Assessment and referral of suspected breast cancer at primary health care

Breast lump

- Normal breasts are often lumpy
- Cancers → hard, fixed, and irregular
- Benign → soft or cystic, movable, and regular
- Clinicians rarely diagnose breast cancer with CBE, further evaluation with other tests is then required.

What is a clinical breast examination (CBE)

- CBE is a physical examination performed by a health care professional who is well trained in the technique
- This may be a physician, nurse or other medical staff.
Patient preparation

- Introduce yourself to patient
- Inform patient as many unaware of length of time required
- Explain procedure and obtain the patient’s consent
- Conduct in a bright room that ensures privacy
- Patient should be in a gown.

Key components in CBE

1. Visual inspection
2. Patient positioning
3. Palpating technique
4. Breast boundary
5. Pattern of search

Visual inspection

- Dimpling/Retraction
- Nipple changes
- Erythema
- Edema
- Lumps
- Ulceration
- Asymmetry
Patient positioning

- Lying flat on the table
- Place their hand over their head

Palpation technique

1. Pads of middle 3 fingers
2. Circular motion with 3 level of depth: superior, medium, deep

Breast boundary

- Clavicle
- Sternum
- Mid-axilla
- Inframammary crease (bra line)
Assessment and referral of suspected breast cancer at primary health care

Pattern of search

1. Vertical strip pattern
2. Concentric circle pattern
3. Radial spoke pattern

Lymph node examination

The patient should be in a seated position with relaxed shoulders and arms bent.

The regional nodes are examined with careful attention to the axillary, supraclavicular, infraclavicular LN basins.

3 Components of CBE to influence the accuracy

- The finger technique: 3 fingers
- The search patterns: 3 patterns (choose one)
- Time spent: 3 minutes (each breast).
Assessment and referral of suspected breast cancer at primary health care

Activity 3: Step 1

Activity 4: Step 1
What is difference between screening in breast cancer and cervical cancer

- Cervical cancer: screening for precancerous lesion, decrease incidence of cancer
- Breast cancer: screening for early detection in asymptomatic, decrease staging of cancer

Screening

<table>
<thead>
<tr>
<th>Methods</th>
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<tbody>
<tr>
<td>1. Mammography</td>
</tr>
<tr>
<td>2. Clinical Breast Examination : CBE</td>
</tr>
<tr>
<td>3. Breast Self Examination : BSE</td>
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</tbody>
</table>

Mammography

- Low-energy X-rays
- Reducing breast cancer mortality for women aged 50-74 years (40% for age 50-69 years)
- Adverse effects: false positive results, overdiagnosis, and radiation-induced breast cancer
Assessment and referral of suspected breast cancer at primary health care

Breast density

Spiculated mass

Clinical breast examination

- Low-cost approach to breast cancer screening
- Sufficient evidence for detection of smaller and earlier-stage tumors
- No evidence for support a reduction in breast cancer mortality.
Breast self examination

- No evidence for support a reduction in breast cancer mortality
- Useful for breast health awareness.

Appropriateness of breast cancer screening

- Screening should be pursued only after
  1. Basic breast health services are available
  2. Effectiveness
  3. Can sustain the program and quality
- Based on age group and resource setting.
Module 3.9

Assessment and referral of women with suspected cervical cancer at primary health care level
WHAT’S INSIDE

Introduction
Learning outcomes
Topics covered
Competency
Teaching and learning activities
INTRODUCTION

Cervical cancer is a significant public health problem globally as well as in the South-East Asia (SEA) Region of WHO. It is the second most common cancer among women worldwide and causes a significant number of deaths in the SEA Region. Member States in the Region contribute to nearly 35% of the global burden of disease. In 2008, there were 200 000 new cases of cervical cancer in the South-East Asia Region, giving an incidence of almost 25 per 100 000 and a mortality rate of nearly 14 per 100 000. Cervical cancer is not only preventable but also curable if diagnosed in the early stages. Primary health care providers must know that it is preventable through vaccination and screening. Therefore, health workers must know how to assess women with suspected cervical cancer and refer them early. Besides, health workers should be able to follow up women treated for cervical cancer and give palliative care to those who are not curable. This module addresses the basic skills required of a primary health care provider to suspect, assess and refer suspected cases of cervical cancer in a primary health care setting.

LEARNING OUTCOMES

At the end of the session, participants will be able to do the following:

- Explain the risk factors, symptoms and signs of cervical cancer.
- Explain the importance of prevention, screening, early diagnosis and referral for treatment of cervical cancer to improve survival.
- Make appropriate diagnosis and referrals using the algorithms.
- Follow up women with cervical cancer and provide palliative care where needed.

TOPICS COVERED

- Anatomy of the cervix and natural history of cervical cancer.
- Risks factors for cervical cancer.
- Signs and symptoms of cervical cancer.
- Prevention of cervical cancer.
- Techniques of clinical examination of the cervix.
- Use of an algorithm for early detection of and referral for cervical cancer.
- Patient communication on cervical cancer awareness and relaying results.
COMPETENCY

Participants are able to differentiate signs and symptoms that are similar to cervical cancer and refer women with suspected cancer for early diagnosis and provide follow-up care and palliative care to women with terminal cancer.

TEACHING AND LEARNING ACTIVITIES

Total session time: 120 minutes

Activity 1. Normal cervix and pathogenesis of cervical cancer: 10 minutes

Step 1. Ask few participants randomly what they know about cervical cancer (risk factors early signs and prevention).

Step 2. Present the powerpoint slides of the following.
   - Anatomy of the cervix and pathogenesis of cervical cancer
   - Burden of and risk factors for cervical cancer
   - Signs and symptoms of cervical cancer
   - Prevention of cervical cancer (with human papillomavirus [HPV] vaccination)

Activity 2. Screening and treatment of cervical pre-cancer: 15 minutes

Step 1. Share the case story of Mrs Devi given below.

Case story. Why did Mrs Devi, a 45-year-old mother of 6, die of cervical cancer?

Mrs Devi never went to school and was married at the age of 14 years. She delivered her first child at 15 years of age. By the age of 30 years she had 6 children after which she underwent a tubal ligation. Afterwards, she never went to hospital since she was not ill. From the age of 42 years, she had short menstrual cycles with heavy bleeding and post-coital bleeding. She was given iron tablets at a local health centre. Then, she started having low abdominal pain. She was repeatedly treated as a case of urinary tract infection (UTI) till one day she had very heavy bleeding for which she was referred to a district hospital. The doctor did a pelvic examination, including speculum examination, and found that she had an abnormal growth at the cervix and referred her to a centre with facilities in obstetrics and gynaecology where she was diagnosed with stage IIIB cervical cancer at the age of 44 years. She was treated with chemoradiation, but was not cured. She died of obstructive uropathy leading to renal failure.
Facilitator’s explanatory note

Summarize the case story, emphasizing on the importance of prompt diagnosis by proper history-taking, including risk assessment, and doing a proper examination and screening to prevent cervical cancer.

When symptoms occur they usually include irregular vaginal bleeding.

This should be a red flag to anyone evaluating these patients and stressed in patient education programs. This irregular bleeding most often occurs post coitally. Its because of trauma to the cervix which can be necrotic and friable. Larger cancers are more likely to bleed spontaneously and may cause a foul smelling vaginal discharges. Here the differential diagnosis is a vaginitis vs other etiologies such as cancers. Not only cervical cancer but any cancer within the female reproductive tract. Lastly more advanced widespread cervical cancer can cause obstructive uropathy, back pain due to ureteric obstruction, and leg swelling due to venous or lymphatic obstruction.

Step 2. Ask the participants to discuss the following.

- What do you mean by an opportunistic and organized screening for cervical cancer?
- Is opportunistic or organized screening a better approach to prevent cervical cancer?
- How can the health facility team improve early detection of cervical cancer?
- How should the national cancer control programme gear up towards preventing others such as Mrs X’s from dying?

Step 3. List the discussion on the whiteboard/flipchart. Summarize the key messages on opportunistic and organized screening.

Step 4 Present the powerpoint slides of the following.

- Screening approaches
- Recommendations for cervical cancer screening
- Cervical cancer screening tests
- Pap smear
- Visual inspection with acetic acid
- HPV testing
- Confirmatory tests
- Brief mention of the treatment for pre-cancerous conditions of the cervix
- Organizing a cervical cancer screening programme.

Step 5. Ask the participants to list: screening tests and diagnostic procedures for cervical cancer.
Step 6. Ask the participants to what extent the health facility can play a role in the screening and diagnosis of cervical cancer.

Key messages

- Early detection by screening all women in the target age group followed by treatment of detected precancerous lesions can prevent the majority of cervical cancers.
- Cervical cancer screening should be performed at least once for every woman in the target age group where the most benefit can be achieved: 30–49 years.
- Cervical cancer screening, at least once, is recommended for every woman in the target age group, but this may be extended to women younger than 30 years of age if there is evidence of a high risk for cervical squamous intraepithelial neoplasia (CIN)2+.
- HPV testing, cytology and visual inspection with acetic acid (VIA) are all recommended screening tests.
- For cervical cancer prevention to be effective, women with positive screening test results must receive effective treatment.
- It is recommended to take either a “screen-and-treat” approach or a “screen, diagnose and treat” approach.
- Decisions on which screening and treatment approach to use in a particular country or health-care facility should be based on a variety of factors, including benefits and harms, potential for women to be lost to follow up, cost, and availability of the necessary equipment and human resources.
- In the screen-and-treat approach, the treatment decision is based on a screening test and treatment is provided soon or, ideally, immediately after a positive screening test (i.e. without the use of a diagnostic test).
- The screen-and-treat approach reduces loss to follow up, and can reduce the time lag for women to receive treatment.
- Among women who test negative with VIA or cytology, the interval for rescreening should be 3–5 years.
- Among women who test negative with HPV testing, rescreening should be done after a minimum interval of 5 years.
- If cancer is suspected in women who attend screening, they should not be treated but should be referred to a facility for diagnosis and treatment of cancer.
- Cryotherapy or loop electrosurgical excision procedure (LEEP) can provide effective and appropriate treatment for the majority of women who screen positive for cervical pre-cancer.
**Activity 3. Demonstration of speculum examination of the cervix: 30 minutes**

**Step 1. Provide a Zoe model (or show a video demonstration of speculum examination of the cervix).**

**Step 2. Explain the steps of speculum examination (including infection control).**

<table>
<thead>
<tr>
<th>Things needed for a speculum examination</th>
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<tbody>
<tr>
<td>Examination bed, which can be adjusted in the lithotomy position, spotlight, instrument trolley, sterile gloves, bivalve speculum of different sizes, galipot, normal saline, swab sticks, bucket with bleaching powder solution.</td>
</tr>
<tr>
<td>Always have an attendant nearby during the speculum examination.</td>
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</tbody>
</table>

**Steps**

(1) Explain the procedure to the client and let her lie down on the examination bed with her buttocks at the edge of the bed.

(2) Wear sterile gloves, select an appropriate speculum (small size for postmenopausal and nulliparous women and large size for parous women in the reproductive age group), and dip it in normal saline.

(3) With the left hand, retract the labia, insert the speculum with the blades closed, directed posteriorly till the cervix is reached. Then open the blades and expose the cervix till it is fully visualized. Then fix the blades by tightening the screws.

(4) Examine the cervix and perform the necessary procedures (collecting samples for cytology/HPV testing or performing VIA/VIA and with Lugol’s iodine [VILI]/cryotherapy, cold coagulation, etc.)

(5) Loosen the screws, withdraw the speculum till the cervix is freed, then close the blades and remove the speculum gently. Any solution or discharge/blood on the speculum must be cleaned with a swab stick before removing the speculum. Put the speculum in bleaching powder solution.

**Facilitator’s explanatory note**

Observe the participants as they conduct the speculum examination to see if it is correctly done.

Asks participants if they have any questions or need clarification.
Activity 4. Practising the use of the algorithm: 15 minutes

Protocol for assessment and referral of women with suspected cervical cancer at the primary health care facility

Women who present with the following persistent and unexplained signs and symptoms seeking consultation at a primary health centre:
(a) Abnormal vaginal bleeding (i.e. after coitus, between menstrual periods, post menopause)
(b) Foul-smelling discharge
(c) Pain lower abdomen
(d) Any of the above associated with an abnormal growth at the cervix with persistent low backache or abdominal pain

Assess signs and symptoms (i.e. history, intensity, duration, progression)
Identify the relevant risk factors: age (21 years old and above who are sexually active for 3 years or more, multiple partners, multiple childbirths, smoking, no screening)
Speculum examination
Differential diagnosis: abortion in premenopausal women, infections (e.g. chlamydia, gonococcal, etc.), genital ulcers, cervical inflammation, cervical/uterine polyps, dysfunctional uterine haemorrhage, endometrial or vaginal cancer

Women presenting with (a), (b) or (c)
Clinically examine for cervical growth or ulceration
Without cervical growth or ulceration
With cervical growth or ulceration
Treat the suspected condition as per available services and relevant standard guidelines and follow up
Condition resolves
Condition is not manageable, persists or worsens

Women presenting with (d)

Regular screening, review earlier if symptoms occur

Refer immediately to a gynaecologist for further assessment to confirm the diagnosis and refer to an oncologist for treatment.

Note:
Referral of women with (a), (b) or (c) may lead to a diagnosis of "early invasive cervical cancer", particularly in women 30 years old and above.
Step 1. Ask the participants to review the above algorithm and raise the points that are unclear to them.

**Activity 5. Screen-and-treat approach: 15 minutes**

Step 1. Ask the participants to discuss whether screen-and-treat approach in their health facility or a district is available.

Step 2. List the preparedness needed to launch the screen-and-treat approach.

Step 3. If screen and treat is not feasible, discuss what role the health facility team can play in mobilizing women for screen and treat in their local context.
Activity 6. Follow up of women diagnosed and treated for cervical cancer: 10 minutes

Step 1. Ask the participants what should be done for patients who are already diagnosed with and treated for cervical cancer.

Facilitator’s explanatory note
- Death after treatment is due to recurrence, which happens in the first 2–3 years after treatment. Follow up should be frequent in the first 2–3 years.
- If women have bleeding/discharge/pain lower abdomen or lower limbs, persistent cough or swelling in the neck, etc. they must report to the nearest health centre.
- Women who have had chemoradiation/radiation may have bleeding per rectum or bladder. This is a side-effect of radiation. They must report this to their treating doctor.
- Whether cervical cancers are treated with surgery or radiation, patients need to be followed up.
- Survival is calculated by 5 years (early stage patients are more likely to survive).

Activity 7. Patient communication and palliative care: 15 minutes

Step 1. Ask participants to share any experience in breaking the news to a patient with cervical cancer.
- How was the diagnosis conveyed? How did the patient respond? What are the lessons learnt during the process?
- Engage participants to do the role-play with one participant acting as the health care provider and one participant acting as the patient.

Step 2. Discussion on the care of women with incurable cancers

Facilitator’s explanatory notes
- If women have bleeding/discharge beyond 3 months after treatment, it may be a sign that treatment has failed.
- These women will need palliative care, which may even include chemotherapy.
- They also must be helped by giving them pain medications.
- For foul-smelling discharge, women may be advised to undergo douching or Sitz baths with crushed metronidazole tablets.
Assessment and referral of women with suspected cervical cancer at primary health care level

- Help prevent bedsores. If already present, you may do a dry dressing after applying crushed metronidazole tablets with/without honey.
- Give advice on family planning and sex where appropriate.
- Health workers must also give psychological support to caregivers.
- Help give spiritual support to patients nearing death.
I. **Show two photos on a flipchart: normal and abnormal cervix.**

Ask the participants to identify the microscopic appearance of the normal cervical epithelium: columnar epithelium, subcutaneous junction (SCJ), transformation zone from pictures on a flipchart. Ask them to identify the abnormal appearance of cervix before and after applying acetic acid from the pictures. (Participants must recognize Nabothian cysts, polyps, an inflamed cervix and cancers before application of acetic acid. Abnormalities like CIN are seen after applying acetic acid.)

**Figure 1: Normal cervix on speculum examination**

![Figure 1: Normal cervix on speculum examination](image)

**Figure 2: Precancer after application of acetic acid**

![Figure 2: Precancer after application of acetic acid](image)
2. Based on the services available in your health facility, what will be your strategies for cervical cancer prevention and screening?

3. Which of the following statements are true (multiple choice possible)?
   
   (a) Organized screening is better than the opportunistic screening for cervical cancer.
   (b) All women presenting with pain in the lower abdomen and foul-smelling vaginal discharge should be referred to a higher centre.
   (c) Women with abnormal vaginal bleeding without any cervical growth should be initially managed at the primary health centre.
   (d) All women with a palpable abdominal mass with persistent low backache or abdominal pain should be referred to a higher centre.

4. All of the following statements are true except...
   
   (a) Cervical cancer is caused by poor female hygiene or by using sanitary pads more than once.
   (b) Cervical cancer is not a sexually transmitted disease.
   (c) Women with many sexual partners are at higher risk of HPV infection.
   (d) Intrauterine device and oral contraceptive pills are not a risk factor for cervical cancer.
5. **Demonstrate the steps of speculum examination on a ZOE gynaecological simulator**

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<tr>
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<th>Correct</th>
<th>Incorrect</th>
<th>Notes</th>
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<tbody>
<tr>
<td>1. Position of the model</td>
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<tr>
<td>2. Selection of the speculum</td>
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<tr>
<td>3. Exposure of the cervix</td>
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<tr>
<td>4. Speculum blade fixation</td>
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<tr>
<td>5. Speculum withdrawal and cleaning after use</td>
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</table>
Assessment and referral of women with suspected cervical cancer at primary health care level

Activity 1: Step 2

Anatomy of uterine cervix

- Cervix is 3-4 cm in length and 2.5 cm in diameter. Varies with age, parity, menstrual and hormonal status
- Ectocervix is covered by pink multilayered squamous epithelium and endocervix is lined by single layered columnar epithelium and is red in appearance.
- Squamo-columnar junction (SCJ) where 2 epithelium meet.
Assessment and referral of women with suspected cervical cancer at primary health care level
Assessment and referral of women with suspected cervical cancer at primary health care level

Location of SCJ and transformation zone (TZ) in different stages of a woman’s lifetime

Location of SCJ and TZ in different stages of a woman’s lifetime

Squamous metaplasia (columnar epithelium replaced by squamous epithelium)

- This occurs in spurts: in fetal life, at menarche' and during first pregnancy. HPV infection within a few years of menarche’ carries a very high risk of developing cancer. That is why, early age at the first sexual debut is the single most important risk factor for cervical cancer.
- In the absence of HPV infection, the metaplastic epithelium matures and is almost indistinguishable from the original one. Its outer border or the old SCJ is marked by the presence of Nabothian follicles or gland openings.
Human papilloma virus (HPV) infection of the TZ

HPV infects the new dividing cells in the squamous metaplastic epithelium, which is most immature near the new SCJ. This is the beginning of the abnormality in the cervix. If there are no cofactors like other STIs, immunosuppression etc., most of these infections disappear. In presence of these factors, HPV infection persists it can progress on to CIN (cervical intraepithelial neoplasia) and if not treated, to cancer later on.

HPV

- It is the most prevalent STI in the world, occurring in some 75% of sexually active women. HPV infection is the necessary cause of cervical cancer
- It is a transient infection in most of the women. There is no treatment for HPV, but it is controlled by the immune system of the host
- It infects whole of lower genital tract, pubic area, urethra and anus of both sexes (condoms do not offer 100% protection against HPV).

Seed, soil and nutrient’ model for cervical cancer carcinogenesis
Etiopathogenesis of cervical cancer

Transformation zone:
Epithelium covering vagina and ectocervix is squamous stratified and is pink in color whereas the one layered columnar epithelium lining the endocervix is red. The boundary between the 2 epithelia is known as the original squamocolumnar junction (SCI). Before puberty, this SCI lies inside the cervical canal in most of the girls. At puberty, the cervix expands under the influence of estrogen and the endocervical mucosa gets everted onto the ectocervix (referred to erroneously as erosion by most). This columnar epithelium is further.

Transformation zone

Injured by the acidic pH of the vaginal fluid. During repair, the columnar epithelium is replaced by a multilayered squamous epithelium. This process is known as squamous metaplasia. The junction between the original columnar epithelium and the upper end of this metaplastic epithelium is known as the new SCI. The area between this and the original SCI is known as the transformation zone.

Transformation zone
Assessment and referral of women with suspected cervical cancer at primary health care level

Natural history of cervical cancer

- Women get infected with HPV in their twenties, but get cancer after 8 to 15 years.
- Most of the mild dysplasia (CIN 1) will regress in time. Few progress onto high grade CIN.
- CIN 2 and 3 (high grade CIN) are the true precancers. These are mostly seen in women in late thirties to early forties. A substantial number will progress onto cancer over time.
- If women get screened during those 8 to 15 years and get treated, they will not get cancer and this forms the basis of Pap smear or other screening methods.

Burden of cervical cancer

- Cervical cancer is the second most common cancer among women in developing countries.
- In rural areas, it is more common than breast cancer.
- There is a big burden of cervical cancer in SEA region due to high prevalence of risk factors and no access to screening.
- Cervical cancer is preventable and curable if diagnosed early.

Risk factors

- Early age at marriage
- Multiple sexual partners of a woman or her partner
- Having HPV and other STIs
- Immunosuppression
- Cigarette smoking
- Prolonged OCP use
- Multiple child births.
Assessment and referral of women with suspected cervical cancer at primary health care level

Sign and symptoms of cervical cancer

- Many women with cervical cancer have no symptom (especially in early stages)
- Bleeding in between periods
- Bleeding after sexual act
- Postmenopausal bleeding
- Foul smelling discharge
- Low abdomen pain
- Low back pain.

Prevention of cervical cancer

- **Primary prevention**
  - Education of women on risk factors
  - Vaccination against HPV
- **Secondary prevention**
  - Screening
  - Early detection
- **Tertiary prevention**
  - Treat and avoid complications.

HPV vaccination

- Should be given to girls before menarche and before exposure to sexual contact.
- Many other countries have started at state/province or district levels either as horizontal program or as demonstration projects.
- Example in SEA region, Bhutan has a national school based HPV vaccination programme which is given to class VI girls regardless of age.
HPV vaccination

- Vaccine contains viral proteins against HPV 16 and 18 only, because they cause more than 70% of cervical cancers worldwide.
- Vaccine may also help decrease HPV related oral and oropharyngeal cancers.
- Regardless of vaccination status, all women must undergo screening according to the protocols of their respective countries.

Three important things in prevention of cervical cancer

- **Information**
- **Screening** as many women as possible (high coverage)
- **Treating** all women with high grade lesions

*If any of these is not working, programme will fail.*

Activity 2: Step 4

Assessment and referral of women with suspected **cervical cancer** at primary health care level
Assessment and referral of women with suspected cervical cancer at primary health care level

**Screening approaches**

- Opportunistic screening: Not recommended
- High risk group screening: Not recommended
- Organized screening: It is proven to be effective in decreasing and incidence of and mortality from the cervical cancer in target populations in countries that have maintained high quality programmes for a number of years in comparison to other two.

**Organized screening requirements**

- All women aged between 25-60 years should be screened for cervical cancer and interval between tests should be 3-5 years.
- Adequate facilities exist to ensure the high coverage and attendance, including invitation and recall if test is missed.
- Adequate facilities should be available for diagnosis and appropriate treatment of confirmed neoplastic cases and follow up of treated women.
- Monitoring and evaluation need to be organized to determine the impact on incidence and mortality rate.

**Screening methods**

- Pap smear
- VIA (visual inspection with acetic acid)
- VILI (visual inspection with Lugol’s iodine)
- Thin layer Prep
- Automated Pap smear
- HPV testing
- VIAM (VIA with magnification)
- Cervicography.
Assessment and referral of women with suspected cervical cancer at primary health care level

**Reduction in cervical cancer rates with different screening intervals**

<table>
<thead>
<tr>
<th>Frequency of Screening</th>
<th>% reduction in cumulative rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>93.5</td>
</tr>
<tr>
<td>2 years</td>
<td>92.5</td>
</tr>
<tr>
<td>3 years</td>
<td>90.8</td>
</tr>
<tr>
<td>5 years</td>
<td>83.7</td>
</tr>
<tr>
<td>10 years</td>
<td>64.1</td>
</tr>
</tbody>
</table>


**Pap smear**

It is the gold standard for prevention of cervical cancer. Where there is high coverage, good quality cytology along with high adherence to follow up and treatment, it has brought down the cervical cancer incidence and mortality by 90% (USA and N. Europe). But, due to involvement of too many levels of people, it has the high probability of failure. It did not work somehow in the developing countries due to various factors!!!

**Pap smear procedure**

1. Obtain informed consent.
2. Hold the speculum blades together sideways and slip them into the vagina. Be careful not to press on the urethra or clitoris because these areas are very sensitive. When the speculum is halfway in, turn it so the handle is down. Gently open the blades and look for the cervix. Move the speculum slowly and gently until you can see the entire cervix. Tighten the screw (or otherwise lock the speculum in the open position) so it will stay in place.
Assessment and referral of women with suspected cervical cancer at primary health care level

**Pap smear procedure**

3. Insert the long tip of the spatula or brush into the cervical os, and rotate it through a full circle (360 degrees).
4. Smear both sides of the spatula onto the glass slide with one or two careful swipes (or roll the brush onto the slide). If you see any abnormalities outside the area sampled, take a separate specimen and smear it onto another slide.

**Pap smear procedure**

5. Immediately fix each slide, even before removing the speculum from the vagina it only takes a few seconds: either use a spray fixative, at a right angle to and a distance of 20cm from the slide, or immerse the slide in a container of 95% ethanol and leave it there for at least five minutes (while you proceed with the next steps).
6. Gently close and remove the speculum.

**VIA, a new method of screening**

- It is an alternative method for screening of cervical cancer in low resource settings.
- Cervix is painted with 5% acetic acid and observed after one minute. Any abnormal area becomes white(VIA positive). Target population is women 30-45 years age group.
- VIA can be done by nurses and treatment with cryotherapy, offered at the same visit (single visit approach).
Assessment and referral of women with suspected cervical cancer at primary health care level

VIA negative and positive cervix

Advantage of VIA

- Test is simple and non-invasive. Can be done anywhere.
- Sensitivity is better than that of Pap smear
- There is immediate report. Nurses can do it. It is very cheap
- Treatment can be given at the same visit
- More convenient for clients. Women with VIA negative are recalled after 5 years only for a repeat test.

Disadvantages of VIA

- Age limit: it cannot be done in women older than 45 years (SCJ inside canal)
- Intensive training and quality control needed
- Low specificity. Danger of over treatment (but there is no harm)
- No tissue for histopathology for retrospective studies.
Assessment and referral of women with suspected cervical cancer at primary health care level

HPV testing
- It is the only test that detects presence of high risk HPV infection
- Positive result means there is infection with at least one type of high risk infection and does not mean presence of CIN
- Further testing with genotyping will reveal presence of HPV 16 or 18 indicating higher risk of developing cancer
- Test is done on women older than 30 years
- Sample is taken with a brush and emmersed in a medium and transported to a Lab where it is read.

Who should not do HPV testing?
- Women younger than 30 years
- During menstruation
- During pregnancy
- Within 6 weeks postpartum
- After hysterectomy for benign conditions.

Management of HPV positive women
- If HPV negative, repeat in 5-10 years
- If positive, either cytology or VIA is done.
- If VIA positive, treat with cryotherapy if eligible at same visit
- If not eligible for cryotherapy, refer for colposcopy
- If VIA negative, repeat HPV testing in one year.
Assessment and referral of women with suspected cervical cancer at primary health care level

Modalities of treating cervical precancers (CIN)

- All women with abnormal smears must undergo colposcopy to confirm the presence of CIN.
- CIN I (including HPV infection) is followed up in women younger than 30. If persistent or women are unreliable, treat it with cryotherapy.
- All women with CIN 2 and 3 or carcinoma-in-situ, (the true precancers) must undergo excisional therapy with LEEP (loop electrosurgical excision procedure).

Modalities of treating cervical precancers (CIN)

- Conization and TAH are rarely used, especially in young women who has yet to complete family.
- Laser is expensive for a low resource country like ours.
- Diathermocoagulation is not advised where there are better modes of treatment like LEEP and cryotherapy.
- Cold coagulation: exploring.

Cryotherapy

- Freezing the cervix with carbon dioxide or nitrous oxide. In Bhutan, we use carbon dioxide. The aim is to create a 4-5 mm ice ball from the margin of the probe. This ensures that cryonecrosis occurs up to a depth of 5 mm. We use the double freeze method to enhance its efficacy (3 minute freeze, 5 minutes thaw followed by 3 minute freeze again.

Assessment and referral of women with suspected cervical cancer at primary health care level
Assessment and referral of women with suspected cervical cancer at primary health care level

**Appearance of cervix after cryotherapy**

**LEEP or LLETZ (large loop excision of TZ)**

- The transformation zone (TZ) bearing the CIN is excised with a wire loop, through which electric current is passed. It cuts and coagulates at the same time. About 7 to 10 mm. of endocervix is also removed. Any bleeding point is then fulgurated with a ball cautery. Monsel’s solution (ferrous oxide) is applied to ensure hemostasis and a tight pack is put in. This is removed after 2-4 hrs. The tissue is sent for histopathology to ensure margins.

**Loop Electrosurgical Excision Procedure (LEEP)**

- LEEP can be done as an OPD procedure under local anesthesia, which is injected at all 4 quadrants of cervix with a dental syringe. Treat infections if present and do the procedure right after a menstrual period. With these precautions, bleeding is almost nil and patients sent home after a few hours. If vaginal pack is put in, she may remove it after 4-5 hrs at home.
Assessment and referral of women with suspected cervical cancer at primary health care level

**LEEP**

**Information to be given after LEEP/Cryotherapy**

- There will be vaginal discharge for 3-4 weeks
- Expect bleeding after 10-14 days. If heavier than a menstrual period, come back to hospital
- If fever/pain abdomen/prolonged/heavy bleeding occur, come back
- No sexual intercourse for 4 weeks
- Pap smear and Colposcopy after 1 year (if invasive cancer on HPE. After 3 or 6 months.

**Comparison between LEEP and cryotherapy**

<table>
<thead>
<tr>
<th></th>
<th>Cryotherapy</th>
<th>LEEP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectiveness</td>
<td>86-95%</td>
<td>91-98%</td>
</tr>
<tr>
<td>Complications</td>
<td>2%</td>
<td>8%</td>
</tr>
<tr>
<td>Bleeding</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Anaesthesia</td>
<td>No</td>
<td>Yes (local anaesthesia)</td>
</tr>
<tr>
<td>Electricity</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Non-physicians</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Effect on fertility</td>
<td>No</td>
<td>Nil</td>
</tr>
<tr>
<td>Relative cost</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Tissue for Histopathology</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Factors affecting treatment failure

- Big lesion covering more than 75% of ectocervix
- Age more than 30 years
- Persistent HPV infections
- Previous treatment for CIN.

Conclusion

Cervical cancer is a killer of relatively young women, but it is preventable. A well designed screening program backed up by simple, but effective methods of treatment can decrease the incidence and deaths due to this cancer. If Pap smear does not work, look for other simpler methods like VIA. According to experts, where girls are vaccinated, HPV testing is more appropriate as the screening method. Cost is the barrier to introducing this screening method in developing countries.
Module 4.1

Addressing comorbidities of common mental disorders and NCDs
WHAT’S INSIDE

Introduction
Learning outcomes
Topics covered
Competency
Teaching and learning activities
Background information
INTRODUCTION

Mental illness occurring together or coexisting with physical illness is referred to as comorbidity. The comorbid occurrence of mental disorders and noncommunicable diseases (NCDs) is associated with substantial individual and societal health-care costs. Commonly occurring comorbid conditions with NCDs include alcohol abuse/dependence, tobacco abuse/dependence, depression, anxiety disorders, trauma- and stress-related disorders, insomnia, suicide, dementia, etc. Mental illnesses are both a cause and consequence of other physical health conditions and disorders.

Essentially, mental health issues are linked to the increased risk for mortality due to associated NCDs, such as cardiovascular disease (CVD) and cancer. The prevalence of major depression is higher among persons with NCDs. This may be up to 29% with hypertension, up to 22% with myocardial infarction, up to 31% with stroke, up to 27% with diabetes, up to 33% with cancer etc. whereas it is only up to 10 % for general population.

The pathways leading to comorbidity of mental disorders and NCDs are complex and show many commonalities. The major modifiable risk factors for NCDs, such as an unhealthy diet, physical inactivity, tobacco use and harmful use of alcohol, are exacerbated by poor mental health. Furthermore, individuals with mental health conditions are less likely to seek help for NCDs, affecting compliance with treatment, and thus the prognosis. Identification of comorbid mental illness(es) in diabetes, stroke and other NCDs is essential for better management of NCDs and vice versa. This module aims to impart skills in the early identification of comorbid common mental illnesses with NCDs and appropriate management of depression at the primary care level.

LEARNING OUTCOMES

At the end of the session, participants are able to do the following:

- Comprehend the importance of mental illnesses co-occurring with NCDs.
- List common mental disorders that are comorbidities.
- Describe the symptomatology of depression and other significant mental health problems.
- Provide guidance on first-line management and self-care for mental illnesses.

1 Ivbijaro G. Mental health as an NCD (non-communicable disease): the need to act. Mental Health Fam Med. 2011;8:131–2.
TOPICS COVERED

- Identification of depression and other significant mental health problems.
- Management of depression and other significant mental health problems.
- Modifiable risk factors, which are common for NCDs and mental disorders.

COMPETENCY

- Participants have the ability to identify and manage depression and other significant mental health complaints among NCD patients.

TEACHING AND LEARNING ACTIVITIES

Total session time: 90 minutes

Activity 1. Mental health problems among NCD patients: 20 minutes

Step 1. Divide participants into convenient groups. Ask participants to enumerate the different types of mental health complaints they observe in patients with NCDs. Ask participants to share one complaint each with the group and list the set of complaints for the entire group on a whiteboard or flipchart.

Step 2. Ask participants to enumerate the possible reasons for the higher risk of mental health issues among people with NCDs. Ask a group member to present the set of reasons.

Step 3. Summarize the discussion using the powerpoint presentation with the following contents.

- mechanism linking NCDs and significant mental health complaints
- challenges in identifying mental health comorbidities in NCD patients
- implications of comorbidities.
Step 4. Ask the participants to briefly discuss the various myths and facts associated with mental health comorbidities and NCDs, and note the key myths and facts on the whiteboard.

Some of the key myths and facts are below.

<table>
<thead>
<tr>
<th>S. no</th>
<th>Myths</th>
<th>Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mental disorders such as depression and anxiety co-occur with all NCDs.</td>
<td><strong>Not necessarily.</strong> NCDs can cause distress in a patient resulting in sadness, worry and unusual preoccupation with the condition. However, not all symptoms escalate to the level at which it takes the form of psychiatric disorder. Not all sadness or worry is depression and anxiety. A psychiatric condition is diagnosed only when a mental state is persistent and interfering in activities of daily living (ADLs), along with meeting specific criteria as specified by the International Classification of Diseases (ICD) or Diagnostic and Statistical Manual of Mental Disorders (DSM).</td>
</tr>
<tr>
<td>2.</td>
<td>There is no hope for people with NCDs and mental health problems. Once a friend or family member develops these problems, they will never recover.</td>
<td><strong>No. Comprehensive treatment accommodating management of both conditions is widely available.</strong> In fact, studies show that people with mental health problems get better and many recover completely. Recovery refers to the process in which people are able to live, work, learn and participate fully in their communities. There are more treatments, services and community support systems than ever before, and they work.</td>
</tr>
<tr>
<td>3.</td>
<td>Prevention does not work. It is impossible to prevent mental illnesses in NCDs.</td>
<td><strong>No. Prevention of mental, emotional and behavioural disorders in NCDs is possible.</strong> Such prevention plans focus exclusively on addressing known risk factors. Promoting social–emotional well-being leads to higher overall productivity, better educational outcomes, lower crime rates, stronger economies, lower health-care costs, improved quality of life, increased lifespan and improved family life.</td>
</tr>
<tr>
<td>4.</td>
<td>Mental health problems with NCDs is communicable.</td>
<td><strong>No. Mental health problems are not communicable in nature.</strong> Most people with a mental illness recover quickly and do not even need hospital care. Only a few may require short admissions to hospital for treatment. Improvements in treatment over recent decades mean that most people live in their communities, and there is no need for the confinement and isolation that was commonly used in the past.</td>
</tr>
<tr>
<td>S. no</td>
<td>Myths</td>
<td>Facts</td>
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<tr>
<td>5.</td>
<td>Mental disorders are not important. Treating NCDs is primary.</td>
<td><strong>No.</strong> While there may be numerous reasons for public denial of mental disorders, the evidence is clear that mental health problems are in fact common, important considerations, and are related to a plethora of human difficulties. Thus, this is just a hasty generalization. Since both impact the course and outcome of treatment, addressing each completely is important.</td>
</tr>
<tr>
<td>6.</td>
<td>People who have been diagnosed with mental illnesses and NCDs are dangerous and should be avoided.</td>
<td><strong>No.</strong> Comorbid conditions occur frequently and are in no way indicative of any danger or violence. The probability of committing a violent act is as common with other diseases as with mental disorders and NCDs.</td>
</tr>
<tr>
<td>7.</td>
<td>If one cannot see the difficulties in behaviour, it means that mental illness in NCDs has been cured.</td>
<td><strong>No.</strong> Often signs and symptoms of mental health problems are psychological in nature and are not overtly manifested in behaviour. Only a subjective sense of relief in distress, emotional and mental health functioning and overall improved functionality indicate changes in the patient.</td>
</tr>
<tr>
<td>8.</td>
<td>People with NCDs and mental health disorders cannot lead normal lives.</td>
<td><strong>No.</strong> While NCDs and mental health disorders can have a profoundly negative impact on the lifestyle of some individuals, others can lead rich and fulfilling lives. Many such patients are high achievers and do well in many spheres of their lives. Though many lifestyle changes may be needed for them to be better, they are as capable of leading normal lives as any other person with these conditions.</td>
</tr>
</tbody>
</table>

**Activity 2. Case vignettes for identifying mental disorders:**

**30 minutes**

**Step 1.** Divide the participants into convenient groups. Ask each group to refer to one case vignette of Mr Haliim, Mr Apisit, Ms Sumin and Ms Su.

**Step 2.** Ask each group to review the case vignette and make an oral presentation to the whole group. The presentation should focus on the following:

- identifying mental health problems
- classifying the mental health problems as
  - probably depression
  - anxiety disorder (include a case vignette)
  - probably other significant mental health complaints.
Mr Haliim’s story

Presentation: Mr Haliim is a 50-year-old man with type 2 diabetes. He complains of cough and has been visiting the primary health care centre for last three months, with fever for last one week.

Clinical background: He has had type 2 diabetes for five years, but was diagnosed only two years ago and has been prescribed medication. However, he often misses his medicines and does not follow-up with his doctor regularly. He has no other illnesses or sensitivity to any medicine or food item. He is married with five children, and works as a construction labourer. He has been chewing tobacco (ghutka), smokes 20 bidis a day, for last 30 years and occasionally consumes alcohol.

The consultation: On examining the patient, the primary health care doctor learns that his chest and throat are normal. He is prescribed paracetamol (as it appears to be an episode of viral fever) and was advised to visit the health centre if the fever or cough aggravates. The doctor felt that there is no need to put him on antibiotics, but he was not satisfied and complained that the doctor is not taking good care.

Diabetes management: Ideally, people with diabetes should be followed-up regularly, to check on their glycaemic status, identify any complications etc. Accordingly, medication and life-style modification (including tobacco and alcohol cessation) should be advised. Mr Haliim had been irregular with his medication and follow-up visits to his consulting doctor. His diabetes control should be reviewed, damage to target organs checked by blood and urine tests, and a physical examination should be scheduled. If the blood sugar is not controlled by medication or he develops complications, he may require hospitalization and there is at increased risk for early death.

Depression management: Mr Haliim’s case, depression is a probable diagnosis, and the doctor at primary health care centre needs to decide on the next course of action. The issues under consideration:
- What is the best way of making a diagnosis?
- What would a diagnosis of depression mean to Mr Haliim?
- Is there likely to be an issue of stigma?
- What are the various treatment options available?
- Will antidepressants affect the control of diabetes?
- Can cognitive behaviour therapy could improve both diabetic control and depression.

Mr Apisit’s Story

Presentation: Mr Apisit is a 65-year-old man who visits the primary health care centre with complaints of chest pain and breathlessness when climbing up the stairs. He is accompanied by his daughter-in-law, and feels that he is about to die as he is having a heart attack.

Clinical background: Mr Apisit has been consulting his doctor over the past 8 years. He used to be a senior official in a private sector company with a decent salary. But, since his retirement 6 years ago, he is facing financial hardships. Earlier he has had one similar episode of breathlessness and chest pain six months ago, wherein he was anxious that he will not live, as he is having a heart attack, but had responded to the therapy by a cardiologist. He also underwent behavior cognitive therapy, which brought much relief to his anxiety.
Two years ago Mr Apisit lost his wife, who passed away in her sleep. He was recovering from this loss, when his 35 year old son, died in a car accident last year. Presently he is living with his daughter-in-law and granddaughter, who survived the car accident. His daughter is married and her family has migrated to another city. He used to be overweight, smoked 8-10 cigarettes per day, and has a tendency to eat spicy and fried food.

For last one year, he is irregular in monitoring his blood pressure and cholesterol levels, which had been at a higher range. He is usually restless, often has disturbed sleep. His appetite and love for food have gone down drastically, he was lost some weight. He usually complains of a nervous stomach, and often has disturbed sleep.

As soon as he developed the above mentioned symptoms, he presumed that he will not survive, he is anxious about the welfare of his daughter-in-law and granddaughter, when he is gone. His daughter, who has come to take care of him, tries to assure him that all will be well, but he is very restless.

The consultation: Mr Apisit’s chest pain was of a crushing nature, radiating to his neck and left arm, aggravated by exercise and relieved by rest. Since last two months, his pain has aggravated, accompanied by breathlessness. He fears that he may die due to a heart attack. He has no charm in living as he misses his wife and son, and is very worried about his daughter-in-law and granddaughter. He is jobless, survives on retirement benefits, his daughter-in-law is a housewife and his granddaughter is in primary school. His daughter lives in another city and visits him occasionally. He does not want to leave his own house, as he has responsibilities back home. He has no friends or hobbies. He also does not like people sympathizing him for his personal losses.

Blood pressure management: The primary health care doctor finds that Mr Apisit’s blood pressure is higher than normal and he is obese. Mr Apisit is referred to a cardiologist for further investigations, where detailed assessment of blood pressure and associated comorbidities were undertaken.

Anxiety and post trauma stress disorder (PTSD) management: Mr Apisit was also referred to a psychiatrist for assessment of his anxiety. The issues under consideration:

- The clinical challenge is what preventive measures the doctors at primary healthcare centre could prescribe to prevent the development of cardiovascular disease.
- Mr Apisit is more likely to have a worse outcome than similar people without PTSD.
- Treating anxiety and PTSD are likely to improve Mr Apisit’s quality of life.

Ms Sumin’s Story

Presentation: Ms Sumin, a 70-year-old woman with advanced breast cancer, makes a regular visits to her primary healthcare physician.

Clinical background: Ms Sumin regularly visits her doctor, as she has had breast cancer for the last five years. She has been receiving treatment, including surgery, chemotherapy and radiotherapy. Presently her oncologist has told her that her disease was progressing, in spite of the treatment.

Ms Sumin has a supportive family, with husband, and two grown-up children, who are married and have their own families. She is a homemaker, but was very active with household work. During her
treatment, she is hospitalized, but wanted to return home and resume life, in familiar surroundings. Her children were born at home, and she had little contact with doctors before she developed a lump in her breast.

The consultation: The situation is challenging, as both Ms Sumin and her family, who has accompanied her during the treatment, are yet to come to terms with her health condition. After the news by the oncologist, the entire family is very depressed. Ms Sumin is losing weight and having disturbed sleep. She feels tired throughout the day and has lost interest in returning to her active life. The primary healthcare physician discusses the next steps with the family.

*Depression management and palliative care:* The primary healthcare physician needs to decide how to support Ms Sumin, and her family. However, he is facing a problem of deciding whether the current set of symptoms is due to progression of the tumour or due to depression.

The issues under consideration:

- Ms Sumin’s symptoms of weight loss, reduced interest in her daily activities, disturbed sleep and fatigue are all diagnostic features of depression.
- However the above symptoms may also be due to spreading cancer.
- It has been observed that many people with depression and terminal illness, refuse to take treatment. In this case, it would be beneficial to discuss the possibility of depression with her and her husband/family.
- It is often beneficial to support such families by involving the treating oncologist and a palliative care specialist, along with a psychiatrist with experience in psychosocial care for terminally ill patients.

*Ms Su’s Story*

Presentation: Ms Su is a 50-year-old lady, complaining of severe cough, with yellow expectoration for last 10 days, visited the nearest primary health care centre.

Clinical background: Ms Su has been a patient of Chronic Obstructive Pulmonary Disease for last 5 years, with episodes of acute exacerbation, and was hospitalized on many occasions. Recently her condition has deteriorated. She is a widow with five children, chewed tobacco, and used to work as a domestic help. For cooking and heating purposes, she used an open smoky traditional stove, with coal and firewood. For treatment of her chest infection, she usually visits the nearest primary health care centre.

The consultation: The doctor at the primary health care centre, takes a detailed history and examines her. There was no fever associated; her chest examination, simple spirometry, and pulse oximetry did not show any change from previous examinations. The doctor felt that there was no need for hospitalization at the moment, prescribed some medicines for one week and advised her to return if her condition does not improve.

On hearing this, Ms Su is very disappointed, and requests the doctor to hospitalize her, as she feels she needs supervised treatment. She started sharing the fact that she has had choking episodes, rapid heartbeat, and she is afraid that she will not survive if she is not hospitalized immediately.
Addressing comorbidities of common mental disorders and NCDs

Depression management: The doctor at the primary health care centre has been treating Ms Su for last two years, he is familiar with her. Her case does not require hospitalization, he needs to prescribe a suitable treatment protocol.

The issues under consideration:

- The clinical symptoms do not require hospitalization
- Furthermore, hospitalization is not the solution for her anxiety, this will give her a false impression that for effective treatment, hospitalization is mandatory
- The doctor must provide an alternative treatment regimen for managing her anxiety, acknowledging her respiratory conditions
- Alternative include pulmonary rehabilitation, tobacco cessation services, psychological services, advice to use clean domestic fuel etc.

Activity 3. Managing mental health – NCD comorbidities:

40 minutes

Step 1. Ask participants to reassemble into groups. Ask each group to continue with the case vignette they had discussed earlier. This time, ask the groups to discuss and present the method of management keeping in mind the existing health-care system.

(1) Counselling
(2) Grief management
(3) Self-care
(4) Stepped care and referral pathways
(5) Mental health promotion
(6) How to handle the patient during emergencies (including psychological first aid and psychoeducation).
BACKGROUND INFORMATION

The need for integrated management of NCDs and mental health comorbidities has been recognized in Sustainable Development Goal (SDG) 3.4, which states “by 2030 reduce by one-third premature mortality from non-communicable diseases (NCDs) through prevention and treatment, and promote mental health and wellbeing”. This now makes it imperative to address mental health and the NCD agenda in a coordinated manner to leverage current political and funding commitments.

Low-and middle-income countries face greater challenges. A limited number of trained human resources, paucity of standard operating protocols/guidelines, and a fragmented approach within the health systems pose significant challenges. Fortunately, the SDGs have prompted health-care systems in low- and middle-income countries to equip themselves to face this challenge in primary health-care settings, creating opportunities to shape these systems to address NCDs and mental health comorbidities, in line with the changing environments and sociocultural–economic contexts.

These initiatives need to be customized to the country perspective, and well-aligned to the existing health systems. Integration requires additional resources, at least in the short term, which are primarily spent on training of health-care providers in NCDs and mental health screening, diagnosis and management. There should be adequate human resources to cater to the increased workload. There should be a robust system in place to ensure effective monitoring and evaluation of this integration process. These provide updates on the progress, which provides inputs for corrective actions.

Conclusion

- NCDs and mental health each constitute a large portion of the worldwide health-care burden, and they often occur together
- Collaborative care models, where NCD care and mental health care are integrated and provided in the primary care setting, are effective for patients, strengthen health-care systems and reduce costs
- Implementation of collaborative care models/scaling up of successful models needs local knowledge of the social, political, cultural context and health systems
- Collaborative care approaches that integrate services for NCDs and mental health conditions require investments in human resources, services and additional research.

Further reading

2. WHO resource book on Depression
3. Clinical schedules for Primary Care Psychiatry
4. Reducing risk factors for noncommunicable diseases (NCDs) in primary care: training manual for counselors
Additional case vignettes

Other significant mental health complaints

(1) A 45-year-old Ms Gayani from an urban area presents with complaints of excessive worry about doing routine household things for the past 5–6 years, which has worsened in the past 2 years. Most of the day she says she feels restless and has difficulty in concentrating. She worries a lot about "whether her husband will like the food she has prepared or not", "whether she will be able to go to the market or not", "whether she will buy vegetables at the correct price or not", etc. She has difficulty in sleeping (wakes up in the middle of the night and starts worrying about her children’s future). She saw the local doctor 6 months back who found that she had high blood pressure and put her on treatment. He also advised her not to worry unnecessarily and come back for follow up after 1 month. During her follow up, the doctor observed that her blood pressure was still high. He advised her not to take salt-rich foods and come back after another 15 days. In the follow-up visit, her blood pressure was still high. She is now more anxious as she has also developed a new illness (hypertension) and because of it she is unable to do household work properly. She has stopped interacting with her friends and other family members as previously she did.

(2) Mr Sanjeewa is a 34-year-old man and has come to the health centre to get his blood pressure checked. He says he was told by his coworkers to see “someone” because he is stressed all the time. He says with tears in his eyes that he stays worried, feels tired often, does not sleep well. His mind goes blank sometimes. He forgets what someone told him. This causes arguments at work. He has been feeling like this for about 8 months. He does not drink or smoke.

(3) Mr Rafi is a 38-year-old man and works in the factory outside the village. He has been given a warning from his manager about his relationship with his coworkers. His coworkers complain to the manager that he gets into fights easily, gets angry and irritable and keeps taking breaks to smoke or drink coffee. He says that these breaks help him to reduce tension. He prefers eating in local hotels and loves fried snacks. He was found to have diabetes during a medical camp at work and came for a consultation to the health centre with his wife.
Addressing comorbidities of common mental disorders and NCDs

Activity 1: Step 3

Linkages between NCDs and mental health disorders

- There is bidirectional links between NCDs and mental illnesses.
- Major modifiable risk factors for NCDs:
  - unhealthy diet
  - physical inactivity
  - Tobacco use
  - Harmful use of alcohol

Exacerbated by poor mental health
Addressing comorbidities of common mental disorders and NCDs

Understanding the linkage: biopsychosocial model of health

Mental health impacts physical health

- People living with stress or have mental illnesses experience a range of physical symptoms that result both from the illness itself and as a consequence of treatment.
- Mental illnesses can alter hormonal balances and sleep cycles, while many psychiatric medications have side-effects ranging from weight gain to irregular heart rhythms.
- These symptoms create an increased vulnerability to a range of physical health conditions.

Psychological mechanism underlying the link- STRESS model

- When we are under stress for a long time we go through three phases.
  - **Alarm Reaction**: fight-or-flight reaction with various neurological/physiological responses
  - **Stage of Resistance**: arousal state. If situation is prolonged, the unusual high level of hormones may setup homeostasis and make organism vulnerable to disease
  - **Exhaustion**: Bodily energy falls down - organism exhausted, may collapse. It is at this stage, individual is most vulnerable to contributes to range of diseases and stress related illness such as heart disease, diabetes, rheumatoid arthritis etc.
Addressing comorbidities of common mental disorders and NCDs

**General adaptation syndrome (GAS) model of stress**

- Resistance
- Stress curve and phases (General adaptation syndrome)

**Physical condition impacts mental health**

- People living with chronic physical conditions often experience emotional stress and chronic pain, which are both associated with the development of depression and anxiety.
- Experiences with disability can also cause distress and isolate people from social supports.
- There is evidence that the more symptomatic the chronic physical condition, the more likely that a person will also experience mental health problems.
- Thus, it is not surprising that people with chronic physical conditions often self-report poor mental health.

**Risk factors for NCDs and mental disorders**

- Diabetes
- Cancer
- Cardiovascular diseases
- Stroke
- Common mental disorders

- Stress
- Alcohol
- Tobacco
- Unhealthy diet
- Physical inactivity
Addressing comorbidities of common mental disorders and NCDs
Integrating mental health is beneficial

- Optimizes investments in NCD prevention and mental health promotion
- Better treatment compliance
- Improved health outcomes
- Reduces stigma
- Strengthens existing health systems
  - Training of non-specialist cadres on both NCDs and common mental illnesses
  - Counselling of patients for treatment adherence.

Case vignettes

Activities 2 and 3

Features and presentations of depression and other significant mental health problems
Introduction

- Depression is a medical condition and a common public health problem
- The most central problem in depression is low mood: patients feel sad or ‘down’ or ‘dull’ persistently nearly every day
- Patients with depression lose interest in most things including day-to-day work and ability to enjoy the things which they used to enjoy previously
- It causes significant distress, loss of productivity and health-related costs due to frequent visits to doctors or healers.

Clinical presentations

- Patients commonly have physical complaints such as tiredness, headaches, palpitations (sensation of heart beating fast), chest pain and general body aches
- Poor appetite, poor sleep, poor concentration, being forgetful
- Patients frequently have negative thoughts about themselves and worry excessively
- Some physical complaints can be confusing as to whether they are due to medical problem or depression.
How is ‘depression’ different from sadness of day-to-day life?

- The ups and downs of mood are common, most people recover quickly.
- People might say "I’m depressed" when in fact they mean "I’m upset because I’ve had a difficult time, or failed an exam, or lost my job", etc.
- Clinical depression presents with low mood and other symptoms persistently throughout the day and mostly for more than two weeks.

Depression versus sadness

- With depression social interactions and work efficiency would be hampered considerably.
- Patients with depression frequently seek help for their bodily complaints, tiredness and sleeplessness from different medical professionals or healers.
- Thinking about suicide, attempting suicide are serious consequences of depression.

How is depression diagnosed?

- Doctors diagnose depression when patients have a set of cardinal symptoms and associated symptoms.
- Three symptoms of depression are considered as most important (cardinal symptoms):
  - Pervasive low mood
  - Easy fatigability
  - Loss of interest.
Other frequently occurring symptoms (associated symptoms)

- Poor attention and concentration:
  - Patients frequently say that they are not able to pay attention to work in hand. E.g., a lady frequently loses concentration while cooking and finds it hard to decide the ingredients, their proportions and sequence of cooking
  - She may not be able to pay attention while talking to others
  - A young person misses the information given by his boss during conversation and later gets pulled up for not following the orders.

Other frequently occurring symptoms (associated symptoms)

- Reduced self-esteem and self-confidence.
  - Patients may feel that they are worthless or useless to others
  - They may hesitate to face others as they doubt whether others would ignore them and would think less of them

- Feeling helpless and hopeless:
  - Patients frequently feel that people don’t understand or love them
  - They often think that their difficulties would never end or their health would never improve
  - orders.

Other frequently occurring symptoms (associated symptoms)

- Patients may frequently blame themselves, feel that they have committed sins in the past

- They frequently feel like hurting themselves, wish that they are dead or even plan and attempt suicide.
Other frequently occurring symptoms (associated symptoms)

- Poor and un-refreshing sleep is a common complaint of depression. Many say they wake up much earlier than their usual time and find hard to go back to sleep.
- Patients with depression lose appetite, eat less quantity of food and may even lose weight.
- Rarely, the opposite may happen: some patients with depression may sleep more and eat more.

Other significant mental health complaints

Anxiety disorders
Fear and anxiety

- **Fear** is an emotional response to real or perceived threat
- **Anxiety** is **anticipation** of future threat
- Anxiety, therefore, is associated with features such as muscle tension and vigilance. It feels *as if the person is gearing up for a dangerous situation*
- In anxiety disorders, fear and anxiety overlap.

An example

- A young woman is at a “mela”. Everything is going well. She suddenly feels her heart beating very fast, she starts to sweat, her hands start to shake, she feels like she is going to faint. She gets worse when she sees the huge crowd around her. She feels she cannot get away from the crowd fast enough even if she wants to.

What are “anxiety disorders”?

- Anxiety makes people feel frightened, distressed, or uneasy during situations in which most people would not experience the same feelings.
- For example; most people would be comfortable at a wedding reception, people with an anxiety disorder get very tense if they have to attend. At the function they stay tense and uncomfortable.
Why do people not access help

• 25% of the population suffers from anxiety disorders.
• Most people don’t know they have a problem or that there is treatment for it.
• People with anxiety disorders go from doctor to doctor complaining of body pain or fatigue or other vague complaints.

What are the common symptoms?

• These people might stay exhausted all the time, never being able to relax in any situation. Some of them have anger outbursts, arguments at home.
• Many times, their friends tell them to “learn to relax”. They even suffer from days or months of poor sleep.

Are there many types of anxiety disorders?

• There are many types of anxiety disorders.
• The underlying theme is that the level of anxiety interferes with their normal life.
• People around them start to notice and this can be a source of more anxiety or embarrassment for the individual with the illness.
Generalized anxiety disorder

- Some people are very relaxed, “laid back”.
- Some people stay tense all the time, they worry about everything.
- When some one worries all the time, does not sleep well, stays constantly tired for several months at a time AND it has been present almost everyday, for at least six months, psychiatrists call it Generalized anxiety disorder.

How is this different from normal worry?

- It is normal to have some amount of worry. Not every one can be relaxed.
- When the worry or tension becomes so much that a person looks tense most of the time, does not sleep well any more, does not feel hungry, gets angry or irritable easily, and it starts to affect work, or studies or house work, it might be GAD.
- Every day worry does not change life such that routines get disrupted.
- Everyday worries do not impact the person’s family life or their work or their relationships with people, outside the ordinary.

Can memory be a problem?

- Many times people who might have GAD say they have memory problems but on discussing, it turns out their concentration is not good, they are having difficulty focusing.
- But, just having these problems does not necessarily mean one needs treatment. A cluster of these “symptoms”, present together for a certain period of time, can result in a diagnosis of GAD.
How is it different from depression?

- People who have depression as diagnosed by a doctor, complain of being “sad” or “down”. People with only GAD, do not.
- People with depression can feel hopeless, guilty about everything and sometimes contemplate suicide. This does not happen in people with only GAD.
- GAD and depression can co-exist!

Social phobia

What is “normal”?

- It is common for people to feel anxious when meeting new people, giving a public talk, meeting future in laws, one’s new manager.
- Some people are shy. They are not easily drawn into a conversation, they do not like to be the centre of attention.
- But, they are able to function well in life, the shyness does not interfere with promotions, successes.
So...what is social phobia?

- Persons with social phobia have a strong fear that people around them are judging them.
- They also have a strong fear that they are going to embarrass themselves in front of others.
- People with social phobia know their fear is out of proportion but they are unable to control this fear.

What does it mean to have social phobia?

- The fear can be so strong that it gets in the way of going to work or school or doing other everyday things.
- People with social phobia are afraid of doing common things in front of other people, such as: some one who is due for a promotion is unable to give his presentation, some thing he did regularly before.

Is it that bad?...

- Sometimes people with social phobia can worry for days or weeks before an event.
- Because of the social anxiety, they might blush, tremble, feel nauseated around people.
- This then causes them to avoid people and have very few friends.
More on social phobia

- Social phobia sometimes is present in families.
- It usually starts in childhood or adolescence.
- People with social phobia might also suffer from other anxiety disorders or depression.
- It can last for many years if not treated.
- Most people don’t realize its an illness or that it can be treated.

Panic disorder

What is panic disorder?

- People with panic disorder have episodes of sudden terror—sometimes over and over again and without warning.
- A lot of people with this illness think they are having a heart attack since they can experience chest pain, palpitations, breathlessness.
- Many of them visit a doctor worried that they are having heart attacks.
- They get multiple tests, including heart exams looking for answers.
How is it different from normal panic?

- Every one feels anxious about certain situations and avoids them but in Panic disorder:
  - The discomfort and sense of danger the attack brings is so intense that people with panic disorder often believe they are having a heart attack or other life-threatening illness.

Panic disorder and agoraphobia

- Some people have intense fear during a panic attack when they feel they will not be able to escape or an exit will not be available. This is “agoraphobia”.
- People with this illness are so afraid of having attacks with people around that they start to avoid being around people.
- This sometimes progresses to isolating themselves. It can become so bad that they stop leaving the house.

Management of mental health comorbidities in NCD
Addressing comorbidities of common mental disorders and NCDs

Overview of management approach

| Psychoeducation | Symptoms, course and outcome of mental disorder as well as NCD, its impact on person’s functioning in all domains, mind-body relations using biopsychosocial approach, importance of treatment, range of available treatment and its benefits & risks |
| Pharmacological intervention | Explain risk and benefits of taking medical treatment, course of medications, role of regular follow-up, ways of taking medicines properly and safely, what to expect after taking medicines (side-effects if any and expected improvement) |
| Individual psychotherapy sessions | Explain the importance of psycho-social interventions & its benefits, choose an individual psychotherapy model (CBT, IPT etc). As per the model, conceptualization of current symptoms due to various reasons, fix treatment goals, begin skill building sessions followed by active therapeutic work on person’s management of self-management of emotions, behavior, interpersonal relations, coping mechanisms, cognitive functioning |
| Reduce stress & strength social support | Adaptive ways of stress management should be discussed - relaxation exercises/yoga, problem solving, engaging in pleasurable activities, expressive techniques. Current social support networks must be identified and strengthened. |
| Enhancing functionality | Behavioral activation, sleep hygiene, self-care, diet management, importance of regular exercise and other required lifestyle modifications can be incorporated to enhance optimum functionality in all the domains of functioning |

Psychological first aid (PFA): managing health crisis

- Often, due to chronic or critical mental and physical health conditions, patient experiences negative emotional states like sadness, extreme anxiety, hopelessness, helplessness, poor self-esteem and even occasional suicidal ideations.
- These must be immediately addressed to impede its progression into mental disorders and other psychiatric emergencies like suicide.
- Thus, all professionals must be trained in some of the basic counselling skills to manage such conditions.
- One such technique of doing so is “psychological first aid”.

Concept of psychological first aid

- “Psychological first aid involves humane, supportive and practical help to follow human beings who have suffered a serious crisis event.” (WHO, 2011)
- According to the WHO PFA Guide (2011), the main themes of PFA are:
  - Providing practical care and support, which does not intrude;
  - Assessing needs and concerns
  - Helping people to address basic needs (e.g. food and water, information)
  - Listening to people, but not pressuring them to talk
  - Comforting people and helping them to feel calm
  - Helping people connect to information, services and social supports
  - Protecting people from further harm.
Addressing comorbidities of common mental disorders and NCDs
Module 4.2

Palliative care
in primary health care

Step 1
Non opioids +/- adjuvant

Step 2
Weak opioid + non opioid +/- adjuvant

Step 3
Strong upload + non opioid +/- adjuvant
WHAT’S INSIDE

Introduction
Learning outcomes
Topics covered
Competency
Teaching and learning activities
Background information
INTRODUCTION

Palliative care is an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual. It is now well known that specialist palliative care services alone will not be able to address the enormous number of patients in need of palliative care. Availability of simple effective protocols for symptom relief and a low-technology approach on one hand, and inability of hospitals in offering “total care” for the rest of the life of a patient with advanced diseases make palliative care a much-needed component of primary health care. This module covers the skills for communication and management of patient with terminal diseases in primary health care.

LEARNING OUTCOMES

At the end of the session the participants will be able to:

- Effectively communicate with patients living with terminal noncommunicable diseases (NCDs) and their families.
- Manage pain, and diagnose and manage distressing symptoms in patients with terminal NCDs.

TOPICS COVERED

- Concept of palliative care and the public health approach for integrating it into primary health care.
- Role of effective communication in the management of diseases.
- Identification, assessment and documentation of chronic pain.
- WHO analgesic ladder for management of pain and neuropathic pain.
- Common distressing symptoms in terminal NCDs and their management.
- Prevention and management of pressure sores.

COMPETENCY

- Communicate effectively with patients and manage pain and distressing symptoms in patients with terminal NCDs.
TEACHING AND LEARNING ACTIVITIES

Total session time: 60 minutes

Activity 1. Introduction to palliative care: 15 minutes

Step 1. Start with the following statement.

Most people with advanced diseases approach primary health care (PHC) facilities at the end of life as they are more accessible and affordable than other facilities. But often PHC facilities are not able to do justice to these patients.

Step 2. Ask the participants to discuss the barriers to improving services for incurably ill, elderly and dying patients in their areas. Write the responses on a white board/flip chart.

Possible responses will include:
- lack of skills, knowledge and trained personnel
- lack of time due to existing workload
- lack of appropriate medications.

Step 3. Present the following case study.

There is a 48-year-old female with advanced breast cancer in your neighbourhood. She has two daughters aged 24 and 16. The elder daughter is away with her husband. The treating doctor has told the patient’s husband that her disease is not responding to treatment and that she is likely to die in 6–9 months. You visited her yesterday. She complained of pain all over the body. She looked very worried.

Step 4. Ask the participants to discuss the following questions related to the above case.

What can you do to help this patient and her family?
What skills/knowledge/contacts that you have can help?
Can further help be sought from anyone else?

Use a flip chart/white board to write down the responses.

Possible responses will include
- exploring her worries
- giving medicines for pain
counselling
- referring her to a hospital
- exploring support from social services.

Step 5. Present the powerpoint slides on palliative care.

Activity 2. Communication on palliative care: 15 minutes

Step 1. Start with the following statement.
Communication is part of our life. We talk to other people and we listen to other people talking. Sometimes we feel that the other person did not talk or listen to you well. We are spending a few minutes to discuss how other people should talk to us and how others should listen to us when we talk to them.

Step 2. Divide the participants into two groups. One group will discuss how people should listen when we talk and the other group will discuss how people should talk to us.

Each group to discuss for 5 minutes. One person from each group to report the key points after the discussion. Write down the responses on a flip chart/white board.

**Group A:** Attributes of a good listener: how do you want the listener to listen when you talk to him/her?

Possible responses include:
- take an interest in what the speaker is saying
- no distractions such as attending to the phone while listening
- do not interrupt the speaker
- don’t look the other way; maintain eye contact
- verbally and non-verbally encourage the other person to speak.

**Group B:** Attributes of a good speaker: how do you want the speaker to speak when he/she talks to you?

Possible responses include:
- speak clearly
- use simple language; do not use jargon
- prepare what you want to speak before speaking
- show interest in the listener. Don’t get distracted.
**Step 3. Present the powerpoint slides on patient communication containing the following.**

- Role of communication in patient care
- Good communication skills
- Do’s and dont’s in communication.

**Activity 3. Pain management:** 15 minutes

**Step 1:** Ask participants to list the commonly used and available painkillers and to classify them into opioid drugs and non-opioid drugs.

**Step 2.** Write down the responses down under two headings (opioids, non-opioids) on a flip chart/white board.

Possible responses include:

<table>
<thead>
<tr>
<th>Non-opioids</th>
<th>Opioids</th>
</tr>
</thead>
<tbody>
<tr>
<td>paracetamol</td>
<td>tramadol</td>
</tr>
<tr>
<td>non-steroidal anti inflammatory drugs (NSAIDs)</td>
<td>codeine</td>
</tr>
<tr>
<td>ibuprofen</td>
<td>buprenorphine</td>
</tr>
<tr>
<td>diclofenac</td>
<td>pethidine</td>
</tr>
<tr>
<td>ketanov</td>
<td>morphine</td>
</tr>
<tr>
<td>meloxiccam</td>
<td>fentanyl</td>
</tr>
<tr>
<td>mefanamic acid</td>
<td></td>
</tr>
</tbody>
</table>

**Step 3.** Enquire if morphine tablets/solution are available in the primary health care centre.

Possible response will be ‘No’, and if so, ask how they manage pain in chronic patient.

**Step 4.** Using powerpoint slides explain the WHO Analgesics Ladder and pain management.

**Step 5.** Refer to the two prescriptions in the workbook and ask participants how they want to modify the prescriptions in the light of the key points shown in the previous slide.

Note down the responses on a flip chart/white board.
**Prescription I:** Patient with carcinoma lung, post-radiotherapy, post-chemotherapy. The disease is progressive; pain relief is inadequate.

Tablet paracetamol 500 six hourly
Tab tramadol 50 mg eight hourly.

Correct response:
- Paracetamol needs to be given in 1000 mg dose four times a day.
- Laxatives to be prescribed with tramadol.
- Antiemetics to be prescribed for a few days when tramadol is prescribed for the first time.

**Prescription II:** Patient with carcinoma breast, post-surgery, post-radiotherapy, post-chemotherapy. Metastases to chest wall present; pain in chest wall present but pain relief is inadequate.

Tab ibuprofen 400 mg eight hourly
Tab morphine 10 mg six hourly and prn (SOS).

Correct response:
- Proton pump inhibitors to be given with ibuprofen.
- Morphine needs to be given every four hours.
- Laxatives to be prescribed with morphine.

**Activity 4. Symptom relief in advanced diseases:** 15 minutes

**Step 1.** Ask the participants to list names of available drugs to treat breathlessness. Note the suggestions on a flip chart/whiteboard.

Possible responses will include:
- oxygen
- broncho dilators (tablets/injections/syrup/inhalers)
- steroids.

**Step 2.** Present powerpoint slides on the management of breathlessness/dyspnoea in advanced diseases.

**Step 3.** Refer to the case situation in the workbook.

A 56-year-old man with advanced cancer of the stomach has been pronounced incurable by the oncologist. He has nausea and vomiting and is diagnosed to have inoperable total gastrointestinal obstruction. Patient requests a glass of water. Will you stick to a policy of nil per oral or will you allow him to drink? Why?
The possible response is ‘No’. The facilitator explains that the gastrointestinal system normally has more than seven litres of fluid in it. At the time of obstruction, it can go up to 11 litres because of increased secretions. Addition of another 50–100 ml by way of a glass of water/tea/coffee is not harmful. Also, mention that patient’s mouth should be kept clean and moist to reduce thirst.

**Step 4. Present powerpoint slides on management of nausea, vomiting, and fungating wound.**

**Optional activity**

**Step 1. Refer to the case situation in the workbook.**

A 75-year-old male has cancer in his right lung. Admitted for radiotherapy to lower back for vertebral metastasis. He is on tablet morphine 10mg q4h, tablet paracetamol 1000mg q6h, tablet dexamethasone 16 mg once daily, tablet bisacodyl 10mg HS and capsule omeprazole 20 mg once daily. He spends most of the time in bed. He is seen to be behaving abnormally this evening. He is talking irrelevant things and attempting to get out of the bed and go out. What is happening to him? Why? How will you manage the situation?

(Possible response is delirium)

**Step 2. Present slides on delirium in advanced diseases.**

**Step 3. Explain that we all have to die one day and that most people die in distress and suffering. Participants are asked to list the main reasons for distress and suffering in death. Note the key points on a flip chart/white board**

Possible responses will include pain, physical symptoms, unfinished business, worries about family and the afterlife.

**Step 4. Explain that most of the symptoms at the time of dying can be managed. Present slides on the common symptoms at the end of life and methods of symptom relief.**
Palliative care

Palliative care is an attempt to prevent and manage suffering, especially when the condition is incurable and progressive. Palliative care relieves suffering and improves the quality of life of patients and families of progressive incurable illness.

WHO definition of palliative care

Palliative care is an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual.

Current status of palliative care in world

(http://www.who.int/cancer/palliative/definition/en/)

1 http://www.who.int/cancer/palliative/definition/en/
Palliative care and noncommunicable diseases

Palliative care has become very relevant in recent years because of two reasons.

(1) Noncommunicable diseases (NCDs) are having an increasing impact on the health status of populations globally. Of 56.4 million global deaths in 2015, 70% were due to noncommunicable diseases (NCDs)³.

(2) Ageing of the population has caused the number of people in need of supportive care in the community to rise significantly. A United Nations report on ageing states that virtually every country in the world is experiencing a growth in the number and proportion of older persons in their population. Population ageing is poised to become one of the most significant social transformations of the 21st century².

The World Health Organization has been advocating for the need to promote a public health approach through the integration of palliative care programmes into the existing health systems and their being tailored to the specific cultural and social context of the target populations⁴. Resolution WHA67.19 of the Sixty-seventh World Health Assembly appeals to Member States to strengthen palliative care as a component of comprehensive care throughout the life course, in line with the spirit of this approach⁵.

Role of primary health care provider in patients with advanced disease at home

It is possible to manage patients with advanced diseases at home. The establishment of affordable, accessible and quality palliative care facilities in the community will reduce the duration and frequency of hospitalization of incurable patients. This will be a welcome step as people will be at home during the end-stage of their lives. The establishment of quality community-based health-care services at home will provide emotional and spiritual support to the patient, and help in preventing complications in bed-ridden cases. This can be done in partnership with the family/neighbourhood/local community that has a keen interest in the well-being of the patient.

Figure 1 shows the public health approach in palliative care.

*Figure 1: Public health approach in palliative care*

Palliative care as part of primary health care

Doctors, nurses and health workers at the primary health care level can easily master the skills and knowledge required to provide symptom relief and emotional support through simple short courses/training programmes. Table 1 presents a sample two-day training programme covering basic practical issues. Community members can be sensitized and trained to offer meaningful companionship to the patient and family at the time of crisis and to help them in social and spiritual issues. Social and spiritual support can be made available to patients by linking them up with interested and competent agencies/trained volunteers in the community.

Table 1: Suggested minimum training standards for the home care team

<table>
<thead>
<tr>
<th></th>
<th>Basic</th>
<th>Mid-level</th>
<th>Advanced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>Foundation courses (3-10 days)</td>
<td>Residential course (6 weeks)</td>
<td>Fellowship/postgraduate qualification in palliative care (1-3 years)</td>
</tr>
<tr>
<td>Nurses</td>
<td>Foundation courses (3-10 days)</td>
<td>Residential course (6 weeks)</td>
<td>Certificate course (4 months), fellowship (1 year)</td>
</tr>
<tr>
<td>Community health workers</td>
<td>3-6 hours to supplement prior training</td>
<td>Basic course (3 months/400 hours)</td>
<td>Advanced communication skills/lymphoedema management</td>
</tr>
<tr>
<td>Volunteers</td>
<td>Introductory course (3 hours)</td>
<td>16 hours theory + 4 clinical sessions</td>
<td>Advanced communication skills and train-the-trainer course</td>
</tr>
</tbody>
</table>


The success of the programme in terms of quality and coverage depends on the meaningful involvement of the maximum number of stakeholders. Since the problems of the patient are multiple – including physical, psychosocial, emotional and spiritual – it is possible to start action at any point depending on the availability of resources, and build capacity in other necessary areas in a phased manner. Figure 2 represents the matrix depicting the interplay between different components of community-based palliative care services.

Figure 2: Matrix of community-based palliative care services
Home-based care

Palliative care needs to be provided at the place where the person’s care takes place, which may be either the patient’s own home or a treatment/care facility. Since patients requiring palliative care are spread out in the community and tend to spend most of their time at home, a “palliative care approach” by all health-care professionals is needed in addition to specialist centres for training and referral. This will mean that all the health-care professionals need to be educated and skilled through appropriate training. For maximum effectiveness in terms of quality and coverage, the health-care professionals offering palliative care at the primary care level need to have a supportive environment in the community. This can be made possible by empowering the community to effectively intervene in psychosocial and spiritual issues and reorienting the health-care system to work with the community. Such a system of care should also be supported by specialist palliative care centres for referral of patients and training for health-care professionals and community volunteers. Such community-based palliative care services developed as a part of the comprehensive NCD programme should be available and accessible to people living with advanced diseases.

In most cases, patients with advanced NCDs can be managed at home with a trained nurse/health worker-led home care programme, supervised by a trained doctor. Services of the home care unit can be complemented by a network of trained volunteers in the community. Depending on the available manpower at the primary health care level, the grassroots-level professional can be a nurse with training in palliative care or a local person who has undergone a three-month “Basic Certificate Course in Community Nursing and Palliative Care”.

Home care programme will be based on protocols clearly defining documentation, areas and types of intervention and indications for referral.

Strategy for integration of palliative care with primary health care

The WHO Guide for Programme Managers on Planning and Implementing Palliative Care Services has identified key success factors for integration of palliative care to the primary care system

1. WHO views that palliative care is part of the role of all health workers, rather than seeing palliative care as a speciality that requires separate health workers.

2. Palliative care is embedded in the health-care continuum, making it an essential component of primary care. It is seen as a normal health-care activity rather than a specialist one.

3. Opportunities in the national palliative care context (e.g. training, financing, legislation, regulation of drugs) are used to build ownership of them at district level.

Palliative care integrated with primary health care: Examples from the South-East Asia Region

Northeast Thailand

Thailand has a strong primary care network. The country has a three-tier system of health care in the public sector with primary care units, district hospitals and provincial hospitals. At least 99% of the population is covered through a universal health insurance.

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Northeast Thailand has developed an effective network of nurse-led home-care programme integrated with the mainstream health-care system which is under the Ministry of Public Health. A specialist palliative care centre based in a university hospital serves as the training and referral unit. This tertiary care unit has trained health-care professionals and facilitated the development of nurse-led home-based care teams in the provincial hospitals, district hospitals and primary care units.

A successful pilot project in one service area (Service Area 7 with four provincial hospitals, 62 district hospitals and all their sub-district primary care units) has now been extended to all Northeast Thailand. Twenty provincial hospitals, 300 district hospitals and more than 3000 PHCs are under this initiative. The home-care units are supervised by palliative care units in district hospitals. About 95% of district hospitals in Northeast Thailand now have palliative care units. Palliative care units in the district hospitals are linked with the provincial palliative care unit above and with the primary care units below.

The success of the programme in Northeast Thailand can be attributed to three major supporting factors:

1. A strong existing primary health care network;
2. An effective universal health coverage programme; and
3. Effective training and facilitation programmes organized by the training and referral institution.

Kerala (India)

The southern state of Kerala in India has managed to establish an integrated health service delivery system in palliative care at the primary health care level. This state with a population of 33 million and a fairly well functioning primary health care system has already been drawing international attention for its health indices. A formal attempt to provide palliative care for the needy in Kerala was initiated by a civil society organization in Calicut in the early 1990s. This was later developed into the “Neighbourhood Network in Palliative Care (NNPC)”, a concept of wider and deeper participation by the community.

In 2008, the Government of Kerala declared a pain and palliative care policy highlighting the concept of community-based care and committing to develop palliative care integrated to the existing primary health care system in the Region.

The Government followed this policy with a project aimed at sensitization and training of various groups of community volunteers, doctors, nurses and local politicians who are the potential policy-makers at the local self-government level. The philosophy and action plan has been in line with the public health approach in palliative care envisioned by the World Health Organization through various declarations starting with the one from Alma-Ata. The strategy was to facilitate the development of palliative care programmes through local self government institutions while taking care to maintain the spirit of community participation in the programme. The focus of the facilitation programme was on sensitization and capacity-building among various strata of society and health-care professionals at the primary, secondary and tertiary levels of the health care system.

Now, the 1000-odd primary health centres in Kerala deliver palliative care through their community nurse-led, volunteer-supported, home-care programmes. This is complemented by more than
200 programmes run by civil society organizations. Secondary palliative care programmes are being developed in the 14 district hospitals to support programmes at the primary health care level. Further improvement in quality and coverage at the primary health care level is needed, but the most difficult barrier of scaling up has been overcome. Kerala, with 3% of India’s population, now has more than 90% of palliative care units in the country.

The following factors seem to have contributed to the success of the programme:

- Improved awareness among the public because of efforts by various civil society organizations in the field, regular support by the media and sensitization programmes by the Government.
- High-level policy recognition resulting from awareness at the political level.
- State funding for palliative care through the Ministry of Health and local self-government institutions.
- The government’s innovative project in palliative care with the agency acting as facilitator and coordinating different governmental and nongovernmental agencies.
- Decentralized system of governance in Kerala with empowered local self government institutions.
- Better utilization of nurses as lead health-care professionals in home-based care.

For further reading

The facilitator can go through the following documents if further information on setting up palliative care services or training of carers/volunteers is needed. Pdf copies of both documents are available for free download.


Palliative Care – A Workbook for Carers, by WHOCC on Community Participation in Palliative Care and Long-Term Care http://www.instituteofpalliativemedicine.org/downloads/Palliative%20Care%20Workbook%20for%20Carers.pdf

Pain

Definition

The International Association for the Study of Pain defines “pain” as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”.

Pain has a sensory component and an emotional component (effect) which encompasses emotions, moods and temperaments. The emotional component is subjective, essentially “private”, and often somewhat vague.

For all practical purposes, based on this definition, Pain is when a person says, “it hurts”, because pain is a subjective phenomenon.
Acute and chronic pain

Depending on the duration, it is customary to classify pain as acute and chronic. Acute pain is pain of less than 3 months duration (some textbooks say less than six months duration) and chronic pain is pain of more than 3 months duration.

Apart from duration of pain, there are a lot of important differences between these two types of pain. Acute is associated with subjective and objective physical signs such as hyperactivity of the autonomic nervous system (increased pulse rate, increased respiratory rate, increased blood pressure, increased muscle tone, sweating, etc.) and increased basal metabolic rate (BMR). Acute pain serves a biological function by helping in limiting the damage.

Whereas in chronic pain, the autonomic nervous system adapts to the situation and, as a result, none of the physical signs associated with acute pain will be manifested. Instead, we will observe changes in personality, lifestyle and functional ability of the patient. Chronic pain does not serve any useful biological purpose.

Chronic pain causes sleep disturbance, change in moods and restriction of social activities. It restricts household chores. Reduced functional status sometimes make people change jobs due to chronic pain. There have also been instances of jobs lost due to chronic pain.

Chronic pain can be a major financial burden for the patient and his family. Many patients with insufficient pain relief feel helpless and go for alternative methods. It is associated with anxiety and depression. Chronic pain causes reduced satisfaction and self-esteem, leads to difficulties within the family and also an overall reduction in the quality of life.

Assessment and documentation of pain

Assessment and documentation of pain is important to ascertain the efficacy of therapy, understand the pain better, provide encouragement and support to the patient, and for future reference.

Inadequate pain assessment is an important contributing factor in the undertreatment of pain. Assessment of pain is complex because pain is always subjective. The patient’s self-report of pain is the single most reliable indicator of pain. The basic principle in assessment of pain is that the clinician must accept the patient’s self-report of pain.

The following points should be explored while charting a history of pain.

(1) Site of pain: where exactly is the pain?

It is a good practice to use pain diagrams to document the pain during each visit.
Character/quality of pain: Burning/Pricking, etc.
Frequency
Radiation: Does the pain spread from the original site?
Intensity of pain (use a pain scale as described below)
Aggravating factors: What aggravates the pain?
Relieving factors: What relieves the pain?

**Pain scales for measurement of intensity of pain**

Two types of pain scales are available.

(I) Multidimensional
(II) Unidimensional

Multidimensional scales explore all dimensions of pain. Since they take time to administer, multidimensional pain scales are not suitable for use in busy outpatient settings.

Unidimensional scales assess the overall intensity of pain. These take little time to administer and hence are suitable for busy clinical settings.

Any one of the following scales can be used.

- numeric rating scale
- verbal rating scale
- visual analog scale
- verbal descriptor scales
- face pain rating scale (observation scale for kids).
Steps involved are:

(I) Explain the scale to the patient.

(II) Ask him/her to rate the intensity of the particular pain at the time of assessment.

(III) Document the intensity mentioned by the patient.

![Figure 4: Pain scales](image)

0–10 Numerical scale

Descriptive Pain Intensity Scale

Pain descriptive scale

Visual Analogue Scale (VAS)

Management of pain in advanced diseases

Basic principles of management of pain in advanced diseases include:

(1) Do not delay treatment; treat the pain immediately.

(2) Have a good understanding of the pharmacology of analgesics and adjuvant medications.

(3) Document properly.

(4) Educate patient and family.

(5) Follow WHO analgesic ladder protocol.

(6) Always prescribe additional “as and when required” doses to cover breakthrough pain.
**WHO analgesic ladder**

WHO analgesic ladder is a simple protocol for pharmacological management of pain in advanced diseases.

It is based on the theory that in 90% of patients, pain can be steeled by analgesic therapy:

- by mouth.
- by the clock (giving medicines at regular fixed intervals based on the half-life of the drug).
- by the ladder (following a three-step protocol).

Invasive procedures are used only when drug therapy fails.

**Figure 5: WHO analgesic ladder**

![WHO analgesic ladder diagram]

**Step I. Non-steroidal anti-inflammatory drugs (NSAIDs) and/or paracetamol**

Key points:

- Use the NSAID you are most comfortable prescribing and use the optimum dose.
- Be aware of the side-effects of NSAIDs.
  - GI toxicity
    - consider prophylactic PPI
  - Renal toxicity
    - watch for signs and symptoms
    - avoid use in at risk patients
  - Interference with platelet function
    - avoid use in patients with risk of bleeding.
Never prescribe multiple NSAIDs.
Optimum dose of paracetamol as analgesic in an adult is 1g 4 times a day.
Paracetamol can be combined with an NSAID.

**Step II. Weak opioids**

Drugs commonly available in the South-East Asia Region are:
- codeine
- tramadol

**Step III. Strong opioids**

Strong opioids commonly available in the South-East Asia Region are:
- morphine
- pethidine
- fentanyl
- methadone.

Among the opioids, morphine needs special mention.
- Morphine is WHO’s strong opioid of choice for cancer pain management.
- Orally, no other strong opioid has a clear advantage over morphine.
  - Among the available drugs in the Region, Fentanyl is the drug of choice in renal failure as accumulation of the metabolite morphine 6-glucuronide can happen with morphine.
  - Orally available in immediate release and long-acting formulations.
  - Can also be given rectally, intravenously, subcutaneously, epidurally and intrathecally.

**Side-effects of opioids**

Clinician should be aware of the following common side-effects while prescribing opioids
- Constipation
  - always prescribe laxatives
- Nausea, vomiting
  - use small dose of haloperidol (1.5 mg at bedtime)
- Sleepiness, tiredness
  - improves with time
  - check for overdose
Urinary hesitancy
- alpha blockers may help

Itching
- may need to change the drug.

The following are signs of overdose to be responded to by reducing the dose or stopping the opioid drug:
- drowsiness
- delirium
- myoclonus
- respiratory depression (extremely rare with oral opioids).

**Adjuvants in the WHO ladder**

Two groups of drugs are called adjuvants in the context of the WHO analgesic ladder.
- First one is the group of drugs used to limit the side-effects of analgesics. Common examples are laxatives/antiemetics/proton pump inhibitors.
- The second group of drugs which show analgesic potential in certain clinical situations are called co-analgesics. Antidepressants, anti epileptics and NMDA receptor antagonists which show analgesic properties in neuropathic pain are the common examples.

**Neuropathic pain**

The revised definition of neuropathic pain by the IASP Neuropathic Pain Special Interest Group (NeuPSIG) 2008 is “pain arising as a direct consequence of a lesion or disease affecting the somatosensory system”.

The diagnosis is derived from three areas.
- A history-derived working hypothesis (possible neuropathic pain) +
- the presence of somatosensory abnormalities on neurological examination (probable neuropathic pain) +
- at least one positive confirmatory test (definite neuropathic pain).

Negative and positive sensory symptoms coexist in neuropathic pain.
- Negative symptoms include deficits of different somatosensory qualities:
  - tactile hypoesthesia or anaesthesia
  - thermal hypoesthesia
  - pinprick hypoalgesia
  - loss of vibratory sensation.
Positive symptoms include:
- spontaneous positive sensations
  - paraesthesia
  - dysesthesia
  - paroxysmal pain
  - ongoing superficial pain.
- stimulus-evoked positive symptoms
  - hyperalgesia
  - allodynia.

Different types of nerve injuries result in neuropathic pain.
- infections
- trauma
- metabolic abnormalities
- surgery
- radiation
- neurotoxins
- nerve compression
- tumour infiltration.

**Pharmacological management of neuropathic pain**

The following groups of drugs have been proven to be useful in randomized controlled trials:
- tricyclic antidepressants
  - imipramine or amitriptyline in a dose of 25–75 mg per day. Start with 25 mg at bedtime and increase up to 75 mg at bedtime.
- serotonin noradrenalin reuptake inhibitors
  - venlafaxine, starting with 37.5 mg twice daily; increase in 1 week to 75 mg twice daily
- opioids
- topical lidocaine
- sodium channel blockers
  - gabapentin 300–1200 mg per day

NMDA receptor antagonists (ketamine 25 mg three times a day per oral medication) and steroids (dexamethasone 8–16 mg/day) can also be useful.

**For further reading**

Respiratory symptoms in advanced diseases

Three common symptoms are

- dyspnoea (breathlessness)
- cough
- haemoptysis

Dyspnoea (breathlessness)

Dyspnoea is subjective experience of breathing discomfort due to increased afferent inputs from chemoreceptors and mechanoreceptors, increased sense of respiratory effort and an afferent mismatch.

Dyspnoea is a common symptom in advanced diseases, particularly in cancer.

Steps in management at the primary health care level include:

- Assessment of dyspnoea
  - history
  - rating the intensity
  - physical examination
  - selective investigations if appropriate
    - X ray
    - ultrasonogram
- Correct the correctable
  - e.g. infections, anaemia
- Referral for management of specific dyspnoea syndrome if any
  - malignant pleural effusion
  - malignant cardiac disease and pericardial effusion
  - superior venacaval obstruction
  - pulmonary lymphangitis carcinomatosis
- Exploring the role of oxygen

Oxygen need not always be beneficial in breathlessness in advanced disease. The evidence of benefit comes from the management of chronic obstructive pulmonary disease and congestive heart failure. Many studies have shown that dyspnea at the end of life is not related to hypoxia.

A practical solution can be a therapeutic trial of oxygen. Administer oxygen (4 litre/ minute) for a period of 15 minutes after explaining to the patient that it can be continued if beneficial. It can be discontinued after 15 minutes if the patient does not find it helpful.

- Pharmacological treatment
Opioids are the drugs of choice in the symptomatic management of dyspnoea. They act through a multiple mechanism:

- central sedation
- reduction of anxiety
- reduced response to CO₂
- improved cardiac function
- analgesia.

Morphine is the most commonly used drug.

- If the patient is already on morphine for pain, the dose can be increased by 30%–50%.
- If the patient is not already on morphine, it is customary to start with 2.5 to 5 mg q4h – q6h.

Morphine can be supplemented by small doses of anxiolytics.

Other useful drugs include:

- corticosteroids (dexamethasone 4–8 mg/day) in
  - superior venacaval obstruction
  - lymphangitis carcinomatosis
  - airway obstruction (e.g. tracheal tumours)
  - pneumonitis (after radiotherapy).

- Bronchodilators have a role if bronchospasm is present.

- non-pharmacological management:
  - provide care to the patient in a well ventilated room
  - fan should be switched on or use a hand fan
  - loosen the garments worn
  - make the patient sit or lie down in his most comfortable position.
  - make arrangements for him to lean comfortably when seated. Give water as and when required
  - do not allow people to crowd in the patient’s room
  - breathing and relaxation techniques can be useful if patients had training on them before the acute episode of dyspnoea.

**Cough**

Cough is present at the time of diagnosis in >65% of patients with lung cancer. Non-opioid cough suppressants can be of help in a minority. Bronchodilators are often helpful. Inhaled sodium cromoglycate has been proven to be of benefit in patients with non-small cell lung cancer.

Opioids are the drugs of choice in symptomatic management of cough in advanced disease. Codeine is commonly used as a cough suppressant. Oral morphine is also effective. Corticosteroids are helpful in controlling radiotherapy-induced cough.
Haemoptysis

Coughing out blood is an alarming symptom for patient and family. Minimal haemoptysis is usually self-resolving. Patient needs reassurance and anxiolytics.

Massive haemoptysis, which by definition is expectoration of at least 100–600 ml of blood within 24 hours, often has poor prognosis. Other features associated with poor prognosis include:

- radiographic evidence of aspiration
- haemodynamic instability
- massive haemoptysis caused by neoplasm.

Management at the primary health care level

Management at the primary health care level consists of:

- General resuscitation and referral for possible invasive interventions/oncological treatment.
  
  General measures include:
  - suction, oxygen, intravenous fluids
  - stopping of NSAIDs or anticoagulants if any
  - if the bleeding side with lesion can be identified from previous records, keeping the patient in lateral position with the healthy side up can help in aspiration to the healthy lung.
  - commonly used drugs like vitamin K IV – 1.0–2.5 mg upto 5 mg/tranexamic acid – 1.5 g followed by 1 g TID/aminocaproic acid 5 g followed by 1 g QID are of little value.

- Palliative management of fatal haemoptysis.

  Fatal refractory haemoptysis as terminal event is usually manged by titration with sedatives and anxiolytics. Benzodiazepines can be used.
  - Midazolam 2.5–5.0 mg, lorazepam 1–2 mg sublingual. You can titrate this up till the patient is drowsy.
  
  Using dark coloured bedsheets and wipes to reduce the visual impact of bleeding has also been suggested.

Gastrointestinal symptoms in advanced diseases

Controlling symptoms related to gastrointestinal system is important in improving the quality of life in patients with advanced diseases.

Three problems to be discussed here are:

- nausea and vomiting
- inoperable malignant bowel obstruction
- constipation
Nausea and vomiting

The unpleasant sensation of nausea along with uncontrolled regurgitation (vomiting) can be very depressing to the patient. Proper treatment depends on the mechanism and neurotransmitters involved. Causes of nausea and vomiting in advanced diseases can be classified as:

- **Chemical causes** (drugs including opioids, digoxin, anticonvulsants, antibiotics, cytotoxic chemotherapy, toxins like food poisoning, ischemic bowel, gut obstruction or metabolic organ failure, hypercalcemia, ketoacidosis uremia and hyponatremia are the common causes).
- **Gastrointestinal causes** (gastric stasis due to anticholinergic drugs/ascites/ hepatomegaly/ gastritis, stretch/distortion of GIT due to constipation, intestinal obstruction/mesentric metastases, serosal stretch/irritation (liver metastases, ureteric obstruction).
- **Cranial causes** (cerebral oedema, intracranial tumour, intracranial bleeding, cerebral infections skull metastases, meningeal infiltration).
- **Other causes** (common examples are movement associated nausea and vomiting, anxiety induced nausea and vomiting, anticipatory emesis)

Pharmacological management

Always try to address the underlying cause if possible.

A few drugs which can be useful in nausea and vomiting in advanced diseases are:

- prokinetics
  - metoclopramide
  - domperidone
  (Metoclopramide is more potent than domperidone)
- dopamine (D2) antagonist
  - haloperidol
  - metaclopramide/domperidone
- antihistamine and anticholinergics
  - cyclizine, hyoscine butylbromide, glycopyrrolole
- corticosteroids
- octreotide.

The choice of antiemetic for symptom relief depends on the cause of nausea and vomiting.

- Chemical causes
  - haloperidol
  - 5HT 3 antagonist with corticosteroid
Gastrointestinal causes
- prokinetic agents
- drugs to reduce gastric secretions
- corticosteroids
- cyclizine
- hyoscine hydrobromide

Cranial causes
- high-dose corticosteroids
- cyclizine

Others
- movement associated
  - cyclizine/cinnarizine/scopolamine
- Anxiety induced/anticipatory emesis
  - benzodiazepins

**Malignant Gastrointestinal obstruction**

Bowel obstruction is common in advanced gastrointestinal and gynaecological cancers. Obstruction can be due to extrinsic occlusion/intraluminal occlusion. Obstruction can be at the level of oesophagus, gastric outlet or intestines. Oesophageal obstruction presents with difficulty/inability to swallow. Obstruction below the oesophagus presents with multiple symptoms:
- abdominal pain
- distension
- vomiting
- constipation, sometimes later with paradoxical diarrhoea.

The intervention of choice is surgical management. But sometimes the patient will be inoperable, in which case the management is medical.

**Medical management of inoperable malignant obstruction** includes:

- hydration
  - intravenous fluids
  - subcutaneous fluids: One litre per day can be given through a scalp vein (butterfly) needle placed subcutaneously into the side of the abdominal wall.
- prokinetics in the case of partial obstruction
  - metocolpamide 60–80 mg subcutaneously over 24 hours. Can be changed to oral after 24 hours.
- antispasmodics in the case of total obstruction not responding to corticosteroids
Palliative care in primary health care setting

- Hyoscine butylbromide (buscopan) 60 mg subcutaneously over 24 hours in the case of total obstruction (colic).

- Analgesics
  - Opioids

- Haloperidol
  - 5–10 mg subcutaneously over 24 hours if nausea is a significant symptom.

- Anti-secretory agents
  - Atropine/glycopyrrolate

- Octreotide is an expensive option. 300–600 micrograms subcutaneously over 24 hours can control frequent large volume vomits.

- Corticosteroids. Randomized controlled trials have shown that dexamethasone 6–16 mg i.v./s.c. may bring about resolution of obstruction without any side-effects.

**Eating and drinking in inoperable gastrointestinal obstruction**

Patients may eat and drink what they wish because they usually do not request large volume of food or fluid. Sufficient absorption across the GI tract can take place to prevent absolute dehydration, even in total obstruction. It is also to be remembered that patients will tolerate some degree of dehydration provided careful attention is paid to mouth care (keeping the mouth clean and moist).

**Constipation**

Constipation is common in advanced diseases. The use of opioid analgesics is the most common cause of constipation in palliative care, especially for the bedridden, immobile patient. Other possible causes in cancer patients include hypercalcemia, intestinal obstruction and spinal cord compression.

**Management of constipation through**

- Laxatives.
- Attention to:
  - Other symptoms, especially pain
  - Diet
  - Fluid intake
  - Mobility
  - Privacy for toileting.
Delirium

Delirium is a common clinical problem in advanced diseases. The majority of the terminally ill patients develop delirium in the last hours and days before death. Delirium is also present in more than 30% of advanced cancer patients at the time of admission to an acute care hospital or palliative care unit.

Delirium is a multifactorial syndrome, resulting from the interaction of predisposing conditions such as old age, frailty, cognitive impairment, severe illness and visual/hearing impairment, and environment related insults such as medications and procedures in the hospital.

Common causes of delirium include:

- drugs (opiates, anticholinergics, steroids, benzodiazepines)
- drug withdrawal (alcohol, sedatives)
- dehydration, constipation, retention, uncontrolled pain
- infection, hypoxia, brain tumours/vascular, liver/kidney dysfunction, electrolyte imbalance.

Diagnosis

Delirium is always of acute onset and runs a fluctuating course.

Diagnostic features include:

- disorientation in time/place/person
- fluctuating levels of consciousness/awareness
- poor attention and concentration
- sleep disruption
- hallucinations: insects on the bed, imagining people around, become paranoid, hostile.

The problem is usually worse around sunset (a phenomenon called “sun downing”).

Delirium is also associated with psychomotor disturbances characterized by rapid unpredictable shifts from hyoactivity to hyperactivity and increased reaction time.

Management

Nonpharmacological supportive interventions play a major role in the management of delirium in advanced diseases.

- Since the patient is in a confused state, it is important to communicate clearly and concisely. Take care to give repeated verbal reminders of the day, time and location, and identify key individuals, such as members of the treatment team and family.
- Provide clear signposts to patient’s location, including clock, calendar, chart with the day’s schedule.
- Have familiar objects from the patient’s home in the room.
- Ensure consistency in staff (for example, a key health worker).
- Involve family and caregivers to encourage feelings of security and orientation.
- Avoid physical restraints, if possible, as they often increase agitation.
- Identify and correct sensory impairments: ensure patients have their glasses, hearing aid and dentures.
- Encourage self-care and participation in treatment. Take regular feedback from the patient (for example, on pain).
- Arrange treatments to allow for maximum periods of uninterrupted sleep.
- Maintain activity levels whenever possible.
- Keep noise levels to the minimum.
- Maintain hydration and nutrition.

**Pharmacological management**

- Treat underlying causes (for example, infection).
- Review and stop non-essential medications.
- Check for opioid toxicity.
  - reduce dose/change opioid
- Administer a low-dose antipsychotic.
  - drug of choice is haloperidol (0.5-3mg)
  - olanzapine (2.5–5mg) or quetiapine (25–100mg) can also be used, but do not have any advantage over low-dose haloperidol.
- Benzodiazepines (diazepam 2–10 mg) preferable over anti psychotics in delirium tremens and Parkinson disease

**Common symptoms at the end of life are:**

- noisy and moist breathing
- urinary symptoms
- pain
- restlessness
- dyspnoea
- nausea and vomiting
- profound weakness
- muscle twitching (myoclonus)
- confusion (delirium).

Most of these symptoms can be settled with simple medication.
**Route of administration of drugs** needs to be changed when the patient cannot take medicines by mouth. Possible options at the primary health care level are:

- sublingual
  - many drugs used to control terminal symptoms gets absorbed through intact mucosa and so can be administered buccally/sublingually

- subcutaneous
  - A scalp vein (butterfly) needle placed subcutaneously over the arm/chest wall/abdominal wall and secured with a piece of transparent dressing can be used to deliver injections (ideally in volumes less than 2 ml) easily and painlessly. Most of the medicines usually given intravenously can be administered subcutaneously also. The needle can be kept in the same position for more than a week. The site needs to be inspected every day for any signs of inflammation. Change site if redness is seen at the injection site.

- rectal
  - most of the medicines usually administered by mouth can also be administered rectally

**Management of terminal symptoms**

**Noisy and moist breathing ("death rattle")**

Death rattle refers to noise observed in patients too weak to expectorate or are moribund. It is produced in the upper airways by secretions (either saliva or the bronchial secretions) during the respiratory cycle. It does not cause hypoxia.

Non-pharmacological measures include semi-prone position, withdrawal of parenteral hydration, gentle nasopharyngeal or tracheal suction. Reassurance to family about the process is important.

**Pharmacological management**

Atropine 1 mg or glycopyrrolate 0.2 mg subcutaneously/sublingually. Can be repeated 3–4 times a day. Start drugs early because they do not affect existing respiratory secretions.

Hyoscine hydrobromide 0.4 mg or hyoscine butylbromide 20 mg are also helpful subcutaneously.

Noisy tachypnoea in moribund patients respond well to injection of morphine 1.5–3mg +/− midazolam 2–3mg subcutaneously.

**Urinary symptoms**

Retention of urine and overflow incontinence secondary to it are common in dying patients not on catheter.

Inattention, drugs with anti-cholinergic properties, weakness and hypertrophied prostate (in men) are the common causes.
**Palliative care in primary health care setting**

**Pain**

Pain in an unconscious/semi-conscious patient presents as restlessness. It is important to continue the analgesics even when the patient is unconscious. Doses of opioids can be reduced to half or one third of the original dose. Usual practice is to resort to subcutaneous route.

**Restlessness**

Restlessness in an unconscious/semiconscious dying person can be due to a variety of causes. The common reasons are:

- pain
- pruritis
- full bowel/full bladder
- anoxia/dyspnoea
- anxiety/akathesia/delirium
- dehydration
- addition or withdrawal of benzodiazepines/steroids
- withdrawal of alcohol/nicotine
- drugs reducing seizure threshold (phenothiazines/butrephenones/tricyclic antidepressants/opioids).

Detailed history and careful physical examination is needed to rule out these.

**Management of restlessness**

- Treat the cause if identified:
  - unrelieved physical symptoms
  - delirium
  - drugs causing restlessness
  - dehydration.

**General symptomatic management**

- If restlessness is not associated with delirium, it can be managed with subcutaneous midazolam (2–3 mg increments every 30 minutes till the patient settles).
- For restlessness associated with delirium, haloperidol 3–5 mg/day subcutaneously needs to be added to midazolam.
Dyspnoea

Terminal dyspnoea is most often NOT associated with hypoxia. Management includes

- trial of oxygen (see the chapter on dyspnoea)
- titrated doses of morphine (1.5 mg increments subcutaneously every 20 minutes) supplemented with small doses of 2–3 mg every 3–4 hours) of subcutaneous midazolam.

The idea is not to knock down the patient, but to achieve a fine balance between settling dyspnoea and deep sleep.

Nausea and vomiting

Appropriate anti-emetics (see the section on nausea and vomiting in the chapter on gastrointestinal symptoms) to be given subcutaneously.

Muscle twitching (myoclonus)

Frequent muscle twitching can be a pre-epileptiform phenomenon. Common precipitators/exacerbators include drugs (introduction/withdrawal – see section on restlessness above), organ failure, hypoxia, cerebral edema, hyponatremia and hypoglycemia.

Management

Correct the correctible

General symptomatic treatment with benzodiazepines.

- Midazolam 2–3 mg subcutaneously every 30 minutes, maximum daily dose of 30 mg.

Confusion (delirium): See the section on Delirium

Fungating wounds

Malignant fungating wounds presents both physical and emotional challenges to the patient, family and health-care workers. These wounds may be associated with pain, bad odour, exudates, blood and unsightly appearance. Cancerous skin infiltration with subsequent ulceration or fungating wounds is the most common cause.

Foul smell from the wound can be settled with local application of metronidazole either as gauzes soaked with metronidazole injection or metronidazole tablet crushed and made into a paste with a water-based gel.

Pressure sores

What is a pressure ulcer?

Through the ages, this entity was known by several names such as “bed sore”, decubitus ulcer, pressure sore, pressure necrosis or ischaemic ulcer. However, by definition, all these terms refer to “an area of localized soft tissue necrosis caused by prolonged pressure higher than capillary pressure with or without shear and friction, related to posture, usually occurring over bony prominences”.

Palliative care in primary health care setting
Such ulcers become a nuisance as well as a matter of grave concern for the care givers when it occurs in an otherwise sick patient.

“If he (the patient) has a bedsore, it’s generally not the fault of the disease, but of the nursing”: Florence Nightingale

Risk factors for pressure ulcers

1. **Pressure**

Pressure is the primary factor responsible for the development of the ulcer. It varies with body weight and surface area of skin contact. When the incident pressure exceeds the normal capillary pressure for a critical duration of time, blood circulation to tissue is compromised leading to cell death and eventually to skin ulceration.

Pressure points over bony points in different lying postures
2. **Shearing**

When the body of a propped up patient tends to glide with gravity over a rough surface, skin and subcutaneous tissue remain stationary and in contact with the surface whereas the deeper tissues slide down. This differential movement will stretch and tear blood vessels to skin and cause ischaemia and ulceration.

3. **Friction**

Friction occurs between skin and stationary surfaces like the bed. A trivial breach in the epidermis of skin by friction causes loss of the protective barrier against infections leading to ulceration. Forceful pulls on bedsheets or clothes also lead to friction. Friction occurs together with shearing.

4. **Moisture**

Perspiration, discharges from wounds, urine or faeces due to incontinence all lead to skin maceration, blistering and eventual breakdown and ulcer. The excess moisture also weakens the skin barrier increasing the susceptibility to pressure, shearing, friction forces and infection.

5. **Abnormal posture**

Pressure points vary in sitting, supine, lateral and prone postures and take the brunt of pressure. Tissues get squeezed between the skeleton and supports such as beds, chairs, shoes, prosthesis or surgical appliances, causing pressure ulcers. A “hammocking” effect of an unsupported wheelchair, presence of contractures and spasticity will increase the propensity for pressure ulcers.

6. **Immobility**

Change of posture in normal individuals is a function of the unconscious mind. This function is impaired in sedated, comatose or neurologically compromised individuals. Unremitting pressure in such patients who sit or lie in the same position for prolonged periods cause pressure ulcers in susceptible areas.
7. **Neurologic factors**

Any abnormality affecting the sensorimotor feedback system between the brain and peripheral senses as in muscle paralysis, impaired pain and pressure sensibility or coma can make a patient prone to develop pressure ulcers.

8. **Nutritional factors**

Patients with rapid weight loss need closer observation. Poor nutrition will make a patient prone for pressure ulcers by loss of subcutaneous fat padding. Haemoglobin level is an important indicator of nutritional status. Anaemic patients with reduced oxygen-carrying capacity of blood are more prone to tissue hypoxia and ulceration. Blood transfusions in such patients would increase wound healing.

9. **Edema**

Soft tissue edema causes detrimental effects on tissues by decreasing tissue oxygenation, increasing interstitial fluid pressure and reducing blood flow. Hence areas of edema are prone for pressure sores.

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**Preventive measures for pressure ulcers**

(a) **Pressure relief**

Pressure relieving mechanisms to reduce ambient pressure on the body by support surfaces and overlays must be used. There are several low-tech or high-tech devices available. These can be static surfaces such as air cushions, water bed or foam bed, or gel or silicon cushions, or even simple waterfilled gloves. Dynamic surfaces offer very good pressure relief but are expensive and need an electric power source. Pneumatic ripple bed overlays or low-air-loss (LAL) beds use alternating air pressure for pressure relief. Air fluidized mattresses have warm air circulating through ceramic beads which keep the patient-mattress interface warm and dry.
(b) **Regular inspection**

Careful inspection of pressure points of the body by the trained caregivers twice a day or more frequently in higher risk individuals is required. This will help in detection of pressure ulcers at early stages and prevent their progression to more severe grades.

(c) **Positioning**

- nursing on pressure relief mattresses and cushions,
- pressure relief of at-risk areas by padding or silicone gel supports,
- careful handling of patients to avoid shear and friction,
- regular repositioning and turning every two hours or earlier in high-risk patients,
- alternate lying-down postures: right side, on the back and left side,
- use 30-degree side-lying position,
- offloading of the heel,
- special care for patients sitting in wheelchair:
  - use alternating air pressure cushions (avoid doughnut cushions),
  - support the feet in wheelchair on a padded surface,
  - avoid “hammocking” of wheelchair seat,
  - encourage patient to hoist himself on elbows at 15-minute intervals,
  - never allow patient to sit in wheelchair continuously for more than 60 minutes.

(d) **Nutrition**

Restoring nutrition and hydration, a positive nitrogen balance, replenishing trace elements, zinc and vitamin C are all essential prerequisites in pressure ulcer management. Recommended energy intake is 30–35 Kcal/kg/day and protein intake of 1.25–1.5 gm/kg/day. Patient weight, mid-arm circumference and skinfold thickness must be charted at regular intervals by the care givers. Haematocrit values must be kept corrected to improve oxygen carrying capacity of blood. Serum albumin values of 3.5–5 mg/dL or pre-albumin values of 16–35 mg/dL have to be maintained to ensure proper wound healing.

**Wound care**

If left uncared, pressure ulcers are capable of progressive involvement and destruction of underlying bones, joints and deeper structures. A patient can lose his life to spreading infection and septicemia. Most pressure ulcers, however, heal with pressure relief, wound care and attention to general health of the patients.

**Additional reading resources**

Palliative care in primary health care

Activity 1: Step 5

Suffering due to incurable illness

“Over 30 million people suffer unnecessarily from severe pain and other symptoms each year. So much is known in the management of these symptoms, but unfortunately this knowledge is not benefiting most of those in need of it. In spite of all the effort over the last two decades, the great majority of individuals with incurable diseases that need care are not getting it”

Problems of patients with advanced diseases

- Physical problems – pain, dyspnoea etc
- Social problems – financial problems, social isolation etc
- Emotional problems – sadness, anger, worries, anxieties etc
- Spiritual problems – religious or otherwise.

Palliative care: definition

“Palliative care is an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual.”

– World Health Organization

Community based care for the incurably ill

- Patients with advanced diseases require continuous care and attention for the rest of their lives
- They are also in need of regular social, psychological and spiritual support in addition to the medical and nursing care
- Care should be readily accessible and available as close to home as possible
- Home care is the best option for most of them.
Primary health care team and community role

Many of the problems in advanced diseases are of a 'non medical' nature; Local community can play a major role in addressing these problems.

Capacity building

- Improving our skills to ensure better care for our patients
- Better skills and knowledge for doctors, nurses and other health workers in diagnosing and treating symptoms
- Better communication skills for doctors, nurses and other health workers
- Ensuring better participation by the community
- Involving the family, neighborhood and local community in the care.

Examples from SEA Region

- Nurse led palliative care network in Northeast Thailand
- Palliative care integrated to primary health care in Kerala (India).
Activity 2: Step 3

Role of communication in patient care
- Relief of anxiety & better adjustment with the disease process
- Mutual exchange of ideas or feelings
- Proper guidance & better compliance
- Involvement of the family
- Reduce isolation (self & social)
- Acceptance & Trust.

Good communication
- Make your communication clear, and specific
- Recognize that each individual sees things from a different point of view
- Be open and honest about your feelings and accept others’ feelings
- Ask questions for clarification on an issue
- Learn to listen actively and allow time for the other person talk without interruption.
**Communication skills**

- No look book recipe!
- Everyone has his/her own communication skills which have individuals societal and experimental factors which framed it
- To develop better skills – “Know yourself”
- Identify your own ways of communicating with others
- Identify weaknesses and try to correct

---

**Do’s in communication**

- Have enough time for discussion with the patient
- Have timely reassurance when ever needed
- Listen... listen... listen
- Be Attentive to verbal and nonverbal communication
- Use simple words
- Have an open attitude
- Explain.

---

**Don’ts in communication**

Don’t
- Be in hurry
- Be a premature practitioner
- Pretend that you are listening
- Ignore what the patient says
- Interrupt more frequently than needed
- Use medical jargon
- Be judgmental
- Patronize
- Compare with other patients.
Look at your communication style

1. The way you talk – slow, fast, soft etc.
2. Your posture – close, distant
3. Your expression – happy, unhappy, ‘stone face’
4. Do you make eye contact
5. Do you feel anxious, angry or sad during communication?
6. Who starts first? You or him/her?
7. Do you find it difficult to respond effectively?
8. Do you interrupt often?
9. Do you advice or ask too many questions?
10. Do you try to comfort them saying “every thing will be alright”?
11. Is there any difference in the way you communicate at work & in your personal life?
12. Among these which are the points you feel good and which are the ones you feel needs improvement/change?

Remember

- Do not withhold information if the patient wants it.
- Do not impose information if the patient does not want it.
- Gauge and respond to the patient’s reaction to the news.

Active listening

- Let the other person speak
- Interrupt only when you have to ...
- Encourage the talk
- Yes... Ha, then...
- Tolerate short silence
- Listen for hidden questions
- Active hearing
- Repetition
- Paraphrasing
- Reflection
- Responding
- Further questions
- Clarification
- Summarizing.
Activity 3: Step 4

WHO Analgesic Ladder

Pain is a subjective sensation

- Pain is not purely a physiological process that is experienced the same way in every individual
- The perception and tolerance of pain vary widely from person to person
- Pain is what a person says “it hurts”
- Chronic pain is persistent or recurrent pain, lasting for more than three months, and adversely affecting the patient’s well-being.
Sample tools to assess intensity of pain

Drugs used in WHO Analgesic Ladder

- Step I
  - NSAIDs: Use the NSAID you are most comfortable prescribing, but Never prescribe multiple NSAIDs!!
  - Paracetamol: Paracetamol 1g qid is equianalgesic with Diclofenac 50 mg bd
- Step II Weak opioids
  - Codeine
  - Tramadol
- Step III Strong opioids
  - Morphine
  - Pethidine
  - Fentanyl
  - Methadone

Opioid doses

- Codeine: Start with 15mg 4th hourly and SOS
- Can be increased by 50% everyday if patient is not pain free and not drowsy. No upper limit
- Tramadol: Start with 50 mg 8hrly. Can be increased upto 300mg/day
- Morphine: Start with 5 mg 4th hourly and sos
- Can be increased by 50% everyday if patient is not pain free and not drowsy. No upper limit.
Opioid side effects

- Constipation 99%
  - Always prescribe laxatives
- Nausea, vomiting 33%
  - Use small dose of Haloperidol
- Sleepiness, tiredness 33%
  - Improves with time
  - Check for over dosage
- Urinary hesitancy 5%
  - Alpha blockers may help
- Itching 5%

Symptoms of neuropathic pain

- Can be summarized as: “a sensory deficit and the presence of paradoxical pain in the same region”
- Allodynia
- Hyperalgesia
- Paroxysms (shooting, shock-like, stabbing pain occurring spontaneously)
- Parasthesiae
- A pain (e.g., in cancer) can present as a mixture of neuropathic and nociceptive features, making the situation more challenging.

Management of neuropathic pain

- Opioids – can help partially
- Antidepressants – tricyclic anti depressants are the drugs of choice
- Gabapentin
- NMDA receptor antagonists – injection ketamine orally.
Anti-depressants - dosage

- Amitriptyline, imipramine
  - 25 mg HS generally. In elderly & very sick 10 – 12.5 mg HS can be a good starting dose.
  - Increase by every 3 days up to 75 mg HS
  - In case of early morning drowsiness take drug early in the night
- Citalopram
  - 10 – 20 mg daily. Low dose for elderly & very sick. Up to 20 – 40 mg per day
- Venlafaxine
  - 37.5 mg b.d. Increase in 1 week to 75 mg b.d
  - Reduce dose by 50% in renal/hepatic impairment

Anti-depressants – side effects

- Dry mouth
- Constipation
- Urinary retention
- Drowsiness
- Delirium, mental clouding
- Orthostatic hypotension
- Myocardial depression (very rare, avoid using in persons with major heart diseases, arrhythmias, cardiac failure)
- Glaucoma
- Withdrawal symptoms on stopping drug suddenly.

Gabapentin

- Slow: 100 mg tid, increase by 300 mg/week up to 1200mg tid
- Rapid: 300mg od and reach 1200 mg tid in one week
- Side effects: drowsiness, dizziness, ataxia, fatigue, tremors, nystagmus
- Dosing two hrs after aluminum/magnesium containing drugs.

Palliative care in primary healthcare setting
N-methyl-D-aspartate (NMDA) receptor antagonists

- Ketamine (anaesthetic agent)
  - Oral/SL: 0.5mg/kg tid to qid
  - IV: 0.25 – 0.5 / kg bolus
  - SC Infusion: 0.1-0.15mg/kg/hr (100–500mg/day)
  - Side effects: delirium, dysphoria, hallucinations, nightmares
- Amantadine
  - 100 mg bd
  - Side effects: nervousness, poor concentration, insomnia.

Activity 4: Step 2

Dyspnoea in advanced diseases

- Prevalence shows large variation: 29–74% of all patients
- 25% in the last week of life
- More common with diseases affecting respiratory system
- Non-pharmacological management:
  - Address patient’s & family’s concerns
  - General measures (proper Positioning in bed, stream of fresh air such as fan, open window, change in daily activities)
  - Physiotherapy, breathing exercises & relaxations techniques.
Management of dyspnoea

- Correct the correctable:
  - Infections
  - COPD
  - Hypoxia
  - Obstruction (bronchial, SVC)
  - Lymphangitis carcinomatosa
  - Effusions
  - Anemia
  - Cardiac failure.

Pharmacological management of dyspnoea

- Oxygen: limited number of studies have shown minimal benefit
- Inhaled bronchodilators and corticosteroids: no evidence of beneficial effects
- Systemic corticosteroids: limited role
- Analgesics can help in relieving pain if associated
- Anxiolytics: no direct benefit, but can relieve anxiety
- Opioids: beneficial effect on oral/parenteral administration

Nausea and vomiting in advanced diseases due to chemical causes

- Causes:
  - Drugs (opioids, digoxin, anticonvulsants, antibiotics, cytotoxics)
  - Toxins (food poisoning, ischemic bowel, gut obstruction)
  - Metabolic organ failure, hypercalcemia, ketoacidosis, hyponatremia
- Treatment
  - Stop/reduce the offending drug
  - Treat the underlying cause
  - Haloperidol 1.5 mg/day
  - 5HT3 antagonist with corticosteroid.
Nausea and vomiting due to gastro-intestinal causes

- **Causes:**
  - Gastric stasis (anticholinergic drugs, ascites, hepatomegaly, gastritis)
  - Stretch/distortion of GIT (constipation, intestinal obstruction, mesentric mets)
  - Serosal stretch/irritation (liver mets, ureteric obstruction)

- **Treatment**
  - Treat the underlying cause
  - Prokinetic agents (Metoclopramide 40-60 mg/day) for gastric stasis
  - Corticosteroids for stretch of GIT
  - Cyclizine/Hyoscine hydrobromide for serosal stretch.

Nausea and vomiting due to cranial causes

- **Causes:**
  - Cerebral oedema
  - Intracranial tumour
  - Intracranial bleeding
  - Cerebral infections skull mets
  - Meningeval infiltration

- **Treatment**
  - Treat underlying cause
  - High dose corticosteroids (Dexamethasone >24mg/day).

Nausea and vomiting due to other causes

- **Movement associated**
  - Treat underlying cause
  - Cyclizine, Cinnarizine, Scopolamine

- **Anxiety induced**
  - Anticipatory emesis
  - Address anxiety
  - Psychological techniques
  - Relaxation
  - Benzodiazepines.
### Fungating wounds

- Topical metronidazole for foul smell
- Inj metronidazole soaks
- Tab metronidazole crushed and made into a paste with gel (200mg/5ml) applied over the wound.

### Optional activity

### Malignant bowel obstruction

- Seen in advanced gynaecological and gastrointestinal cancers
- Symptoms:
  - Abdominal pain — colic if total obstruction
  - Distension
  - Vomiting
  - Constipation
  - Appearance of paradoxical diarrhoea.
Drugs useful in inoperable bowel obstruction

- Metoclopramide
  - 60–80 mg subcutaneously over 24 hours
- Hyoscine butylbromide (buscopan)
  - 60 mg subcutaneously over 24 hours in the case of total obstruction (colic)
- Haloperidol
  - 5-10 mg subcutaneously over 24 hours if nausea is a significant symptom
- Dexamethasone
  - 8-16 mg intravenously for recent total obstruction
- Octreotide
  - 300-600 micrograms subcutaneously over 24 hours to control frequent large volume vomits.

Malignant bowel obstruction - management

Intestinal obstruction

Partial

Prokinetics

Convert to partial with steroids

If failed, manage with antispasmodics/antisecretory agents and anxiolytics

Total

Delirium at end of life

- Delirium is present in ~1/3 of advanced cancer patients at the time of admission to an acute care hospital or palliative care unit
- More than 75% of the terminally ill patients develop delirium
- 80% of patients with advanced cancer develop delirium in the last hours and days before death.

Bush & Bruera 2009
Delirium - diagnosis

AFCOS
A: Acute onset
F: Fluctuating course
C: Consciousness impaired
O: Orientation to time/place/person changed
S: Sleep reversal.

Delirium - causes

- Drugs (opiates, anticholinergics, steroids, benzodiazepins)
- Drug withdrawal (alcohol, sedatives)
- Dehydration, constipation, retention, uncontrolled pain
- Infection, hypoxia, brain tumours/vascular, liver/kidney dysfunction, electrolyte imbalance
- Sensory (vision/hearing) impairment is risk factor

Management of delirium

- Treat underlying cause: Bowel/bladder/infection
- Review and stop non-essential medications
- Check for opioid toxicity: Reduce dose/switch
- Drug Rx (oral preferred to injection)
  - 1st choice: Antipsychotic – use low dose. Haloperidol (0.5-3mg), Olanzapine (2.5-5mg), Quetiapine (25-100mg)
  - 2nd choice: Benzodiazepines (helps anxiety) - Diazepam 2-10mg
- In delirium tremens and Parkinson’s, benzodiazepines preferable.
Terminal symptoms

- Death rattle
  - Atropine 1mg/glycopyrrolate 0.2mg +/- Midazolam 2mg
- Noisy tachypnoea in moribund
  - Morphine 1.5–3mg +/- Midazolam 2-3mg
- Nausea & vomiting
  - Appropriate anti emetic + antisecretory.

Terminal symptoms - restlessness

Causes:
- Pain
- Pruritis
- Bowel/bladder
- Anoxia/dyspnoea
- Anxiety/akathesia/delirium
- Addition or withdrawal of benzodiazepines/steroids
- Withdrawal of alcohol/nicotine
- Drugs reducing seizure threshold (phenothiazines/butrephenones/TCA/opioids).

Management of restlessness

- Treat the cause if identified
  - unrelieved physical symptoms
  - emotional issues
  - delirium
  - drugs
  - dehydration
- If no delirium-midazolam
- If delirium-Haloperidol +/- Midazolam.
Palliative care in primary health care setting

**Terminal symptoms – myoclonus**

- Pre epileptiform phenomenon (encephalopathy)
- Precipitators/exacerbators
  - Drugs (introduction/withdrawal)
  - Organ failure – hypoxia – cerebral edema
  - Hyponatremia – hypoglycaemia
- Management:
  - Correct the correctable
  - General symptomatic treatment with Benzodiazepines.
  - Midazolam 2-3 mg subcutaneously every 30 minutes, maximum daily dose of 30 mg.
Module 5.1

Organizing NCD services through a team-based approach
WHAT’S INSIDE

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Learning outcomes 1
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Competency 1
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INTRODUCTION

Most countries in the South-East Asia Region have a shortage of physicians and health workers. In order to provide patient-centred continuous care more effectively, primary care systems can include team-based care strategies in their clinic workflows and protocols. Team-based care uses multidisciplinary teams (which may involve new staff, or the shifting of tasks among existing staff). Teams can include patients themselves, primary care physicians, and other allied health professionals, such as nurses, pharmacists, counsellors, social workers, nutritionists, community health workers, or others. Teams reduce the burden on physicians by utilizing the skills of trained health workers. There is strong evidence to show that team-based care is effective in improving hypertension control among patients in a cost-effective way.¹ A good quality of Package of Essential NCDs (PEN) service delivery requires team work with shared responsibility, close coordination, and sense of team-belonging among various subgroups of primary health care workers. This module provides steps to improve team-based approach at health facilities to improve delivery of PEN services.

LEARNING OUTCOMES

At the end of the session, the participants will be able to:

- Apply steps to improve team-based approach to integrate NCD services at the health facility.
- Use quality improvement methods to enhance coordination of care for essential NCD services among health care workers at a health facility.
- Explain practical steps to set up knowledge and skills sharing systems among health facility team to manage common NCDs.

TOPICS COVERED

- Steps to implementing team-based care.
- PEN clinical audit.
- PEN peer coaching.

COMPETENCY

Ability to foster team approach to NCD care to enhance integrated quality care at the health facility.

TEACHING AND LEARNING ACTIVITIES

Total session time: 120 minutes

Activity 1. Mapping the work flow of patient care at the health facility: 60 minutes

Step 1. Divide the participants into convenient groups. Assign each group to discuss one of the following diseases

1. Hypertension
2. Diabetes
3. Stroke and heart attack
4. Cervical cancer
5. COPD and asthma

Ask groups to discuss the current practices in care delivery in managing the disease at the health facility. Include the following key questions in the discussion:
- List the key tasks involved in disease management
- Who performs the key tasks (eg, doctor, nurse, etc)?

Step 2. Ask the participants to map the tasks and persons responsible for the identified disease in the table below

Table 1: Mapping of tasks for management of the disease
(name of the disease............................................)

<table>
<thead>
<tr>
<th>Task</th>
<th>Doctor</th>
<th>Nurse</th>
<th>Pharmacist</th>
<th>Laboratory technician</th>
<th>Community health worker</th>
<th>Nutritionist</th>
<th>Other clinical staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take patient history</td>
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<td>Take BP measurement</td>
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<td>Initiate medication</td>
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<td>Refill medication</td>
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<td>Patient follow-up</td>
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</tbody>
</table>
Organizing NCD services through a team-based approach

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<th>Laboratory technician</th>
<th>Community health worker</th>
<th>Nutritionist</th>
<th>Other clinical staff</th>
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<tr>
<td>Adjust medication</td>
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<td>Refer patient</td>
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<td>Appointment scheduling</td>
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<td>Appointment reminders</td>
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</tbody>
</table>

Step 3. Ask the participants to identify good practices in the current care delivery and some practices that need improvement in their facility. Complete the exercise using the table below.

Table 2: Mapping of good practices, and practices that need improvement and steps to make improvements.

<table>
<thead>
<tr>
<th>Good practices</th>
<th>Practices that need improvement</th>
<th>Steps for improvement</th>
</tr>
</thead>
<tbody>
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<td></td>
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</table>

Step 4. Invite each group to make a quick round of presentation of their discussions on the above two tables.

Step 5. Ask the participants to carefully review the samples of the workflow of NCD services in Maldives, New York City and Thailand (shown in the following figures).

Step 6. Ask the groups to review their own work flows for NCD care at the health facility and propose improvement to the current workflow. Invite a few participants to present the new workflow of their health facility, clearly identifying the steps taken to improve the workflow.
Figure 1: Sequence of patient care at a health facility, Maldives PEN Protocol 2017

**Routine care**: Outpatient with no conditions needing observation or admission at the time of visit

**Acute care**: Hypertensive, renal, diabetic, respiratory and other comorbid emergencies

Note: Dotted arrow refers to potential pathway.

- **NCD CLINIC / OPD (By nurse/health worker/doctor)**
  - Check medicines
  - Demonstrate use of devices (insulin injection, inhalers and other devices)
  - Educate on self-care and adherence to treatment

- **PHARMACY COUNTER**
  - Instructions for medicine use and adherence advice (some time there may not be qualified pharmacist)

- **REGISTRATION COUNTER**
  - Collect bio-data
  - (Clerk/receptionist)

- **TRIAGE COUNTER (nurse/health worker)**
  - Complete bio-data
  - H/o: Tobacco, use, areca nut use, alcohol use, diet, physical activity, indoor air pollution
  - Vital examination,
  - Measurement of weight, height and BMI

- **PATIENT ENTRY**

- **PATIENT EXIT**

- **INPATIENT / ER**
  - Stabilize patient
  - Refer

- **OUTPATIENT ROOM**
  - ASK, ASSESS, ADVICE, ASSIST; ARRANGE (Follow-up / Referral as required)
  - Tobacco use, areca nut use, alcohol use, unhealthy diet, physical inactivity, and other patient health needs

- **AT PATIENT BEDSIDE or ON DISCHARGE (By nurse/doctor)**
  - ADVICE, ASSIST, ARRANGE (Follow-up / Referral as required)
  - Demonstrate use of devices (Eg; insulin injection
  - Advice on compliance of medicine
  - Advice on life style modification

Organizing NCD services through a team-based approach
**Organizing NCD services through a team-based approach**

**Figure 2: Adapted from: ABCS toolkit for the practice facilitator***

<table>
<thead>
<tr>
<th>Pre-visit planning</th>
<th>Patient visit</th>
<th>Post-visit follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRACTICE ADMIN</strong></td>
<td><strong>FRONT DESK</strong></td>
<td><strong>MEDICAL ASSISTANT/NURSE/FRONT DESK</strong></td>
</tr>
<tr>
<td>- Run patient lists/quality reports to identify patients diagnosed with HTN who do not have a future appointment and have not been seen in three months.</td>
<td>- Confirm upcoming appointments.</td>
<td>- Provide patient education.</td>
</tr>
<tr>
<td>- Determine high risk patients (i.e., by stage) and schedule appointments.</td>
<td>- Ask each patient to bring in all medications and BP logs, and to be prepared for BP measuring.</td>
<td>- Provide instructions for filling prescription.</td>
</tr>
<tr>
<td></td>
<td>- Prepare educational tools for upcoming appointments</td>
<td>- Schedule future appointments as directed by provider.</td>
</tr>
</tbody>
</table>

**RECEPTION COUNTER**
- Check in patient.
- Ask patient to rest for at least 5 minutes before BP measuring (and empty bladder if necessary).

**MEDICAL ASSISTANT/NURSE**
- Position and prepare patient for accurate BP measuring.
- Choose correct cuff size.
- Tell patient the current BP numbers and what the numbers mean.
- Ask patient to show all current medications and reconcile. Discuss potential concerns with Provider.
- Assess medication adherence. Counsel accordingly.

**FRONT DESK**
- Con/firm upcoming appointments.
- Ask each patient to bring in all medications and BP logs, and to be prepared for BP measuring.
- Prepare educational tools for upcoming appointments

**PROVIDER**
- Conduct Preliminary Assessments
  - Offer lifestyle counselling.
  - Before adjusting medications, check external Rx history for possible adherence issues.
  - Prescribe once-daily formulations, less expensive generics, combination formulations and longer-lasting supplies of medicine whenever possible.
  - Recommend self-management whenever possible.
- Follow-up Care
  - Communicate with patient and team (i.e., when to schedule next office visit and/or telephone encounter)
- Based on update, add/change prescriptions.

* Healthy Hearts NYC. New York City Department of Health and Mental Hygiene, 2017
Registration: The registration desk is the first contact point in the patient pathway continuum. Tuesdays and Thursdays are set days designated especially for hypertensive patients. Patients are sorted through a numbered colour scheme registration system: green for those with appointments, yellow for older individuals as a fast track option, and blue for general OPD patients.
**Activity 2. Improving team-based approach to NCD care:**

30 minutes

Materials needed for the activity: wood, sticks, paper, cardboard, tape, balloons.

**Step 1.** Continue with the same groups as in activity 1. Distribute to each group the same amount of materials. Ask the group to construct a tower, as tall as they can, within 10 minutes, using the materials provided. Ensure that they stop the activity within 0 minutes.

**Step 2.** Invite each group to present their work and explain the significance of the tower to the whole group. After all the groups have completed their presentations, discuss the questions below with the whole group.

- Did you have a clear vision of what the team should achieve?
- Did the team members know their roles and responsibilities?
- Were there any disagreements and how did the team resolve them?
- What could have been done to improve the construction of the tower?

**Step 3.** Ask a few participants to briefly discuss how the delivery of NCD services at the primary health care level can be improved using the team-based approach.

**Step 4.** Summarize the group work with powerpoint slides on steps to implement team-based care.

**Activity 3. Case studies to organize health workers’ teams at a health facility:**

20 minutes

**Step 1.** Divide the participants into convenient groups. Assign a case study to each group and ask them to discuss how they can improve the team-based approach for delivery of NCD care.

**Step 2.** Ask a participant from each group to present the case study to the whole group.

**Case study 1**

A medical officer is working at a primary health care facility where she is responsible for providing outpatient services every day except on Sundays. In addition to the routine outpatient services, the medical officer (MO) has to screen 20 clients for NCDs during one morning session per week at the
facility. There is a medical clinic once a week in the afternoon to treat patients who are suffering from chronic NCDs as well. The MO also provides emergency care if a patient comes with any acute condition.

According to the national guidelines the following tasks need to be completed during screening at the facility:

1. Register the patient and enter data in the relevant register
2. Check fasting blood sugar (capillary method)
3. Check total cholesterol if facilities are available (capillary method)
4. Measure height, weight and calculate BMI
5. Check BP
6. Assess CVD risk
7. Give health education
8. Manage the patient based on the CVD risk
9. Give individual counselling if necessary

It is necessary to maintain the registries at each screening session and to send a monthly summary to the district health managers. The MO has one dispenser and one health assistant.

**Case study 2**

A divisional hospital has outpatient and inpatient facilities. In addition, screening for NCD is done once a week through a “NCD corner” situated within the facility and care for patients with chronic NCDs is given through a medical clinic which functions once week. There are five medical officers, six nursing officers, one dispenser, and four health assistants. Approximately, on an average, there are 250 outpatients and 12 in patients per day.

According to the national guidelines provided by the Ministry of Health, the following are the key tasks for screening a patient.

1. Register the patient and enter data in the relevant register
2. Check fasting blood sugar (capillary method)
3. Check total cholesterol if facilities are available (capillary method)
4. Measure height, weight and calculate BMI
5. Check BP
6. Assess CVD risk
7. Give health education
8. Manage the patient based on the CVD risk
9. Give individual counselling if necessary

It is necessary to maintain the registries at each screening session and to send a monthly summary to the district health managers.
Activity 4. Setting up PEN peer coaching at health facility: 40 minutes

Step 1. Provide the situation below:

You are the head of the divisional hospital as described in case study 2. One doctor and a nurse was initially sent to attend the PEN training provided by the national NCD programme of the Ministry of Health, six months ago. The training included provision of brief advice, screening of hypertension and diabetes and undertaking a total risk approach to NCD care. The two staff members had returned from the training and they have been very eager to use the new skills and ideas at the health facility. After a few days, the doctor became busy with outpatient care and the nurse returned to her MCH clinic in the hospital. The national NCD programme does not have adequate resources for additional training and it is likely that the next round of training will take place in two years.

Step 2. Discuss whether this is a familiar situation in their settings. Ask the groups to discuss and share specific and realistic steps that could be taken as the head of the hospital in the above situation.

Step 3. Summarize the discussion by presenting powerpoint slides with the following contents:

- concept of peer coaching
- components of peer coaching

Step 4. Provide the following scenario in the divisional hospital in case study 2.

As the head of the hospital, you intend to integrate PEN services through a team-based approach. The best way for now is to enable the doctor and the nurse who attended the PEN training to introduce PEN peer coaching for other staff who did not attend the training.

Ask the participants to brainstorm in groups and prepare the PIDI plan for the above doctor and the nurse to conduct PEN peer coaching. Ask one of the groups to present their work and invite other groups for additional ideas.

Description of PEN peer coaching

Purpose of PEN peer coaching

Build learning primary healthcare teams at the health facility to provide person–centred essential care for four major NCDs (CVDs, diabetes, CRDS, and cancers).
**Objectives**
- Initiate PEN peer coaching teams at PHC level
- Strengthen PHC teams to provide essential NCD management and early detection at first point of contact at a health facility
- Improve quality of essential NCD care at the PHC level

**Competency focus of peer coaching**
PHC team is able to:
- organize health facility teams to deliver essential NCD services at the primary health care level;
- detect, manage and make appropriate referrals of patients with major NCDs (cardiovascular diseases, diabetes, chronic respiratory diseases and common cancers);
- employ brief intervention techniques using 5A and 5R approaches to motivate positive behavioural change to address tobacco, alcohol, unhealthy diet and physical inactivity;
- measure weight, height, abdominal circumference and calculate BMI, WHR
- Use WHO/ISH risk prediction chart to prioritize for management of patients with NCDs
- demonstrate use of basic diagnostics and patient-aids such as use of glucometer, peak flow meter, spacers and inhalers
- interpret the results of blood pressure, blood sugar and peak flow measurements
- document PEN service delivery information and report data to HPA/MoH

**Principles of PEN peer coaching**
The PEN peer coaching is built on three principles:
- Primary health facility-led
- Primary health facility-driven
- Primary health facility-empowered

**Critical components of PEN coaching**
- A PEN trained staff as a peer coach;
- A health facility manager providing support.
- Identified team of health staff PEN players;
- A time-bound coaching schedule (time table) ; and
- Teaching learning materials available

**Benefits of PEN coaching**
- Improve individual competencies of healthcare workers
- Improve team work and performance
- Improve patient-centered care practices
- Improve NCD services
- Improve person-centered services
- Improve quality of health services in the health facility

**Critical factors of PEN coaching**
Both intrinsic and extrinsic motivational factors should be considered in PEN coaching.

Extrinsic motivations include
- Incentive (monetary and non-monetary)
- Certification
- Credits
- Organizational recognition such as designation as PEN centre

**The PEN peer coaching PIDI cycle**
PEN peer coaching involves ongoing continuous learning sessions among the primary health care team and not a one-time event. The PIDI cycle can be repeated for the same group as well as for different groups of participants. The more repetitive rounds of cycles are implemented, the better and sustained learning outcome of participants. The four components of the PIDI cycle include:

1. Plan and prepare for coaching
2. Implement coaching
3. Deliver PEN services to clients
4. Improve practices
Checklists for implementing PEN coaching through PIDI approach

Each component of the PIDI cycle should be completed for the success of the PEN coaching. Set checklists for each component of the PEN PIDI cycle are outlined in the following sections.

Step 1. Planning and preparation

Materials:

1. Office notice from health facility manager encouraging staff members to participate in PEN peer coaching
2. Coaching timetable
3. Terms of reference for the coach
4. PEN trainer’s manual
5. PEN participant’s guide
6. PEN protocols
7. PEN algorithms for diseases
8. Algorithms for 5A’s and 5R’s
9. CVD risk prediction chart in colour print
10. Patient clinical records and other health services reporting forms
11. Table-top flip charts on NCD risk factors, NCDs for patient education
12. If available: Breast models, food plate and food pyramid models

Sample. Schedule for PEN peer coaching

<table>
<thead>
<tr>
<th>Date (dd/mm/yyyy)</th>
<th>Time (AM/PM)</th>
<th>Module topic</th>
<th>List of staff to be trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>22/09/2017</td>
<td>2 PM to 4 PM</td>
<td>Understanding the implementation of PEN programme</td>
<td>A, B, C, D, E, F</td>
</tr>
</tbody>
</table>

Assessment tools and reports:

1. Pretest PEN questionnaire
2. Post–test PEN questionnaire
3. PEN coaching completion report
Sample PEN peer coaching completion report

1. Start date (dd/mm/yyyy).............................. End date (dd/mm/yyyy)..............................
2. Total number of eligible health professionals for PEN coaching in the health facility
3. Total number of eligible health professionals for PEN coaching completed the coaching in the health facility
4. Calculate eligible staff coaching coverage
5. List reason/s for eligible staff not coached
6. Average session hours accumulated for each trainee (all modules)
7. Average number of hours for each module
8. Change in test scores (pretest-post–test)
9. Domains that are not satisfactory according to the peer coach

Patient assessment tools and equipment for teaching and demonstration

(1) Measurement tape
(2) Weighing scale
(3) Height measurement scale
(4) BP machine
(5) Glucometer
(6) Cholesterol meter (if available)
(7) Inhaler
(8) Spacer
(9) Peak flow meter

Step 2. Implementation of coaching

(1) Administer pretest
(2) Hold coaching sessions as per the schedule
(3) Conduct case discussions (minimum of one case discussion on each of the major diseases CVDs, diabetes, COPD, hypertension) and on tobacco, alcohol, unhealthy diet and physical inactivity
(4) Administer post–test coaching
(5) Submit coaching report to local health administration manager to be forwarded to the Ministry of Health
(6) Provide coaching attendance and completion certificate
Step 3. Delivery of services

Step 3 focusses on key practices required during the provider-client interaction at the point of care delivery. These include:

1. Use CVD risk-based management
2. Provide total risk approach brief interventions using 5A’s and 5R’s and motivational interviewing techniques
3. Present case reviews to the health facility team members
4. Document essential NCD service delivery activities

Step 4. Improvement of practices

This step involves continuing practice improvement. Key activities include:

1. Conduct internal clinical audit
2. Conduct supportive supervision from higher centres and experts
3. Evaluate PEN coaching programme

Certification of PEN coaching attendance

PEN coaching is an objective activity focused on care providers’ competencies and skills to deliver PEN interventions. Participants should be required to take a pretest assessment before the coaching session and a post–test following (the active hours of) the coaching. The change of each participant should be conducted measured objectively to identify additional needs of participants.

Activity 5. PEN clinical audit for quality improvement at the PHC level: 45 minutes

Step 1. Ask the groups to discuss the following questions:

- What are the specific current practices in quality improvement of health services in health care centres?
- What are some of the quality improvement practices applied for NCD service?
- Is the current quality improvement system adequate? What additional steps can be taken to strengthen integration of quality improvement in general and for NCD services at the PHC level?

Step 2. Ask the participants to explain some of the differences between clinical audit and research. Write the responses on the white broad or flip chart.
Step 3: Present the powerpoint slides on the clinical audit.

Step 4. Ask participants to refer to the workbook in the clinical audit tool. Discuss how useful the tools are to adapt to their contexts.

Facilitator’s explanatory notes

Clinical audit

Clinical audit is a quality improvement tool that involves measurement of practices as per agreed and proven standards of high quality care. Apart from data collection analysis and interpretation, clinical audit involves measuring current patient care and outcomes against explicit audit criteria/standards. Clinical audit is a continuous process followed by a series of audits to measure practice and health outcome changes.

Table 1: Difference between clinical audit and research

<table>
<thead>
<tr>
<th>Clinical audit</th>
<th>Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>How close is current practice to best practice?</td>
<td>What is the best practice?</td>
</tr>
<tr>
<td>Improves health-care services</td>
<td>Increased knowledge or test hypothesis</td>
</tr>
<tr>
<td>Carried out by members of multidisciplinary team</td>
<td>Carried out by researchers</td>
</tr>
<tr>
<td>Practice-based</td>
<td>Theory driven</td>
</tr>
<tr>
<td>An ongoing process</td>
<td>A one-time project</td>
</tr>
<tr>
<td>Never involves experimental treatment</td>
<td>May involve experimental treatment</td>
</tr>
</tbody>
</table>

Clinical audit tool

It is useful for each facility to have a clinical/supervision audit tool for quality assurance.

Functions of the clinical audit tool:

- enables extraction of data from a random sample of patient records to measure the minimum indicators for quality of care and health outcomes;
- can be used as a supervision tool to review a limited number of records for data quality (completeness and coherence with register) as well as quality of care; and
- can be used to review a limited number of records as part of internal facility quality-management processes.

The frequency of the clinical audits can vary, but at a minimum it should be conducted annually to take timely corrective steps.
Organizing NCD services through a team-based approach

Engagement of staff in health facility-based PEN clinical audit

All health facility teams should be encouraged to participate in the process of information collection and use for service improvement. The health facility team should establish a common understanding that the purpose of the clinical audit is to find corrective steps to improve services and not for administrative reprimands of staff.

The health facility should agree on the dates and identify responsible staff for conducting an internal clinical audit. The sample size can vary, but at least 30 NCD patients receiving NCD care at the health facility should be targeted in a larger setting. In a smaller catchment population, where the case loads are less, even a few prescriptions can be included in the audit.

A sample of PEN clinical audit instrument

A. Name of the health facility: …………………………………………
B. Facility type: ……………………………………………………..
C. Date of data collection: From……………………to……………..

<table>
<thead>
<tr>
<th>Patients</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
<th>P5</th>
<th>P6</th>
<th>P7</th>
<th>P8</th>
<th>P9</th>
<th>P10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Patient ID available</td>
<td>Yes/ No</td>
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<td>2</td>
<td>Patient follow-up book available</td>
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<td>3</td>
<td>Counselling stamp available</td>
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<td>5</td>
<td>Gender Male/ Female</td>
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<td>Diagnosis</td>
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<td>HTN</td>
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<td>Diabetes</td>
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<td>CVD</td>
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<td>Cancers (Oral, Breast, Cervix)</td>
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<td>Other NCD</td>
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<td>Any complications/end organ damage</td>
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<td>If Yes, specify</td>
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<td>What is the regularity of follow-up visits in the past six months: Yes = Regular 6/6 NO=Irregular/Missed visits</td>
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<td>a If Irregular, action taken by health facility</td>
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<td>Are the medicines prescribed appropriate for the diagnosis</td>
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<td>Has the 10-year CVD risk score been calculated</td>
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<td>11</td>
<td>Has the BP been checked and documented at every visit</td>
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<td>Current BP</td>
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<td>Has the patient been informed</td>
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<td>a Risk factors</td>
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<td>b Complications of the disease</td>
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<td>c What are the drugs to be taken, side effects</td>
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<td>d Dosage, adherence, for how long are the medicines to be taken</td>
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<td>14</td>
<td>If there was a switch in NCD medication in the past three months reasons</td>
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<td>a Clinical indication</td>
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<td>b Stock-out of drugs</td>
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<tr>
<td></td>
<td>c Unavailability of drugs prescribed by other centre</td>
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</tr>
<tr>
<td>15</td>
<td>Has the patient missed the NCD medicines in the last 30 days or since last prescription</td>
<td></td>
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<tr>
<td>16</td>
<td>If yes, how many tablets did the patient miss</td>
<td></td>
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<td></td>
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<tr>
<td>17</td>
<td>NCD drug adherence %</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>a Total number of NCD tablets taken during the prescribed time</td>
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<td></td>
<td>Patients</td>
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<td>P1</td>
<td>P2</td>
<td>P3</td>
<td>P4</td>
<td>P5</td>
<td>P6</td>
<td>P7</td>
<td>P8</td>
<td>P9</td>
<td>P10</td>
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<tr>
<td>18</td>
<td>If hypertensive</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>a</td>
<td>RFT checked at least every six months</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>b</td>
<td>End-organ damage assessed</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>19</td>
<td>If diabetic</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>a</td>
<td>HbA1c checked every six months</td>
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<td></td>
<td></td>
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<td></td>
<td>b</td>
<td>Visual acuity checked every six months</td>
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<td></td>
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<tr>
<td></td>
<td>c</td>
<td>Blood glucose tested every month</td>
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<td></td>
<td>d</td>
<td>Renal function tests every six months</td>
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<tr>
<td></td>
<td>e</td>
<td>Value of HbA1c if available (Last value should be within six months)</td>
<td></td>
<td></td>
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<tr>
<td>20</td>
<td>If COPD</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>a</td>
<td>Severity of breathlessness assessed (Yes / No)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>b</td>
<td>Has peak flow meter/spirometry been done and documented? (Yes/No)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>c</td>
<td>If RR 20-30 managed as exacerbation</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>d</td>
<td>If RR&gt; 30 and pitting pedal edema, heart failure assessed?</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

D. Name of the data collector: ..................................................  E. Designation: ........................................

F. Signature: .................................................................  G. Date: ........................................

Organizing NCD services through a team-based approach
A sample for risk factor clinical audit

Clients/patients for tobacco, betel nut and alcohol use during the previous contact with a health care provider.

A. Name of the Health Facility: .................................................................

B. Facility Type: ...................................................................................

C. Date Of Data Collection: From..............................To.........................

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Risk factor assessment</th>
<th>Pres* 1</th>
<th>Pres* 2</th>
<th>Pres* 3</th>
<th>Pres* 4</th>
<th>Pres* 5</th>
<th>Pres* 6</th>
<th>Pres* 7</th>
<th>Pres* 8</th>
<th>Pres* 9</th>
<th>Pres* 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Tobacco use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>If tobacco user in previous visit, current status</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Smoking (Yes/No)</td>
<td></td>
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<tr>
<td></td>
<td>Chewing (Yes/No)</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Sniffing (Yes/No)</td>
<td></td>
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<tr>
<td>II</td>
<td>Betel nut use</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>If betel nut user in previous visit, current status of use? (Still using/abstinent)</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>III</td>
<td>Alcohol consumption♣</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If alcohol abuser* in the previous visit: Current status of drinking? (Still using/abstinent)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

D. Name of the data collector: ......................................................E. Designation: ..............................................

F. Signature: .................................................................................G. Date: ..............................................................

*Pres=prescription ♣ Drinking alcohol to the state of drunk/unable to walk due to intoxication
### A sample of asthma observation

This is a sample of an instrument as a checklist for observing the provider’s practice for diabetes management. Note any special comments at the end of the form.

<table>
<thead>
<tr>
<th>Q No.</th>
<th>Question</th>
<th>Scored answers</th>
<th>Sum of scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Did the provider follow the infection prevention guideline – washing hands before and after the examination?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 2     | Did the provider greet the client respectfully?  
+ asking client to sit down  
+ referring to client by name  
+ looking at the client when talking with him/her |                |               |
| 3     | Did the provider ask about the client’s general condition, including  
+ symptoms of cyanosis, inability to talk, silent chest, ability to do physical acts, waking at night  
+ medications  
+ infections  
+ previous episodes |                |               |
| 4     | Did the provider follow the asthma protocol to conduct a physical assessment including  
+ respiratory rate  
+ temperature  
+ wheezing status  
+ peak flow |                |               |
| 5     | Did the provider follow the asthma protocol to provide health education messages and ensure the client understood:  
+ medication use  
+ follow-up care guidance  
+ exercise  
+ danger signs indicating when to return  
+ telling about treatment plan  
+ by asking if client had any questions  
+ by asking if client understood |                |               |
| 6     | Did the physician close the session by:  
+ explaining treatment plan  
+ asking if client understood  
+ asking if client had any questions |                |               |
| 7     | Did the provider tell the client when to return for the next appointment? |                |               |

---

2 Adapted from quality improvement handbook for primary health care, November 2004, Kingdom of Jordan.
### Record Review

*After the observation, check the client record to answer the following questions*

<table>
<thead>
<tr>
<th>Q No.</th>
<th>Question</th>
<th>Scored answers No=0; Partial=1; Yes=2</th>
<th>Sum of scores</th>
</tr>
</thead>
</table>
| 8     | Did the provider record?  
+ classification and severity of asthma  
+ medications  
+ previous episodes  
+ follow-up appointment  
+ health education messages | | |
| 1     | Did the provider follow the infection prevention guideline – washing hands before and after the examination? | | |
| 2     | Did the provider greet the client respectfully?  
+ asking client to sit down  
+ referring to client by name  
+ looking at the client when talking with him/her | | |
| 3     | Did the provider ask about the patient’s health and symptoms and medical history? | | |
| 4     | Did the physician follow the asthma protocol to conduct a physical assessment including  
+ weight and height  
+ oedema  
+ Blood pressure  
+ heart and lung sounds | | |
| 5     | Did the physician follow the hypertension protocol to provide health education messages and ensure client understood:  
+ importance of diet  
+ medication use  
+ exercise  
+ dangers of smoking  
+ follow-up care | | |

### A sample of hypertension observation

This is a sample of an instrument as a checklist for observing the provider’s practice for hypertension management. Note any special comments at the end of the form.
Organizing NCD services through a team-based approach

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Scored answers No=0; Partial=1; Yes=2</th>
<th>Sum of scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Did the physician close the session by:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ explaining treatment plan</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ asking if client understood</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ asking if client had any questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Did the provider tell the client when to return for the next appointment?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Record Review**

*After the observation, check the client record to answer the following questions*

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Scored answers No=0; Partial=1; Yes=2</th>
<th>Sum of scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Did the provider follow the hypertension guidelines to document:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ blood pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ ECG</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ urine analysis</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Pulmonary exam</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ Blood chemistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ oedema</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>If appropriate, did the provider note a referral to an ophthalmologist?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**A sample of diabetes observation**

This is a sample of an instrument as a checklist for observing the provider’s practice for diabetes management. Note any special comments at the end of the form.

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Scored answers No=0; Partial=1; Yes=2</th>
<th>Sum of scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Did the provider follow the infection prevention guideline – washing hands before and after the examination?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Did the provider greet the client respectfully?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ asking client to sit down</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ referring to client by name</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>+ looking at the client when talking with him/her</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Did the provider ask about the patient’s general condition, including</td>
<td></td>
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<tr>
<td></td>
<td>+ past and current medication</td>
<td></td>
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<tr>
<td></td>
<td>+ complications such as vision loss and oedema</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q No.</td>
<td>Question</td>
<td>Scored answers</td>
<td>Sum of scores</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>----------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No=0 Partial=1 Yes=2</td>
<td></td>
</tr>
</tbody>
</table>
| 4     | Did the physician follow the diabetes protocol to ask about:  
+ current diet  
+ loss of weight  
+ infections  
+ foot ulcers | | |
| 5     | Did the physician follow the diabetes protocol to conduct physical assessment including:  
+ measuring weight  
+ measuring blood pressure  
+ checking chest, abdomen,  
+ checking condition of feet | | |
| 6     | Did the physician follow the diabetes guidelines to deliver health messages and ensure the client understood:  
+ medication management  
+ physical activity  
+ hygiene  
+ foot care  
+ danger signs  
+ diet  
+ complications | | |
| 7     | Did the provider encourage the client to ask questions and ensure the client understood the information? | | |
| 8     | Did the provider tell the client when to return for the next appointment? | | |

**Record Review**
After the observation, check the client record to answer the following questions

| 9     | Did the provider record the following monthly examination results in the client record?  
+ blood pressure  
+ weight  
+ glucose  
+ foot exam | | |
|       | Did the provider record?  
+ medication dosage  
+ health messages  
+ follow-up appointment | | |
<table>
<thead>
<tr>
<th>Q No.</th>
<th>Question</th>
<th>Scored answers</th>
<th>Sum of scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Did the provider record the following results in the client record</td>
<td>No=0 Partial=1 Yes=2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HbA1C</td>
<td></td>
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<tr>
<td></td>
<td>ALB/creatinine ratio</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Neurological examination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>If appropriate, did the provider note a referral to an ophthalmologist?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Organizing NCD services through a team-based approach

BACKGROUND INFORMATION

PEN peer coaching at health facility level

PEN implementation entails a shared responsibility involving various levels of the primary health care workforce. At the health facility level, it involves a constant interaction of within and across units of health facilities, not to mention that this needs a proactive administrative and logistical support from the federal health system.

For example, screening for diabetes may require laboratory staff for the blood test, a nurse to provide healthy lifestyle education, a primary health care physician or non-physician health care workers to do clinical workup and prescription, and a pharmacist to dispense medicines and so on. Depending on the staffing composition at a health facility, skills mix and task sharing can slightly vary in different settings. However, the fundamental approach remains the same in all the settings. Good quality PEN service delivery requires team work with shared responsibility, close coordination, and a sense of team-belonging among various subgroups of primary health care workers.

Following a whole-of-health facility approach has the potential to improve not only delivery of basic NCD services but also to a health facility’s performance in overall health service delivery. It can promote task sharing and cooperation among all primary health care staff at the health facility level resulting in improved service delivery. PEN coaching and service delivery focus is a systems improvement programme.

In order to achieve this transformational change, concerted efforts are needed at the health facility supported by supervisors and managers of district and higher-level health tier administrators. A step-by-step implementation process is required to mainstream and integrate with clear standards for PEN service delivery within the health facility. Following the return of a ToT trained health worker/s at the health facility, immediate arrangements should be made to institute a health facility PEN coaching programme. Clear terms of reference for the peer coach outlining procedural steps for coaching, logistical and administrative support should be provided. The trained health worker becomes the PEN coach at the facility. A step-by-step process for PEN coaching and mainstreaming within and beyond health facilities is broadly defined below:
Terms of references for PEN coach/es

- Prepare a coaching schedule in consultation with the head of the health facility and staff
- Send the agreed coaching schedule to the local health supervisor and endorse the plan
- Conduct PEN coaching at the health facility
- Administer PEN pretest, post–test examination and submit to the local health supervisor/central PEN training evaluation team
- Prepare PEN coaching completion report and submit to the local health supervisor
- Conduct intermittent onsite case discussions among the team
- Conduct periodic reviews of PEN services such as monthly, quarterly, half yearly and annually to promote quality services
- Participate in development of future training plan and quality improvement programmes and evaluation of PEN programme.

Logistical readiness for health facility-based PEN coaching

- Identify a temporary coaching room or space at the health facility
- Procure health facility PEN coaching manuals and learners tools
- Procure black/white board, flip chart, markers, pen, pencils and notebook
- Stock essential medicines
- Stock essential diagnostics: glucometer, cholesterol meter or available laboratory facilities, measuring tapes, weighing scales, peak flow meters
- Resources permitting, use LCDs and computers, and if not, use paper-based and interpersonal communication methods.

Role of monitoring and evaluation team

- Expert team such as a training or teaching institute may be assigned by the National NCD Programme to support PEN coaching programme
- Analyze health facility training completion reports, post–test examination results, as well as individual and health facility and assessment reports
- Prepare health facility, district or provincial PEN coaching reports and submit to the national, provincial or district health administrations
- Provide technical inputs to improve tools and designs of coaching, training and service delivery assessments on PEN.

Health facility-based PEN coaching

PEN coaching approach should be directed at improving the knowledge and skill base of primary health care workers at health facilities that rapidly transfers knowledge, creates a culture of lifetime
learning, and enhances capacity, builds greater responsibility and accountability for health care delivery.

PEN coaching programme should be provided without interrupting the routine health facility services. PEN coaching should be implemented over an extended period lasting 6-8 weeks rather than rapidly completing in a 4-5 day course. It should contain a specific start date and end date. Specific days of the week such as an afternoon of a relatively lean day in a week should be identified as a PEN coaching day. For example, two hours on a Wednesday afternoon can be blocked for PEN coaching. Extended duration of coaching not only helps service delivery, it also provides enriching onsite learning and problem solving opportunities for staff bringing real case examples from the clinic setting. Plus extended duration helps achieve maximum staff coverage for training.

High quality training materials should be made available, which are easy to adapt to different levels. The following tools should be made available in advance:

- Trainers’ guide
- Trainees’ notes
- Worksheets
- Counselling and patient education aids (flipchart, NCD toolkit)
- Standardized post–test tools
- Other supplies

It is equally important to ensure that PEN coaching programme conforms to the defined parameters such as: exposure and dosage, quality of the training content etc.

**Evaluation of PEN training**

**PEN training and coaching evaluation**

Training evaluation should be carried out during the training course as well as at its conclusion to assess the fidelity of training to assess that coaching resembled the original programme. In addition to assessing the learner’s achievement, the trainers should follow-up with the participants to assess the impact of training on performance in their work situation. Training should be put into a context of continuous performance improvement. Follow-up assessments should be conducted at fixed intervals such as annually to assess the retention of skills, changes in work behaviour and practices in PEN service delivery at health facility and to identify coaching needs or institute reinforcement programmes.

**Linking PEN to staff motivation and incentives**

A staff’s PEN coaching results should be linked to individual performance measurement systems. For example, assessment may be credited to staff’s continuing medical education or other in-service skills accreditation and certification.
Once coaching has been provided, monitoring of retention of knowledge, improvement in attitude and practices need to be systematically documented. The gaps identified should be corrected at the facility level by NCD service quality improvement teams and through clinical mentoring.

A simple excel tool such as PEN Coaching Trackers Tool (PEN-CTT) should be developed to monitor post-training knowledge, attitude and service delivery practices and linked to supportive supervision and clinical mentoring programmes for the health facilities.

Even the health facilities can be designated as a PEN integrated health facility once a minimum coverage of training and satisfactory level of staff competencies has been achieved at a health facility.

**Implement PEN coaching programme through partnership**

The national NCD programmes are generally understaffed and mostly overwhelmed with too many responsibilities handling wide-ranging areas of prevention, promotion and disease management. On the other hand, PEN coaching requires a focused, dedicated team of people who can ensure quality, training, and coaching as well as assessments and provide in-depth support. In this context, it is difficult for programme managers to shoulder responsibility at national or subnational levels without relying on partnerships.

The MoH central programmes should identify entities such as national training institutions, medical and public health teaching institutions and nongovernmental partners to undertake this component of service delivery. Engagement of academic institutions and other stakeholders in the country is a mechanism for building partnership and capacity development for NCD response which is crucial for all countries. A clear memorandum of understanding with specific deliverables should be drawn up between the national NCD programme and the implementing partners for PEN training or service delivery.
Organizing NCD services through a team-based approach

Activity 1: Step 5

Distribution of staff responsibility for hypertension management
Organizing NCD services through a team-based approach

Sequence of patient care at a health facility in Maldives

Adapted from: ABCS toolkit for the practice facilitator*

Clinical workflow example: integrated patient pathway, Thailand
Organizing NCD services through a team-based approach

Activity 2: Step 4

Team-based care

- **Task shifting** is the reassignment of clinical and non-clinical tasks from one level or type of health worker to another so that health services can be provided more efficiently or effectively. For example, when medical officers are in short supply, some services can be effectively shifted to equipped and well-trained non-physicians such as clinical officers and nurses, while maintaining quality.

- **Team-based care** is a strategic redistribution of work among members of a practice team. In the model, all members of the physician-led team play an integral role in providing patient care. The physician (or in some circumstances a nurse practitioner or physician assistant) and a team of nurses and/or medical assistants (MAs) share responsibilities for better patient care.

- Team-based care and task shifting, or a combination of the two, are useful models that can be tailored to meet country needs. This module refers to both but will use the phrase “team-based care” as shorthand.

Team-based care

**Advantages**

- Expanded access to care (more hours of coverage, shorter wait times)
- Better patient support
- Team member collaboration
- Improved patient adherence to medications
- Better follow-up
- Improved BP control and other patient outcomes (CVD morbidity and mortality, and comorbid CVD risk factors such as diabetes and high cholesterol)
- Improved patient knowledge
- Better quality of life
- Time saving for patient and health care team
- Cost efficient
- Improved patient and physician satisfaction
Barriers

- Rapid staff turnover
- Retention of training
- Patient attitudes: perception by patients of being treated by non-physician health workers
- Physician attitude and reactions
- Legislation and policy.

Requirements

- Consult closely and coordinate with the physician
- Train healthcare workers in new skills
- Enable additional health workers to prescribe medications
- Clearly define roles and responsibilities for different team members
- Arrange close supervision, mentoring, and support by experienced healthcare staff
- Schedule regular clinical team meetings and good communications between staff to discuss patient cases and issues, so that they can work together to solve problems.
- Facilitate regular dialogue between staff about how to improve tasks in order to increase service efficiency and quality
- Devise measurable processes and outcomes.

Steps to implementing team-based care

1. Engage the team
2. Determine the team composition
3. Design workflows to reflect the new model of care
4. Increase communication among the team, practice, and patients
5. Use a gradual approach to implement the model
6. Optimize the care model.
Engage the team

- Bring together a multi-disciplinary team of nurses, health assistants, physicians, pharmacists, community health workers, nutritionists, administrators and information technology staff members with a leader who has enough authority within the practice or organization to empower the process. Consider involving patients on the team as well.

Determine the team composition

- Design the model of care that will meet the needs of your patients and team. Consider which current team members could learn a new skillset and fulfill a new role. Your team may include a counsellor, nutritionist, nurse practitioner, physician assistant, clerical staff or others.
- Ensure that the team(s) consists of physicians and supporting team members who are eager to transform the clinic into a team-based care model. They should be champions and good communicators who are willing to put in extra effort.
- to prepare for the transition and continue to develop the new model once it is underway.

Distribution of staff responsibility for hypertension management

<table>
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<tr>
<th>Task</th>
<th>Nurse</th>
<th>Physician</th>
<th>Pharmacists</th>
<th>Community Health Workers</th>
<th>Nutritionists</th>
<th>Information Technology</th>
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Organizing NCD services through a team-based approach
Organizing NCD services through a team-based approach

### Task reassignment for clinic and staff management

<table>
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<tr>
<th>Task</th>
<th>Who does it now?</th>
<th>What would you do?</th>
<th>How this person need additional training or reclassification test?</th>
<th>If answer is yes, then what level of training is best focusing on role or training or reclassification?</th>
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<tr>
<td>Take patient history</td>
<td>Diagnostics</td>
<td>Identify risk factors/secondary causes, additional risk factors and organs damage</td>
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<td>Update medical records</td>
<td>Identify barriers</td>
<td>Take self-assessment</td>
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<td>Review medications</td>
<td>Screen lifestyle counseling</td>
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<td>Review patient</td>
<td>Review patient</td>
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<tr>
<td>Assess patient needs</td>
<td>Appointments rescheduling</td>
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### Increase communication among the team

- Physicians and staff may feel out of the loop and disengage if they are not involved.
- Include the team’s task-shifting work as a standing agenda item at team meetings and department gatherings.
- Broadcast updates in a weekly meeting or call.
- Have doctors share space with the rest of their team in a common workspace to support team communication.

### Use a gradual approach to implement the model

- Team-based care implementation will be a gradual process. It will take time, and every day will not be perfect. Be patient; know that several months may go by before the team feels like they are really comfortable with the new system.
- One physician who has implemented team-based care recommends that physicians who are considering implementation make sure that they are completely committed because it is not easy. He followed up with, “I cannot imagine practicing any other way.”
- A medical assistant (MA) who works in a team-based care model said that it took her about two months to feel like she was really getting the hang of documenting patient visits for her physician. She worked very closely with him as he taught her his preferences and showed her how he edited every single patient note. This type of time commitment is necessary to successfully implement team-based care. As the model expands, experienced staff can mentor or assist with training new staff.
Optimize the care model

Shared work space
- Teams that sit in closer proximity communicate with greater frequency and ease. Questions can rapidly be answered, reducing the time that someone may have to wait before completing a task or responding to a patient. Everyone will be aware of the work that their teammates are doing, enabling easier task-sharing and division of work. Finally, after a busy clinic day, your inbox will not be filled with messages that could have quickly been triaged by another team member during the day.

Communication management
- In a team-based care model, the number of phone and email messages that are sent to the team should decrease for several reasons:
  - Lab results are discussed during the visit, so the number of messages sent back and forth to discuss results or set up a call is significantly reduced.
  - Patients receive additional education at the conclusion of their visit, resulting in fewer questions after the visit.
  - Care coordination is enhanced. Patients will leave with their follow-up appointments, corresponding labs and diagnostics scheduled, so they should have fewer requests after leaving the office.
  - Referrals to supportive services such as behavioral health or to a health educator can be made during the visit, involving additional team members. In a patient’scare provides them with a point of contact for follow-up questions regarding these specific services.

Activity 4: Step 3

PEN trainings
- National Training of trainers
  - Master training of trainers

Subnational trainings
- e.g., district/regional level

Few staff from each facility
- 1-2 staff from each facility

?
Organizing NCD services through a team-based approach

PEN trainings
- National Training of trainers
- Subnational trainings
- Few staff from each facility
- Health facility-based PEN coaching

What is it?
- Coaching

Coaching
- Coach
- Field
- Time
- Players
- Referee
- Goal
Coaching

PEN coaching

PEN trained HW
Coach
Health facility
Field

Players
Health staff

Better PEN services
Reduce morbidity & mortality

Goal

Steps for health facility-based PEN coaching: PIDI

Plan
Prepare
Improve
Implement
Deliver

Organizing NCD services through a team-based approach
Organizing NCD services through a team-based approach

Steps for health facility-based coaching - PIDI

Coaching

Benefits of health facility-based PEN coaching
Steps for health facility-based PEN coaching: PIDI

- **PLAN**
- **IMPLEMENT**
- **IMPROVE**
- **DELIVER**

**PEN- PC schedule**

<table>
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<tr>
<th>Date (dd/mm/yyyy)</th>
<th>Time (AM/PM)</th>
<th>Module topic</th>
<th>List of team members to be trained</th>
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**PEN – PC reporting**

- **Start date (dd/mm/yyyy) … and end date (dd/mm/yyyy) …**
- 1. Total number of eligible health professionals for PEN coaching in the health facility
- 2. Total number of eligible health professionals for PEN coaching completed the coaching in the health facility
- 3. Calculate eligible staff coaching coverage
- 4. List reason/s for eligible staff not coached
- 5. Average session hours accumulated for each trainee (all modules)
- 6. Average number of hours for each module
- 7. Change in test scores (pretest-posttest)
- 8. Domains that are not satisfactory according to the trainer
Success factors

- Intrinsic motivations
- Extrinsic motivations
  - Incentive (monetary)
  - Certification
  - Credits
  - Individuals
  - Organizational recognition
WHAT’S INSIDE

Introduction
Learning outcomes
Topics covered
Competency
Teaching and learning activities
Background information
INTRODUCTION

Implementation of Package of Essential NCDs (PEN) services need to be supported with strong monitoring systems. As a health service component, PEN requires structured and standardized tools at the health facilities. The information should be routinely collected, assessed and used for monitoring the services. Monitoring systems and culture vary in different settings even within a country. It will be difficult to standardize the monitoring systems across countries. However, at the core, the purpose of the PEN monitoring systems is aimed at improving the processes and outcome of care in health services and support continuous improvement of services. The module discusses the supervision, recording and reporting tools, as well as strengthening information systems for programme management.

LEARNING OUTCOMES

At the end of the session, participants will be able to:

- Develop and plan supportive supervision for monitoring essential NCD services.
- Adapt tools for strengthening recording and reporting of information on PEN services at health facility level.
- Develop monitoring of hypertension control rate among cohort and in the catchment population.

TOPICS COVERED

- Organizing and conducting supportive supervision.
- Steps in supportive supervision.
- Reporting tools.

COMPETENCY

Ability to plan supportive supervision and develop simple monitoring of outcome of treatment.
TEACHING AND LEARNING ACTIVITIES

Total session time: 150 minutes

Activity 1. Conducting supervision: 45 minutes

Step 1. Ask participants to share how the monitoring and supervision is currently conducted in the PHC.

Some potential issues to discuss are:

- frequency of the supervisory visits
- style of supervision (traditional versus supportive supervision)
- usefulness of the monitoring and supervision practices
- Key challenges of supervision.

Facilitator’s explanatory notes:

Supportive supervision: Supportive supervision is a process of guiding, monitoring, and coaching workers to promote compliance with standards of practice and assure the delivery of quality care service. The supervisory process permits supervisors and supervisees the opportunity to work as a team to meet common goals and objectives.

Traditionally, supervisors visited workers to audit performance, their supervisory activities were primarily administrative, and their attitudes were often punitive and critical of those they supervised. More recently, the role of the supervisor has become “facilitative or supportive.” Supervisors often help solve problems and try to create a more supportive environment for the health workers by helping them to solve problems, coaching them on skills, and becoming more involved in their activities.

However, the reality is that most of the time in PHC programme, supervision is virtually non-existent or of questionable value even when it does occur.

Some of the key challenges to the supervision may include:

- Travel expense and logistics
- Supervisors are really not “supervisors”
- Supervisors do not have appropriate tools and support to conduct supervision
- Supervision is not a priority
- Supervisors do not understand the primary health care worker’s role or the context in which they operate.

Step 2. Present the powerpoint slides on monitoring and supportive supervision.
Step 3. Present the following situation.

You are a district health supervisor and you visit health facilities quarterly to monitor health services. Recently, you have rolled out PEN services in all the health facilities in the district. In your visit, you will now need to include monitoring of PEN services along with other services.

- Discuss how you would integrate supportive supervision to monitor PEN services.
- List the key components of PEN services to be included in the supervision checklist.

Step 4. Provide the participants with a sample of a supportive supervisory checklist. Discuss whether the components of the checklist they have developed are included in the sample checklist.

Facilitator’s explanatory notes

- Screening, patient counselling and treatment, and follow-up
- Recording
- Medicines and supplies
- Team organization.

Activity 2. Orientation on samples of data collection tools: 45 minutes

Step 1. Ask the participants to share the recording and reporting system they use in their health facility. List the type of data collection tools, frequency of data collection and data quality checks in place, other practices and challenges they face in ensuring a strong information system.

Step 2. Ask the groups to review the following sample of reporting tools suggested in the PEN interventions. (Note that countries may have different reporting tools).

- Patient identification card
- Patient treatment card
- Facility register
- Quarterly and annual report.
Step 3. Ask the groups to share (within the groups) the possible revisions they would like to make to improve the reporting forms and processes in their health centres.

Step 4. Invite few groups to share their ideas with the whole group.

Facilitator’s explanatory notes

Proper reporting includes completeness and timeliness of reports. Some of the measures to improve reporting are:

- Discuss the problems of incomplete reports in the monthly meetings; take corrective action as needed.
- Poor understanding of data definitions and data collection methods lead to data entry errors—proper training of data entry operators should be organized to prevent errors.
- Find out the reasons for late reporting and take action to prevent the delay. Some reasons may be absence of staff, computer-related problems etc. Try to find local solutions like deputation of other staff for data entry, making alternative arrangements for computer repair etc.
- Send reminders to the health centres which are habitually sending reports late.

Activity 3. Cohort monitoring: 60 minutes

Step 1. Present the following two situations to the participants. Assign a few groups to work on situation 1 and others on situation 2.

Situation 1: You are a manager of a primary health care facility. There are 250 cases of hypertension registered in the outpatient clinic in the past two years. As a health facility manager, discuss how you would like to measure the success of the treatment programme at the facility.

Situation 2: You are the district health officer of a district. With the country’s recent commitment to improve care for NCDs, screening for hypertension has been rolled out and health facilities are increasingly identifying cases of hypertension and diabetes. The district has a population of 780,000. The summary of case reports show that 45,000 cases of hypertension, and 6500 cases of diabetes have been recorded in the past two years.

Step 2. Discuss what are the key indicators you would need to consider in understanding the quality of the hypertension and diabetes programmes in the district. Are these issues being currently addressed in your district? If not, how can they be addressed?
Facilitator’s explanatory note

Participant responses may include:

- Availability of medicines in the health centre
- Functioning of health facility teams
- Follow-up care of patients
- Medicine adherence of patients
- Control rate of hypertension treatment.

While all the above are relevant, the facilitator should stress that the ultimate aim is to achieve the treatment control rate of the patients. As a health facility manager, it will be important to understand the treatment response of each individual patient, but the health facility should also understand the overall performance of the treatment outcome such as hypertension control rate to improve overall care of treatment services.

Step 3. Cohort monitoring

Complete the quarterly and annual reports of 20 patients based on information provided in the register below.

It is April 2019 and time to submit quarterly and annual reports. Provide a blank quarterly report and ask participants to prepare a quarterly and annual facility report (for 20 patients).

1. Discuss the control rate for the cohort. What can be the possible programmatic interventions necessary to improve the current control rate.

2. Calculate the annual hypertension treatment enrollment and outcome in the population. Discuss the strength and caveats of this approach.
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**Page Summary**

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<th>Total number with control for quarterly outcome</th>
<th>Total number with control in Q1 of 2019</th>
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BP Controlled* = Yes = Systolic blood pressure <140 and Diastolic blood pressure <90. No = Blood pressure ≥140/90 or patient did not visit for follow up or blood pressure was not measured

**Take blood pressure reading of the last visit in the quarter**
<table>
<thead>
<tr>
<th>Date of registration</th>
<th>Unique patient treatment number</th>
<th>Name</th>
<th>Gender M/F/TG</th>
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<td>Total number with control for quarterly outcome</td>
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<tr>
<td>Total number with control in Q1 of 2019</td>
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<tr>
<td>Total number with control in Q1 of 2020</td>
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<tr>
<td>Total number with control in Q1 of 2021</td>
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</tr>
</tbody>
</table>

BP Controlled* – Yes = Systolic blood pressure <140 and Diastolic blood pressure <90. No = Blood pressure ≥140/90 or patient did not visit for follow up or blood pressure was not measured

**Take blood pressure reading of the last visit in the quarter**
Health facility report

*(Section A and B will be filled at health facilities where HTN Facility Register is placed and section C and D will be filled by all health facilities)*

Name of health facility: __________________ Name of district: ________________

Name of State: ___________________________ Date of reporting: day, month/Year __________

Please enter the Quarter for which you are making the report. Quarter: _______ Year: _______

(This is the ‘Reporting Quarter’. Usually this is the most recent quarter)

- Quarterly report for Quarter 1 will be made in April,
- Quarterly report for Quarter 2 will be made in July,
- Quarterly report for Quarter 3 will be made in October, and
- Quarterly report for Quarter 4 will be made in January

### A. Quarterly treatment enrollment and outcomes

<table>
<thead>
<tr>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1. Number of patients registered two quarters earlier</td>
</tr>
<tr>
<td>A2. Out of (A1) Number of patients whose BP was documented to be less than 140/90 in the reporting quarter</td>
</tr>
</tbody>
</table>

### B. Annual treatment enrollment and outcomes

*(To be filled only once a year- with Quarter 1 report)*

<table>
<thead>
<tr>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1. Number of patients whose BP documented to be less than 140/90 during Quarter 1 (If the patient made more than 1 visit in the quarter, use most recent reading)</td>
</tr>
<tr>
<td>B2. Estimated number of people with hypertension in the catchment population (only for district level)</td>
</tr>
</tbody>
</table>

### C. Quarterly consumption of drugs

<table>
<thead>
<tr>
<th>Give number of tablets</th>
<th>Give number of tablets</th>
<th>Give number of tablets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amlodipine</td>
<td>Telmisartan</td>
<td>Enalapril</td>
</tr>
<tr>
<td>Chlorthalidone</td>
<td>Statin</td>
<td>Aspirin</td>
</tr>
<tr>
<td>Beta blocker</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Quantity of drugs available at the health facility:

Quantity of drugs requested for the next quarter:
D. Quarterly supervision

<table>
<thead>
<tr>
<th>Was there a supervision visit to this health facility by district staff during the reporting quarter?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Answer:

Name of health facility: PHC SA NAGAR   Name of district: KANCHEEPURAM

Name of State: XX   Date of reporting: day, month/Year 15 April, 2019

Please enter the Quarter for which you are making the report Quarter: 1 Year: 2019

(This is the ‘Reporting Quarter’. Usually this is the most recent quarter that has just finished)

- Quarterly report for Quarter 1 will be made in April,
- Quarterly report for Quarter 2 will be made in July,
- Quarterly report for Quarter 3 will be made in October, and
- Quarterly report for Quarter 4 will be made in January

A. Quarterly treatment enrollment and outcomes

| A1. Number of patients registered two quarters earlier | 7 |
| A2. Out of (A1) Number of patients whose BP was documented to be less than 140/90 in the Reporting quarter | 3 |

B. Annual treatment enrollment and outcomes

(To be filled only once a year- with Quarter 1 report)

| B1. Number of patients whose BP documented to be less than 140/90 during Quarter 1 (If the patient made more than 1 visit in the quarter, use most recent reading) | 10 |
| B2. Estimated number of people with hypertension in the catchment population (only for district level) |
### C. Quarterly consumption of drugs (Give number of tablets)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Quantity of drugs available at the health facility (Give number of tablets)</th>
<th>Quantity of drugs requested for the next quarter (Give number of tablets)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amlodipine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telmisartan</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enalapril</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chlorthalidone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aspirin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beta blocker</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### D. Quarterly supervision

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was there a supervision visit to this health facility by district staff during the reporting quarter?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Adapted from the Resolve healthcare provider training module*
Planning PEN activities

As a programme manager, one of the major responsibilities will be to plan activities and thereby estimate the requirement of resources.

What is an action plan?

An action plan consists of a number of actions, steps or changes to be brought about in a given setting. The objectives of an action plan should be SMART (Specific, measurable, action oriented, realistic and time-bound)

Before preparing the action plan one should be clear of what needs to be achieved. The objectives have to be in keeping with that of PEN and the national programme.

Need and purpose of health management information system

A continuous flow of good quality information on inputs, process, outputs and outcome indicators facilitates monitoring of the programme. An efficient data management system is essential to assist, at all levels, in managing and planning the programme. The concepts of data, information, and knowledge are often used interchangeably though they are not synonymous. Often collecting more data is regarded as creating more knowledge, which is a wrong assumption.

Data: It is the raw material in the form of numbers or characters and it is without context.

Information: It is a meaningful collection of facts/data with reference to a context after analyzing the data.

Knowledge: When information is analyzed, communicated, and acted upon it becomes knowledge.

Thus data have to be used to generate knowledge. Data is useless if it does not lead to any action.

Storage and management of patient treatment cards

Cards should be stored systematically to facilitate retrieval during follow-up visit by the patient. They will be needed to identify patients for recording treatment and progress during follow-up visits, and updating treatment registers.

There should be appropriate and safe storage space and tools available.

Cards should be arranged sequentially, by unique patient treatment registration number to:

Help to retrieve patients easily

Identify which patients have missed an appointment in the past month so that they can be called-up and reminded for collection of drugs.
Identify which patients have been lost to follow-up – patient not receiving care in the health facility continuously for four quarters

IDENTITY CARD Treatment card (see annexure)

<table>
<thead>
<tr>
<th>Patient identification card</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique patient treatment number:</td>
</tr>
<tr>
<td>Name of health facility:</td>
</tr>
<tr>
<td>Name of patient:</td>
</tr>
<tr>
<td>Address Village District</td>
</tr>
<tr>
<td>Mobile number</td>
</tr>
<tr>
<td>Diagnosis</td>
</tr>
<tr>
<td>Date of registration:</td>
</tr>
<tr>
<td>Date of initiating treatment:</td>
</tr>
<tr>
<td>Medicines 1.</td>
</tr>
</tbody>
</table>
Facility register

Hypertension/diabetes facility register

Name of treatment unit: ____________________________________________________

District: ___________________________ State: __________________________

Complete this section at the time of registration

<table>
<thead>
<tr>
<th>Patient ID number</th>
<th>Date of registration</th>
<th>Name</th>
<th>Gender M/F</th>
<th>Age</th>
<th>Hypertension Yes/No</th>
<th>Diabetes Yes/No</th>
<th>COPD Yes/No</th>
<th>Asthma Yes/No</th>
<th>Unique patient treatment number</th>
</tr>
</thead>
</table>
## Patient treatment card

### A: Patient identification information
- **Patient ID number:**
- **Full name:**
- **Gender:** 
  - Male
  - Female
  - Other
- **Age:**
- **DOB:**
- **Address:**
  - House number/name:
  - Street name:
  - Area/colony:
  - Village/town:
  - District name:
- **Post code:**
- **Patient's phone no.:**
- **Family/neighbour: Name:**
- **Phone no.:**

### D: Diagnosis
- **HYPERTENSION:**
  - Yes: treatment initiated
  - Yes: on treatment
  - No

- **DIABETES:**
  - Yes: treatment initiated
  - Yes: on treatment
  - No

- **DIABETES & HYPERTENSION**
  - Yes: treatment initiated
  - Yes: on treatment
  - No

- **COPD**
  - Yes: treatment initiated
  - Yes: on treatment
  - No

- **ASTHMA**
  - Yes: treatment initiated
  - Yes: on treatment
  - No

### E: Treatment initiated
- **Date treatment started:**
- **Aspirin:**
  - Yes
  - No
- **Medication:**
  - Dose

### B: CVD risk factors
- **Current smoker:**
  - Yes
  - No
- **Smokeless tobacco user:**
  - Yes
  - No
- **Alcohol use:**
  - daily
  - some days
  - none
- **Prior heart attack:**
  - Yes
  - No
- **In last three years?**
  - Yes
  - No
- **Prior stroke:**
  - Yes
  - No
- **In last three years?**
  - Yes
  - No
- **History of CKD?**
  - Yes
  - No
- **History of diabetes?**
  - Yes
  - No
- **History of asthma?**
  - Yes
  - No
- **Family history of heart attack or stroke (parent, sibling, or child younger than age 60):**
  - Yes
  - No

### F: Treatment outcomes
- **Transferred-out Date:**
- **Transferred to:**
- **Lost to follow-up**
- **Last date attended:**
- **Died from:**
  - CVD
  - non-CVD
  - unknown
- **Date of death:**
<table>
<thead>
<tr>
<th>C: Examination and investigations</th>
<th>G: Additional notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight:</td>
<td>Height:</td>
</tr>
<tr>
<td>BMI:</td>
<td></td>
</tr>
<tr>
<td>Blood pressure:</td>
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<tr>
<td>SBP</td>
<td></td>
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<tr>
<td>DBP</td>
<td></td>
</tr>
<tr>
<td>Blood sugar: Fasting Random</td>
<td></td>
</tr>
<tr>
<td>Total blood cholesterol:</td>
<td></td>
</tr>
</tbody>
</table>
### Hypertension/diabetes/COPD annual follow-up visits Sheet 1

**Year:** 
(new sheet for each year)

<table>
<thead>
<tr>
<th>Date attended</th>
<th>Visit 1</th>
<th>Visit 2</th>
<th>Visit 3</th>
<th>Visit 4</th>
<th>Visit 5</th>
<th>Visit 6</th>
<th>Visit 7</th>
<th>Visit 8</th>
<th>Visit 9</th>
<th>Visit 10</th>
</tr>
</thead>
</table>

**SBP**

**DBP**

- Aspirin
- Ramipril
- Losartan
- Chlorothalidone
- Amlodipine
- Beta blocker
- Statin
- Metformin
- Second-line diabetes medication
- Salbutamol
- Steroid inhalers
- Other

**Treatement dose and code.** Indicate dosage. Note when starting (N for new) and stopping (D for discontinued).

*Drug names listed on this form should correspond to the drugs selected by the country for the chosen protocol.*
## Hypertension/diabetes/COPD annual additional investigations Sheet 2

Year: □□□□
(new sheet for each year)

<table>
<thead>
<tr>
<th>At treatment initiation</th>
<th>Visit 1</th>
<th>Visit 2</th>
<th>Visit 3</th>
<th>Visit 4</th>
<th>Visit 5</th>
<th>Visit 6</th>
<th>Visit 7</th>
<th>Visit 8</th>
<th>Visit 9</th>
<th>Visit 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date attended</td>
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<tr>
<td>Fasting blood glucose</td>
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<tr>
<td>Random blood glucose</td>
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<tr>
<td>Post-prandial glucose</td>
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<tr>
<td>HbA1c</td>
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<tr>
<td>Serum potassium</td>
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<td>Serum creatinine</td>
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<td>Total cholesterol</td>
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<td>HDL</td>
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<td>Urine protein</td>
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<td>Other</td>
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</tbody>
</table>
## District-based quarterly report

### Hypertension/diabetes district quarterly report

Name of state/province: ____________________________ Quarter: ____________________________ Year: __________

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Facility</th>
<th>Denominator</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Numerator</th>
<th>Denominator</th>
<th>Numerator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>Patients registered for hypertensive treatment during the quarter that ended 6 months previously</strong> minus those who died <em>minus</em> those who transferred out</td>
<td><strong>Patients registered with hypertension (6–9 months previously with documented hypertension) with controlled BP during last clinical visit in last quarter</strong></td>
<td><strong>Cumulative number of patients registered with diabetes treatment at end of quarter</strong> minus those who died <em>minus</em> those who transferred out</td>
<td><strong>Cumulative number of patients registered for diabetes at end of quarter who attended the clinic in the last quarter with controlled blood glucose</strong></td>
<td><strong>No drug stock-out of core drugs in the last quarter</strong></td>
<td><strong>Received a structured supervisory visit with a check list used in the last quarter</strong></td>
</tr>
<tr>
<td>1.</td>
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<td>6.</td>
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<td>7.</td>
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<td>8.</td>
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<td>9.</td>
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<tr>
<td>10.</td>
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<tr>
<td>Total</td>
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</tbody>
</table>
Monitoring systems

Treatment register

Monitoring
Monitoring is the ongoing collection, management and use of information to assess whether an activity or programme is proceeding according to plan and/or achieving defined targets.

Purpose
The purpose of a PEN monitoring system is to support continuous improvement of services. The monitoring system should assess the performance of the PHC service delivery system. E.g It is important to measure whether the goal of preventing heart attacks and strokes is being achieved. However, the actual reduction in heart attacks and strokes will usually require a special study. This module, therefore, focuses on measuring the performance of the PHC service delivery system.

Monitoring cycle
Indicators are the foundation of a monitoring system. A monitoring system starts with defining the indicators needed to answer the most important monitoring questions. It is essential that indicators are standardized so that they can be used for comparisons across time, place, and populations.

After defining the indicators, the next step is to design (or adapt) tools and processes to collect the data needed to produce the indicators. The tools and processes must be standardized so that the data can be collected and reported in the same way across all PHC facilities. For data to be useful, they must be consistently available on time and must be of reliable quality.

When the data have been collected, they need to be analysed. Analysis involves checking the quality of the data and making corrections where needed, then using the data to calculate the indicators. The indicators need to be presented to managers and other information users in a way that is timely and user-friendly, for example, in charts and tables. The users can then interpret the indicators and take any necessary programme action. Providing feedback on the monitoring findings to the staff who collected the data is an important part of ensuring data quality and promoting programme performance.

A well-functioning monitoring system also requires definition of staff responsibilities at the various stages of the cycle, capacity building of staff involved in all stages of data management, and a system of ongoing supervision and support to ensure that the information produced is of sufficient quality to be useful.

Monitoring at different levels of the health system
Monitoring needs to take place at different levels of the health system. It should be tailored towards the particular information needed for decision making at each level.

In addition to indicators obtained from the health system itself, some indicators relevant to the health system are obtained through population-based surveys, such as the Demographic and Health Survey, and the STEPS survey. These surveys are important as they provide information about entire populations, not only the proportion using the public services. For example, the STEPS
Monitoring systems

A survey provides population-level indicators on the prevalence of CVD risk factors, the proportion of people on treatment for diabetes and raised blood pressure, and the proportion of those who have it under control.

<table>
<thead>
<tr>
<th>Monitoring level</th>
<th>Tools and indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>National databases</td>
</tr>
<tr>
<td></td>
<td>National-level summary indicators and facility comparisons</td>
</tr>
<tr>
<td>Subnational</td>
<td>Subnational databases</td>
</tr>
<tr>
<td></td>
<td>Subnational-level summary indicators and facility comparisons</td>
</tr>
<tr>
<td>Health facility</td>
<td>Management records, assessment tools, registers, summary reports, clinical audit tools</td>
</tr>
<tr>
<td></td>
<td>Facility-level indicators</td>
</tr>
<tr>
<td>Patient</td>
<td>Individual health records</td>
</tr>
<tr>
<td></td>
<td>Individual patient data</td>
</tr>
</tbody>
</table>

**Patient monitoring**

- The review of patient data takes place at each visit of an individual patient. Essential data needs to be collected at each visit in order to assess whether the patient is being treated adequately and the goals and objectives of the programme are being achieved.

**Health facility monitoring**

This occurs either at the primary health care level or in the private sector.

- The review of aggregate patient data occurs at regular intervals, such as every three months, and these are termed “quarterly reports”. These quarterly reports focus on the agreed minimum set of indicators that are used to monitor progress of the programme.
- Supervision and audit are also carried out at set intervals (monthly or quarterly) to ensure that guidelines and processes are being followed.

**Subnational/district monitoring**

- The review of aggregate patient data from all facilities in the district occurs at regular intervals, usually quarterly, enabling district performance to be assessed and comparisons made between facilities in the district.
- Challenges encountered during facility-based supervision visits, referring to use of supervision and audits tools, are discussed at district quarterly meetings.
- Annual programme review builds on quarterly cumulative reports and assesses progress made each year against the key indicators.
**National monitoring**

Annual programme review collates all the annual district data to assess countrywide progress made as per the key indicators and to compare district performance for outcomes and service delivery.

**Core indicators**

A list of core indicators to be used for monitoring PEN services is given below. All the indicators shown in the matrix are obtained from data collected at the level of a PHC facility. These data are used to inform decision-making at various levels of the health system.

<table>
<thead>
<tr>
<th>Health facility setting (patient data)</th>
<th>Community setting (population data)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Managing hypertension</strong></td>
<td></td>
</tr>
<tr>
<td>Patient hypertension control rate</td>
<td>Hypertension community level control / coverage rate</td>
</tr>
<tr>
<td>To determine if programme is effective in controlling hypertension in patient cohort (in patients at the facility)</td>
<td>To determine % of people in a community / area with hypertension who have controlled BP</td>
</tr>
<tr>
<td><strong>Managing diabetes</strong></td>
<td></td>
</tr>
<tr>
<td>Patient diabetes control rate</td>
<td>Diabetes community level control/ coverage rate</td>
</tr>
<tr>
<td>To determine if programme is effective in controlling diabetes in patients at the facility</td>
<td>To determine % of people with diabetes in a community who have controlled blood sugar</td>
</tr>
<tr>
<td><strong>Managing CVD risk</strong></td>
<td></td>
</tr>
<tr>
<td>CVD risk patient control rate</td>
<td>CVD risk community level control/ coverage rate</td>
</tr>
<tr>
<td>To determine if programme is effective in controlling risk among patients of the facility determined to be at risk of CVD</td>
<td>To determine % of people in the community who are at uncontrolled risk for CVD</td>
</tr>
<tr>
<td><strong>Managing COPD</strong></td>
<td></td>
</tr>
<tr>
<td>Patient COPD treatment rate</td>
<td>COPD treatment coverage rate</td>
</tr>
<tr>
<td>To determine if programme is effective in treating COPD patients at the facility</td>
<td>To determine % of people with COPD in a community who are on treatment</td>
</tr>
<tr>
<td><strong>Access to essential medicines</strong></td>
<td></td>
</tr>
<tr>
<td>Service delivery/drug stock</td>
<td></td>
</tr>
<tr>
<td>% of treatment units that have no stockouts of core medicines</td>
<td></td>
</tr>
<tr>
<td>To determine if facilities implementing PEN have continual access to essential medicines for CVD management</td>
<td></td>
</tr>
</tbody>
</table>
Annex 1: Checklist for supportive supervision and monitoring

Supervision period: From………………………to ……………………………

Name of the supervisor……………………………………………………………..

Name of the health facility……………………………………………………………

<table>
<thead>
<tr>
<th>Observation of the supervisor Y=Yes, N=No, DN=Don't know</th>
<th>Actions agreed by the supervisor and facility supervised</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Administration and management</strong></td>
<td></td>
</tr>
<tr>
<td>Are the quality improvement teams formed?</td>
<td>Y N DN</td>
</tr>
<tr>
<td>Describe whether quality enhancement discussions are conducted monthly? (Review reports of the meetings)</td>
<td>Y N DN</td>
</tr>
<tr>
<td><strong>Logistics (medicines, supplies &amp; equipment)</strong></td>
<td></td>
</tr>
<tr>
<td>Are the essential medicines required for treatment of hypertension available (in stock) to last for at least two months?</td>
<td>Y N DN</td>
</tr>
<tr>
<td>Are the essential medicines required for treatment of diabetes, available (in stock) to last for at least two months?</td>
<td></td>
</tr>
<tr>
<td>Are the essential medicines required for treatment of COPD available in the stock to last for at least two months?</td>
<td></td>
</tr>
<tr>
<td>Is the blood glucometer in use?</td>
<td>Y N DN</td>
</tr>
<tr>
<td>Are weighing scale and measuring tape available at the OPD?</td>
<td>Y N DN</td>
</tr>
<tr>
<td>Comment whether physical measurements such as weight, height, waist and hip are conducted routinely on patients?</td>
<td>Y N DN</td>
</tr>
<tr>
<td><strong>Record keeping</strong></td>
<td></td>
</tr>
<tr>
<td>Is the referral register updated?</td>
<td>Y N DN</td>
</tr>
<tr>
<td>Is patient appointment system documented and well organized?</td>
<td>Y N DN</td>
</tr>
<tr>
<td>Is the NCD dashboard displayed with updated information</td>
<td>Y N DN</td>
</tr>
<tr>
<td><strong>Patient care</strong></td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Y</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>---</td>
</tr>
<tr>
<td>Are all patients above 40 years screened for hypertension at the health centre?</td>
<td></td>
</tr>
<tr>
<td>Does care for diabetes appear to be adequate?</td>
<td></td>
</tr>
<tr>
<td>Is care for COPDs adequate?</td>
<td></td>
</tr>
<tr>
<td>Can doctors/primary health care workers/nurses recall the purpose of CVD risk prediction chart?</td>
<td></td>
</tr>
<tr>
<td>Does it appear that CVD risk score is routinely provided to the eligible patients at the OPD?</td>
<td></td>
</tr>
</tbody>
</table>

**Integration of NCD services**

<table>
<thead>
<tr>
<th>Question</th>
<th>Y</th>
<th>N</th>
<th>DN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are staff and units of the health facility aware of the purpose of PEN programme?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is health education on tobacco, alcohol, unhealthy diet and physical activity provided at the antenatal and postnatal clinics?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>What is the state of screening for raised blood pressure and raised blood sugar at the antenatal services?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are referrals occurring among the units within the same health facility for CVD risk stratified management?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Overall observations and summary**

<table>
<thead>
<tr>
<th>Question</th>
<th>Rating:.................</th>
</tr>
</thead>
<tbody>
<tr>
<td>What would you rate the level of overall performance on NCD management on the scale of 1 to 10, 1 being minimal and 10 being excellent?</td>
<td></td>
</tr>
<tr>
<td>Brief statement on the reasons for the level of rating:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summary of recommendations:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td></td>
</tr>
<tr>
<td>ii.</td>
<td></td>
</tr>
<tr>
<td>iii.</td>
<td></td>
</tr>
<tr>
<td>iv.</td>
<td></td>
</tr>
</tbody>
</table>

**Signatures**

<table>
<thead>
<tr>
<th>Supervisor:</th>
<th>Head of the Health Facility:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date/month/year--------------------------------------------------------</td>
<td>Date/month/year--------------</td>
</tr>
</tbody>
</table>
Monitoring systems

Activity 1: Step 2

Supportive supervision

- Supportive supervision is a process that promotes quality at all levels of the health system by
  - strengthening relationships within the system, focusing on the identification and resolution
  - promoting high standards
  - Promotes team work and better two-way communication
  - involves directing and supporting health service providers in order to enhance their skills, knowledge
- abilities with the goal of improving health outcomes for the patients they manage. It is an ongoing relationship between HSPs and their supervisors.
Comparison of traditional and supportive supervision (adapted from Marquez and Kean, 2002)

<table>
<thead>
<tr>
<th>Monitoring systems</th>
<th>Traditional monitoring</th>
<th>Supportive supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>WHO performs supervision</strong></td>
<td>  External supervisors designated by the service delivery organization, or from other facilities, health facility management team or colleagues from the same facility (from supervision, community health committees, staff themselves through self-assessment).</td>
<td><strong>Supportive supervision</strong></td>
</tr>
<tr>
<td><strong>When supervision happens</strong></td>
<td>During periodic visits by external supervisors.</td>
<td><strong>Continuous</strong> supervision during routine work, team meetings, and visits by external supervisors.</td>
</tr>
<tr>
<td><strong>What happens DURING supervision Encounters</strong></td>
<td>Inspection of facility, review of records and supplies, supervision makes most of the decisions, relay of problem solving to supervisor (little feedback or discussion of supervisor observations).</td>
<td>Observation of performance and comparison to standards, provision of corrective and supportive feedback on performance, discussion with clients, provision of technical updates or guidelines, issue training, use of data and risk report to identify opportunities for improvement, joint problem solving, follow-up on previously identified problems.</td>
</tr>
<tr>
<td><strong>What happens AFTER supervision Encounters</strong></td>
<td>No or irregular follow-ups.</td>
<td>Actions and decisions recorded, ongoing monitoring of weak areas and improvements, follow-up on prior visits and problems.</td>
</tr>
</tbody>
</table>

**Mentoring**

- Mentoring is a system of practical training and consultation that fosters ongoing professional development to yield sustainable high-quality clinical care outcome.
- Mentoring relationships work best without directive approach to where both a mentor and a mentee learn from each other.
- It is a learning opportunity for both parties. It should be noted however that a mentor must be a practicing person who is more experienced with greater knowledge and skills, and who is willing to empower a junior or inexperienced.

**Indicators for monitoring services/PEN process**

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Specify</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health facility management</td>
<td>Health facility staff trained and aware on PEN and PEN counseling at health facility</td>
</tr>
<tr>
<td>Health workers</td>
<td>Number of health staff reached with minimum required source content hours</td>
</tr>
<tr>
<td>Quality assurance</td>
<td>Health facility PEN services are included in annual audits</td>
</tr>
<tr>
<td>Essential medicines</td>
<td>All essential medicines for PEN for management of hypertension, CHD, diabetes, COPD and asthma in all care centers available in health center</td>
</tr>
<tr>
<td>Essential diagnostics</td>
<td>All essential diagnostics for blood sugar, cholesterol, blood flow meter, and other basic laboratory support available in health centers</td>
</tr>
<tr>
<td>Essential patient teaching and assessments aids for PEN</td>
<td>Essential patient teaching and assessment aids for PEN available at health center</td>
</tr>
<tr>
<td>Friends and forms</td>
<td>Forms available and distributed within health facility</td>
</tr>
<tr>
<td>Supportive supervision</td>
<td>Health facility holds regular supportive supervision from the national programme (10%) and technical support at least once in three months.</td>
</tr>
</tbody>
</table>
## Monitoring patient outcome indicators for PEN

<table>
<thead>
<tr>
<th>Area</th>
<th>Diabetes</th>
<th>Hypertension</th>
<th>Alcohol</th>
<th>Tobacco</th>
<th>Arsenic</th>
<th>Overweight and obesity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process for care (follow up and service utilisation)</td>
<td>Among those diagnosed with diabetes</td>
<td></td>
<td>Blood pressure checks at periodic interval among those diagnosed with hypertension</td>
<td>Number of tobacco users provided with brief intervention</td>
<td>Number of overweight and obese clients provided with brief intervention</td>
<td>Number of overweight and obese clients provided with brief intervention</td>
</tr>
<tr>
<td>Immediate/intermediate</td>
<td>Fasting (HC) cholesterol control</td>
<td>Glucose control</td>
<td>Abstinence of alcohol</td>
<td>Cessation of tobacco</td>
<td>Number left using arsenic</td>
<td>Reduction of BMI/WHR</td>
</tr>
<tr>
<td>Long-term</td>
<td>Low density lipoprotein ratio</td>
<td>Kidney disease in diabetes</td>
<td>Cardiovascular complications</td>
<td>Cardiovascular mortality</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carbohydrate metabolism in people with diabetes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
WHAT’S INSIDE

Introduction

Learning objectives

Teaching and learning activities
INTRODUCTION

This module addresses all other PEN modules regarding how those other modules are delivered using Adult Learning methods. To be effective in teaching adults, it’s important to know your audience and have a general understanding of how adults learn. Trainers of PHC workers can use this module to adapt each module using adult learning approaches.

Health care worker training without adult learning methods is not likely to enhance the skills and competencies. Health workers have experience, are independent, and should be motivated to improve their performance; thereby, benefiting their target population. It is well accepted that adult learning approaches achieve better outcomes in terms of performance. The adult-learning methods introduced here will be reinforced through practice in subsequent modules.

LEARNING OBJECTIVES

At the end of the session, trainers (facilitators) should be able to:

- Facilitate training using adult learning techniques to make PEN training sessions effective, and
- Conduct training sessions incorporating appropriate problem based and adult learning activities.

Reference


TEACHING AND LEARNING ACTIVITIES

Total session time: 150 minutes

The following are suggested as possible learning activities to demonstrate adult learning methods; however, trainers can freely choose whatever would be most suitable for their own situation and audience.

---

1 Refer to: "(1) Klatt_FINAL 1-4; (2) Interactive Learning; (3) Reading List".

PURPOSE: Hopefully, the trainees will identify themselves (and their reported important learning experiences) as adult learners. Thereby, helping the trainees to accept themselves and their training course as adult learning based.

Show PowerPoint Slide 2, Pose a question:

“What was your most important learning experience”? (Suggestions: learning how to drive, painting, performing a clinical task, cooking food, etc.)

Step 1. Ask trainees to write down answers to encourage less out-spoken members.

Step 2. Ask for volunteers to read out their answers. (It is not necessary to call on all trainees, if less time.)

Step 3. Show PowerPoint slide 3: which distinguishes between pupils and adult learners. Ask the trainees to recall what they had written (their own, recorded experiences) in terms of these differences (more independent, self motivated, solving a problem, etc.). Slide 3.

Step 4. Ask trainees: Were those experiences more school based or more as adult learners?

Step 5. Discuss in plenary session (Discuss what and why are there differences among answers.)

Step 6. Summarize with the following key messages:

- Adults are internally motivated and self-directed
- Adults bring life experiences and knowledge to learning experiences
- Adults are goal oriented
- Adults are problem solvers
- Adults are relevancy oriented
- Adults are practical
- Adult learners like to be respected
Method 2. Brainstorming/Subgroups: 40 minutes

PURPOSE: The purpose of this activity is for the trainees to experience problem solving through discussion (These are key characteristics of adult learning, especially independence and problem focus).

A key feature of this exercise is to point out that there may be differences between the groups based on their Assumptions of the meanings of ‘Opinion,’ ‘Most Serious,’ and ‘Population.’

The trainees are expected to be those who, with their previous experience, to solve problems in their working situations, without much support.

By engaging trainees in Adult Learning activities, we can expect more effective training experiences in other modules.

Step 1. Form small groups (2-3 members) See: Klatt (1999) p 236-7

Step 2. Give instructions for Brainstorming See: Klatt (1999) p 188

Step 3. In response to the following question (Ppt Slide 4), ask trainees to draw conclusions among themselves and write down their answers in a group.

Show Ppt Slide 4:

“In your opinion, what is the most serious health problem facing your population”?

When the groups have made their decisions, we can expect that there will be differences between the groups. The Trainer should show Ppt Slide 5 and

Lead a (Q&A) discussion about:

1. It is the same question, but are there different/same answers? Why?
2. What are the differences between ‘opinion’ and conclusions based on ‘facts’?
3. Is seriousness measured by any standard (Policy? Medical perspective? Numbers of cases? Treatability? etc.)?
### Guidelines for facilitators to manage discussion about activity

**this question is purposefully not clearly stated; it has logical faults as well as a number of assumptions:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is the same question, but are there different/same answers? Why?</td>
<td><strong>The answer would depend</strong> on how trainees define ‘opinion,’ ‘serious’ and ‘population.’</td>
</tr>
<tr>
<td>2. What are the differences between ‘opinion’ and conclusions based on ‘facts’?</td>
<td>‘Opinion’ is a personal factor, and depends primarily on one’s beliefs/attitudes. <strong>Agreement on ‘facts’</strong> would be a better approach, especially if some <strong>data were used</strong> (although this is problematic in and of itself).</td>
</tr>
<tr>
<td>3. Is seriousness measured by any standard?</td>
<td><strong>How can we define ‘seriousness?’ Who should define it?</strong> There may be many points of view depending on whether it is, e.g., at a policy level, from a medical perspective, morbidity rates, or patients’ perspectives. <strong>An important step in analyzing any problem is to define what is meant by ‘seriousness’ and from whose perspective.</strong></td>
</tr>
<tr>
<td>4. How is a ‘population’ defined: by Nation? Ethnic group? District? Etc.?</td>
<td><strong>The issue here could be seen as geographical, and that raises issues of definition as well.</strong> However, if we are looking at solving a problem (‘health problem’), we should account for who should be involved in defining the problem (previous two items). <strong>Possible ‘populations of interest’ include,</strong> general populations, groups affected by the health problem, health workers/professionals, policy makers, and special interest groups, among others.</td>
</tr>
</tbody>
</table>

**In summary:** This activity is intended to encourage trainees to **reflect on their own thinking (critical thinking)** so to **encourage them to ask questions** (Adult learning through interactive methods).
Method 3. Practice Exercise Klatt (1999); p. 219: 60 minutes

Task: Fractured Rectangle

PURPOSE. The purpose of this activity is, to reinforce the previous adult learning methods (through practice), but now with an emphasis on the essential components of communication and teamwork.

Preparation (before exercise)
- Using the template (attached) cut up pieces of paper (A4), the number being the same as the total number of trainees.
- Mix resulting pieces.

Conducting exercise
- Organize trainees into at least 2 groups of 3-5 members.
- Randomly distribute pieces to each trainee (not one member receives the same number, within and across groups).
- Show Ppt Slide 6.
- Instructions to trainees are as follows:
  - “Your task as a group is to put the pieces back together to create an A4 piece of paper.”
  - “Your group will complete your task when all members of your group have completed their individual pieces.”
  - “This is a competition.” (Possibilities for a ‘prize’ can be biscuits or candies for tea break.)
  - “You are not allowed to talk or ask questions of the facilitators after you begin.”
  - “You have a time limit of 15 minutes.”
- After 5 minutes, allow the trainees to talk.
- After 15 minutes, ask the trainees to STOP (It is possible to extend another 5 minutes).
- Instruct each group to discuss among themselves the following points (20 min):
  - What was the difference between before and after the ‘talking ban’?
  - What strategies did you use, as individual and as a group, to complete the task on time?
  - What did you learn about communication and teamwork?
- In a plenary session (led by the Trainer) (25 min), conduct an open discussion among all groups for the following:
  - How much did you rely on the other members of your group?
  - What were the factors that helped/hindered you to complete the task?
  - What implications can you think of for adult learning?
Notes for participants

<table>
<thead>
<tr>
<th>TRAINEES</th>
<th>FACILITATORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Silent attempt to reconstruct rectangles (5 min)</td>
<td>Enforce silence rule</td>
</tr>
<tr>
<td></td>
<td>Observe according to guidelines</td>
</tr>
<tr>
<td>2. Discussion permitted; continue group work (10 min)</td>
<td>Observe according to guidelines</td>
</tr>
<tr>
<td>3. Small Group discussion of exercise (20 min)</td>
<td>Conduct group discussion</td>
</tr>
<tr>
<td></td>
<td>Provide feedback</td>
</tr>
<tr>
<td>4. Plenary Session (25 min)</td>
<td>Provide feedback</td>
</tr>
</tbody>
</table>

Facilitators, during the exercise, you should (a) enforce the “no talking” rule, and (b) observe (watch and listen) the following:

- Did participants break the “no talking” rule? Why?
- Did they attempt any other forms of communication (signing, writing, etc.)?
- Did individuals attempt to take leadership role, when, how long?
- How did group members cooperate?
- Did group members show any signs of “dropping out” (not interested, etc.)?

In the plenary session, Facilitators can discuss:

- To what extent did trainees depend on communication among their team?
- What were the effects of the ‘No Talking’ rule?
- How did they attempt to communicate without talking?
- How did the group manage themselves? Leaders emerging?
- Did anyone refuse to cooperate?
- What other aspects of group dynamics can you identify?
- What are the implications for work?

Method 4. Effective facilitation: 30 minutes

Purpose: to discuss how to increase retention skills, delivery methods and facilitate effectively and spot learners engagement in a training session (Adapted from Effective Adult Learning- A Toolkit for teaching Adults)

Step 1. Ask the trainers to discuss the following.

- How to increase retention of skills?
- What delivery method to use?
- How to effectively facilitate in the training session?
- How to spot learners engagement in the training session?
Facilitator’s explanatory notes

How to facilitate effectively in the classroom?

How effectively your course depends largely on the learning atmosphere you set up and model for your participants. Support your participants by building an atmosphere of trust. Model a positive attitude, and provide constructive and supportive feedback. Some of the facilitation tips are:

- Build trust
- Model positive attitude
- Give supportive feedback
- Stick to a schedule
- Create a “parking lot” for deviations off topic
- Ask open-ended questions
- Respect every student’s feelings

10 important lessons for effective classroom presentations

Capturing the attention of an in-person class takes skill. Some of the key lessons for making classroom presentations effective are:

1. Don’t talk at participants. Involve them.
2. Encourage positive group dynamics. Reform and move students into groups as needed.
3. Allow participants to discover data for themselves.
4. Ask participants to keep an action or idea list, and revisit it throughout the session.
5. Change the pace. Listening with retention only lasts about 20 minutes at a time.
6. Design your class so participants leave impressed with themselves and what they learned.
7. Allow adults learners to use their expertise by leaving time to share experiences.
8. Don’t offer material only one way. Recognize your participants will learn differently.

(Adapted from Robert W. Pike, ASTD handbook for workplace learning professionals, 2008.)

Resolving class conflicts

- Agree to class rules early on
- Teach and model the right thing to do, set norms for your classroom
- Shut down unhealthy conversations and inappropriate behavior immediately
- Redirect back to the subject at hand, take the focus off the negativity

Exercise: Ways to spot level of learner engagement

Use this checklist to assess the level of learner engagement during your class. The behaviors at the top of the list indicate a positive level of engagement, so the desired answer is “yes.” The behaviors shaded in grey at the bottom of the list indicate low levels of engagement, so the desired answer is “no.”
<table>
<thead>
<tr>
<th>Verbal and Non-Verbal Cues</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nods head</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smiles or makes eye contact</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Looks interested</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask relevant questions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leans forward</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tries activities or assignments on their own</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adds relevant information to the topic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drums fingers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shrugs or yawns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talks to neighbour, easily distracted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closes eyes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Looks away or stares</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crosses arms or legs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rests head in palm of hand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comes to class late</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Selected readings for methods**

**Small group discussions**


**Q&A**


**Fractured rectangles or broken squares**

Making training effective

What was your most important learning experience?

• When you felt great success!
• When you felt most achievement!

Pupils*   -----   Adults

Pupils are:
• Dependent
• Have little experience
• Told what to learn
• Motivated by externals

Adults are:
• Independent
• Have much experience
• Identify what to learn
• Self motivated
• Focus on PROBLEMS

*Pupils are classroom based in school settings.
In your opinion, what is the most serious health problem facing your population?

• What do you mean by ‘OPINION’? Is it fact based?
• How do you measure ‘SERIOUS’?
• Which ‘POPULATION’?

Group work 1: Fractured rectangle

• Instructions to participants:
• Your task as a group is to restore rectangles according to the original template (all are same).
• Your group will complete your task when all members of the group have completed their individual pieces.
• This is a competition.
• You are not allowed to talk or ask questions of the facilitators after you begin.
• You have a time limit of 15 minutes.
Fractured rectangle

Discussion points (for group work):
- How much did you rely on the other members of your group?
- What were the factors that helped/hindered you to complete the task?
- What implications can you think of for adult learning?

Module summary 1

Discussion points:
- Adult learning methods are used by those who are experienced, independent, problem solvers.
- These methods are interactive, and depend on good communication and teamwork.
- Trainers act as facilitators of learning!

Module summary 2

- In the following ‘Package of Essential Noncommunicable (PEN) disease and healthy lifestyle interventions’, trainees will be introduced to adult learning methods, including:
  - Role Play
  - Demonstration
  - Drill
- These methods will also use the same principles introduced in this module.
- Any questions?
Quick module evaluation

1  2  3  4