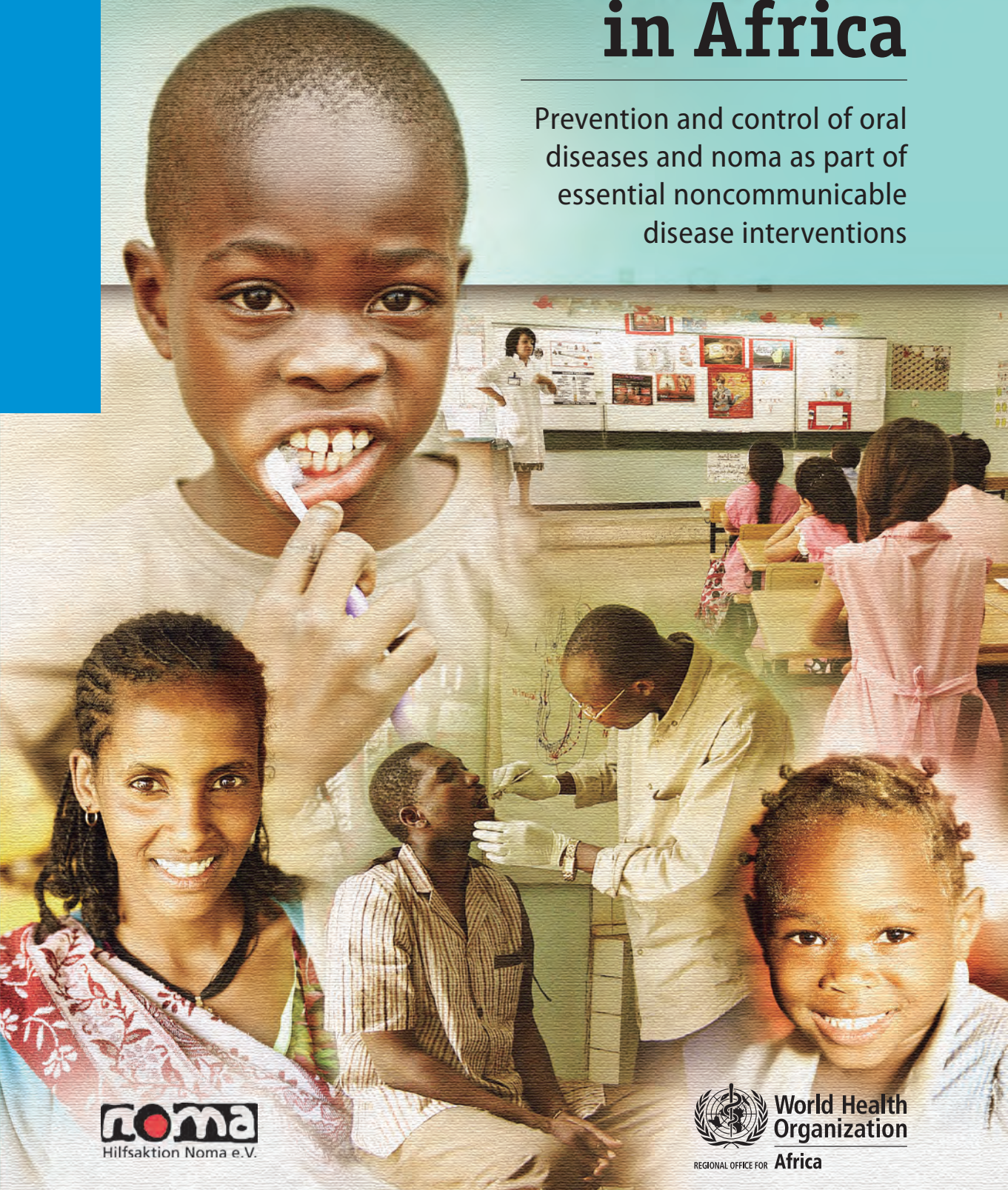


# Promoting Oral Health in Africa

Prevention and control of oral  
diseases and noma as part of  
essential noncommunicable  
disease interventions



# Promoting Oral Health in Africa

---

Prevention and control of oral  
diseases and noma as part of  
essential noncommunicable  
disease interventions

## **AFRO Library Cataloguing-in-Publication Data**

Promoting oral health in Africa: prevention and control of oral diseases and noma as part of essential noncommunicable disease interventions

1. Oral Health – organization and administration
2. Mouth Diseases – prevention and control
3. Noma – prevention and control
4. Oral Hygiene – organization and administration
5. Health Promotion
  1. World Health Organization. Regional Office for Africa

ISBN: 978-929023297-1

(NLM Classification: **WU 140**)

## **Acknowledgements**

The development of this manual was led by Benoit Varenne, Regional Adviser for Oral Health, WHO Regional Office for Africa. Editorial assistance was provided by Andrew Wilson. Production coordination was by Leo Vita-Finzi.

The manual was prepared under the general guidance of Francis C. Kasolo, Director, Disease Prevention and Control Cluster, and Abdikamal Alisalah, Acting Director, Noncommunicable Diseases Cluster, of the WHO Regional Office for Africa.

The WHO Regional Office for Africa would like to thank all the experts in the field of oral health and primary health care who contributed to the drafting of the manual. Special thanks are due to:

Habib Benzian (New York University, USA), Elizabeth Dimba (University of Nairobi, Kenya), Christopher Holmgren (independent oral health expert, France), Sudeshni Naidoo (WHO Collaborating Centre for Oral Health, University of the Western Cape, South Africa), Emmanuel Otoh (Regional Centre for Oral Health Research and Training Initiatives for Africa, Nigeria), Emerica Mugonzibwa (Muhimbili University of Health & Allied Sciences, United Republic of Tanzania).

The WHO Regional Office for Africa also sincerely thanks the following who assisted with development of the manual:

Constance Addo-Yobo (Ministry of Health, Ghana), Denise Baratti Mayer (University of Geneva, Switzerland), Souleymane Bougoum (Ministry of Health, Burkina Faso), Manon Chatelain (Sentinelles, Switzerland), Almoustapha Illo (Ministry of Health, Niger), Mamane Kaka (Ministry of Health, Niger), Lucina Koyio (Ministry of Health, Kenya), Niry Ramaromandray (Santé Sud, Madagascar), Emmanuel Crezoit (Ministry of Health, Côte d'Ivoire), Oumarou Djibo (Ministry of Health, Niger), Daouda Faye (Ministry of Health, Senegal), Ciku Mathenge (Ministry of Health, Rwanda), Rachel J.A. Mhavile (Tanzania Dental Association, United Republic of Tanzania), Neil Myburgh (WHO Collaborating Centre for Oral Health, University of the Western Cape, South Africa), Jocelyne Gare (Ministry of Health, Burkina Faso), Mark Topley (Bridge2Aid, United Republic of Tanzania), Ahadiel R. Senkoro (Ministry of Health, United Republic of Tanzania), Hadissa Tapsoba (oral health expert, Burkina Faso), Marie-Laure Tchéché (Ministry of Health, Côte d'Ivoire), Will Rodgers (Facing Africa, UK), Margaret N. Wandera (Makerere University Hospital, Uganda).

Thanks are also due to the following individuals for their review of the content of the manual:

Mamoudou Amadou (Hilfsaktion Noma e.V., Niger), Bimpe Adebisi (Federal Ministry of Health, Nigeria), Marion Bergman (Miracle Corners of the World, USA), Denis Bourgeois (Université Lyon 1, France), Lois Cohen (National Institute of Dental and Craniofacial Research, USA), Nicole Stauf (The Health Bureau Ltd, UK), Attie J. Louw (University of the Western Cape, South Africa), Eyitope Ogunbodede (Obafemi Awolowo University, Nigeria), Kahabuka F. Kokulengya (Muhimbili University of Health & Allied Sciences, United Republic of Tanzania), Bella Monse (Deutsche Gesellschaft für Internationale Zusammenarbeit, Philippines), Juha Ruotoistenmäki (University of Helsinki, Finland), Eino Honkala (Kuwait University, Kuwait), Michel Seminet (Brazzaville, Congo), Jeff Yengopal (University of the Witwatersrand, South Africa).

Representatives of the target readership including WHO staff in four countries in the Region (Kenya, Madagascar, Niger and Uganda) also kindly reviewed the manual and provided input:

Kenya: Joyce Nato, Elizabeth Onyiego, Loice Gathece, Regina Mutave, Alice K. Limo, Charles Akuru, Florence Ouma, Desmond K'Owino.



Madagascar: Harinjaka Randrianarivo, Christian Razanakoto, Eva Ranivoharilanto, Noeline Zafisenga, Nirina F. Rakotonomenjanahary, Noelisoa Rakotondrazaka, Rivoarilala Ratovonahary, Hantamalala Randrianampy, Verohanitriniala Rahoariantsoa, Olivier Aimé Rakotoarivony, Renaud Rasolofonirina, Domohina Rakotondrasoandrazana, Solomon Randriamanantsoa, Tina Madeleine Findrama, Rojolala Ratsimbazafy, Niry Jaoferson, Célestine Razafindramora, Hilarion Raolison Guy, Harinelina Randriamasiarijaona, Sahondra Raivonandrianina, Fanja Léonie Rakotoarijaona, Malala Raminosoa.

Niger: Habi Gado, Ibrahim Amadou, Bayé Assoumane, Ousseini Halima, Abdoulaye Boubacar, Chekou Koré Hadjo, El Sani Mahamane Mansour, Ibrahima Sita, Haroun Allassan, M. Tsayaba, Hamidou Chaibou, Barou Issa, Hassan Oumarou Awade, Hamsatou Saidou, Bako Hali, Salamatou Abdoulaziz, Hamsatou Boubacar.

Uganda: Hafisa Kasule, Juliet Nabbanja, Charles Mugisha Rwenyonyi, Nsubuga Peter Rock, Rose Kibalizi, John Wobusobozi, Charles Ssali, Patrick Lutakome Ddumba, Gaetti Nakagolo, Margret Kiwumulo, Kayizzi Mubiru, Kasule Mubiru, Katumba Ssentongo.

Finally, the following WHO staff members from headquarters and regional offices made valuable contributions to the text:

Emil Jones Asamoah-Odei, Andrea Bruni, Sebastiana Da Gama Nkomo, Jean-Marie Dangou, Saskia Estupinan, Frank John Lule, Charlotte Ndiaye, Hiroshi Ogawa, Ezra Ogwel Ouma, Poul Erik Petersen, Patrick C.W. Kaboré, Yves Turgeon, Simona Minchiotti, Boureima H. Sambo, Steven V. Shongwe, Issa Sanou and Chandralall Sookram.

The WHO Regional Office for Africa warmly acknowledges the financial support provided for this project from Hilfsaktion Noma e.V., and the encouragement provided by the President of Hilfsaktion Noma e.V., Ute Winkler-Stumpf.

Front cover photographs: WHO/Julie Pudlowski; Benoit Varenne; Pascaline Durand

Layout and typesetting: Interligar - Branding, Design & Web (<http://www.interligar.com.br>)

© WHO Regional Office for Africa, 2016

Publications of the World Health Organization enjoy copyright protection in accordance with the provisions of Protocol 2 of the Universal Copyright Convention. All rights reserved. Copies of this publication may be obtained from the Library, WHO Regional Office for Africa, P.O. Box 6, Brazzaville, Republic of Congo (Tel: +47 241 39100; Fax: +47 241 39507; E-mail: [afroafrbooks@who.int](mailto:afroafrbooks@who.int)). Requests for permission to reproduce or translate this publication – whether for sale or for non-commercial distribution – should be sent to the same address.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either express or implied. The responsibility for the interpretation and use of the material lies with the reader. On no account shall the World Health Organization or its Regional Office for Africa be liable for damages arising from its use.



# Contents

Abbreviations and acronyms	viii
Foreword by the Regional Director	ix
Overview	x
Introduction: using this manual	xiii
<b>Chapter 1. Oral disease burden and risk factors</b>	<b>1</b>
Oral health – essential to overall health	2
The burden of oral diseases	3
Noncommunicable diseases and oral health	4
Common risk factors	4
Changing risk patterns	4
Tackling the common risk factors of oral diseases and NCDs	5
Priority oral diseases	6
Tooth decay and cavities	7
Gum (periodontal) disease	9
Oral cancers	10
Noma (cancrum oris)	11
Oral manifestations of HIV and AIDS	12
Oro-facial trauma from accidents and violence	13
Cleft lip and cleft palate	14
<b>Chapter 2. Integrating oral health within noncommunicable disease strategies at primary health care level</b>	<b>17</b>
Integrating oral health within primary health care	18
The role of health workers who are not oral health professionals	20
Essential elements of oral health policy	21
<b>Chapter 3. The Basic Package of Oral Care (BPOC)</b>	<b>25</b>
Essential health packages: using limited resources effectively	26
Three key components	27
Affordable fluoride toothpaste (AFT)	27
Oral urgent treatment (OUT)	28
Atraumatic restorative treatment (ART)	28
Conditions for sustainable implementation of the BPOC	29
Referral procedures	30
Record-keeping and data collection	31
<b>Chapter 4. Essential intervention protocols for primary health care facilities</b>	<b>33</b>
PROTOCOL 1: Oral health examination	35
PROTOCOL 2: Management of pain affecting oral hard tissues (teeth)	38
PROTOCOL 3: Management of pain arising from oral soft tissues	40
PROTOCOL 4: Management of oral swelling	42

PROTOCOL 5: Management of oral and peri-oral ulcers	44
PROTOCOL 6: Management of red, white or grey oral pigmentation (discoloration)	46
PROTOCOL 7: Management of noma	48
PROTOCOL 8: Atraumatic restorative treatment (ART)	51
PROTOCOL 9: Basic oral health education	53
PROTOCOL 10: Infection control	55
<b>Chapter 5. School-based oral health promotion</b>	<b>69</b>
Schools: where good health skills begin	70
The challenge	70
Opportunities for collaboration	71
Essential package of school-based oral health interventions	72
Ensuring that oral health is integrated into school health policies	72
Health-enabling facilities and environment	73
Oral health education and promotion	74
Group tooth brushing	76
Participatory monitoring	76
Supporting effective implementation	76
Advocacy for school oral health	77
<b>Chapter 6. Community-based oral health promotion and disease prevention</b>	<b>79</b>
Essential package of community oral health activities	80
Local partnerships: crossing sectors and disciplines	81
Health sector leadership	81
Who should join an oral health partnership?	81
Oral health promotion	82
Community action can improve oral health for everyone	83
How to communicate these messages	83
BPOC training for all health workers and community health workers	84
Essential skills and services	84
Noma awareness: a priority health issue	85
<b>Chapter 7. Monitoring and evaluation</b>	<b>89</b>
National oral health surveillance	90
Surveillance of local level objectives	91
References	92
Annexes	
Annex 1. Essential medicines for the BPOC in primary health care facilities	96
Annex 2. Essential medicines for managing noma	98
Annex 3. Essential equipment for the BPOC in primary health care facilities	100
Annex 4. Recommended essential oral health indicators for the African Region	101
Annex 5. WHO STEPwise approach to surveillance – Oral Health Module	103
Annex 6. Global School-based Student Health Survey (GSHS) – Hygiene Module	107
Annex 7. Hand washing techniques	108

## Figures

Figure 1. Map of the WHO African Region	3
Figure 2. Risk factors shared by major NCDs and oral diseases	5

## Tables

Table 1. Checklist for oral health policy advocacy	22
Table 2. Suggested minimum competencies required for OUT and ART	29
Table 3. Essential oral health messages to be taught in schools	74
Table 4. Advocacy messages for school oral health	77
Table 5. What should a first-contact health agent be able to do?	85
Table 6. Surveillance indicators for local oral health activities	91



## Abbreviations and acronyms

AFT	affordable fluoride toothpaste
AIDS	Acquired Immunodeficiency Syndrome
ART	atraumatic restorative treatment
BPOC	Basic Package of Oral Care
GSHS	Global School-based Student Health Survey
IEC	information, education and communication
IMAI	Integrated Management of Adolescent and Adult Illness
NCD	noncommunicable disease
PHC	primary health care
HIV	Human Immunodeficiency Virus
M&E	monitoring and evaluation
NGO	nongovernmental organization
OUT	oral urgent treatment
STEPS	STEPwise approach to surveillance
WHO	World Health Organization
WHO-PEN	WHO Package of Essential Noncommunicable Disease Interventions for Primary Health Care in Low-Resource Settings

## Foreword by the Regional Director

Good oral health is one of the essential building blocks of living well. Oral health is fundamental to the ability to breathe, eat, swallow, speak or even smile. Impairment of these functions can seriously interfere with the ability to interact with others, attend school, and work. In the WHO African Region, poor oral health causes millions of people to suffer from devastating pain, increases the out-of-pocket financial burden for society and seriously affects people's quality of life and well-being.

Oral diseases are among the most common and preventable noncommunicable diseases (NCDs) worldwide. All oral diseases are of multifactorial origin and share modifiable risk factors with the leading NCDs. These risk factors include tobacco use, harmful use of alcohol and unhealthy diets high in sugar, all of which are increasing in the Region. Addressing these risk factors in an integrated way within a primary health care based strategy is key to controlling and preventing the major NCDs and thereby also improving the oral health of populations in the African Region.

Across the Region, activities to prevent and treat oral diseases as well as to promote oral health need to be significantly increased, particularly at the local level. There is a need for a population approach that is cost-effective, has a high and sustainable impact and that includes a mix of preventive population-wide and patient-centred care with a clear focus on health promotion and empowerment for effective self-care.

This manual demonstrates that the majority of interventions needed to address most day-to-day oral health needs are proven, affordable, and feasible in the places where ordinary people live. Most of these interventions can be done in primary health care facilities, school or community settings by first-contact personnel. When specialist treatment is necessary then patients should be referred to clinical facilities.

The manual also draws attention to the problem of noma, which for too long has been a "hidden" disease both literally and in terms of policy and resources. I thank our partner Hilfsaktion Noma e.V. Foundation for its years of work against this cruel disease, and for its generous funding which has helped make this manual possible.

This manual will benefit practitioners, public health specialists and governments, as well as health sector partners, across the Region. In the context of the emerging recognition of the increasing burden of NCDs, I hope you will all find it useful, and that it will serve to re-energize national and local efforts to improve the oral health of millions of Africans.



Dr Matshidiso Moeti  
WHO Regional Director for Africa



# Overview

## The oral disease burden and common risk factors for noncommunicable diseases

Oral diseases are among the most common noncommunicable diseases (NCDs) and may affect people throughout their lifetime, causing pain, disfigurement and even death. In the WHO African Region, where 80% of the population have low socioeconomic status, these diseases affect the health and well-being of millions of people. They also have an adverse economic impact on the population.

*Promoting oral health in Africa* addresses seven priority oral diseases and conditions that represent the largest part of the disease burden in the Region: dental caries, periodontal diseases, oral cancers, noma, oral manifestations of HIV and AIDS, oro-facial trauma, and cleft lip and palate.

Most of these oral diseases are either preventable or treatable in their early stages. In addition, they share modifiable risk factors, such as tobacco use, alcohol consumption and poor diet, with the major NCDs. Addressing these risk factors in an integrated way within a primary health care based strategy is therefore key to both controlling and preventing the major NCDs and improving oral health.

Due to the unequal distribution of oral health personnel and the lack of appropriate and functional facilities within the primary health care system, the majority of the population have only limited or no access to appropriate oral health care services. This results in a high proportion of untreated oral diseases and significant needs and demands for essential oral health care services, thus posing challenges to primary health care systems in the Region.

Across the WHO African Region, therefore, there is a need for a population approach that is cost-effective, has a high and sustainable impact and that includes a mix of preventive population-wide and patient-centred care, with a clear focus on health promotion and empowerment for effective self-care.

## Integrating oral health within noncommunicable disease strategies at primary health care level

There are relatively few trained oral health professionals in the Region, and therefore it is unrealistic to rely on workforce models that require oral health professionals to deliver treatment at all levels, including in primary health care facilities. New models must be explored in order to ensure that people suffering from pain and illness caused by oral diseases and conditions are not left without treatment. Fortunately, the majority of interventions needed to address most day-to-day oral health needs are proven, affordable, and feasible in the places where ordinary people live and can be carried out by non-oral health professionals at the primary health care level.

By integrating oral health into NCD prevention and control and primary health care delivery, cost-effective policies can be devised to improve the health of poor and disadvantaged population groups, taking into account individual countries' situations and priorities. *Promoting oral health in Africa* is designed to be easily adaptable to different national contexts. It aims to inform and support policy-makers and administrators, staff in primary health care facilities, schools and local communities to reduce the burden resulting from oral diseases. The manual can also be used to support training activities at different levels of the health system.

## A health package for oral health

“Packaging” a number of health interventions together permits effective interventions to be focused on targeted priority health problems. The WHO Package of Essential Noncommunicable Disease Interventions for Primary Health Care in Low-Resource Settings (WHO-PEN) presents such an integrated approach. *Promoting Oral Health in Africa* can be seen as a support to the WHO-PEN approach in the area of oral health as it promotes the Basic Package of Oral Care (BPOC), which aims to provide a framework for prevention and basic oral health activities in low-resource primary health care settings.

The BPOC framework for integrating oral health care into primary health care comprises oral health promotion, as well as activities, such as: (1) the promotion of affordable fluoride toothpaste to prevent dental decay; (2) oral urgent treatment aimed at relief of oral pain and providing emergency treatment; and (3) atraumatic restorative treatment to treat existing dental decay and prevent further decay.

## Essential interventions for primary health care workers

Since oral health professionals are relatively scarce in the Region, additional oral health training for non-oral health professionals such as doctors, nurses, clinical officers, and other health care workers, can help to address some of the unmet needs related to the prevention and control of oral diseases and the provision of a public dental service.

In order to help non-specialist health workers carry out their work, the manual provides 10 protocols for dealing with the main demands and the most common oro-facial symptoms seen in primary health care facilities: oral health examination; the five symptom-based interventions for managing urgent pain, swellings, ulcers, and altered pigmentation in the mouth and surrounding tissues; identification and management of noma; atraumatic restorative treatment; basic oral health education; and infection control procedures.

## Health initiatives in schools and communities

As with the essential interventions for primary health care workers, the manual explains how the essential health package approach can also be applied to schools and communities.

Children who suffer from poor oral health are far more likely to miss out on educational activities. *Promoting oral health in Africa* outlines a package of interventions for schools, including integrated school health policies (that include oral health); providing a health-enabling environment and facilities; promoting oral health; daily group tooth brushing with fluoride toothpaste; and participatory monitoring arrangements that include parents and the community. In most parts of the Region, these interventions should focus on disease prevention and health promotion rather than treatment, and children should play an active role.

Similarly, empowering communities to deal with their own oral health, particularly through multisectoral partnerships, includes developing a package of community-level activities, such as forming local partnerships with government authorities and with other sectors or disciplines (including oral health professionals), community oral health promotion and noma awareness. The aim is to enable people to increase control over, and to improve, their health. This manual provides practical, user-friendly and adaptable guidance to communities that includes check-lists, advocacy messages and other measures.

## Surveillance and monitoring

People responsible for oral health care programmes and services need good quality information in order to undertake planning, track progress, and measure impact, through integrated monitoring and evaluation based on solid surveillance systems. *Promoting oral health in Africa* proposes a basic set of indicators for surveillance of essential oral self-care and education at local level, using quick and small-scale local surveys. Integrated oral health surveillance and monitoring, using existing tools such as the STEPwise approach to surveillance and the Global School-based Student Health Survey, is a key approach to be used to improve the interventions described in the report.

## Adapting to the future

The lessons learnt during implementation of the guidance contained in the manual will be used to inform regular updates, ensuring that the manual continues to respond to the needs of the African people and fulfil its goal of re-energizing national and local efforts to improve their oral health.

## Introduction: using this manual

*Promoting oral health in Africa* is the response by the WHO Regional Office for Africa to requests from a wide range of people and organizations – health care workers, senior and mid-level staff of ministries of health, nongovernmental organizations (NGOs), and health sector partners that contribute to oral health across the 47 countries in the WHO African Region – for a reference manual on the prevention and management of oral diseases. The manual emphasizes the fact that improving oral health is an integral part of the essential interventions against noncommunicable diseases (NCDs) at the primary health care (PHC) level.

The first step leading to its development was taken in March 2012 in Dar es Salaam during a WHO regional workshop opened by H.E. Dr Jakaya Mrisho Kikwete, at the time President of the United Republic of Tanzania. The workshop documented best practices for the prevention and management of oral diseases throughout the WHO African Region, and provided a platform for development of a reference manual.

The manual is designed to be easily adaptable to different national contexts. Its objectives are:

- To inform and support policy-makers and administrators at local, district and national levels to strengthen oral health policies within wider NCD policies;
- To equip staff in PHC facilities with a set of effective interventions to address the most frequent oral diseases and conditions;
- To promote and guide the creation or reinforcement of oral health programmes in schools;
- To contribute to communities' awareness of the causes of oral diseases and how public health measures can be used to prevent and treat them.

The manual was developed with the participation of experts from the WHO African Region and beyond. The draft was then reviewed by representatives of the target readership in several countries and different health and education structures in Africa, with expertise in different areas of public health. WHO will provide technical assistance to facilitate adaptation and implementation of the interventions at primary care level. The lessons learnt during the implementation phase will be gathered and integrated into regular updates of the manual. While a number of copies will be printed, it is anticipated that this manual will be mainly used in electronic format. It is available at <http://www.afro.who.int/en/oral-health/publications.html>.



## Using this manual in training

Wherever possible, the manual provides checklists and protocols that can be used to support busy staff in the course of their daily work. These aim to facilitate application as well as assist with longer-term planning and decision-making.

While not a textbook, the manual can be used to support training activities at different levels of the health system. For example, several chapters might be used by a medical and oral health clinician when lecturing in a medical school or college of nursing, or for in-service training of staff already working in PHC facilities.

Trainers are encouraged to “mix and match” different parts of the manual.

## Structure

The manual contains seven chapters:

**Chapter 1. Oral disease burden and risk factors** briefly describes the prevalence and causes of the most common oral diseases in the Region and their associated risk factors.

**Chapter 2. Integrating oral health within noncommunicable disease strategies at primary health care level** provides the underlying policy framework for efforts to improve oral health, and places oral health in the context of health systems as a whole. It will be of special interest to decision-makers responsible for health policy and planning.

**Chapter 3. The Basic Package of Oral Care (BPOC)** describes the components of a basic oral diseases prevention and control package that can be delivered in the context of PHC. It outlines the essential human and other resources required, including essential medicines. Its primary target audience is health system decision-makers at national, district and local levels, as well as managers and senior clinical staff of PHC facilities.

**Chapter 4. Essential intervention protocols for primary health care facilities** is written especially for PHC health staff who deal directly with patients presenting with signs and symptoms of oral diseases. The core of the chapter is a set of protocols designed to aid in diagnosing and treating specific oral diseases.

**Chapter 5. School-based oral health promotion** recommends an essential package of school-based oral health activities. The chapter is designed for teaching staff and for education sector decision-makers at district and national levels, and is also expected to be of interest to parents and community members interested in advocating or organizing oral health activities in their areas.

**Chapter 6. Community-based oral health promotion and disease prevention** aims to help empower communities to deal with the oral health issues prevalent in their area, particularly through multisectoral partnerships and a package of oral health promotion activities. It is written for use by community leaders, public health authorities and local government.

**Chapter 7. Monitoring and evaluation** describes responsibilities for these essential activities and presents some broad guidelines for national and local surveillance of oral health status.





## Oral disease burden and risk factors

This chapter provides an overview of the challenges the Region is facing, as well as the public health and clinical options for dealing with these challenges. Designed to be of use to all readers, it presents:

- The importance of oral health to overall health;
- The general oral health situation in the Region;
- The links between oral health and NCDs, including the major risk factors;
- Seven major oral diseases or conditions that are currently of greatest concern, including their prevalence, prevention and treatment options.



## Oral health – essential to overall health

WHO defines oral health as:

*a state of being free from chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects such as cleft lip and palate, periodontal (gum) disease, tooth decay and tooth loss, and other diseases and disorders that affect the oral cavity (1)*

Oral health is a key indicator of overall health and its links with general health are systemic and reciprocal. The mouth, comprising the teeth, masticatory muscles, tongue, mucosal soft tissues and salivary glands, is the body's main portal for nutrition. The mouth may also provide access for bacteria, viruses, fungi and other vectors of disease. It is the starting point of the body's defence system and immunity. When oral health is compromised by disease or injury, general health suffers. It is for this reason that the World Health Assembly recognized the "intrinsic link between oral health, general health and quality of life" (resolution WHA60.17). Risk factors for oral diseases include unhealthy diet, tobacco use, harmful use of alcohol and poor oral hygiene. These are also risk factors for noncommunicable diseases.

At the most basic level, diseases and conditions affecting the mouth and face disrupt vital functions such as chewing, swallowing, speaking and sleeping. They can have adverse effects on one's quality of life, social relations, ability to communicate and self-esteem. The pain and discomfort associated with these diseases make concentrating difficult, cause people to miss school and work, and can lead to social isolation and reduced income.



## The burden of oral diseases

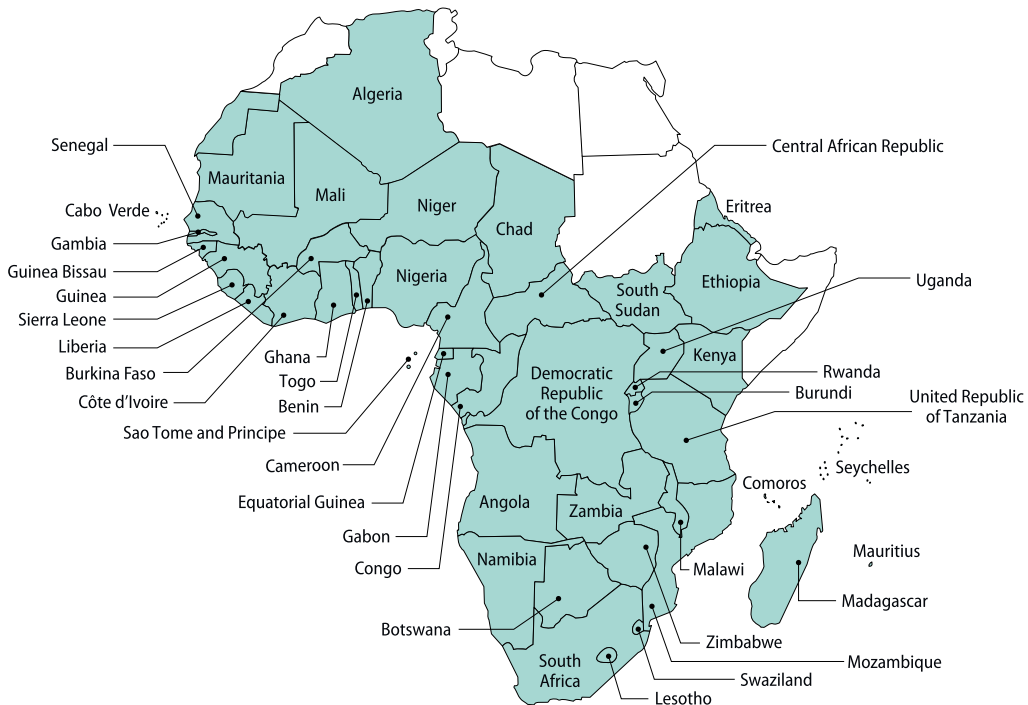
The 2010 Global Burden of Diseases, Injuries and Risk Factors Study estimated that oral conditions affected 3.9 billion people, and that the burden of oral conditions had increased by almost 21% between 1990 and 2010. There were notable increases in severe periodontitis and untreated caries – in fact, untreated caries in permanent teeth was found to be the most frequent condition of the 291 diseases included in the study, with a global prevalence of 35% for all ages combined (2).

Severe periodontitis and untreated caries in deciduous teeth (“milk” or “baby” teeth) were respectively the sixth and tenth most prevalent conditions, affecting approximately 1 out of every 10 people globally.

Another way of measuring the burden of disease is the Disability-Adjusted Life Year (DALY), which is a calculation of how many years are lost due to ill-health, disability or early death. The 2010 study estimated that oral conditions combined accounted for 15 million DALYs globally. DALYs due to oral conditions increased by 20.8% between 1990 and 2010, mainly due to population growth and ageing. The largest increases in DALYs were observed in eastern (51.7%) and central sub-Saharan Africa (50.5%).

The African Region, one of the six WHO regions, is home to over 892 million people, or about one seventh of the world’s population (see Figure 1). The 47 countries in the Region carry a special burden of oral ill-health and risk factors. The Region’s patterns of disease and risk factor prevalence are different from the rest of the world, and in fact the Global Burden study did not include several conditions that are especially important to Africa.<sup>i</sup>

**Figure 1. Map of the WHO African Region**



<sup>i</sup> These are noma and oro-facial trauma.



## Noncommunicable diseases and oral health

Noncommunicable – or chronic – diseases are distinguished from infectious diseases in that they are not passed from person to person. Many are of long duration with slow progression, though some can result in rapid death through events such as a heart attack or stroke.

Globally, the four major NCDs – cardiovascular diseases (e.g. hypertension, heart attacks, and stroke), diabetes, cancers, and chronic respiratory diseases (e.g. asthma and chronic obstructive pulmonary disease) – have received a great deal of attention in recent years, as their prevention is among the most cost-effective public health measures available. Major causes of these NCDs include tobacco use, unhealthy diets, physical inactivity and harmful use of alcohol. WHO estimates that if these risk factors were eliminated, at least 40% of cancer and 80% of all heart diseases, stroke, and type 2 (late-onset) diabetes would be prevented (2).

The global disease burden is currently shifting from communicable to noncommunicable diseases. It is estimated that by 2030, if nothing is done to reverse the trend, deaths from NCDs will be the most common cause of mortality in Africa (3).

Besides the four major NCDs, the African Region has prioritized five additional NCDs, namely oral diseases, sickle cell disease, eye and ear conditions, mental disorders, and violence and unintentional injuries such as road traffic accidents.

### Common risk factors

Most common NCDs share many risk factors with oral diseases (see Figure 2). In 2011, a high-level meeting of the United Nations General Assembly on NCDs urged the world to recognize that oral, eye and renal diseases “pose a major health burden for many countries and that these diseases share common risk factors and can benefit from common responses to non-communicable diseases” (4).

Many of these risk factors are behaviour and lifestyle related and are therefore preventable. For example, tobacco use is estimated to be the underlying cause of over 90% of oral cancers and it is also linked to aggravated periodontal tissue breakdown, poor oral hygiene, and premature tooth loss (5).

Although there are many other factors that contribute to ill-health in general, poverty is the single most important one (6). In 2014, 31 of the 47 countries in the African Region were classified as least developed countries according to the criteria defined by the United Nations, and 80% of their population were categorized as having low socioeconomic status. As with other conditions that undermine health, the greatest burden of oral diseases is frequently found in this population group.

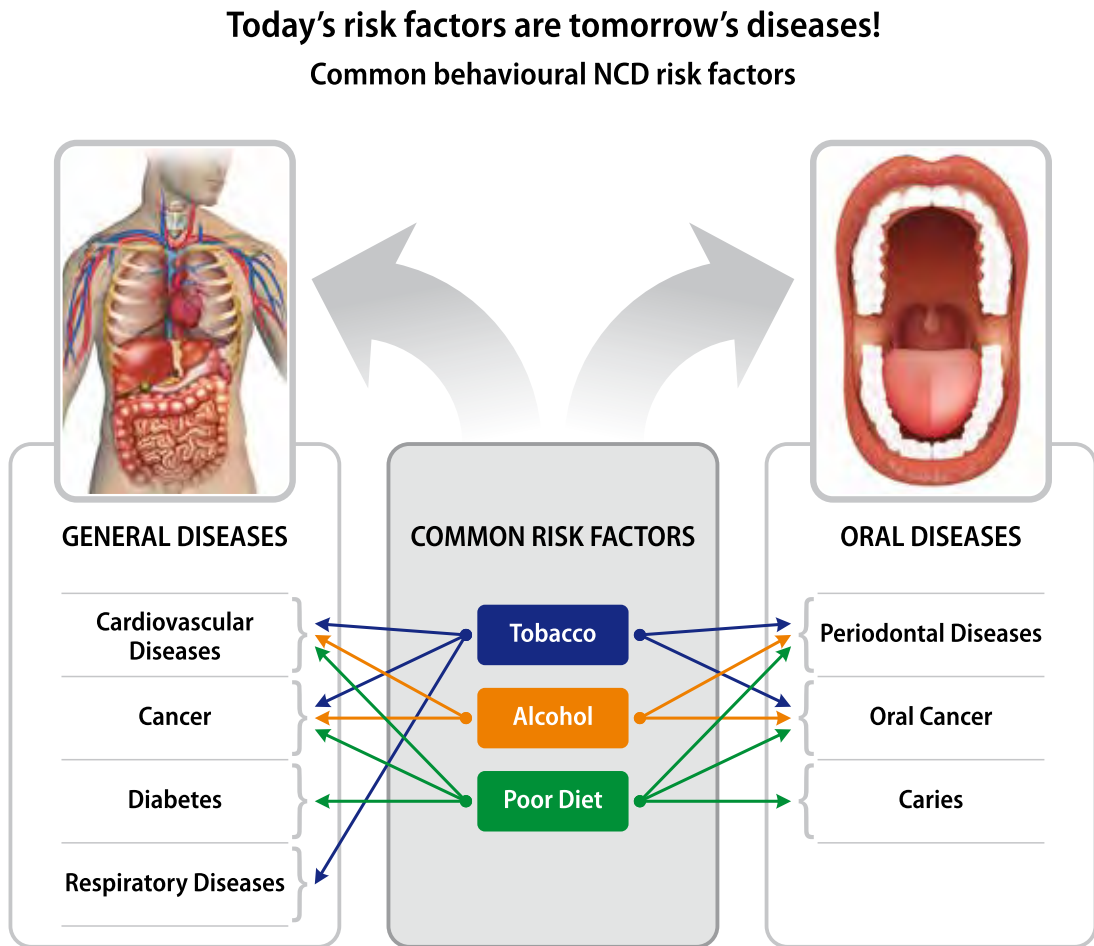
Other factors are more specific to the epidemiological situation in the Region. For example, HIV is widely present in the Region, often in association with oral cancer and opportunistic diseases in and around the mouth. Similarly, noma – nowadays rarely reported elsewhere in the world – occurs in some sub-Saharan African countries and is seen as a marker of extreme poverty.

### Changing risk patterns

The disease pattern in the Region is evolving, largely as a result of socioeconomic change (7). For example, in the 1970s, dental caries was less common in most African countries than in other regions, but with increasing urbanization and changes in living conditions, the prevalence of dental caries continues to increase in the Region – most notably due to growing consumption of free sugars and inadequate exposure to fluoride. To cite a few other examples:

- increasing urbanization is associated with rises in the prevalence of several oral diseases. In particular, urbanization increases access to sugar-containing foods and drinks that are prime risk factors for dental caries;
- rising levels of bottle feeding have been associated with high rates of tooth decay known as “baby bottle syndrome” or “early childhood caries”;

Figure 2. Risk factors shared by major NCDs and oral diseases



- increasing consumption of alcohol is associated with higher levels of injuries to the face and teeth as a result of violence and accidents;
- rising levels of tobacco use are associated with increasing numbers of oral cancer.

### Tackling the common risk factors of oral diseases and NCDs

It is widely acknowledged that a preventive approach that addresses the common risk factors

is the most effective way to tackle oral diseases within the larger context of NCD prevention and control, rather than trying to address oral conditions on their own (8). The WHO Health-Promoting Schools initiative is an example of an effective way of promoting oral health and general health. Prevention and control of NCDs are therefore incomplete without measures to address the major oral diseases in the Region.

In the medical world, oral health has long been a specialty, with its own history, professional training and standards, and research stream.

Increasingly, however, oral health is being integrated into more holistic approaches to health and its place within NCDs is being recognized. In addition, calls are being made for its inclusion within the range of conditions to be taken care of at the primary health care level. Despite the progressive integration noted in several countries of the African Region, oral health is still too often overlooked in NCD prevention and control programmes.

### *Traditional and cultural practices – benefits and risks*

In some areas, vulnerability to oral disease is higher because of locally-specific nutritional patterns and social habits, although some traditional practices can be beneficial to oral health. Traditional practices such as dental chipping and intentional removal of healthy teeth or tooth germs can lead to serious complications (9–11). At the same time, chewing of certain substances such as *khat* puts people at higher risk of oral cancers and periodontal diseases (12–14) (see box “Existing traditions: distinguishing the beneficial from the harmful”).

### *Inadequate dental services*

Oral health in the Region also suffers because basic dental services are lacking in existing health systems. Several conditions that can be easily managed in their early stages are missed because health workers at PHC level are overwhelmed, or do not know what to look for, or are not trained in the basic interventions that could help deal with these conditions. The result is that the opportunity to refer serious cases is overlooked. The resources allocated to preventive or restorative dental care are also inadequate.

It is important to note that while there are well-qualified dentists in the Region, dental care for the majority of the population is mostly limited to pain relief or emergency care. The number of oral health professionals required by a country

depends on many factors, including need and demand. The current dentist-to-population ratio in the Region is estimated to be approximately 1 to 150 000 people, compared to about 1 to 2000 in high-income countries (17). Moreover, dental services in the Region are largely concentrated in hospitals in urban centres or in private practices where the services offered are not affordable for a large proportion of the population.

## Priority oral diseases

While there are many forms of oral disease with different signs and symptoms, a relatively small number of these account for the greatest burden of pain and disability at the population level. Fortunately, cost-effective interventions exist to prevent and treat these highly prevalent diseases.

WHO has given priority in the Region to seven oral diseases and conditions that represent the largest part of the oral disease burden. They are all widespread, and most are either preventable or treatable in their early stages:

- tooth decay and cavities (dental caries);
- gum (periodontal) diseases;
- oral cancers;
- noma;
- oral manifestations of HIV and AIDS;
- oro-facial trauma from accidents and violence;
- cleft lip and palate.

Each of these prioritized diseases and conditions is described at greater length in subsequent pages. In addition to a general discussion of the disease, information is provided on its prevalence, prevention and treatment. The information is in large part adapted from two sources: *WHO's IMAI district clinician manual* (18) and *The oral health atlas* (19).

## Existing traditions: distinguishing the beneficial from the harmful

Different African communities have their own traditional oral health practices, some of which are beneficial while others are harmful. These should be taken into account when considering community strategies.

For example, in some places traditional healers remove or damage unerupted teeth in infants. They incorrectly blame conditions like diarrhoea, fever and vomiting – frequently associated with teething in infants – on visible prominence of unerupted canine teeth. Because the removed tooth is not yet hardened by calcification, it is often shown to the parent as a “worm”. Associated dangers from this practice range from infection due to the use of non-sterile equipment, to defects of the teeth and jaw later in life. Another harmful practice is traditional uvulectomy, which involves the partial or total removal of the soft part of the palate (uvula). This may cause a range of conditions such as anaemia, septicaemia, gangrene, HIV infection, bleeding, difficulty in swallowing, and even death (15).

On the other hand, some traditional practices can be beneficial. An example is the use of branches from trees such as the Arak tree (*S. persica*), often called “chewing sticks” or *miswak*. Such chewing sticks have been used to clean the mouth in parts of Africa for centuries. More recently, research has shown that *miswak* contains an antibacterial agent that might be helpful with oral hygiene (16). Communities can be encouraged to continue the use of *miswak* and other chewing sticks wherever they are widely available for tooth brushing in combination with the use of fluoride toothpaste.



Traditional medicines used for treating diseases

## Tooth decay and cavities

### Description

Dental caries results when bacteria in the biofilm on teeth convert the sugars contained in foods and drinks into acid that dissolves tooth enamel and dentine. If no action is taken, this results in cavities. It may cause sensitivity to hot or cold foods or drinks and progress to pain. Eventually the bacterial invasion may reach the pulp (internal part of the tooth with nerve endings and blood vessels) resulting in excruciating pain. The infection can spread to the jaw bones and can cause an abscess or other complications.

Dental caries frequently results in the loss of teeth. In advanced cases, it may interfere with dietary habits and thus affect nutritional status, as

well as affecting sleep, work activities and school attendance.

### Prevalence

Dental caries is the world's most widespread chronic disease. In the African Region, DMFT levels (see box “Measures of oral health”) vary widely, ranging from less than 1.0 in Ghana and Guinea-Bissau to over 4.0 in Gabon and Mauritius. Moreover, local studies indicate a rapidly rising disease burden among both urban and rural populations. Most tooth decay remains untreated.

### Prevention

For all age groups, tooth brushing twice a day with fluoride toothpaste is the most effective preven-

## Measures of oral health

WHO encourages the use of standardized measurements of oral diseases and conditions. Two common measures are used to measure the burden of oral diseases (20):

**Tooth decay.** The most widely used measure of tooth decay prevalence is the DMFT index, which is used to calculate the number of decayed (D), missing (M) or filled (F) teeth (T). The sum of the three figures forms the DMFT value. For example, a DMFT of 4-3-9=16 means that 4 teeth are decayed, 3 teeth are missing and 9 teeth have fillings. A DMFT of 28 (or 32, if “wisdom” teeth are included) is the maximum possible, meaning that all teeth are affected.

**Gum disease.** The Community Periodontal Index is a screening procedure that examines several parameters, including bleeding of the gums as a sign of inflammation, the presence of calculus and loss of gum attachment to the tooth.

In addition, new measures are being tested. An example is PUFA, an index used to assess the presence of oral conditions resulting from untreated tooth decay (21). The PUFA index records the presence of severely decayed teeth with visible pulpal involvement (P), ulceration caused by dislocated tooth fragments (U), fistula (F) and abscess (A).



Credit: Benoit Varenne

Evaluation of the oral health status of a child

tive measure. Reducing the amount and frequency of sugar and carbohydrates in a person's diet also reduces the risk of developing tooth decay.

In young children, frequent bottle feeding with sugary liquids can result in early childhood caries (“baby bottle syndrome”) starting soon after the first teeth appear. Exclusive breastfeeding is recommended by WHO for the first six months of life. At six months, solid foods, such as mashed fruits and vegetables, should be introduced to complement breastfeeding for up to two years or more (22). Between meals, babies and toddlers should be given water.

Fluoridation of public water supplies has proven effective in many industrialized countries. Water fluoridation should not be considered in countries lacking a reliable centralized water system and supporting infrastructure. Similarly, salt fluoridation is another option for countries when salt iodization has already been successfully introduced.

Where suitable medical infrastructure and trained personnel are available, regular oral check-ups can help to detect early decay so that appropriate care can be provided. In certain conditions, removal of calculus (hard deposit that builds up over time on teeth) by oral health professionals is indicated.

## Treatment

An analgesic may be sufficient to deal with immediate discomfort but this will not resolve the problem in the long term. Early detection and intervention are crucial to prevent complications. Where available and indicated, restorative treatment can be provided. This involves removing the decayed part of the tooth and inserting a filling in the cavity to restore the shape and masticatory function (23). In many PHC settings, however, the only treatment options may be abscess drainage





Tooth decay causing destruction of enamel and dentine

or extraction of the affected tooth, using infection control protocols. The routine use of antibiotics is not advised.

## Gum (periodontal) disease

### Description

A periodontal disease is any disease that affects the tissue structure supporting the tooth, including the gums. This often presents itself as bleeding or swollen gums (gingivitis) and sometimes as bad-smelling breath. In its more severe form, loss of gum attachment to the tooth and supporting bone causes “pockets” and loosening of teeth (periodontitis). If the disease progresses, it may result in loss of the tooth.

The major cause of periodontal disease is the presence of pathogenic bacteria in dental plaque, which can be removed with regular cleaning. If plaque is not removed it becomes hard (called calculus or tartar) and this can only be removed by a trained oral health professional.

Gum diseases are also associated with systemic health problems, namely increased risks of heart disease, premature and low-weight birth, and increased severity of diabetes. Tobacco use is a major risk factor for gum disease.

### Prevalence

Globally, most children have signs of gingivitis. Among adults the initial stages of periodontal dis-

eases are widespread. Severe periodontitis, which may result in tooth loss, is found in 5–20% of adults in most populations, while mild to moderate periodontitis affects a majority of adults (24).

### Prevention

Although not all cases of gingivitis progress to periodontitis, all periodontal diseases start as gingivitis. Preventive efforts should therefore focus on identifying and treating gingivitis and curbing its progression to periodontitis.

Tooth brushing twice a day with fluoride toothpaste is the most effective preventive measure in all age groups. Reducing consumption of sugars and carbohydrates might also be important, as is giving up or never starting to use tobacco products (25).

Healthy baby teeth and gums



Periodontal disease





## Treatment

Once diagnosed, gingivitis can be managed through self-care by adopting good tooth brushing habits for oral hygiene, including in some cases the use of antiseptic mouthwash or regular mouth rinsing with clean salted water, associated with effective and gentle brushing.

Periodontitis can usually be arrested by periodontal treatment such as removal of plaque and tartar from around the teeth. Such deep cleaning or scaling might be indicated where calculus makes brushing of the teeth difficult and should be done by an oral health professional.

## Oral cancers

### Description

Oro-pharyngeal cancers are tumours (malignant growths) on any part of the mouth or throat. The most common form of oral cancer initially appears as an ulceration (lesion) or white or dark patch on the oral mucosa. Over time, it may cause pain, swelling, bleeding or difficulty in eating or speaking.

The chance of developing oro-pharyngeal cancer is greatly increased when the two main risk factors – tobacco use and alcohol consumption – are present. Dietary factors, particularly the consumption of *khat* and cola nuts, exposure to other



Credit: University of Nairobi

A non-healing ulcer that persists for more than two weeks is likely to be oral cancer

types of carcinogenic substances, low consumption of fruit and vegetables, and some types of viral infections have also been implicated as risk factors for oral cancer.

### Prevalence

Oro-pharyngeal cancer is among the 10 most common cancers globally. It is up to twice as prevalent among men as women (26).

### Prevention

Reduction of tobacco use and alcohol consumption greatly reduces the risk of developing oral cancer.

Oral cancer has a better chance of being successfully treated if diagnosed in its early stages. For this reason, routine oral cancer screening of all patients and counselling of patients with high-risk habits by PHC workers are recommended.

### Treatment

Sores, white or dark patches, oral pain or undiagnosed bleeding or swellings of the mouth or neck should be checked at a health care facility, and referred for specialist opinion and care.

Confirmed cancerous lesions should be surgically removed where possible. Chemotherapy and radiation treatment may be required to deal with cancers in advanced stages.

Oral cancer



Credit: University of Nairobi

## Noma (cancrum oris)

### Description

Noma is a severe type of gangrenous stomatitis. It usually starts as a benign lesion of the gums or cheek before rapidly destroying both the soft and hard tissues of the mouth and face. If left untreated, it progresses rapidly to an externally visible swelling within the cheek or lip. The patient may have bad breath and spit frequently. As the swelling increases, a dark patch of skin appears, eventually showing a blackened centre with a well-defined perimeter. Bone and teeth may become exposed and a hole remains after the scab is removed (27, 28).

Survivors are disfigured for life and many are left unable to speak or eat on account of the functional damage. Surviving children are very

commonly rejected by their family and community and receive little or no medical care. The only remedy following destruction of the facial tissue is reconstructive surgery.

### Prevalence

According to a survey carried out in Africa in 2007 by WHO, 39 of the 46 Member States surveyed had reported cases of noma during recent decades. However, Burkina Faso, Ethiopia, Mali, Niger, Nigeria and Senegal are the countries with the highest disease burdens – forming the world's "noma belt". In these countries, an estimated annual incidence of 20 cases per 100 000 has been extrapolated. There is a mortality rate of approximately 70–90% in the absence of treatment (29).

Acute noma is seen predominantly in children aged 1 to 6 years, although late stages can occur in adolescents and adults (30). Noma in children is commonly preceded by measles, malaria, severe diarrhoea and necrotizing ulcerative gingivitis.

### Prevention

Risk of this condition can be reduced through significant public health measures such as promoting good nutritional practices, oral and general hygiene, exclusive breastfeeding in the first six months of life, immunization against prevalent communicable diseases, use of bednets to prevent malaria, and segregation of livestock from human living areas.

Education about noma is crucial, as it is treatable in its early stages. Ideally, everybody in a community should be able to identify the first signs of noma (spontaneous bleeding of the gum, fever, bad breath and sometimes facial swelling) and advise about seeking help at the local PHC centre.

### Treatment

When detected early, noma can be successfully treated with rehydration, antibiotics, and better nutrition (including iron supplementation). A great deal of the necessary care for children with noma can be carried out at home following treatment and

A young child affected by noma





Credit: Hilfsaktion Noma e.V.

A young child affected by noma

advice received at a health care facility or from a health worker.

Unfortunately, the condition is often advanced by the time medical help is sought. Although reconstructive surgery is possible, normal facial appearance is unlikely to be restored. While the surgery is complex and expensive, some specialized surgical teams supported by NGOs provide treatment.

## Oral manifestations of HIV and AIDS

### Description

Oral lesions are a common occurrence in HIV-positive individuals. These lesions can also be used to predict progression of HIV to AIDS. Oral candidiasis (commonly called thrush), herpes ulcers (cold sores and fever blisters) and Kaposi sarcoma (an otherwise rare condition) are among the first signs of HIV infection. Other conditions include oral hairy leukoplakia (a white patch on the side of the tongue with a hairy appearance). Although these conditions are not in themselves life-threatening, they are often associated with significant pain, discomfort, and eating difficulties that may result in malnutrition (31).

People taking antiretroviral therapy may experience dryness in the mouth, which increases the risk of dental caries and, in later stages, cause increasing discomfort (24). In some cases of the final stages of AIDS, noma may occur (see above) and may severely degrade the gums, lips, face and jaw.

Early detection and treatment of HIV infection can prevent progression to many of these conditions. However, stigma still surrounds HIV and AIDS. Overcoming HIV-related stigma is important not only to encourage people to seek care but also to reassure health professionals that oral health procedures (including extractions and surgery) can be carried out safely if standard infection control procedures are followed.

### Prevalence

Among HIV-infected patients, the prevalence of oral manifestations of HIV and AIDS is estimated to be 50–60% (32).

### Prevention

Oral examination is quick and inexpensive, and should be offered in PHC settings when screening populations at greater risk of HIV infection.

The first line of defence is to take measures to prevent the transmission of HIV. In addition, diagnosis and monitoring of oral manifestations of

Oral manifestation of HIV/AIDS: Kaposi sarcoma



Credit: Emmanuel Chukwuka Otoh



Credit: Sudeshni Naidoo

Oral manifestation of HIV/AIDS:  
pseudomembranous candidiasis on palate

HIV and AIDS can be used to estimate progression of the disease, and can help to assess the patient's response to antiretroviral therapy.

### Treatment

Antiretroviral therapy to reduce the HIV viral load allows the body's natural defences to return and deal with many of these conditions. Other measures to treat symptoms of HIV and AIDS are also helpful.

There are many treatments available for specific oral manifestations (see Chapter 4) once they have been diagnosed. For example, a patient with oral candidiasis can be treated as an out-patient with interventions such as (a) regular mouth rinsing with clean water containing sodium bicarbonate, (b) antifungal solution or drops for extensive lesions, (c) vitamin supplements, and (d) nutritional advice.

## Oro-facial trauma from accidents and violence

### Description

Oro-facial trauma is among the most frequent reasons for people to seek primary health care. Management of trauma to the teeth constitutes a significant part of paediatric dental care. Trauma to the face and teeth can result from a wide range of causes including interpersonal violence

(fights, domestic violence), armed conflict, road traffic injuries, contact sports such as football or martial arts, and accidents in the school, home or workplace.

Common conditions are lacerations and bruises, as well as chipped, broken or lost teeth, dislocated jaws, and fractured jaws and facial bones.

### Prevalence

Injuries accounted for an estimated 9% of deaths and 12% of the burden of disease worldwide in 2000. Many of these injuries result in varying degrees of disability, and the costs of immediate care and follow-up are high. The burden from injuries is especially high for males.

Oro-facial trauma is widely prevalent in the African Region. While all age groups are affected, oro-facial injuries are relatively common in children, affecting about one in five. Studies in 11–13 year old Africans have reported prevalence ranging between 9.8% and 19.1% (33).

### Prevention

A wide variety of public health measures to prevent violence and accidents are recommended by WHO (34). Safety measures to reduce road traffic accidents and the mandatory use of seatbelts in vehicles and helmets for motorcycle users can help avoid many of the most severe injuries that burden the Region's hospitals and PHC facilities. Efforts to control alcohol consumption are important to reduce interpersonal violence both in public places and in the home.

### Treatment

Treatment for oro-facial trauma depends on the severity and extent of the trauma. Fractured teeth can be repaired with fillings, while displaced or knocked-out teeth can often be put back in place if the tooth is preserved and immediate treatment is given. More complicated cases require referral for dental surgery and other interventions.



## Cleft lip and cleft palate

### *Description*

Cleft lip and cleft palate are gaps in the natural structures of the face. They result from incomplete or otherwise abnormal development of bones and soft tissue in the unborn child during pregnancy.

### *Prevalence*

Cleft lip and cleft palate are among the most common congenital malformations. They occur in around one per 500–700 births, and the incidence rate varies substantially across ethnic groups and geographical areas. Oro-facial clefts appear to have substantial environmental causes. Higher risk is associated with tobacco and alcohol use during pregnancy, as well as with nutritional factors.

### *Prevention*

There is some evidence that multivitamin and folate supplements given in the early months of pregnancy may help to prevent these conditions (35). Women and particularly pregnant ones should be strongly discouraged from smoking and alcohol use. Association between maternal tobacco smoking and oro-facial clefts is strong enough to be used in anti-smoking campaigns (36).



Child with bilateral cleft lip and palate

### *Treatment*

Surgical techniques to repair cleft lips and cleft palates exist and are effective. They result in complete rehabilitation in most cases. However, they are relatively complicated, requiring appropriate facilities and frequent follow-ups. While this is not affordable for many children and their families in the African Region, a number of specialized NGOs exist which offer such treatment free of charge.





Maternal and Child Health (MCH) Case Report Form

1. Client Information

2. Clinical History

3. Physical Examination

4. Laboratory Investigations

5. Management Plan

6. Follow-up

Parameter	Normal Range	Value
Weight	45-55 kg	50 kg
Height	150-160 cm	155 cm
Blood Pressure	120/80 mmHg	120/80 mmHg
Heart Rate	60-100 bpm	70 bpm
Respiratory Rate	12-20 bpm	18 bpm
Temperature	36-38°C	37.5°C





Chapter

# 2

## Integrating oral health within noncommunicable disease strategies at primary health care level

This chapter presents:

- The benefits of including oral health in PHC programming;
- Five major oral health policy areas for consideration at national level.

This chapter will be of special interest to senior and mid-level staff of ministries of health, NGOs, health sector partners and opinion leaders responsible for developing, implementing and supporting programmes and interventions that contribute to oral health.



## Integrating oral health within primary health care

Over the years, the African Region has developed a network of facilities and infrastructure to support PHC delivery. Depending on the country, this includes health posts, dispensaries, rural maternity units and primary health centres. These units provide many services and are the first-contact points from which people in need of further care are referred to higher-level facilities like district and referral hospitals. The PHC facilities serve about 80% of the population, although they generally only receive about 20% of health systems' budgets (37).

The Declaration of Alma-Ata in 1978 was the first international declaration advocating PHC as the main strategy for achieving WHO's goal of "Health for All". It defined PHC as "essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination". Although approaches to PHC have developed over time, the principles remain valid and continue to be upheld by the international health community.

In 2007, the World Health Assembly adopted a resolution to reaffirm its commitment to integrate oral health within PHC (resolution WHA60.17). It emphasized the need to incorporate oral health into prevention and control of NCDs within the framework of enhanced PHC.



## A long-term commitment to oral health

Over the years, the WHO African Region has consistently emphasized oral health as part of PHC. In 1980, it called on Member States to integrate oral health into PHC programmes (resolution AFR/RC30/R4); in 1994 it urged them to formulate national oral health policies and plans based on PHC, and to develop training programmes for oral health care workers at all levels, particularly the district level (resolution AFR/RC44/R13).

A 10-year Regional Oral Health Strategy was published in 1998, which also emphasized PHC (38). This was reaffirmed in the 2008 Ouagadougou Declaration on Primary Health Care and Health Systems in Africa, when the WHO Regional Committee for Africa noted that: “The Primary Health Care strategy will continue to be the cornerstone of the acceleration of the implementation of integrated oral health programmes, thus enabling rural communities and vulnerable groups to have access to basic care” (39).

From 2011 onwards, the growing global momentum to tackle NCDs has provided a unique opportunity for the oral health community in the Region to work towards greater recognition of oral health and thereby contribute to comprehensive efforts to control and prevent NCDs and their risk factors. In this context, from November 2011 to December 2015, the WHO Regional Office for Africa carried out a situation analysis of oral health and conducted several regional consultations involving representatives of Member States, national dental associations and other stakeholders in order to define new priority interventions for oral health in the context of integrated prevention and control of NCDs.

The results of these consultations formed the basis for developing the Regional Oral Health Strategy for Integrated Prevention and Control of Oral Diseases with NCDs: 2016–2025. The strategy suggests a set of voluntary oral health targets and focuses on four synergistic objectives, which are aligned with global and regional NCD policies. It proposes tangible policy options for addressing key risk factors and determinants of NCDs and oral diseases through essential evidence-based, cost-effective and sustainable interventions. The Regional Oral Health Strategy will be presented for the consideration of Member States during the 2016 session of the Regional Committee for Africa. The current manual should be considered as a tool for supporting the implementation of the new oral health strategy in the Region (40).

The WHO African Region has supported this declaration with its own important statements, and has specifically included oral health as part of the approach (see box “A long-term commitment to oral health”). The 2008 Ouagadougou Declaration on PHC and Health Systems in Africa reaffirmed the Region’s commitment to PHC (41).

A key element in current PHC practice is to use *integrated approaches* to service provision. In contrast with a vertical approach (i.e. devoted to a single risk factor or intervention), an integrated

approach comprises a set of core interventions that can be considered part of a health care “package”.

The WHO Package of Essential Noncommunicable Disease Interventions for Primary Health Care in Low-Resource Settings (WHO-PEN) presents such an integrated approach. In essence, WHO-PEN provides prioritized sets of cost-effective interventions that aim to provide an acceptable quality of care while making limited resources go further. Its guidelines and protocols are designed to empower primary care physicians and their associated health

workers to contribute to NCD care. Currently, WHO-PEN has delivered guidelines on integrating and scaling up care of heart disease, stroke, cardiovascular risk, diabetes, cancer, asthma and chronic obstructive pulmonary disease in low-resource settings. This manual can be seen as a complement to the WHO-PEN approach in the area of oral health.

In a similar approach focused specifically on oral diseases and conditions, the Basic Package of Oral Care (BPOC) aims to provide prevention and basic oral health care in PHC settings (42).

A more detailed discussion of the BPOC and its implementation in PHC facilities is provided in Chapter 3.

## The role of health workers who are not oral health professionals

Since trained oral health professionals are relatively scarce in the Region, it is unrealistic to rely on workforce models that require oral health professionals to deliver treatment at all levels, including in PHC facilities. New models must be explored in order to ensure that people suffering from pain and illness caused by oral diseases and conditions are not left without treatment.

The idea of “task-shifting” basic primary oral care to non-oral health personnel is not without controversy. However, in most places, the number of dentists and dental assistants or therapists is relatively low compared to other health care workers. Therefore, additional oral health training for doctors, nurses, clinical officers and other health care workers can help to meet some of the unmet demand for dental services. Moreover, there is evidence that many health workers would welcome opportunities to receive training in oral health in order to better serve their patients (see box “Paediatricians are eager to learn more about oral health”).



The WHO-PEN tool is available at [http://apps.who.int/iris/bitstream/10665/133525/1/9789241506557\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/133525/1/9789241506557_eng.pdf?ua=1)

Community health workers also have great potential to support oral health activities. Most countries in the Region have substantial numbers of such workers, who are also known by names such as health auxiliaries, health agents, health promoters, health volunteers, and village health workers (44). These individuals have generally been trained to (a) deliver a wide range of services from childhood immunization promotion to family planning, (b) treat minor health conditions and injuries, and (c) identify and refer more serious cases to the next level of care. With proper training from medical or oral health professionals, such workers have the educational and clinical capacity required to promote oral health and provide certain components of the BPOC (45) (see also Chapter 6).

A key activity to improve oral health is to include aspects of oral health in the curriculum of basic health training programmes and within in-service training of existing personnel.

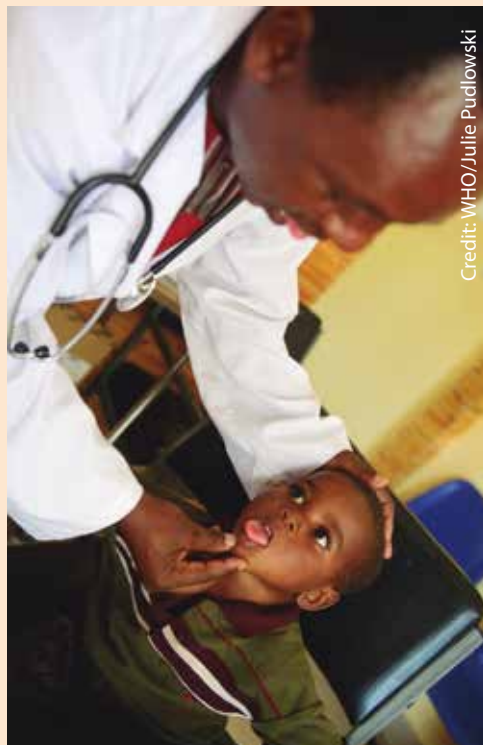
## Paediatricians are eager to learn more about oral health

Specialists from various areas of the medical community recognize the importance of oral health, and would be eager to learn more about it if training could be provided.

In January 2011, paediatricians attending the annual national conference of the Paediatric Association of Nigeria, in Abuja, took part in a survey. The survey assessed their knowledge of early childhood caries, the oral health services they provided, and their attitude to preventive dental services.

Over 90% said they had received various dental complaints from their patients, but only 26% performed routine oral screening. When asked about their level of knowledge, only 29% felt adequately informed about oral health and 87% were willing to receive training on oral health care. Most agreed that dental assessments and counselling should be included in routine paediatric clinical examinations, and 94% said they believed oral screening should be routinely carried out.

The researchers concluded that paediatricians could help to increase access to oral health care for children, and that oral health education should be made available to paediatricians (43).



Credit: WHO/Julie Pudlowski

A paediatrician examining a child

## Essential elements of oral health policy

Managing one disease at a time is a cost intensive endeavour: only an integrated, inter-professional and intersectoral approach can make significant progress on a population level. By adding oral health to the agenda of NCD prevention and control and PHC delivery, cost-effective policies can be devised to improve the health of poor and other disadvantaged population groups, taking into account individual countries' situations and priorities.

The publication *Writing oral health policy* (46) provides detailed global advice on how to formulate oral health policy.

Table 1 is a checklist for policy advocacy and analysis that is specifically adapted to the context of the African Region. The checklist covers five main themes: (1) including oral health within strategic health programmes; (2) integrating essential oral health care into PHC; (3) ensuring school-based oral health programming; (4) supporting community-based approaches to oral health; and (5) improving oral health data collection for planning, monitoring and evaluation.



Table 1. Checklist for oral health policy advocacy

1. Integrate oral health into strategic health programmes	
<b>Policy overview:</b> Given its prevalence and systemic association with other diseases, oral health should be part of the national multisectoral action plan for the prevention and control of NCDs.	
<b>Action points to advocate</b>	<ul style="list-style-type: none"> <li>- Clarify national and regional or district oral health responsibilities.</li> <li>- Set up or reinforce departments of oral health led by a chief dental officer or equivalent. These should be part of NCD departments within the ministry of health so that oral health has a “champion” within government.</li> <li>- Integrate oral health within broader strategies targeting NCDs.</li> <li>- Embed oral health concerns within major health programmes. Examples include nutrition, HIV/AIDS, and maternal and child health.</li> </ul>
2. Integrate essential oral health care into primary health care	
<b>Policy overview:</b> The Basic Package of Oral Care (BPOC) should be available in all PHC districts. While additional human and financial resources will be needed to deliver certain components of the BPOC properly, the benefits will be significant, largely quantifiable, and meet the needs of the population.	
<b>Action points to advocate</b>	<ul style="list-style-type: none"> <li>- Plan and budget to provide some or all three BPOC components (oral urgent treatment; affordable fluoride toothpaste; atraumatic restorative treatment) in PHC facilities and districts.</li> <li>- Carry out pilot projects in a small number of facilities and districts as a cost-effective way to explore BPOC delivery before scaling up to cover larger numbers of facilities and districts at national level.</li> <li>- Provide both initial training and continuing education on the BPOC for key personnel, including oral and non-oral health professional staff and community health workers.</li> <li>- Engage other relevant ministries to make fluoride toothpaste more affordable and accessible by making it tax-free, or providing it as part of a government oral health promotion campaign. Where classification can help to reduce taxes, fluoride toothpaste should be redefined as an essential medicine rather than a cosmetic product.</li> <li>- Fluoride content of toothpastes should be routinely monitored by an independent laboratory and only those products which meet certain standards concerning fluoride bioavailability should be licensed for sale and attract tax-free status.</li> </ul>

(Table 1, continued)

### 3. Ensure provision of school-based oral health programming

**Policy overview:** Educational institutions provide one of the most effective settings for oral health promotion and oral disease prevention. Oral health should therefore be integrated as an essential part of the wider school health agenda at national level, particularly within primary schools.

- |                                  |   |
|----------------------------------|---|
| <b>Action points to advocate</b> | <ul style="list-style-type: none"> <li>- Formalize cooperation between the ministry of health and the ministry of education, key government structures at various levels, and partners (including donors and NGOs) through written agreements.</li> <li>- Integrate oral health promotion and oral disease prevention into school curricula as part of general health promotion.</li> <li>- Gather evidence and “lessons learnt” from successful programmes in other countries, and adapt them to national conditions.</li> </ul> |
|----------------------------------|---|

### 4. Support community-based approaches to oral health

**Policy overview:** Community-based oral health activities are important in their own right, but can also reinforce both PHC and school-based interventions. Since health is primarily dependant on individual and community behaviour and is not just a matter for health authorities, as many people as possible should be encouraged to adopt measures for the prevention of oral diseases.

- |                                  |  |
|----------------------------------|--|
| <b>Action points to advocate</b> | <ul style="list-style-type: none"> <li>- Reinforce community-based oral health promotion programmes, in particular by supporting information, education and communication (IEC) activities for behaviour change.</li> <li>- Promote intersectoral collaboration on issues such as education, water and sanitation, etc., and sharing of best practices for the prevention and early detection of oral diseases.</li> </ul> |
|----------------------------------|--|

### 5. Improve oral health data collection for planning, monitoring and evaluation

**Policy overview:** Consistent surveillance makes a considerable contribution to monitoring progress on oral health at national and community levels, and building an evidence base for appropriate and effective policies and programmes as needed (see also Chapter 7).

- |                                  |  |
|----------------------------------|--|
| <b>Action points to advocate</b> | <ul style="list-style-type: none"> <li>- Develop or strengthen existing surveillance systems by integrating essential oral health indicators into the health information system and monitoring and evaluation frameworks.</li> <li>- Promote the incorporation of noma surveillance into the integrated disease surveillance and response system in countries at risk.</li> <li>- Adopt and implement the oral health module in the WHO STEPwise surveys and the Hygiene Module including oral health in the Global School-based Student Health Survey (see Annexes 5 and 6).</li> </ul> |
|----------------------------------|--|



## The Basic Package of Oral Care (BPOC)



This chapter presents:

- The concept of essential health “packages”;
- The components of the BPOC recommended by the WHO Regional Office for Africa;
- The essential resources required to provide the BPOC at PHC level.

The primary target audience of the BPOC is health system decision-makers at national and local levels, as well as managers and senior clinical staff of PHC facilities and districts.





Credit: WHO/Julie Pudlowski

Integrating oral health within PHC facilities and districts is fundamental to the activities proposed in this manual. Integration means organizing services so that they are focused on the overall health needs and expectations of people and communities. It also implies the need to prioritize and re-evaluate on a regular basis what is incorporated into any PHC essential health package.

Ultimately, the goal is to deliver safe, high-quality health services through which “people receive a continuum of health promotion, disease prevention, diagnosis, treatment, disease-management, rehabilitation and palliative care services, through the different levels and sites of care within the health system, and according to their needs throughout the life-course” (47).

## **Essential health packages: using limited resources effectively**

An essential health package often consists of a limited list of public health and clinical interventions to be provided at primary and/or secondary level care. “Packaging” a number of health interventions together permits effective interventions to be focused on targeted priority health problems. Thus, essential health packages aim to concentrate scarce resources on effective interventions that provide the best “value for money”.

For example, the WHO-PEN Package, which is discussed in Chapter 2, focuses on the major NCDs and related risk factors: cardiovascular diseases, cancers, chronic respiratory diseases and diabetes. Essential health packages also have the potential to achieve broader goals such as improved equity, community empowerment and accountability.

Developing a successful essential health package requires detailed discussions of purpose, design and decisions about financing and delivery arrangements. It will need to be adapted over time as lessons are learnt and conditions change. Moreover, political “buy-in” is required: WHO advises that, “without adequate national ownership, an essential health package is unlikely to be implemented – no matter how popular it is with donors” (48).

## Three key components

The BPOC is an essential health package designed specifically for oral health. It was developed by the former WHO Collaborating Centre for Oral Health Care Planning and Future Scenarios at the Radboud University in Nijmegen, Netherlands (42).

Designed for low-resource settings, the BPOC provides a framework for incorporating prevention and basic oral health care activities into the PHC package of services. It comprises three activities:

- the promotion of affordable fluoride toothpaste (AFT) to prevent dental decay;
- oral urgent treatment (OUT) aimed at relieving oral pain and providing emergency treatment;
- atraumatic restorative treatment (ART) to treat existing dental decay and prevent further decay.

The package also includes oral health promotion as a means of supporting BPOC components and improving people’s control over their oral health.

### Affordable fluoride toothpaste (AFT)

The use of fluoride toothpaste is the single most important and efficient means of preventing dental caries. It can be made accessible to most of the population, including those with low incomes or in remote areas.

Yet a number of barriers exist. For many families, good quality fluoride toothpastes are expensive to purchase at market rates, when



Credit: WHO/Julie Pudlowski

There are often no controls of the quality or fluoride content of toothpastes



Credit: Depositphotos.com

A good quality fluoride toothpaste

available locally. In many countries, toothpastes are taxed as cosmetic products, adding significantly to their price.

Another serious problem is the prevalence of counterfeit toothpastes with no or insufficient fluoride content.

For AFT-related activities to be effective, certain conditions must be met:

- the toothpaste must be easily available and affordable;
- it must be properly packaged, displaying fluoride concentration, other ingredients, expiry date and directions for use;
- the fluoride content of toothpaste sold in shops must be routinely monitored by an independent laboratory to ensure that the toothpaste is effective for dental decay prevention.



In order to promote these conditions, governments should be encouraged to make AFT tax-free, or provide AFT as part of a government oral health promotion campaign.

AFT activities at PHC level should focus on promoting twice-daily tooth brushing with fluoride toothpaste. This can be integrated into other PHC health promotion activities, in collaboration with school and community health authorities (see Chapters 5 and 6).

### Oral urgent treatment (OUT)

OUT is an on-demand service providing basic emergency oral care. Since it is designed to be tailored to the needs and demands of the local population, the detailed content will differ from country to country and possibly from region to region within the same country.

The three fundamental elements of OUT are:

1. pain relief;
2. first aid for oral infections and trauma to the mouth and face;
3. referral of complicated cases to the nearest hospital or oral health professional.

Specific OUT interventions are presented in greater detail in Chapter 4.

Oral urgent treatment



### Atraumatic restorative treatment (ART)

Atraumatic restorative treatment includes two activities. The first is a procedure to treat decayed tooth cavities by removing the decay using hand instruments. This is followed by filling the cavity and any adjacent pits and fissures on biting surfaces of the teeth with an adhesive material containing fluoride, usually glass ionomer. This is known as an ART restoration (42).

ART sealants might be indicated when there are pits and fissures at risk of caries or there is early non-cavitated decay (when decay is reversible).

Atraumatic restorative treatment



The same adhesive filling material as for ART restorations can be used to seal pits and fissures to prevent further decay.

The provision of ART is not limited to dental clinics since it does not require a dental chair, dental drill, piped water or electricity. Moreover, pain is rare during ART treatment, virtually eliminating the need for an anaesthetic.

Although ART is ideally delivered by an oral health professional or auxiliary, experience shows that properly trained local health personnel are also able to deliver ART effectively.

ART is also presented in greater detail in Chapter 4.

## Conditions for sustainable implementation of the BPOC

Though relatively simple technically, implementing and sustaining the BPOC at primary health level requires a number of conditions to be met. Although some of these are described as pre-conditions, in practical terms they may need to be achieved in steps, or adapted while activities are being implemented. The conditions include:

**Understanding local needs, demands and preferences.** Services are most efficient and

effective if they are based on a thorough understanding of local population profiles, socioeconomic factors, geographical characteristics and institutional contexts. This understanding can be achieved in many ways, including formal surveys or research projects if a skilled partner (e.g. university medical or public health faculty, research centre, or specialized NGO) can be found to help carry out such a project or survey.

**Human resources.** As discussed above in Chapter 2, the use of health workers who are not oral health professionals will often be the only way to deliver certain components of the BPOC. Unlike for AFT, which is implemented at a population or group level, OUT and ART need to be provided on a one-to-one basis, which has repercussions in terms of delivery personnel, support, equipment and consumables. Since health personnel structures and regulations differ between countries, the requirements for delivery personnel are defined in terms of essential competencies. The appropriate level of health care personnel for a country can then be determined and training undertaken as required.

PHC facilities and districts will sometimes have to meet their human resource needs for the provision of the BPOC by recruiting new staff or training existing personnel in the range of BPOC activities. The competencies required for health workers who are not oral health professionals to provide OUT and ART should be defined locally, but will probably include the elements contained in Table 2.

**Table 2. Suggested minimum competencies required for OUT and ART**

Oral urgent treatment (OUT)	
Competencies	<p>Know basic oral anatomy and pathology pertinent to the care level to be delivered</p> <p>Correctly diagnose oral conditions including caries, trauma and soft tissue lesions</p> <p>Perform correct hygiene, infection control and medical waste disposal methods</p> <p>Correctly manage oral pain, infection and trauma according to OUT protocols*</p> <p>Maintain dental equipment and materials</p> <p>Keep correct patient records</p> <p>Recognize one's limitations and be prepared to refer patients where possible</p>

(Table 2, continued)

Oral urgent treatment (OUT)	
PHC facility conditions necessary to support primary health care worker competencies	<p>Regular assessment and supervision to ensure that all competencies are being maintained and practised</p> <p>Training to maintain competencies and skills of personnel</p> <p>Regular and consistent supply of equipment and materials</p>
Atraumatic restorative treatment (ART)	
Competencies	<p>Same competencies as for OUT as well as those below</p> <p>Correctly select appropriate cavities for ART restorations, follow the treatment technique, and use dental restorative material*</p> <p>Repair defective or failed ART restorations when possible</p> <p>Maintain dental equipment required to provide ART</p>
PHC facility conditions	Same as for OUT

\* Note: It is recommended that practical training be undertaken in a delivery environment similar to that in which the personnel will ultimately work.

**Ongoing training and quality management.** Maintaining quality of services is essential to the long-term success of the BPOC. A training plan with attendance at appropriate courses or periodic visits from qualified medical or oral health professionals can ensure that staff maintain existing skills and have the opportunity to learn new ones. In-service training plans and quality management procedures should already be part of each PHC facility's standard operating procedures, but if they are not, the introduction of certain components of the BPOC can be a good place to start.

**Financial resources.** Implementation of the BPOC requires financial resources for both start-up and running costs. Budgeting should therefore include consideration of resources to cover:

- training costs and incentives;
- essential equipment, instruments and consumables;
- essential drugs;
- monitoring and record-keeping.

**Essential medicines.** The list of essential medicines may vary from place to place according to the local clinical profile, but will include local

anaesthetics, analgesics, antibiotics and disinfectants. Annex 1 provides a model list of essential medicines for the BPOC in PHC facilities. A list of essential medicines for management of noma is provided in Annex 2.

**Essential equipment.** A specialized dental chair is not required to provide OUT or ART. For OUT, the patient may be seated upright on an ordinary chair while for ART it is recommended that the patient be placed horizontal on a table. In both cases, the patient should be positioned for ease of examination with the assistance of good lighting. However, certain equipment, instruments and consumables are considered essential. These are listed in Annex 3.

## Referral procedures

It is essential that PHC workers are able to recognize their competency limits and that complicated cases are referred. This is a key part of the BPOC. It requires formal procedures based on written protocols and agreements with other health care facilities and, where available, with qualified oral health professionals and dental clinics or medical facilities.

## Record-keeping and data collection

As with training and quality management, updating and keeping medical records and their ongoing analysis should be part of PHC facilities' standard operating procedures. As a starting point, the implementation of the BPOC should include integration of oral health indicators into a facility's general health data collection system. If maintained consistently over time, the collected data may feed into formal reviews or evaluation, or contribute to the type of community-based oral health surveillance described in Chapter 6.





## Essential intervention protocols for primary health care facilities

This chapter provides protocols for 10 essential oral health interventions that PHC facilities should be able to carry out on a routine basis as part of the BPOC. The protocols cover:

- Procedures to be followed when examining adults and children;
- Five symptom-based interventions for managing urgent pain, swellings, ulcers and altered pigmentation in the mouth and surrounding tissues;
- Identification and management of noma;
- Atraumatic restorative treatment procedures;
- Basic oral health education;
- Infection control procedures.

The main target audience of this chapter is PHC workers and managers.





As described in the previous chapter, the emphasis of the BPOC components is on simple and effective interventions that can be carried out by trained staff at PHC facilities on an outpatient basis. Promotion of affordable fluoride toothpaste is a wider public health measure; it should be promoted not only by PHC facilities but also by educational, community and government health authorities (see Chapters 5 and 6).

In the framework of the BPOC, the WHO Regional Office for Africa recommends that PHC facilities in the Region offer the following 10 interventions:

1. Oral health examination
2. Management of pain affecting oral hard tissues (teeth)
3. Management of pain arising from oral soft tissues
4. Management of oral swelling
5. Management of oral and peri-oral ulcers
6. Management of red, white or grey oral pigmentation (discoloration)
7. Management of noma
8. Atraumatic restorative treatment (ART)
9. Basic oral health education
10. Infection control

This chapter provides protocols for dealing with the most common oro-facial symptoms that are seen in PHC facilities including the procedures that should be followed when examining patients. The proposed essential interventions present a minimum for improving oral care at the primary care level and should be applicable in all countries. However, the treatment protocols might nevertheless need to be adapted to the local situation, depending on the availability of human resources, technology and medication. These interventions are consistent with the WHO-PEN approach and with the *IMAI district clinician manual* (18).

**Note:** These protocols are only to be used by PHC and other health staff who have had hands-on training by a properly qualified physician, dentist, or senior nurse.

## PROTOCOL 1: Oral health examination

All patients complaining of oral health problems – or who, a health worker believes, might benefit from an oral health consultation – should be examined following a basic list of observations and questions. The patient's medical records or health document should be read as well.

In all cases, the patient should be seated or lying down under a good light, and the health worker should use a sterilized dental mirror or disposable tongue depressor, and disposable gloves. The entire mouth should be examined.



Credit: Benoit Varenne

Oral health examination

### Oral health examination checklist

#### Signs (look) and symptoms (feel)

- Facial (external) swelling around the mouth or jaw
- Blisters on the lips
- Damage to teeth
- Damage to gums, including dead or dying tissue, redness, swelling, bleeding easily
- Pus, redness, warmth, pain in mouth
- Red, swollen tonsils with pus
- Ulcers in the mouth including tongue and under tongue
- White patches inside the mouth
- Signs of poor oral hygiene

#### Questions to ask

- Difficulty with speaking, eating or drinking?
- How long have the problems been present?
- Is there pain or discomfort when chewing or taking hot or cold foods and fluids?
- Has the patient had fever?
- What are the patient's oral hygiene practices?
- What are the patient's dietary habits (sugar consumption)?
- Does the patient take long-term medicine to treat systematic diseases or birth control pills? (risk of gingivitis and dry mouth)
- Does the patient consume alcohol, use tobacco, betel nut or khat? (risk of periodontitis and oral cancer)

Adapted from *Integrated oral disease prevention and management module III* (49).

## Protocol 1, continued

## Examining children

Whenever children aged 18 months to 8 years are brought for a health check-up, an oral examination should be routinely carried out (however, an adult should always be present when a child is examined). Health care workers should be particularly alert to the presence of any of the stages of noma, particularly if the following primary risk factors are revealed in the child's health records or social history:

- **Malnutrition.** Health workers should look for signs of malnutrition in all children, including history of low growth, swollen abdomen or legs, muscular wasting, persistent low energy, etc. Similarly, if children are brought to the PHC facility because malnutrition has been identified, they should have a routine oral examination and receive treatment for oral and dental diseases that may coexist with malnutrition.
- **Measles and malaria.** If children are brought for a consultation because of measles or malaria they should have a routine oral examination. If either disease is diagnosed, the child should also receive treatment for oral and dental diseases in addition to treatment for measles or malaria.
- **Poor hygiene and sanitation practices.** Health workers should document the methods used (toothbrush, chewing sticks, cotton swabs, use of fluoride toothpaste) and the regularity with which the patient cleans his/her teeth. Oral examination should include checking for plaque or calculus (tartar) around the teeth. In case of a child presenting a risk of noma, health workers should ask whether domestic animals such as sheep, goats or cattle are kept near to where people sleep or live.

In addition, health workers should be alert to the following:

- **Congenital conditions.** When examining a child with cleft lip or cleft palate, the defect on the lip or the roof of the mouth may cause functional problems. The child may experience difficulties in breastfeeding and may occasionally inhale liquids instead of swallowing them normally. The resultant respiratory infections and nutritional deficits can result in failure to thrive. Sometimes, due to stigmatization of disabilities, parents may avoid bringing a child with these conditions for oral health examinations. If health workers hear of such a child, they should encourage the parents to bring the child in to discuss oral health in general, the reason for this disability and available services for corrective treatment.

· **Oro-facial trauma.** The main causes of oro-facial trauma are falls and collisions, automobile accidents, sports and related injuries, and physical abuse. An estimated 50% of abuse-related injuries are to the face and mouth (50). Children who come repeatedly to PHC facilities with facial injuries may be victims of child abuse. All health care facilities should have policies in place to deal with cases where a health worker suspects a child has been intentionally harmed and is in need of protection. Such policies typically include procedures for contacting the legal authority that is responsible for child welfare, the police or local social services.

## PROTOCOL 2: Management of pain affecting oral hard tissues (teeth)

### Symptom-based management protocol

**Remarks:** Pain in the mouth often arises from teeth or jaw rather than from surrounding soft tissue. The most common causes are caries and trauma, but infections may also be involved.



ASK

Is the pain coming from the teeth or jaws?  
Is there pain or discomfort when chewing or taking hot or cold foods and fluids?



TEST / ASSESS

1. Duration, site and severity
2. Number of teeth involved
3. Tenderness to percussion (TTP)
4. Any teeth encouraging food impaction and cavitation



DIAGNOSE

#### A Dental decay

The following make a diagnosis of dental decay more likely:

- Tooth discoloration
- Hole in the tooth / broken tooth
- Pain caused by heat / cold / sugar
- Spontaneous pain
- Associated infection:
  - Abscess / fistula
  - Fever

#### B Traumatic dental injury

The following make a diagnosis of traumatic dental injury more likely:

- Fracture affecting only enamel
- Fracture affecting dentine / pulp
- Subluxation – slight tooth mobility
- Avulsion – tooth displaced from socket
- Intrusion – tooth pushed into socket
- Extrusion – tooth pushed out of socket
- Broken tooth

#### C Jaw and joint pain

The following make a diagnosis of jaw and joint pain more likely:

- Infections within bone
- Intra-bony pathologies
- Temporomandibular joint pain
- Muscular pain
- Pain from ear infections – otitis media

## Protocol 2, continued



## TREAT

In case of infection: Antibiotics and analgesics, rinse off any contamination with clean water, incise and drain abscess if any.

A

**Large cavities:** Simple extractions

**Small cavities:** Atraumatic restorative technique (see Protocol 8)

**Preventive treatment:** Sealing pits and fissures (see Protocol 8)

B

**Fractured tooth:** Temporary filling

**Luxation (loose tooth):** Gently reposition tooth

**Intrusion (tooth pushed in):** No intervention

**Avulsion (tooth removed):** Rinse tooth and reinsert in socket without touching the root within one hour

C

**Manage the pain:** Analgesics



## REFER

A

Complex extractions and restorative care

B

Refer all cases of trauma for further management

C

Referral for further investigation and management



## ADVISE

- Oral hygiene instructions
- Tooth brushing twice daily with fluoride toothpaste
- Avoid applying medications directly onto the affected area

A

Reduce sugar intake to prevent decay

B

Soft diet (easy to chew and swallow)

C

Soft diet (easy to chew and swallow)



## PROTOCOL 3: Management of pain arising from oral soft tissues

### Symptom-based management protocol

**Remarks:** Pain in the mouth may arise from the mucosa, gum, periodontium (supportive tissues surrounding the teeth), lips, tongue and pharynx rather than from the teeth only.



ASK

Is the pain coming from somewhere in your mouth other than your teeth?  
Has there been an accident or other event causing trauma?  
Is the pain associated with any stimulus?  
Are there any associated systemic complaints, e.g. malaria?



TEST / ASSESS

1. Duration, site and severity; loss of function
2. Swellings, colour changes, bleeding, wounds (ulcers)
3. Involvement of adjacent tissues (teeth/bone)



DIAGNOSE

#### A Traumatic soft tissue injuries

The following make a diagnosis of traumatic soft tissue injuries more likely:

- Physical injuries: bruising, bleeding, cuts
- Thermal injuries: superficial burns, deep burns
- Chemical injuries: treatment burns, ingestion burns

#### B Periodontitis

The following make a diagnosis of periodontitis more likely:

- Frequent bleeding of gums
- Gingival recession
- Loss of alveolar bone
- Irritation / pain around teeth
- Plaque / tartar build-up
- Tooth looseness
- Associated infection: abscess / fistula

#### C Other soft tissue pathologies

The following make a diagnosis of other soft tissue pathologies more likely:

- Typical (organic) pain: Diseases within the tissues in and around the mouth (not easy to understand)
- Atypical pain: Severe, episodic pains with no obvious organic pathology

## Protocol 3, continued

**TREAT**

In case of infection: Antibiotics and analgesics, rinse off any contamination with clean water, incise and drain abscess if any.

**A**

Wound dressing  
Tetanus toxoid where necessary

**B**

Only teeth which are very loose should be removed

**C**

Manage the pain: Analgesics

**REFER****A**

Complex extractions and restorative care

**B**

Complex extractions and periodontal care

**C**

Further investigation and management

**ADVISE**

- Oral hygiene instructions
- Avoid applying medications directly onto the affected area
- Bland diet: avoid or gradually reduce the use of spicy food (e.g. chilli) and acidic foods (e.g. unripe fruits like pineapples, oranges)

**A**

Adequate safety precautions

**B**

Smoking cessation

**C**

Emphasize need for further consultation

## PROTOCOL 4: Management of oral swelling

### Symptom-based management protocol

**Remarks:** Although dental infections are the most frequent cause of oral and peri-oral swellings, a wide range of lesions may also be involved. Staff should be alert to cases of persistent new growths with a history of rapid increase in size.



ASK

How did this come about?  
How rapidly has the swelling been growing?  
Where is it located?  
Is it linked with any other signs and symptoms?



TEST / ASSESS

1. Duration, primary site, size, pigmentation, pain or tenderness
2. Any associated fever, discharge (pus/non-purulent), warmth
3. Any associated loss of function or ability of the affected site
4. Tobacco, alcohol, betel nut or khat consumption
5. Salivary gland openings (dry mouth or inflammation could indicate gland disease)
6. Dentures or any other type of artificial teeth

## Protocol 4, continued

**DIAGNOSE****A Acute swellings (soft tissue)**

The following make a diagnosis of acute swellings more likely:

- Oral infections: Secondary to tooth decay, periodontitis, trauma and other oral diseases
  - Widespread swelling (cellulitis)
  - Localized purulent swelling (abscess)
  - Dry mouth if salivary glands affected
  - Swollen lymph nodes and fever
- Malignant neoplasms: Persistent swelling > 2 weeks; aggressive growth pattern; invasion of adjacent structures; loss of function

**B Chronic swellings (soft tissue)**

The following make a diagnosis of chronic swellings more likely:

- Cysts: Fluid filled swelling which may rupture and reappear
- Benign neoplasms: Persistent swelling > 5 days with non-invasive growth
- Reactive growths: Frequently on gums, associated with poor oral hygiene and the use of some medications
- Congenital growths: Develop at birth or in early childhood

**C Jaw swellings**

The following make a diagnosis of jaw swellings more likely:

- Cysts: Fluid filled swellings
- Tumours: Benign or malignant
- Jaw fractures: History of trauma, bone displacement, soft tissue bruising, inability to bite properly, limited mouth opening (trismus) or inability to close the mouth
- Infection: Bone swelling and sinuses discharging pus

**TREAT**

In case of infection: Antibiotics and analgesics, rinse off any contamination with clean water, incise and drain abscess if any  
If not – immediate referral to specialist

**REFER**

URGENT referral to oral health professional or further investigation and management

**ADVISE**

- Oral hygiene instructions
- Avoid applying medications directly onto the affected area
- Cessation advice for tobacco, alcohol, betel nut or *khat*

## PROTOCOL 5: Management of oral and peri-oral ulcers

### Symptom-based management protocol

**Remarks:** Ulcers may be limited to the mouth or they may result from systemic diseases such as herpes or HIV/AIDS. A solitary persistent ulcer, which shows no signs of remission after 10–14 days, should be closely followed up and regularly monitored. Whereas traumatic ulcers tend to disappear within two weeks, malignant ulcers do not disappear and keep developing.



ASK

How long has the break in the skin been present? Is there just one or several?  
Have you had it before? Do you have fever? Do you have any lumps in the neck?  
Do you have any other symptoms or signs?



TEST / ASSESS

1. Primary site and severity; loss of function
2. Nutritional status for ALL children (height, weight, BMI measurements)
3. Tobacco, alcohol, betel nut and khat consumption in adults



DIAGNOSE

#### A Recurrent ulcerations

- Aphthous ulcers:
  - Single superficial ulcer < 5 mm (minor)
  - Deep ulcer > 5 mm (major)
  - Multiple ulcers < 5 mm (herpetiform)
- Systemic diseases:
  - Autoimmune conditions
  - Vitamin B deficiencies
  - Neutropenia

#### B Non-recurrent ulcerations – children

Stages of noma / cancrum oris:

1. Acute necrotizing gingivitis
2. Oedema stage / facial swelling
3. Gangrenous stage / red/black gangrene
4. Scarring stage
5. Sequelae stage

NB1: Accompanied by severe halitosis due to anaerobic infection  
NB2: Also observed in some adults with HIV/AIDS

#### C Non-recurrent ulcerations – adults

- Acute ulcers:
  - Acute trauma
  - Malignancy (characteristic rolled margin, necrotic base, fixed satellite lymph nodes)
- Chronic ulcers:
  - Chronic trauma
  - Infectious ulcers (flat margins, enlarged lymph nodes)



## Protocol 5, continued

**TREAT****A****Manage the pain: Analgesics****B**

Start on oral rehydration solution where necessary  
 Aggressive antibiotic therapy (see Annex 1)  
 wound dressing of necrotic area  
 Long-term nutritional support

**C****Manage the pain: Analgesics****REFER****A**

Long-term management

**B**

URGENT referral for further management

**C**

URGENT referral for further investigation and management

**ADVISE**

- Oral hygiene instructions
- Avoid applying medications directly onto the affected area
- Bland diet: avoid spicy food (e.g. chilli) and acidic foods (e.g. pineapple)
- Cessation advice for tobacco, alcohol or *khat*

## PROTOCOL 6: Management of red, white or grey oral pigmentation (discoloration)

### Symptom-based management protocol

**Remarks:** Discoloured patches may be caused by a number of pathologies. Some, such as oral candidiasis, may indicate HIV infection. Pathological pigmentation is characteristically asymmetrical and accompanied by other signs such as swelling, haemorrhage and lymph node enlargement.



ASK

Have any symptoms or signs appeared since you first noticed the discoloration?  
When did you first notice it?



TEST / ASSESS

1. Duration, site and severity
2. Tobacco consumption
3. Dentures or artificial teeth where present

## Protocol 6, continued



## DIAGNOSE

**A White pigmentation**

The following make a diagnosis of white pigmentation more likely:

- Oral candidiasis
  - Oral thrush / white patches that can be scraped off leaving a raw surface
- Immune suppression
- History of prolonged use of antibiotics
- Leukoplakia
  - White, tenacious patch that cannot be scraped off
  - History of tobacco use
- Chemical burn • Mucosal damage due to direct application of medication next to an aching tooth

**B Red pigmentation**

The following make a diagnosis of red pigmentation more likely:

- Vascular conditions: Bleeding, tumours
- Oral candidiasis
  - Redness under a denture
- Immune suppression
- Erythroplakia: Red, tenacious patch in a patient with history of tobacco use
- Mucositis: Allergy / hypersensitivity reaction

**C Black / brown pigmentation**

The following make a diagnosis of black / brown pigmentation more likely:

- Extrinsic staining
  - Foreign material implanted in the soft tissues, e.g. amalgam tattoos, pencil graphite
- Intrinsic staining
  - Excessive activity of melanocytes: due to tobacco, HIV OR drug reactions
  - Malignant melanoma



## TREAT

**A**

Antifungals for candidiasis  
Analgesics for chemical burns

**B**

Antifungals for candidiasis  
Analgesics for pain

**C**

Gently remove any foreign objects



## REFER

**A**

All leukoplakia/persistent cases

**B**

All erythroplakia/persistent cases

**C**

All cases with rapidly growing intrinsic staining



## ADVISE

- Oral hygiene instructions
- Avoid applying medications directly onto the affected area
- Tobacco cessation advice where necessary

## PROTOCOL 7: Management of noma

**Remarks:** Patients often arrive with symptoms such as fever, dehydration, undernutrition, hyper-salivation and diarrhoea. Rehydration and correction of fluid/electrolyte disorders are urgent since parasitic dysenteries coexist frequently with noma. In moderate cases, rehydration can be done orally but in serious cases, intravenous therapy is indispensable. In stages 3–5 (see below) immediate referral is advised.



ASK

How long have symptoms been present?  
Fever? Harsh living conditions?  
Previous or ongoing infectious or parasitic disease?



TEST / ASSESS

Assess the nutritional status of the child as well as any complications

## Protocol 7, continued



## DIAGNOSE

**A Pre-noma stage**

The following make a diagnosis of pre-noma stage more likely:

**Simple gingivitis**

Bleeding gum when touched or during brushing, red or purplish red gum, swelling gum

**B Noma stages 1 to 2**

The following make a diagnosis of noma stages 1 to 2 more likely:

**Stage 1. Acute necrotizing gingivitis**

Fetid breath or halitosis, painful ulceration of the gums, spontaneous bleeding gum, ulceration involving one or more interdental papillae, excessive salivation

**Stage 2. Oedema stage**

Facial swelling or oedema, difficulty eating, fetid breath or halitosis, rapid extension of the gingival ulceration and the mucosal tissue, painful lip or cheek, high fever, excessive salivation, mouth soreness, anorexia, lymphadenopathy

**C Noma stages 3 to 5**

The following make a diagnosis of noma stages 3 to 5 more likely:

**Stage 3. Gangrenous stage**

Extensive destruction of intra oral soft and hard tissue, lesion with a well demarcated perimeter surrounding a blackened necrotic centre, separation of the slough leaving a hole in the face, bluish black discoloration at the corresponding external facial surface of the cheek or lips, difficulty eating, rapid perforation of the cheek, exposition of the teeth and denuded bones, progressive drying of the facial gangrene, anorexia, apathy

**Stage 4. Scarring stage**

Trismus may occur depending on the location of the lesions, sequestration of teeth and exposed bone, beginning of scar formation

**Stage 5. Sequelae stage**

Facial disfigurement, trismus may occur depending on the location of the lesions, teeth loss, feeding difficulties, speech problems, salivary leak, teeth displacement, dental anarchy, fusion of maxilla and mandible bones, nasal regurgitation

Protocol 7, continued



**TREAT**

**A**

Washing of mouth at home using warm salted water that has been boiled.  
Do not use antibiotics at this stage; instead ensure close follow-up.  
Nutritional rehabilitation including food supplements (vitamins, iron) and inexpensive high-protein diets like beans.  
Follow-up (take note of any rapid development of the disease)

**B**

Oral rehydration and protein-rich nutrition; Amoxicillin; Metronidazole; multivitamin complex; Paracetamol; management of related infections; disinfection of the mouth 3 times per day with warm saline mouthwash; close follow-up (take note of any rapid development of the disease)

**C**

As in stages 1 and 2



**REFER**

**A**

Refer for scaling after follow-up is completed

**B**

Refer for scaling

**C**

Immediate referral to a specialized service (NGO or district hospital)



**ADVISE**

**A**

Care can be delivered at home by parents or other caregivers

**B**

Outpatient care at a primary health centre

**C**

Hospitalization



## PROTOCOL 8: Atraumatic restorative treatment (ART)

**Remarks:** ART should only be carried out by trained PHC staff in facilities with the appropriate instruments and consumables. It consists of two activities: (i) placing a filling to restore decayed teeth with cavities; and (ii) sealing pits and fissures at risk of early non-cavitated decay (23).



**ASK**

Details of any previous dental treatment?  
Pain or sensitivity from the teeth?



**TEST / ASSESS**

The cavities to be filled:  
1. Duration, site and severity and number of teeth involved  
2. Tenderness to gentle percussion (TTP)  
3. Any teeth encouraging food impaction and cavitation



**DIAGNOSE**

### A Healthy teeth

Healthy teeth without risk of decay

### B Small tooth cavities

Small tooth cavities and any adjacent pits and fissures

### C Large tooth cavities

Deep decay or decay that is already causing pain (inflammation or infection of pulp)  
Large cavities involving two surfaces  
Swelling (abscess) or fistula (opening from abscess to the mouth) near decayed tooth  
Poor access for hand instruments

## Protocol 8, continued

**TREAT****A**

No treatment

**B**

- Place the patient in a horizontal (supine) position on a table or bench with a pillow under the neck;
- Isolate the tooth with cotton wool on either side of the tooth;
- Dry the tooth with cotton wool;
- Gently use a dental probe to establish the extent of the cavity;
- Obtain access to the cavity with a hatchet;
- Remove the soft decay from the wall and the base of the cavity with a spoon excavator (DO NOT EXPOSE THE PULP IN DEEP CAVITIES);
- Wash and dry the cavity and examine for decay removal completeness;
- Condition the cavity;
- Mix glass ionomer cement (GIC) according to manufacturer's instructions and fill cavity and adjacent pits and fissures (NB If GIC is not available use a temporary filling, and arrange to replace the temporary filling as soon as possible. Temporary fillings are weaker and do not protect teeth against further decay.);
- Apply a little Vaseline to a gloved fingertip to press filling material into cavity and pits and fissures;
- Remove excess filling material before it gets hard;
- Test the bite with articulating or carbon duplicating paper and adjust as necessary

**C**

See protocols for managing pain affecting the oral hard tissues and oral soft tissues

**ADVISE**

Provide advice on maintaining good oral hygiene

## PROTOCOL 9: Basic oral health education

Patient visits are excellent opportunities to provide education about good oral health. Any patient who has attended the clinic with an oral health problem, or parents of children who have an oral disease or condition, should receive the basic information described below.



ASK

Have you received oral health treatment today?  
Have you had oral health problems or worries in the past?  
Is there anything you would like to ask about your teeth or mouth?

### Adult patient had oral health treatment or consultation today

- Did patient receive advice about how to manage their condition?
- Did patient understand the advice, or have any questions about it?

### Child had oral health treatment or consultation

- Did child and parent receive advice about how to manage their condition?
- Did child and parent understand the advice or do they have any questions about it?

**Child or adult patient did not have treatment or consultation today, but was referred by another staff member for oral health education**



ASSESS

### If the answer is NO to either question:

- Review the “Advise” section of the appropriate protocol with the patient
- Ensure advice is understood and all questions have been answered
- Ensure that follow-up or referral instructions have been understood

- Assess level of oral health knowledge
- Assess oral health practice
- Assess level of education: can patient be given a pamphlet or written information to take home?

## Protocol 9, continued

**ADVISE****Oral hygiene**

Demonstrate or use printed material to show correct brushing technique, including all surfaces, and how to gently brush the tongue

Advise that:

- Teeth should be cleaned twice a day using a toothbrush or a chewing stick
- Brushing should be done with fluoride toothpaste
- Use dental floss or toothpick for cleaning between the teeth

**Parents** should be advised to:

- Use a clean cotton swab for cleaning babies' teeth

**Healthy diet**

- Avoid unhealthy snacks between meals, such as sugary foods (sweets, biscuits, cakes etc.) and sugary drinks (soda, artificial juices, energy drinks etc.), junk foods that may contain 'hidden sugars' (potato crisps, tomato sauce etc.)
- Encourage a balanced diet containing grains, vegetables, dairy products, fruits and proteins

**Mothers** should be encouraged to:

- breastfeed their babies for at least 6 months
- avoid bottle feeding of babies with artificial milk formulas and other sugary drinks

**Healthy habits**

- Encourage all non-smokers not to start smoking
- Advise smokers to stop smoking and support them in their efforts
- Advise those using other tobacco products (e.g. snuff) or substances such as khat to quit
- Harmful use of alcohol should be strongly discouraged

**Overall protection**

- Have teeth examined once a year, even if they are not causing problems
- Wear a helmet that covers the mouth when riding a motorcycle
- Use the seat-belt when driving or travelling in an automobile

**Parents** should be advised to:

- Make sure their children use a mouth guard to protect teeth when playing sports

## PROTOCOL 10: Infection control

Infection prevention and control measures aim to ensure the protection of those who might be vulnerable to acquiring an infection both in the general community and while receiving care for health problems, in a range of settings. The infection control procedures outlined in this protocol deal with the secured environment in which all oral health care should be provided at PHC level and beyond, and are necessary to minimize the risk of infection. Prevention and management of infection is the responsibility of all staff working in health care settings. Each element of the practice described should be viewed as part of a whole approach to reducing the risk to patients.

This protocol was developed by AOI, a French international NGO that has worked in the dental public health arena for disadvantaged populations for more than 30 years around the world (<http://www.aoi-fr.org/>).

To give care under optimal conditions, care-related infection control is required, and consists of:

1. Evaluation of the patient
2. Personal protection
3. Reprocessing of instruments
4. Treatment of the work environment
5. Management of waste
6. Management of exposure to blood
7. Establishment of protocols



## Protocol 10, continued

## 1. Evaluation of the patient

Many chronic diseases, such as cancer, diabetes, AIDS and some genetic diseases, are known to affect the immune defences of the body. Malnutrition can also lower the body's immune defences. Answers given by patients to initial questions carefully framed by the practitioner can help guide treatment options.

## 2. Personal protection

Every health worker must be vaccinated against hepatitis B, tuberculosis, etc. The personal protection of the health worker and the patient requires that hands be washed, and that a laboratory coat, gloves and a face mask be worn. It is through personal protection that health workers protect their patients.

### 2.1 Hand washing

Hand washing is one of the most important steps that can be taken to prevent infections. Between 60% and 80% of cross-contamination by catheter-related infections is through hand-borne transmission.

Hand washing should be done with liquid soap; hands must be rinsed with clean water and then dried (preferably with disposable wipes).

Jewellery such as rings, watches and bracelets must be taken off before hand washing. Nails must be short, clean and free of nail polish.

#### • How to wash your hands (<http://www.who.int/gpsc/5may/en/>)

- with one hand, turn on the tap (and keep it running);
- wet one hand and apply a small amount of liquid soap;
- wet the other hand;
- rub your hands for 40 to 60 seconds, paying particular attention to nails, both wrists, and the spaces between your fingers;
- rinse your hands well with water;
- dab your hands dry with a clean towel or with a sheet of disposable absorbent paper (one towel per patient);
- turn off the tap using the towel.

## Protocol 10, continued

**• When to wash your hands**

- on arrival at work and at departure;
- before and after administering care, and between patients;
- before putting on your gloves and after taking them off.

**Wearing gloves should not be an excuse for not washing hands.**

**See Annex 7 for a visual guide to hand washing.**

**2.2 Wearing of gloves**

Wearing gloves protects both the health worker and the patient. Gloves are worn whenever there is a risk of coming into contact with blood or a bodily fluid such as saliva.

Gloves must be changed between patients.

Gloves can be used only once, and cannot be washed for re-use. Washing gloves causes microscopic changes in the composition of the latex, making the gloves permeable and no longer able to serve as a barrier against pathogens.

**2.3 Other personal protection measures**

Wearing a clean laboratory coat is necessary because it helps to protect clothing from getting dirty.

It is recommended that a face mask be worn – even goggles, if spurts are a possibility.

## Protocol 10, continued

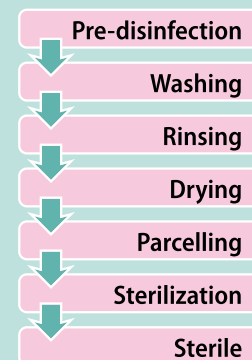
### 3. Reprocessing of instruments

All instruments that pierce the skin or go through a mucous membrane must be sterilized or otherwise subjected to high-level disinfection.

**Needles and scalpel blades must be sterile and are usable only once.**

After use, these supplies must be disposed of in bins specially set aside for sharp cutting objects.

Reprocessing of instruments is in several stages. The golden rule in the handling of instrumentation is respect for the principle of forward movement. Forward movement in instrument reprocessing goes from dirtier to cleaner. Backward movement is not possible; in other words, dirty instruments never cross clean ones.



#### 3.1 Pre-disinfection

This is when soiled instruments are first reprocessed. Cleaning solutions are good at this stage for breaking down soils (originating from organic or foreign matter). This key step must be taken as soon as care has been administered. It helps to minimize initial contamination, and makes subsequent cleaning easier. Soiled instruments must never be left to dry in the open air. For this reason, instruments must be soaked in a cleaning solution (made from liquid soap, for example) for a minimum of 15 minutes. Powder detergents must never be used.

NB. At this stage, bleach must not be used; bleach is a disinfectant and has no cleaning properties. If used at this stage, it binds proteins to the instruments and makes cleaning less effective later. What is more, bleach is a powerful corrosive agent. It must therefore not be used in instrument reprocessing.

**Instruments must be soaked in a cleaning solution:**

- nearest to their place of use;
- as soon as possible.

**In practice:**

- pour water into a container reserved for soaking instruments, add product and stir;
- completely soak the instruments in the container for a minimum of 15 minutes.

### 3.2 Washing and rinsing

Washing is a very important phase in which the soils still left on the instruments are eliminated and the initial pathogen load reduced.

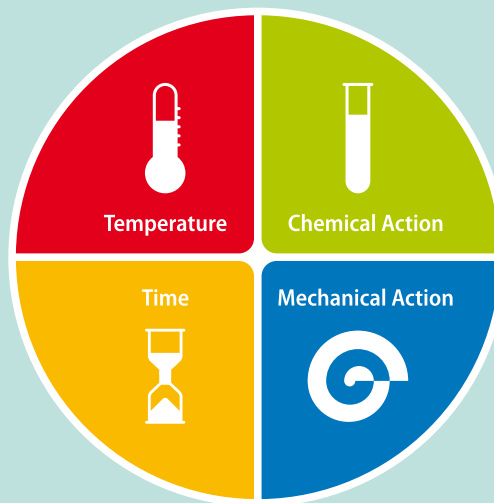
This operation rests on four factors represented in the Sinner Circle:

- the chemical action of the product used;
- mechanical action (rubbing and brushing);
- temperature;
- time.

Each instrument is raised and carefully washed using a non-metallic (plastic) brush; the person washing must wear thick household gloves to protect against soils, pricks, and injuries from sharp objects.

Rinsing is done by soaking the washed instruments in a second container full of water, and draining off the water.

The Sinner Circle



## Protocol 10, continued

### 3.3 Drying

This is done with a clean cloth (washed and dried) used only for drying instruments. Drying must be active, that is, involving mechanical action, so as to further remove any remaining soils.

### 3.4 Parcelling

Parcelling precedes sterilization or high-level disinfection. It protects instruments against any recontamination. Parcelling must be impermeable to micro-organisms but permeable to the sterilizing agent. Instruments can be parcelled variously using:

- pouches and crepe paper used during sterilization by autoclave (you may also use a cloth);
- a cloth and metal boxes used during high-level disinfection.

In practice:

- dry instruments properly;
- make sure they are clean;
- make sure the instruments are in good working order;
- parcel the instruments in available materials.

### 3.5 Sterilization

The sterilization method of choice is by steam. The sterilizing agent is saturated steam.

In order to kill germs, a temperature of 121 °C must be maintained for 20 minutes. To achieve this "heat level" a pressure of 2 bars (1 bar above atmospheric pressure) must be maintained.

**Where there is no autoclave, a fall back on high-level disinfection by moist heat is recommended.**



### 3.6 High-level disinfection by moist heat

Where there is no autoclave, there are fall back solutions that can be employed to attain high-level disinfection.

- **The All American sterilizer with packaging, a manometer and low purge is one such solution**

This method is used for items wrapped in cloth or placed in metal boxes.

- Remove the basket and pour into the sterilizer 3 litres of water.
- Put back the basket and lay the instruments on the cloth base or in an open metal box (in order to let water vapour through).
- Cover the basket with cloth (reduce final condensation).
- Secure the cover and turn on the heat on.
- When the relief valve starts to release steam continuously, shut off the valve.
- Let the pressure rise to 1 bar, then open the valve (vertical position); wait until the pressure has fallen to 0.2 bar.
- Repeat this process twice.
- When the pressure has fallen to 0.2 bar for the third time, turn off the valve and let the pressure rise to 2 bars; once this pressure is reached, do not open the valve; instead, set the heat source so that the pressure is kept between 1 and 1.5 bars.
- This is when "sterilization" begins; wait for 20 minutes.
- Check frequently to ensure that sterilization pressure is maintained.
- Cut off the heat source once sterilization time has elapsed.
- Open the valve and let steam escape.
- When pressure falls to 0 bars, remove the cover of the autoclave and take off the cloth covering the instruments.
- Let the instruments cool down for 15 minutes.

## Protocol 10, continued

**• The pressure cooker**

The pressure cooker is used for instruments packaged in metal containers.

- Place the already cleaned items in the container(s).
- With the container(s) open, place them in the pressure cooker basket.
- Pour water into the pressure cooker; make sure the water line is below the bottom of the basket, and that the items to be sterilized will not be touching the water.
- Lower the basket into the pressure cooker.
- Close the cooker tightly and switch on the heat.
- As soon as the relief valve starts to give off steam continuously, set the timer to 20 minutes.
- After 20 minutes, cut off the heat, open the valve to let the pressure drop, then open the lid.
- Keep the lid ajar to let the instruments dry properly.
- Arrange the boxes.
- If there is no electricity, use a table-top gas cooker.

**3.7 Sterile storage**

The instruments are kept in a glass cupboard and locked. These storage cupboards must be cleaned on a regular basis.

**3.8 Layout of the treatment room**

The place where instruments are washed and disinfected must be far from where patients are attended to.

The room should be divided into two separate sections: the pre-disinfection and cleaning section, and the packaging, sterilization or high-level disinfection section. It is important to maintain a one-way logical flow, ensuring that there is no cross-contact between clean instruments and soiled items.

## 4. Treatment of the work environment

### 4.1 Floors

Two steps are needed in the treatment of floors: cleaning and disinfection. Floors should be cleaned with a detergent, and then disinfected once a week using a bleach-based disinfectant.

Floors should be cleaned daily after the last patient has been seen. The two-bucket method with a wringing mop should be followed. Cleaning action should progress from cleaner areas to dirty ones, and should finish at the entry door.

- Fill the first bucket with diluted liquid detergent solution.
- Pour a small quantity of cleaning solution into the second bucket.
- Soak your mop in the first bucket.
- Mop the floor.
- Wring the mop into the second basket.
- Repeat the process.

The same process is followed for disinfection.

The bleach in a 250 ml container is used to dilute 5 litres of water.

NB. If the cleansing agent used daily for cleaning surfaces is a disinfectant-detergent, cleaning should be done once weekly.

### 4.2 Other surfaces

Surfaces are constantly being contaminated by soiled instruments, spurts during treatment, even the practitioner's hands. After seeing each patient, these surfaces should be cleaned and disinfected.

Specific medical products may be used; these may be sprays or wipes moistened with disinfecting detergents, or otherwise any other household product containing an alcohol-based detergent.

## Protocol 10, continued

## 5. Management of waste

Every health care practitioner is responsible for the contaminated waste produced as a result of their activities. Medical practice produces two types of waste that pose risk:

1. Waste from care-giving that has been contaminated by blood and other bodily secretions.
2. Sharp objects that pose the risk of pricks and cuts.

**Health care-related waste must not under any circumstances be disposed of with household refuse.**

Contaminated waste from health care activity must always be incinerated.

- Soiled waste or waste that has been contaminated by blood, such as gauze, cotton, etc., **carries the risk of infection**. Such waste must be placed in tight waterproof containers and incinerated.
- **Sharp objects that pose the risk of pricks and cuts** must be placed in the closed resistant containers found in the work area, and taken to the incinerator.
- **Waste considered as household refuse** must be sorted and separated from infection-causing waste, disposed of with household refuse, and treated with due regard for the environment.
- **Disposable items**. Cartridges from the administration of anaesthesia must be disposed of after each patient, even if they were not completely used. Cartridges, needles, gauze and suturing thread are for single use. All items used must be placed in the waste bins and the contents of the latter incinerated.

## 6. Management of exposure to blood

While accidental injuries are very frequent, they are always avoidable. In spite of the careful use of protective barriers (gloves, goggles, etc.) and the precaution exercised in handling instruments, accidents can happen.

A wound resulting from a pointed or sharp object can accidentally expose the practitioner to the blood of a patient. The gravest danger is posed when the practitioner re-caps a needle with both hands after using it. Re-capping a needle should be done in strict accordance with the established procedure:

- place the syringe, with the needle mounted, on the work surface;
- place the cap of the needle next to the syringe;
- slide the needle into the cap;
- grab the cap and the syringe, with the cap on the upper side, and snap on the needle;
- release the needle while holding on to the cap.

Under no circumstances should a needle be re-capped with one hand holding the needle and the other hand holding the cap. In case of accidental exposure to blood, the main risk is the transmission of a viral infection such as hepatitis B, hepatitis C or AIDS.

If ever you are accidentally pricked:

- never induce bleeding;
- clean immediately with mild soap and water;
- rinse with plenty of water;
- disinfect the affected area with DAKIN solution (0.5% active chlorine), 70% proof alcohol or bleach diluted with 0.5% active chlorine.

## 7. Establishing protocols

The protocols consist of:

- writing down what you plan to do;
- doing what you have written down;
- evaluating what has been done.

The protocols describe:

- hand washing;
- instrument reprocessing;
- treatment of floors and other surfaces;
- management of waste.

These protocols must be drafted, validated, signed, and reviewed on a regular basis.









## Chapter

# 5

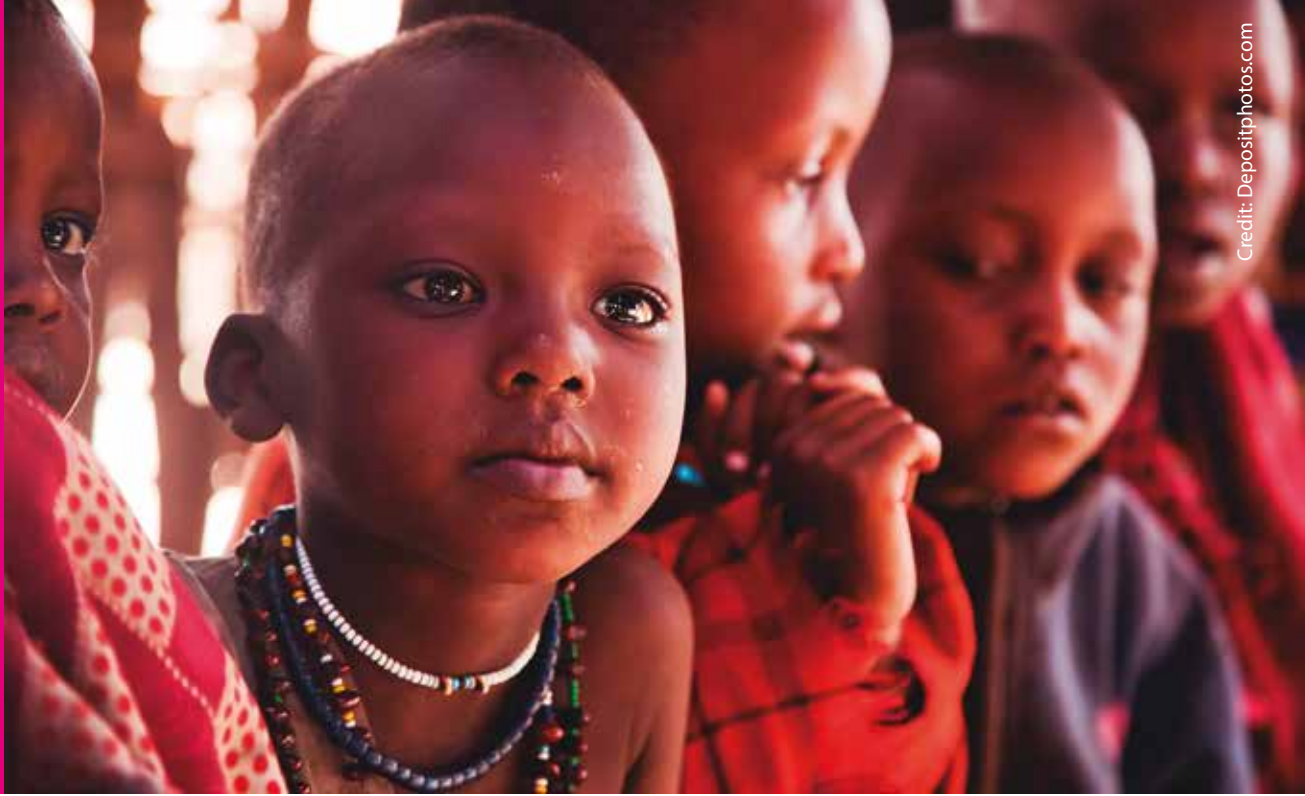
## School-based oral health promotion

This chapter presents the overall rationale for health initiatives within school settings, and recommends an essential package of school-based oral health activities. These include:

- Encouraging integration of oral health into school health policies;
- Health-enabling facilities and environment;
- Oral health promotion;
- Group tooth brushing with fluoride toothpaste;
- Participatory monitoring arrangements that include parents and the community.

The chapter also discusses administrative structures and measures that are needed to support the above activities.

Its main intended audience is local educational authorities, teachers and administrative staff in schools. It will also be useful to parents and community members interested in organizing or advocating for the provision of oral health activities in their schools.



## Schools: where good health skills begin

Just as oral health at PHC level should be integrated into the broader agenda for NCDs, oral health within schools should take into account the wider school health agenda.

Successful education and good health are closely interrelated. Students who are healthy have higher attendance rates, as well as better concentration and educational performance. Children who suffer from poor oral health are far more likely than other children to miss educational activities, or lose much of the benefit of such activities. Millions of school hours are lost each year because of oral health problems. These not only affect children's performance at school but can reduce their chances of success in later life (57).

### The challenge

Children spend a large proportion of their time in education settings like pre-schools, kindergartens or schools. Schools therefore have great potential to play a role in health (including oral health) promotion and disease prevention. Schools are often centres of community life, engaging parents, teachers and the community at large in a multitude of activities. A high number of children from different socioeconomic backgrounds can be reached in a structured and organized way.

Unfortunately, there are a number of obstacles to implementing oral health programmes in schools. Lack of sustainable funding and scarcity of trained personnel are common practical problems, while at policy level, the priorities of school heads, health and education authorities, and local governments may not take account of, or may actually conflict with, each other. Finally, the competing demands of an already full curriculum may make teachers reluctant to include oral health in their teaching.

## Opportunities for collaboration

Despite these challenges, school health is an area that is ideal for collaboration between the health and education sectors. The education sector should take responsibility for and lead the programme, with the health sector in a supportive role. Education personnel should have key roles in programme implementation.

Parents and the community usually have important roles to play in decision-making related to schools. Their involvement in school (oral) health activities fosters support, ownership and transparency, and contributes to sustainability. The role of the children themselves should not be forgotten. In skills-based school health interventions (discussed below), children take an active role in supervising and carrying out the activities on a daily basis.

### School health programming: an essential support for education

A number of international initiatives have been created to support school health interventions and provide guidelines to national governments, particularly education and health ministries. For example, the Education for All global initiative for basic education emphasizes safe and healthy environments as basic conditions for learning. Frameworks such as the “Health-Promoting Schools” approach promoted under WHO’s Global School Health Initiative, and the multi-agency Focusing Resources on Effective School Health (FRESH) initiative have received wide support internationally (52, 53).

The FRESH framework proposes four key components:

**1. Establishment of health-related school policies:** The development of a school health policy, involving the health and education sectors, is the foundation of effective and sustainable school-based health and oral health interventions. All schools should have their own health policy or be covered by a district or regional policy. Actions related to reducing risk exposure as well as enabling changes in the school environment should be defined in a school health policy containing a practical set of measures for implementation in every school. Only interventions that are evidence-based, cost-effective and have a high impact on priority diseases should be used.

**2. Safe water, sanitation and healthy environment:** Improving the school environment through access to safe water and sanitation, and construction of child-friendly group washing facilities that are functional and easy to maintain, is essential to the creation of an environment where healthy habits can be practised. Facilities can start as very simple constructions and be improved over time depending on available resources in order to meet national Water, Sanitation and Hygiene (WASH) in Schools standards.

**3. Skills-based health education:** Skills-based education is more effective than theoretical health education alone. It fosters healthy living and has the potential to influence lifelong healthy behaviour. The focus should be on activities that develop children’s practical skills and daily hygiene habits. For example, international experience suggests that group tooth brushing is a practical way to organize a programme and reduces the workload for teachers. Group activities are also fun for the children and the peer reinforcement contributes to creating healthy social norms.

**4. Health and nutrition services within schools:** Basic health interventions, focusing on prevention and health promotion rather than treatment, can be effectively delivered in the school setting. For example, in addition to skills-based activities such as tooth brushing, school meal programmes can provide entry points for the promotion of healthy eating habits and thus help prevent oral diseases and other NCDs.

These four components were developed as global recommendations, and provide valuable guidance to programming and policies in the African Region.



## Essential package of school-based oral health interventions

As with the interventions described earlier in this manual, the essential health package approach can be applied to schools as well. In most parts of the Region, interventions in schools should focus on prevention and health promotion rather than treatment, unless trained health workers are on the staff.

The following constitutes an essential package of oral health activities that should be carried out in schools.

- integrated school health policies that include oral health;
- health-enabling facilities and environment;
- oral health promotion;
- daily group tooth brushing with fluoride toothpaste;
- participatory monitoring arrangements that include parents and the community.

The fact that many of the interventions overlap with other school health activities should not be viewed as a problem. In fact, oral health activities are stronger when firmly embedded in overall school health programming.

## Ensuring that oral health is integrated into school health policies

As described above, a school health policy is necessary to provide a formal framework for school-based interventions. Policies should be “living documents” that are visible and accessible to staff and parents, and should be reviewed regularly in order to keep them up to date. Oral health should be part of such a policy rather than contained in a separate document. However, if no overall school health policy exists, a “standalone” oral health policy should be created in the meantime.

As well as goals or statements of principle, the oral health component of a school health policy should contain practical measures for implementation, including the other components of the essential package described in this chapter. Affordable fluoride toothpaste (see Chapter 3), should play a prominent role among these measures.

Policies should be developed with input from all stakeholders (parents, teachers, students, school nurses, oral health professionals, community health workers, etc.). In addition, integrating oral health interventions into the school setting should be made as easy as possible for teachers in order not to add a difficult burden to their daily tasks.

Whenever possible, school and local health facilities should jointly organize regular oral check-ups for students, preferably at the school.

### An integrated school health programme

Delivering oral health in schools is often most effective if it is a part of a “package”. In the Philippines, the multisectoral Essential Health Care Programme (EHCP) uses three simple, evidence-based interventions that can be delivered at low cost in elementary schools: (1) daily supervised hand washing with soap; (2) daily supervised tooth brushing with fluoride toothpaste; (3) biannual deworming.



Children brushing their teeth at school



(Box, continued)

Although the three interventions had been used separately in the Philippines for many years, the number of children benefiting was limited and fragmented, particularly in remote and rural areas. Clarifying the responsibilities of each partner was crucial, starting with a national memorandum signed in May 2009 by the Department of Education (DepEd), the League of Provinces of the Philippines, and the NGO Fit for School. The DepEd makes it mandatory for washing facilities to be constructed for group activities in all public elementary schools, and for all teachers to supervise group activities as part of their daily duties.

Currently the programme reaches about 3 million children. More than 20 of the 42 provinces currently implementing the EHCP – out of a total of 80 provinces nationally – have allocated regular budgets to cover the majority of material costs involved.

Community involvement is a key aspect of the programme, as parent–teacher organizations are strong civil society partners in the Philippines. Contributions have also come from the private sector and NGOs. The programme is now also being implemented in three other Southeast Asian countries.

A study in 2010 found that costs (including materials and labour to create and maintain washing facilities) amounted to US\$ 0.50 per child. The DepEd is the largest contributor, covering 65% of costs (mostly the teachers' salaries). Local governments provide 12%, and the Department of Health 0.4% (for procurement of the deworming drugs). The community contribution is 9%. International donors have contributed the remainder of the economic costs.

Source: (54).

## Health-enabling facilities and environment

Access to clean water and sanitation are prerequisites for a health-enabling environment, and should be part of all school health policies. Specific measures related to oral health include the following:

- Schools should have washing facilities large enough for at least 15 children to brush their teeth at the same time. The facility should not be located too far from the classroom. Washing facilities can also be used for regular daily hand and face washing with soap.
- Washing facilities can be simple and do not need access to piped water, but can use other water sources instead (e.g. tanks or “tippy taps”). They can also be more expensive solid constructions, depending on the local materials and resources available.
- The construction and maintenance of washing facilities should be participatory and include community members and parents.

- A cleaning and maintenance plan should be arranged, including a budget to cover maintenance and running costs.

As well as physical changes to facilities, rules to reduce exposure to common health risks and NCDs should be included in order to make the school environment as healthy as possible. Examples include:

- Making the school a tobacco- and alcohol-free area. With the help of local government authorities, it might be possible to extend this to banning sales of related products near the school.
- Banning the sales of soft drinks and sugary snacks in schools, including policies to prohibit the school and teachers from making money from the sale of unhealthy food and drinks.
- If school meals are provided, these should offer a well-balanced diet based on national nutrition guidelines.

Since many children in Africa buy their main meal of the day from street sellers and shops near schools, the school or local educational authority should implement outreach activities to encourage these vendors not to use unnecessary amounts of salt, sugar and fat in their products, and to make them aware of healthy ways of cooking and healthy products they can offer. In some countries, the authorities have banned the sale of certain foods in areas close to school grounds.

## Oral health education and promotion

School curricula should include age-specific health education and promotion, of which oral health should be an integral part. A basic list of health promotion messages that should be taught in schools can be found in Table 3. It should be borne in mind that oral health education may have little positive effect unless accompanied by skills-based education (55), particularly group tooth brushing.

Oral health promotion requires training and instruction materials. These should include:

- simple guidelines and instructions on how to brush teeth, supplemented with pictures;



Credit: WHO/Julie Pudlowski

Supervised handwashing with soap

- training manuals, instruction videos, etc. for staff on different aspects of oral health promotion.

It is important that teachers be positive role models for a healthy lifestyle. Therefore, teachers should be encouraged not to smoke or consume alcohol on school premises. Wherever possible they should also participate in activities such as group tooth brushing and promote good personal hygiene. Health (including oral health) messages that are part of the curriculum should be observed and lived so that every teacher sets a good example to children and parents.

**Table 3. Essential oral health messages to be taught in schools**

**Overall goal: students should have the age-appropriate knowledge and motivation to:**

1. Eat a healthy diet and avoid snacking.
2. Clean teeth twice a day with fluoride toothpaste.
3. Attend regular dental check-ups.

### Healthy diet

WHAT TO AVOID:

1. Unhealthy snacks between meals, such as sugary foods (sweets, biscuits, cakes, etc.) and sugar sweetened drinks (soda, artificial juices, energy drinks, etc.).
2. Foods and drinks that may contain 'free sugars' (sweet or salt fritters, pastries, sweetened juices, etc.).

(Table 3, continued)

**WHAT TO EAT:**

1. A balanced diet containing grains, vegetables, dairy products, fruits and proteins. WHO recommendations include five portions of vegetables and fruits daily.
2. Healthy snacks that provide protection against dental caries (dairy products, fruits).
3. In line with WHO guidance, adults and children should reduce their daily intake of free sugars to less than 10% of their total energy intake. A further reduction to below 5% or roughly 25 grams (6 teaspoons) per day would provide additional health benefits (56).

**SMOKING AND DRINKING:**

1. Advise children why smoking is dangerous to their health, including their oral health.
2. Advise children how alcohol abuse can damage their health and other aspects of their lives.

**Teeth cleaning****WHAT SHOULD BE USED FOR CLEANING TEETH?**

1. Toothbrush or a chewing stick.
2. Fluoride toothpaste.
3. Dental floss or toothpick for cleaning between the teeth.

**HOW SHOULD TEETH CLEANING BE DONE?**

1. Teeth should be cleaned twice a day – after breakfast and before going to bed – always using fluoride toothpaste.
2. All surfaces including the tongue should be cleaned.
3. Mouth should not be rinsed after brushing.
4. Toothbrush should be looked after and replaced regularly.
5. Hands should be washed with soap before tooth brushing.

**HOW ELSE CAN WE PROTECT OUR TEETH AND MOUTHS?**

1. Use a mouth guard to protect teeth when playing sports.
2. Wear a helmet that covers the mouth when riding a motorcycle.
3. Use the seat-belt when travelling in an automobile.

**HOW CAN WE HELP OTHER PEOPLE TO HAVE GOOD ORAL HYGIENE?**

1. Show parents, siblings and friends how to brush their teeth as well.
2. Tell family members what you've learnt in school about why good oral health is important, and how to achieve it.

**Regular dental check-ups (if available)**

1. Attend dental check-ups regularly if available, even if teeth are not causing problems.
2. Parents should talk to a dentist or local health facility about affordable and effective ways to protect their children's teeth.

## Group tooth brushing

The most important skills-based intervention for oral health in schools is group tooth brushing. This may be combined with other activities such as hand washing (an effective measure to reduce respiratory tract infections and diarrhoea) and face washing. It is recommended that:

- All children should brush their teeth with fluoride toothpaste once a day in school for two minutes as a group activity. Ideally, this should take place after lunch or recess. Should this not be possible, another suitable time should be chosen.
- The mouth should not be rinsed after brushing to permit the optimal protective effect of the fluoride toothpaste to take place.
- Toothbrushes should be stored in the school in toothbrush holders made locally that allow the toothbrush to air-dry and not touch other toothbrushes. Holders should be clearly labelled for each child.
- Tooth brushing should be supervised by older students or teachers, with teaching staff held accountable for ensuring that the activity takes place as scheduled and is done correctly.
- Children should be encouraged to practise at home and motivate their parents and siblings to brush their teeth as well.

In support of this activity, reliable supplies of toothbrushes and fluoride toothpaste must be secured. Depending on local conditions, supplies may be procured through the school or local government, as this allows bulk purchases to be made from reliable suppliers. In line with AFT principles (see Chapter 3), fluoride toothpaste must contain at least 1000 ppm fluoride to be effective.

## Participatory monitoring

Monitoring of school health activities is essential to their sustainability and continued quality. The monitoring process should be conducted in a participatory way with stakeholders such as school staff, parents (including members of parent and teacher associations if these exist locally), and representatives of local government, and education and health authorities.

The monitoring process should take place on a regular basis with standardized simple monitoring forms and guidelines for every step of the procedure. It should include checking the ongoing quality and functionality of facilities, observation of group activities, availability of supplies, access to water, etc. Results should be discussed with all stakeholders and feedback should be provided as a basis for an action plan to address challenges.

## Supporting effective implementation

The success of interventions depends not only on their coverage and technical quality, but also on their proper administration and organizational supervision. Practical policy and administrative measures to prioritize school health and to facilitate the integration of oral health include the following.

**Establish a school health committee or a technical working group at different levels of governance (national, provincial/district, local).** Where an appropriate structure does not already exist, an intersectoral committee or technical working group involving key stakeholders should be given the task of developing and coordinating school oral health programmes, defining roles and responsibilities of partners, and supervising monitoring. Advocacy may be one of the main activities for such a committee or group (see below). The committee or group should also encourage the school and local health facility to jointly organize regular check-ups for students.

**Assign roles and responsibilities to the different actors.** The involvement of education staff in the supervision of daily health activities such as group tooth brushing should be specified in job descriptions and performance ranking/incentive systems. This helps to motivate teachers and supports sustainability. Where proper facilities are not yet available, it may be possible to ask parents and other community members to help build basic ones, or contribute money to having them constructed. Specialized NGOs may have a useful role to play if they can provide missing expertise or take on tasks no one else has the time or knowledge to undertake.

**Establish written agreements.** Memoranda of understanding or other formal agreements help to clarify and establish roles and responsibilities among different local government offices and schools, etc., for example with regard to procurement and distribution of supplies.

**Include oral health in pre-service and in-service training of teachers.** Familiarizing teachers with oral health concepts in their basic training and continuing education supports their capacity and motivation to engage in implementation of such programmes.



Credit: Benoit Varenne

Brushing teeth with fluoride toothpaste is essential

## Advocacy for school oral health

While most parents, community leaders and government officials would agree, if asked, that providing oral health activities in schools is a “good

thing”, sustained advocacy may be necessary to achieve action. Such advocacy can be done in a variety of ways, from public meetings to active “lobbying” of governments. Advocacy messages need to be positive, clear and evidence-based, as shown in Table 4 (see also the discussion of oral health promotion messages in Chapter 6).

**Table 4. Advocacy messages for school oral health**

### Protect our children’s smiles!

School oral health programming is one of the most cost-effective public health interventions in the world. Extending a few simple, inexpensive activities to all schoolchildren in our area can have immense benefits, not just for them but for all of us.

**Tooth decay has serious consequences for education:** Dental caries (cavities in the teeth) is the most common disease of childhood. Untreated caries leads to infection, swelling, pain, difficulty in eating, sleeping, etc. Toothache is a common reason for missing school.

**Healthy habits last a lifetime:** School oral health programmes reach children at an age where they are vulnerable to diseases but also receptive to acquiring preventive and healthy habits such as daily tooth brushing. Since they spend a large proportion of their time at school it is important for them to gain skills required for healthy behaviour that can last a lifetime.

**Reducing oral health risk factors also prevents other chronic diseases:** Addressing risk factors for oral diseases among school children, such as high-sugar food and drinks, and future tobacco or alcohol use, helps to reduce common conditions such as obesity, diabetes and cancer.

**Parents and the community benefit too:** The community and parents should play an active part in a school oral health programme. Parents and other family members benefit by learning about better oral hygiene directly from their children.

**School oral health programmes help improve school infrastructure:** Access to safe water, sanitation and group washing facilities is essential for school-based tooth brushing. Providing such basic infrastructure improves the school environment, and supports the ultimate goal of providing a good quality education to children.







## Community-based oral health promotion and disease prevention

This chapter aims to help empower communities to deal with their own oral health, particularly through multisectoral partnerships. A package of community-level activities includes:

- Local partnerships with government authorities, and with other sectors or disciplines (including oral health professionals);
- Community oral health promotion;
- Oral health training for all first-contact health workers in the community;
- Noma awareness as a priority health promotion issue.

The intended audience is local or district government authorities, health and education officials, and community members interested in oral health promotion and disease prevention activities in their areas.





Communities are groups of people who share common interests, concerns or identities. In the context of PHC in the African Region, and of this manual, the word community generally refers to people within a local geographical area, such as a village, municipality or district. Community empowerment refers to the process of enabling people to increase control over the factors and decisions that shape their health in the places where they live, work and socialize.

## Essential package of community oral health activities

Health promotion is an important part of the PHC approaches described in Chapter 2, and is one of the pillars of action against NCDs. Although the term health promotion is often considered to involve only one-way communication of health information (i.e. “top-down” from experts or health authorities to beneficiaries), it is much more than that: in fact, it is about enabling people to increase control over, and to improve, their health (57). The focus goes beyond individual behaviour, extending to include a wide range of social and environmental interventions. Communities are thus empowered to deal with their own problems according to their own preferences and priorities.

Using the essential health package approach, this chapter recommends the following activities as being feasible and valuable in efforts to increase communities’ control of their oral health:

- local partnerships with government authorities, and with other sectors and disciplines (including oral health professionals);
- community oral health promotion and health literacy activities;

- noma awareness;
- oral health training for all first-contact health agents working in the community;
- data collection for monitoring and evaluation.

## Local partnerships: crossing sectors and disciplines

The health of individuals and communities is not determined by health sector activities alone but by a number of social and economic factors that are beyond the mandate of the health sector. The health sector therefore needs to work closely and creatively with other sectors, and raise awareness of the benefits that can be achieved through such partnerships.

### Health sector leadership

Partnership does not mean that everyone has to contribute at the same level: different sectors and individuals have different strengths and assets. The role of the health sector will be primarily to provide leadership in mobilizing community action for general and oral health. It is the sector with the formal authority, motivation, knowledge and organizational capacity to provide leadership in mobilizing community action for general and oral health.

This leadership may be based in a specific institution such as a district health office, PHC facility, hospital, dental clinic or NGO. The partnership would benefit even more if this institution were willing to carry out administrative functions such as organizing meetings and circulating information. Wherever possible, this should not simply be added to an already heavy list of responsibilities but recognized as a separate activity with its own budget and goals.

In places where oral health professionals have offices or clinics but are not currently involved in health promotion, it should be a priority to

obtain their cooperation in health promotion and training.

In some cases a single individual with an interest in a particular health issue – typically a health worker, such as a doctor, dentist, therapist or nurse, but sometimes a former patient or concerned parent – becomes the driving force in creating a local oral health partnership. This can be exactly what a local oral health partnership needs to “get it off the ground”. An acknowledged leader provides focus to a partnership in the early stages and can energize it with their passion, network of contacts and willingness to put in the hard work of organizing activities and motivating others. However, it is important to note that dependence on one person has its dangers, including the possibility that a partnership becomes a “one-person show”, and may fall apart if that individual leaves or becomes ill.

Partnerships should therefore take this into account as they organize themselves, and participants should spend some time thinking about how to spread leadership responsibility through mechanisms such as rotating chairpersons.

### Who should join an oral health partnership?

Partnerships can benefit from a wide range of participants. When considering non-health actors who might be invited to join a partnership, it is usually helpful to consider sectors that have an influence on health such as education, agriculture, environment, housing and transport. It is also useful to consider who has influence in a community, including religious leaders, prominent business people, local government officials, and representatives of civil society (including cultural, charitable, sports and community activist organizations).

As oral health may be low on the agenda of these potential partners, basic oral health promotion messages should be used when contacting them. Potential partners should also be guided on how oral health activities will help achieve their own objectives while at the same time improve health more widely.



Examples of intersectoral collaboration could include working with:

- local and religious leaders to obtain their support to conduct oral health promotion campaigns, or permit IEC activities in their buildings;
- private sector employers to fund oral health promotion activities, or allow oral health screening on their premises;
- police and public safety authorities to enforce the use of seat belts and fix conditions at traffic accident “hot spots”;
- local government regulators, wholesalers and merchants to ensure that counterfeit toothpaste (i.e. falsely claiming to contain fluoride or lacking the recommended fluoride content) is not sold in local shops;
- local government departments responsible for sanitation and water services to ensure that schools have sufficient water to support group tooth brushing and hand washing.

Resource sharing is another type of collaboration that should be explored. This is not limited to

financial resources but includes sharing workforces, supplies, public relations skills and logistics such as transport. In areas that have NGOs carrying out community activities, these organizations may be eager to collaborate with oral health promotion and service provision.

## Oral health promotion

Communication plays a vital role in community empowerment (58), and therefore in health promotion. One of the key goals of health promotion is to increase “health literacy”. This type of literacy is much more than being able to read pamphlets and make appointments. It is about acquiring the knowledge, skills and attitudes needed to gain access to, understand and use information in order to maintain good health. This is fully in line with the approach to NCDs recommended by WHO, and with the activities of the WHO Regional Office for Africa to improve oral health in the African Region.

### Main messages

It is important to concentrate health promotion communications on a few powerful concepts. Good knowledge of how oral diseases and conditions occur and how they can be prevented and treated can help community members to decide on local priorities, and therefore the provision of education and information that helps people build skills and make healthier choices is vital. Promotion of oral health at community level should emphasize the following messages, which move logically from information to action:

**Oral diseases and conditions are highly common.** The main diseases and conditions, and their identifying symptoms, should be known as widely as possible, as discussed in Chapter 1. This message should be supported by local data if available, or by national data if not. The risk factors for poor oral health should be widely understood, including links to NCDs, as discussed in Chapter 2. A particular effort should be made to increase local knowledge about the symptoms and consequences of noma (see below).

**Oral diseases and conditions can be prevented from childhood.** Communications about prevention should always include a discussion of preventive actions that can be taken at community level, notably through provision of the BPOC at local health care facilities, AFT promotion, oral health activities in local schools, and local partnerships (see below).

(Box, continued)

**Prevention of oral diseases begins at home.** Basic information for individuals and families about oral hygiene and tooth brushing with fluoride toothpaste should be disseminated as widely as possible, with particular efforts to reach remote, uneducated and otherwise vulnerable audiences. This information may be given separately or along with other basic health promotion messages emphasizing healthy diets and health-promoting behaviours.

**A great deal of treatment can – and should – be done locally.** Having been made familiar with the symptoms and causes of oral health diseases and conditions, community members should be encouraged to attend their local health centre or seek help from a qualified oral health professional when symptoms appear. Community members should be prepared to demand that certain components of the BPOC be made available in their local health facilities (ideally these should be integrated into the existing essential health package), and that referral systems be in place for treating more complicated conditions outside the community.

## Community action can improve oral health for everyone

Once they understand the oral health situation and the possibilities for dealing with it, people should be encouraged to think about actions they can take, and to get involved in decisions that affect the health of their community. While each community is different, common goals to work towards include:

- ensuring that the BPOC is available in their local health facilities;
- establishing oral health education and activities, particularly group tooth brushing, in local schools;

- establishing local regulations to reduce sales of alcohol and tobacco in local areas and prevent underage persons from purchasing these items; and
- working with police and local government to reduce traffic-related injuries (e.g. increase seat-belt use, encourage helmet use by motorcyclists and their passengers, improve road conditions at accident “hot spots”, apply fines and penalties for drunk driving, etc.).

## How to communicate these messages

Oral health messages can and should be disseminated in a variety of ways, using a wide range of IEC activities. Each should be carefully considered in terms of the message to be communicated and the audience to be reached:

- Public information meetings, special events such as oral health days, and presentations in marketplaces and other social events can reach people who are illiterate or who only occasionally come to more populated areas. Educational skits and plays can be presented through local barazas (public meetings).
- Traditional print media such as posters and banners in public places can be effective supports for specific events such as meetings or

A community pharmacy



community campaigns such as oral health days. Information pamphlets provided at health facilities can help to reinforce messages already given by health care staff.

- Mass media such as newspapers, television and local community radio can provide communication opportunities either through advertising or through media strategies such as press releases, offering articles for publication and cultivating contacts with individual journalists.
- Video formats and online media have also been used successfully (59).
- Social media have been used in other health promotion activities (e.g. tobacco control) successfully in several countries and will be increasingly important as more and more people obtain access to the Internet, including through smartphones.

Some workplaces, particularly those of large public and private sector employers, provide formal opportunities for health promotion, and are open to health workers visiting to give health talks. As described in the previous chapter, schools remain probably the best places to carry out health promotion, targeting not only the children themselves but also (indirectly) their families.

## BPOC training for all health workers and community health workers

An important function of local partnerships is to advocate for or facilitate BPOC training for all first-contact health agents – the staff whom patients meet when they first seek help from the health care system. First-contact health agents are often physicians or nurses working in health care facilities, but may also include community health workers.

Already trained to deliver a range of services (child immunization, family planning, health



Trained rural health workers

promotion, etc.) and treat minor conditions and injuries, community health workers have the educational background and clinical skills needed to learn and promote the BPOC (44). They often have deep knowledge of the community that enables them to gather support from family, friends and organizations, and to offer continuity of care.

## Essential skills and services

It is important that communities be aware of the types of skills and services that can be provided even in relatively isolated and impoverished areas under the BPOC. This will encourage local advocacy and demand, as community members start to ask for a service rather than passively accept only what is offered.

Table 5 describes the basic set of oral health skills and knowledge that PHC facility staff and community health workers should have. These should not only enable them to advise and treat patients when they first seek help for oral diseases and conditions (see Chapter 4), but also conduct outreach work in schools and health promotion sessions in places where community members gather. Such places may include meeting halls, schools, religious buildings, workplaces, and any other place appropriate for IEC activities aimed at changing behaviours in favour of good oral hygiene, nutritionally balanced diets and healthy habits.



**Table 5. What should a first-contact health agent be able to do?****Promote oral health and prevention of oral disease:**

- ☒ conduct routine oral and dental examinations during health centre visits
- ☒ conduct routine oral and dental examinations during school visits
- ☒ encourage regular general and oral hygiene
- ☒ promote healthy nutrition and an active lifestyle
- ☒ carry out IEC sessions about tooth brushing with a fluoride-containing toothpaste
- ☒ carry out IEC sessions about the harmful effects of tobacco and alcohol
- ☒ (in a risk environment) promote awareness of noma, its early symptoms, and the “Don’t delay!” message.

**Manage common oral diseases:**

- ☒ treat dental emergencies, including the treatment of pain and oral infections
- ☒ manage periodontal disease
- ☒ recognize and stabilize simple disorders (prescription or procedures) and refer specific cases
- ☒ control cross infection by effective implementation of recommended hygiene and disinfection measures
- ☒ know how to recognize cases that need to be referred to a higher level, and have the connections and facilities to do so

## Noma awareness: a priority health issue

As described in Chapter 1, the prevalence of noma sets the African Region apart from the rest of the world. Known as “the face of poverty”, noma is caused by a combination of factors that include poor hygiene, particularly oral hygiene, malnutrition and various infectious diseases, all of which weaken the immune defences. The situation is compounded by the precarious living conditions typical of very poor communities, in particular those with limited access to medical care, lack of information and knowledge, and generally poor maternal health.

In order to control noma in regions more likely to be affected, special efforts need to be made to sensitize communities as to what noma is and what can be done about it. Fighting stigmatization

is central to this. Key messages about noma that should be communicated in community health promotion campaigns are:

- the nature of noma, and the conditions in which it is most common;
- noma is not inevitable, can be treated and prevented, and is not communicable from one person to another;
- how to identify its symptoms in the early stages;
- “Don’t delay!” Take a child showing these symptoms to a health care facility immediately;
- how to reduce risk of noma (e.g. healthy diet, exclusive breastfeeding during the first six months of life, immunization against communicable diseases, good oral hygiene practices, segregation of livestock from human living areas).

Prevention and early detection of noma also require community leaders and local health and government authorities to understand the disease



Credit: Benoit Varenne

Community health worker carrying out a mouth inspection

and undertake concrete actions to control it. As recommended by the WHO regional programme for noma control, the following actions should be discussed and adopted in local health care planning:

**1. Training for health care workers:** Training in prevention and treatment of noma should be provided to community health workers and staff in health centres. Particular emphasis should be placed on staff working in isolated areas, which are more likely to be affected by noma. Training courses should also be available for all those in the public sector and civil society (e.g. in associations, groups and NGOs) who are active in community health. Finally, control of noma should be integrated into the formal training of health workers of all kinds (initial or continuation training): doctors, dentists, surgeons, nurses, midwives, etc.

**2. Early detection of cases and first aid.** Activities should include screenings, systematic mouth inspections and treatment of mouth sores both in the general population and among particularly vulnerable groups, such as children aged between two and six years. These can be carried out by community health workers and health care centre staff, but may also be organized by community volunteers.

**3. Social mobilization to fight stigma and raise awareness:** Success in bringing noma under control in the Region will only come when communities and individuals become stakeholders in the fight against the disease and the conditions under which it thrives. Activities to inform and mobilize populations include organizing local, regional and national media campaigns (educational theatre, local radio, press, television, mobile cinema, etc.), and special events. These activities can be carried out by various stakeholders in health including NGOs, university health departments and other experienced organizations working with health authorities at many levels.



5850 7800 964 7351  
 1138 6105 964 2341  
 81 86 90 100  
 6000 8000 1185 7999  
 20 77 93 90  
 5684 7625 920 7603  
 6130 5984 1176 4140

REMARK-

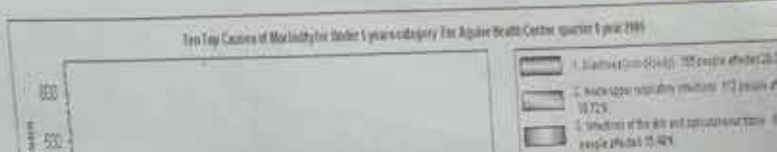
AS \* 2005

# TEN TOP DISEASES

17/11/54 A-URTI  
 48/12/72 DYSPEPSIA  
 1/14/135 DISEASE OF PARASITE  
 82/3/118 SKIN INFECTION  
 1/6/118 MIS DYSEASE  
 5/6/117 TROUMA  
 22/4/70 DISEAS OF THE EYE  
 3/9/52 UTI  
 2/2/46 DENTAL AND GUM DISEASE  
 9/3/17 DIARRHEA

1st QUARTER	2nd Quarter
MORBIDITY	MORBIDITY
URTI	URTI
SKIN INFECTION	TRAUMA
TRAUMA	SKIN INFECTION
MALARIA	DISEASES OF MUSKULO SK. SYSTEM
DYSPEPSIA	DYSPEPSIA
PARASITIC DISEASE	PARASITIC DISEASES
MUSKULO SKELETAL DISEASES	MALARIA
UTI	UTI
DENTAL CARIES	EYE DISEASE
DISEASES	DENTAL CARIES

2005





1. put **A** when the given range of time on the due date.
2. put **✓** when the report is incomplete

**N AGULAE H.C. 2005**

3 <sup>rd</sup> QUARTER		4 <sup>th</sup> QUARTER
MORBIDITY	NO OF cases	MORBIDITY
URTI	423	URTI
DYSPEPSIA	126	DYSPEPSIA
TRAUMA	161	PARASITIC DISEASES
SKIN INFECTION	102	SKIN INFECTION
PARASITIC DISEASES	90	TRAUMA
DISEASE OF MUSKULO SKEL ETAL DISEASE	75	MUSKULO SKEL ETAL DISEASE
UTI	51	EYE DISEASES
MALARIA	43	UTI
DENTAL CARIES	31	DENTAL CARIES
EYE DISEASES	27	DIARRHOEA

Chapter

7

## Monitoring and evaluation

This chapter describes:

- The importance of monitoring and evaluation of oral health programmes;
- Broad guidelines for national surveillance of oral health status;
- Surveillance activities that can be carried out in support of local oral health initiatives.

Its primary audience is health system decision-makers at national, district and local levels, as well as managers and senior clinical staff of PHC facilities.



Those responsible for oral health care programmes and services need good quality information in order to undertake planning, to track progress and eventually to measure the impact the programmes have had. Monitoring and evaluation (M&E) must be part of these efforts, based on solid surveillance systems.

As noted in Chapter 2 (see Table 1), essential oral health indicators should be integrated within existing health surveillance systems, including information on noma. Chief dental officers (or their equivalent) should make this a key objective if integration has not yet taken place, and ensure that any proposed oral health surveillance is fully consistent with national health system M&E plans.

As well as taking responsibility for the quality of data collected, the chief dental officer should ensure that an M&E plan or framework for oral health is created, which establishes the main components that need to be in place as well as a schedule for M&E activities and reporting.

## National oral health surveillance

Surveillance involves the ongoing collection, analysis and interpretation of population health data and timely communication of these data to users. Surveillance of oral health status requires a consistent effort over a long period. It also requires standardized methods of data capture, processing and reporting of country-specific data.

Detailed advice on the collection and analysis of oral health data can be found in *Standardization of oral health information in the African Region* (60), which provides a list of recommended essential oral health indicators for the African Region (see Annex 4). Another useful tool is WHO's STEPwise approach to Surveillance (STEPS), a standardized method for collecting, analysing and disseminating data, which not only permits monitoring of within-country trends, but also allows comparisons across countries to be made (61). A two-page specific oral health module has been developed with questions on oral health and related areas (see Annex 5).

## Surveillance of local level objectives

Since reliable oral health data may not be available from national sources, rapid and small-scale local surveys of oral health problems can be used as a guide to planning at community or village level. Local oral health partnerships (see Chapter 6) or

health authorities may be able to obtain assistance from experts in government, faculties of public health, medicine or dentistry in universities, or specialized NGOs.

The following table proposes a basic set of indicators for oral health surveillance at local level, with reference to a baseline and targets to be achieved during a specific period of time.

**Table 6. Surveillance indicators for local oral health activities**

Indicator	Baseline (year)	Target %	Achieved (year)
% of caries-free children up to age 18 years			
% of children up to age 18 years with a poor oral hygiene and periodontal status			
% of children up to age 18 years who brush their teeth twice daily with fluoride toothpaste			
% of children who report eating sweets or soft drinks daily			
% of children up to age 18 years with access to and who use protective devices during sports			
% of children up to age 18 years affected by traumatic injuries to face, jaws or teeth			
% of the population able to identify harmful practices that could lead to injury to face, jaws or teeth (road traffic accidents, interpersonal violence, etc.)			
% of schools with safe playgrounds			
% of population able to name the common modifiable risk factors related to NCDs including oral diseases (tobacco use, unhealthy diets and harmful use of alcohol)			
% of adults able to name all four early signs of noma (fever, bad breath, bleeding gums, possible facial oedema) and know where to send a child with suspected noma			
% of population with expressed oral health needs accessing primary oral health care services			
% of primary health care facilities able to provide safe oral urgent treatment			
% of primary health care facilities collecting and reporting data on oral diseases as part of a Health Management Information System			



## References

1. Oral health [website]. Geneva: World Health Organization; 2014 ([http://www.who.int/topics/oral\\_health/en/](http://www.who.int/topics/oral_health/en/), accessed 2 December 2015).
2. Marcenes W, Kassebaum NJ, Bernabé E, Flaxman A, Naghavi M, Lopez A, et al. Global burden of oral conditions in 1990–2010. A systematic analysis. *J Dent Res*. 2013;92(7):592–7.
3. Global status report on noncommunicable diseases 2014. Geneva: World Health Organization; 2014 ([http://apps.who.int/iris/bitstream/10665/148114/1/9789241564854\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/148114/1/9789241564854_eng.pdf?ua=1), accessed 2 December 2015).
4. General Assembly of the United Nations. High-level Meeting on Non-communicable Diseases. United Nations; 2011 (<http://www.un.org/en/ga/president/65/issues/ncdiseases.shtml>, accessed 2 December 2015).
5. What is the burden of oral disease? [website]. Geneva: World Health Organization; 2014 ([http://www.who.int/oral\\_health/disease\\_burden/global/en/](http://www.who.int/oral_health/disease_burden/global/en/), accessed 2 December 2015).
6. Closing the gap in a generation: Health equity through action on the social determinants of health. Geneva: World Health Organization; 2010 ([http://www.who.int/social\\_determinants/thecommission/finalreport/en/](http://www.who.int/social_determinants/thecommission/finalreport/en/), accessed 2 December 2015).
7. Thorpe S. Oral health issues in the African Region: Current situation and future perspectives. *J Dent Educ*. 2006 Jan 11;70(11 suppl):8–15.
8. Sheiham A, Watt RG. The common risk factor approach: a rational basis for promoting oral health. *Community Dent Oral Epidemiol*. 2000 Dec;28(6):399–406.
9. Barbieri P, Focardi M, Pradella F, Garatti S. Infant oral mutilation (IOM). *Journal of forensic odonto-stomatology*. 2013;31(Suppl 1):156.
10. Barbieri P, Focardi M. Dental ritual mutilations. *Journal of forensic odonto-stomatology*. 2013;31(Suppl 1):161.
11. Edwards PC, Levering N, Wetzel E, Saini T. Extirpation of the primary canine tooth follicles: a form of infant oral mutilation. *JADA*. 2008 Jan 4;139(4):442–50.
12. Bissessur S, Naidoo S. Areca nut and tobacco chewing habits in Durban, KwaZulu Natal. *SADJ*. 2009 Nov;64(10):460–3.
13. Al-Kholani AI. Influence of Khat chewing on periodontal tissues and oral hygiene status among Yemenis. *Dent Res J (Isfahan)*. 2010;7(1):1–6.
14. Avon SL. Oral mucosal lesions associated with use of quid. *J Can Dent Assoc*. 2004 Apr;70(4):244–8.
15. Adoga AA, Nimkur TL. The traditionally amputated uvula amongst Nigerians: Still an ongoing practice. *ISRN Otolaryngology*. 2011; 2011: 704924.
16. Sukkarwalla A, Ali SM, Lundberg P, Tanwir F. Efficacy of miswak on oral pathogens. *Dent Res J (Isfahan)*. 2013;10(3):314–20.
17. Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. *Bull World Health Organ*. 2005 Sep;83(9):661–9.
18. IMAI district clinician manual: hospital care for adolescents and adults: guidelines for the management of common illnesses with limited resources. Geneva: World Health Organization; 2011 ([http://apps.who.int/iris/bitstream/10665/77751/1/9789241548281\\_Vol1\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/77751/1/9789241548281_Vol1_eng.pdf?ua=1) (Volume 1), [http://apps.who.int/iris/bitstream/10665/77751/3/9789241548290\\_Vol2\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/77751/3/9789241548290_Vol2_eng.pdf?ua=1) (Volume 2), accessed 14 December 2015).

19. The Challenge of oral disease – A call for global action. The oral health atlas. 2nd ed. Geneva: FDI World Dental Federation; 2015 ([www.fdiworldental.org/media/77552/complete\\_oh\\_atlas.pdf](http://www.fdiworldental.org/media/77552/complete_oh_atlas.pdf), accessed 2 December 2015).
20. Petersen PE, Baez RJ. Oral health surveys: basic methods (fifth edition). Geneva: World Health Organization; 2013 (<http://www.icd.org/content/publications/WHO-Oral-Health-Surveys-Basic-Methods-5th-Edition-2013.pdf>, accessed 2 December 2015).
21. Monse B, Heinrich-Weltzien R, Benzian H, Holmgren C, van Palenstein Helder W. PUFA – An index of clinical consequences of untreated dental caries. *Community Dent Oral Epidemiol*. 2010;38(1):77–82.
22. The optimal duration of exclusive breastfeeding. Report of the expert consultation, Geneva, Switzerland, 28–30 March 2001. Geneva: World Health Organization; 2002 (WHO/NHD/01.09; WHO/FCH/CAH/01.24; [http://apps.who.int/iris/bitstream/10665/67219/1/WHO\\_NHD\\_01.09.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/67219/1/WHO_NHD_01.09.pdf?ua=1), accessed 2 December 2015).
23. Holmgren CJ, Roux D, Doméjean S. Minimal intervention dentistry: part 5. Atraumatic restorative treatment (ART) – a minimum intervention and minimally invasive approach for the management of dental caries. *Br Dent J*. 2013 Jan;214(1):11–8.
24. Kassebaum NJ, Bernabé E, Dahiya M, Bhandari B, Murray CJL, Marcenes W. Global burden of severe periodontitis in 1990–2010: A systematic review and meta-regression. *J Dent Res*. 2014 Nov;93(11):1045–53.
25. Lula EC, Ribeiro CC, Hugo FN, Alves CM, Silva AA. Added sugars and periodontal disease in young adults: an analysis of NHANES III data. *Am J Clin Nutr*. 2014 Oct;100(4):1182–7.
26. Globocan 2012: Estimated cancer incidence, mortality and prevalence worldwide in 2012. In: Population fact sheets [website]. Lyon: International Agency for Cancer Research ([http://globocan.iarc.fr/Pages/fact\\_sheets\\_population.aspx](http://globocan.iarc.fr/Pages/fact_sheets_population.aspx), accessed 2 December 2015).
27. Enwonwu CO. Noma — The ulcer of extreme poverty. *N Engl J Med*. 2006;354(3):221–4.
28. Dickson M. Where there is no dentist. 1st edition, 13th updated printing. 2010 edition. Palo Alto (CA): Hesperian Foundation; 2012.
29. Oral and dental health [website]. Brazzaville: WHO Regional Office for Africa; 2014 (<http://www.afro.who.int/en/clusters-a-programmes/dpc/non-communicable-diseases-managementndm/programme-components/oral-health.html>, accessed 2 December 2015).
30. Baratti-Mayer D, Gayet-Ageron A, Hugonnet S, François P, Pittet-Cuenod B, Huyghe A, et al., for the Geneva Study Group on Noma (GESNOMA). Risk factors for noma disease: a 6-year, prospective, matched case-control study in Niger. *Lancet Glob Health*. 2013 Aug;1(2):e87–e96 ([http://www.hug-ge.ch/sites/interhug/files/actualites/2013\\_tlgh\\_noma\\_july\\_2013.pdf](http://www.hug-ge.ch/sites/interhug/files/actualites/2013_tlgh_noma_july_2013.pdf), accessed 14 December 2015).
31. Yengopal V, Naidoo S. Do oral lesions associated with HIV affect quality of life? *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2008 Jul;106(1):66–73.
32. Coogan MM, Greenspan J, Challacombe SJ. Oral lesions in infection with human immunodeficiency virus. *Bull World Health Organ*. 2005 Sep;83(9):700–6.
33. Glendor U, Andersson L. Public health aspects of oral diseases and disorders: Dental trauma. In: Pine C, Harris R, editors. *Community oral health*. London: Quintessence Publishing; 2007.
34. WHO global status report on road safety 2015: Supporting a decade of action. Geneva: World Health Organization; 2015 ([http://apps.who.int/iris/bitstream/10665/189242/1/9789241565066\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/189242/1/9789241565066_eng.pdf?ua=1), accessed 2 December 2015).
35. Wehby G, Murray JC. Folic acid and orofacial clefts: A review of the evidence. *Oral Dis*. 2010 Jan;16(1):11–9.

36. Little J, Cardy A, Munger RG. Tobacco smoking and oral clefts: a meta-analysis. *Bull World Health Organ.* 2004 Mar;82(3):213–8.
37. Report on the review of primary health care in the African Region. Brazzaville: WHO Regional Office for Africa; 2008 ([http://www.afro.who.int/index.php?option=com\\_docman&task=doc\\_download&gid=3806](http://www.afro.who.int/index.php?option=com_docman&task=doc_download&gid=3806), accessed 14 December 2015).
38. Oral health in the African Region: A regional strategy 1999–2008. Brazzaville: WHO Regional Office for Africa; 2000 ([http://www.afro.who.int/index.php?option=com\\_docman&task=doc\\_download&gid=2507&Itemid=2593](http://www.afro.who.int/index.php?option=com_docman&task=doc_download&gid=2507&Itemid=2593)).
39. Implementation of the regional oral health strategy: Update and way forward. Report of the Regional Director. Brazzaville: WHO Regional Office for Africa; 2008 (AFR/RC58/9; <http://apps.who.int/iris/handle/10665/19988>, accessed 2 December 2015).
40. Varenne B. Integrating oral health with non-communicable diseases as an essential component of general health: WHO's strategic orientation for the African Region. *J Dent Educ.* 2015;79(5 Suppl):S32–7.
41. Ouagadougou Declaration on Primary Health Care and Health Systems in Africa: Achieving Better Health for Africa in the New Millennium. Adopted at the International Conference on Primary Health Care and Health Systems in Africa, Ouagadougou, Burkina Faso, 28–30 April 2008 (<http://www.who.int/management/OuagadougouDeclarationEN.pdf>, accessed 2 December 2015).
42. Frencken JE, Holmgren CJ, Helderma WHP. Basic package of oral care. Nijmegen: WHO Collaborating Centre for Oral Health Care Planning and Future Scenarios; 2002.
43. Agbaje MO, Adeniyi AA, Salisu MA, Animashaun AB, Ogunbanjo BO. Dental caries in children – an assessment of the knowledge of Nigerian paediatricians. *Afr J Med Med Sci.* 2013 Jun;42(2):157–63.
44. WHO, Global Health Workforce Alliance. Global experience of community health workers for delivery of health related Millennium Development Goals: A systematic review, country case studies, and recommendations for integration into national health systems. Geneva: World Health Organization; 2010 (<http://www.who.int/workforcealliance/knowledge/resources/chwreport/en/>, accessed 2 December 2015).
45. Chher T, Hak S, Courtel F, Durward C. Improving the provision of the Basic Package of Oral Care (BPOC) in Cambodia. *Int Dent J.* 2009 Feb;59(1):47–52.
46. Writing oral health policy: A manual for oral health managers in the WHO African Region. Brazzaville: WHO Regional Office for Africa; 2005 ([http://www.afro.who.int/index.php?option=com\\_docman&task=doc\\_download&gid=6922&Itemid=2593](http://www.afro.who.int/index.php?option=com_docman&task=doc_download&gid=6922&Itemid=2593), accessed 2 December 2015).
47. Health systems service delivery [website]. Geneva: World Health Organization; 2014 (<http://www.who.int/healthsystems/topics/delivery/en/>, accessed 2 December 2015).
48. Essential health packages: What are they for? What do they change? World Health Organization; 2008 (draft technical brief No. 2, 3 July 2008; [http://www.who.int/healthsystems/topics/delivery/technical\\_brief\\_ehp.pdf](http://www.who.int/healthsystems/topics/delivery/technical_brief_ehp.pdf), accessed 2 December 2015).
49. Integrated oral disease prevention and management module III. Adolescents 13–18 years old. Washington (DC): Pan American Health Organization; 2011.
50. Integrated oral disease prevention and management module I. Children 0–5 years old. Washington (DC): Pan American Health Organization; 2011.
51. Kwan SY, Petersen PE, Pine CM, Borutta A. Health-promoting schools: an opportunity for oral health promotion. *Bull World Health Organ.* 2005;83(9):677–85.
52. Global school health initiative. In: School and youth health [website]. Geneva: World Health Organization; 1995 ([http://www.who.int/school\\_youth\\_health/gshi/en/](http://www.who.int/school_youth_health/gshi/en/), accessed 2 December 2015).

53. Focusing resources on effective school health [website]. United Nations Children's Fund; 2001 ([http://www.unicef.org/lifeskills/index\\_7262.html](http://www.unicef.org/lifeskills/index_7262.html), accessed 2 December 2015).
54. Federal Ministry for Economic Cooperation and Development. Keeping children 'Fit for School': Simple, scalable and sustainable school health in the Philippines. Eschborn: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ); 2012 ([http://health.bmz.de/good-practices/GHPC/Fit\\_for\\_school/FIT\\_EN\\_long.pdf](http://health.bmz.de/good-practices/GHPC/Fit_for_school/FIT_EN_long.pdf), accessed 2 December 2015).
55. Skills for health: Skills-based health education including life skills: an important component of a child-friendly/health-promoting school. Geneva: World Health Organization; 2003 (<http://apps.who.int/iris/handle/10665/42818>, accessed 2 December 2015).
56. Guideline: Sugars intake for adults and children. Geneva: World Health Organization; 2015.
57. Milestones in health promotion: Statements from global conferences. Geneva: World Health Organization; 2012 (<http://www.who.int/healthpromotion/milestones.pdf>, accessed 2 December 2015).
58. Track 1: Community empowerment. 7th Global Conference on Health Promotion: Track themes [website]. Geneva: World Health Organization; 2009 (<http://www.who.int/healthpromotion/conferences/7gchp/track1/en/>, accessed 2 December 2015).
59. Olubunmi B, Olushola I. Effects of information dissemination using video of indigenous language on 11-12 years children's dental health. *Ethiop J Health Sci.* 2013 Nov;23(3):201–8.
60. Standardization of oral health information in the African Region. Regional Workshop, Brazzaville, Republic of Congo, 30-31 May 2005. Final report. Brazzaville: WHO Regional Office for Africa; 2005 ([http://www.afro.who.int/index.php?option=com\\_docman&task=doc\\_download&gid=6925&Itemid=2593](http://www.afro.who.int/index.php?option=com_docman&task=doc_download&gid=6925&Itemid=2593), accessed 2 December 2015).
61. STEPS optional modules. In: Chronic diseases and health promotion [website]. Geneva: World Health Organization; 2005 (<http://www.who.int/chp/steps/riskfactor/modules/en/>, accessed 2 December 2015).

## Annex 1. Essential medicines for the BPOC in primary health care facilities

MEDICATION	NAME	INDICATIONS	PACKAGING	ADULT DOSE	CHILD DOSE	
					1 – 6 YRS	6 – 12 YRS
Analgesics	Aspirin	Mild to moderate pain Reduces swelling	Tablets 250mg	500 mg tds*	125 mg tds	250 mg tds
	Paracetamol	Mild to moderate pain	Tablets 500 mg	1000 mg tds	250 mg tds	500 mg tds
			Syrup 200 mg/5 ml		5 ml tds	10 ml tds
	Ibuprofen**	Moderate to severe pain Reduces swelling	Tablets 200 mg	400 mg tds	100 mg tds	200 mg tds
			Syrup 125 mg/ 5 ml		5 ml tds	10 ml tds
	Lignocaine + adrenaline	Local anaesthesia	Cartridge 1.8–2.2 ml, dilution 1:80,000	1–4 cartridges (for infiltration)	0.5–2 cartridges	
Lignocaine gel	Topical anaesthesia	Tube 50 mg	Apply directly to mucosa or gingiva			
Oral antibacterial medications	Penicillin	Oral infections	Tablets 250 mg	500 mg tds	125 mg tds	250 mg tds
			Syrup 125 mg/5 ml		5 ml tds	10 ml tds
	Amoxicillin	Oral infections Cancrum oris	Tablets 250 mg	500 mg tds	125 mg tds	250 mg tds
			Syrup 250 mg/5 ml		5 ml tds	10 ml tds
	Erythromycin	In patient who are allergic to Penicillins	Tablets 250 mg	500 mg tds	125 mg tds	250 mg tds
			Syrup 125 mg /5 ml		5 ml tds	10 ml tds

(Annex 1, continued)

MEDICATION	NAME	INDICATIONS	PACKAGING	ADULT DOSE	CHILD DOSE	
					1 – 6 YRS	6 – 12 YRS
Injectable antibacterial medications	Metronidazole	Anaerobic infections Cancrum oris	Tablets 200 mg	400 mg tds	100 mg tds	200 mg tds
			Syrup 200 mg/5 ml		2.5 ml tds	5 ml tds
			Vial 500 mg in 100 ml	15 mg/ kg loading dose; 7.5 mg/kg	REFER	
	Ampicillin	Oral infections	Vial 500 mg or 1 g	50 mg/kg		
	Crystalline penicillin	Widespread infections	Vial 1,000,000 units per ml	3 ml qds***	1 ml qds	1.5 ml qds
	Gentamycin	Generalized sepsis	Vial 40 mg/ml	5.0 – 7.5 mg/kg	REFER	
Antifungals	Nystatin	Superficial infections	Suspension/syrup 100,000 IU/ml	4–6 ml qds	1–2 ml qds	
	Gentian Violet	Superficial infections	Solution diluted to 0.25%	Topical application bd		
Antivirals	Acyclovir	Viral infections	Tablets 200 mg	400 mg tds	100 mg tds	200 mg tds
			Gel 5%	Topical application tds		
			Syrup 200 mg/5 ml		5 ml tds	10 ml tds

\* tds = to be taken three times a day.

\*\* Not to be used in children less than 3 months.

\*\*\* qds = to be taken four times a day.



## Annex 2. Essential medicines for managing noma

### Oral medications

Medication	Duration	Age or weight	Quantity
Oral rehydration Solution	PRN (as required)	0–2 yrs: 50–100 ml > 2 yrs: 100–200 ml	1 packet per litre
Amoxicillin 250 mg	14 days	0–1 week (< 2 kg)	22
		1 week–2 months (2–5 kg)	42
		2–12 months (5–9 kg)	64
		1–4 years (10–19 kg)	84
Metronidazole 250 mg	14 days	2 months to 11 months (4–10 kg)	¼
		1 year to 4 years (10–19 kg)	½
Clindamycin	5 days	5–10 kg	50 mg by mouth or 60 mg by injection
		10–17 kg	100 mg by mouth or 130 mg by injection
		17–25 kg	150 mg by mouth or 225 mg by injection
		over 25 kg	250 mg by mouth or 333 mg by injection
Ferrous sulfate 200 mg	14 days	0–3 yrs: 50 mg (1/4 tab) 3 times a day	23
		3–6 yrs: 100 mg (1/2 tab) 3 times a day	46
		> 6 yrs: 200 mg (1 tab) 3 times a day	92
Ferrous fumarate syrup (100 mg per 5 ml)	One dose daily for 14 days	2–4 months (4–6 kg)	1.0 ml (<1/4 tsp)
		4–12 months (6–10 kg)	1.25 ml (1/4 tsp)
		1–3 years (10–14 kg)	2.0 ml (<1/2 tsp)
		3–5 years (14–19 kg)	2.5 ml (1/2 tsp)

(Annex 2, continued)

## Parenteral medications

Medication	Duration	Age or weight	Quantity	
Ampicillin 50 mg per kg. (Add 1.3 ml of sterile water to a vial containing 250 mg – 250 mg/1.5 ml)	5 days	0–2 months (1.0–1.5 kg)	0.4 ml	
		0–2 months (1.5–2.0 kg)	0.5 ml	
		0–2 months (2.0–2.5 kg)	0.7 ml	
		0–2 months (2.5–3.0 kg)	0.8 ml	
		0–2 months (3.0–3.5 kg)	1.0 ml	
		0–2 months (3.5–4.0 kg)	1.1 ml	
		0–2 months (4.0–4.5 kg)	1.3 ml	
Ampicillin (Add 2.1 ml of sterile water to a vial containing 500 mg – 500 mg/2.5 ml for intramuscular injection)	5 days	2–4 months (4–6 kg)	1 ml	
		4–12 months (6–10 kg)	2 ml	
		1–3 years (10–14 kg)	3 ml	
		3–5 years (14–19 kg)	5 ml	
Gentamycin (Undiluted 2 ml vial containing 20 mg = 2 ml at 10 mg/ml OR Add 6 ml sterile water to 2 ml vial containing 80 mg = 8.0 ml at 10 mg/ml)	5 days		Age < 7 days. Dose 5 mg/kg	Age > 7 days. Dose 7.5 mg/kg
		0–2 months (1.0–1.5 kg)	0.6 ml	0.9 ml
		0–2 months (1.5–2.0 kg)	0.9 ml	1.3 ml
		0–2 months (2.0–2.5 kg)	1.1 ml	1.7 ml
		0–2 months (2.5–3.0 kg)	1.4 ml	2.0 ml
		0–2 months (3.0–3.5 kg)	1.6 ml	2.4 ml
		0–2 months (3.5–4.0 kg)	1.9 ml	2.8 ml
		0–2 months (4.0–4.5 kg)	2.1 ml	3.2 ml
Gentamycin. Use undiluted 2 ml vial. (40 mg/ml for intramuscular injection)	5 days	2–4 months (4–6 kg)	0.5–1.0 ml	
		4–12 months (6–10 kg)	1.1–1.8 ml	
		1–3 years (10–14 kg)	1.9–2.7 ml	
		3–5 years (14–19 kg)	2.8–3.5 ml	

## Annex 3. Essential equipment for the BPOC in primary health care facilities

Diagnosis kit	Emergency kit	Minor oral surgery kit:	ART kit
<ul style="list-style-type: none"> <li>- Wooden tongue probes</li> <li>- Dental mirrors</li> <li>- Dental probes</li> </ul>	<ul style="list-style-type: none"> <li>- Adrenaline</li> <li>- Hydrocortisone</li> <li>- Diazepam</li> <li>- Oral glucose</li> <li>- 50% dextrose solution</li> <li>- IV cannulas</li> <li>- Haemostatic packs</li> <li>- Oral rehydration solution</li> </ul>	<ul style="list-style-type: none"> <li>- Blade holders</li> <li>- Tissue forceps</li> <li>- Needle holders</li> <li>- Surgical scissors</li> <li>- Straight elevators</li> <li>- Root tip elevators</li> <li>- Cryer's elevators</li> <li>- Set of dental forceps</li> </ul>	<ul style="list-style-type: none"> <li>- Dentine spoon excavators</li> <li>- Forceps</li> <li>- Dental hatchets</li> <li>- Cement applicators or spatulas</li> </ul>
Equipment	Consumables		
Autoclave/Pressure cooker	Disposable face masks		
Clean water source	Disposable gloves		
Sharps disposal bins	Disposable syringes		
Instrument trays	Dental syringes		
	Disposable needles		
	Disposable dental needles		
	Surgical blades		
	Sutures		
	Sterile gauze/cotton wool		
	Temporary filling materials		
	ART filling material: Glass ionomer cement		

## Annex 4. Recommended essential oral health indicators for the African Region

### 11. RECOMMENDED ESSENTIAL ORAL HEALTH INDICATORS FOR THE AFRICAN REGION

The 34 indicators are described in three categories as indicators for monitoring the oral health of children and adolescents; general populations; and oral health systems.

The list for monitoring the oral health of children and adolescents contains priority indicators specific to children and adolescents. It must be appreciated that there are also a range of indicators in Part B which may also be used to assess oral health in children.

#### A. INDICATORS FOR MONITORING THE ORAL HEALTH OF CHILDREN AND ADOLESCENTS

##### A.1. DETERMINANT

- A.1.1. Preventive Care-Seeking by Pregnant Women
- A.1.2. Maternal Knowledge of when to Seek Care for Child Caries
- A.1.3. Women's Knowledge of Aetiology and Early Symptoms of Noma
- A.1.4. Mother's Knowledge of Fluoride Toothpaste for Tooth Decay Prevention
- A.1.5. Daily Brushing with F-Toothbrush or Tradition

##### A.2. PROCESS

- A.2.1. Preventive Oral Health Programmes in Kindergartens
- A.2.2. Services with a System for Identifying and Referring Children with Cleft Lip, Cleft Palate and Noma
- A.2.3. Screening Oral Health Programme Coverage
- A.2.4. Maternal Child Health Oral Health Prevention Coverage
- A.2.5. School-based Health Centres with an Oral Health Component

##### A.3. OUTCOME

- A.3.1. Decay Experience in firstPermanent Molars in Children
- A.3.2. Prevalence (Incidence) of Detected Case of Noma
- A.3.3. Five Year Old Children with at Least Three Abscessed Teeth

#### B. INDICATORS FOR MONITORING THE ORAL HEALTH OF GENERAL POPULATION

##### B.1. DETERMINANT

- B.1.1. Knowledge of Oral Health-Related Preventive Practices

##### B.2. PROCESS

- B.2.1. Geographical Access to Oral Health Care
- B.2.2. Access to Primary Oral Care Services
- B.2.3. Oral Health Integrated in Other Health Programmes in Health Centres
- B.2.4. Health Providers Competent to Diagnose and Manage Oral HIV

**B.3. OUTCOME**

- B.3.1. Caries Free
- B.3.2. Dental Caries Severity
- B.3.3. Untreated Caries Prevalence
- B.3.4. Periodontal Health Assessment
- B.3.5. Oral Health Manifestations of HIV/AIDS
- B.3.6. Cancer of the Oral Cavity
- B.3.7. Edentulous Prevalence
- B.3.8. Facial Fractures due to Vehicle Accidents
- B.3.9. Physical Pain due to Oral Health Status

**C. INDICATORS FOR MONITORING THE ORAL HEALTH SYSTEMS**

**C.1. DETERMINANT**

- C.1.1. Dentists and Other Oral Care Providers
- C.1.2. Cost of Oral Health Services
- C.1.3. Oral Health Policy Presence (or as part of general health policy)
- C.1.4. Systematically Visiting Traditional Healers as First Choice for Oral Health Care

**C.2. PROCESS**

- C.2.1. Local Health Structure with a Dental Service
- C.2.2. Physicians in Training and Other Student Paramedics with an Oral Health Component in Curriculum
- C.2.3. Districts with a Systematic Oral Health Data Collection System
- C.2.4. Schools with Programmes for Oral Health Personnel Adopting Common List of Graduation Competencies

---

Source: (60).

## Annex 5. WHO STEPwise approach to surveillance – Oral Health Module

### Oral Health

The next questions ask about your oral health status and related behaviours.

Question	Response		Code
How many <b>natural teeth</b> do you have?	No natural teeth	1 <i>If no natural teeth, go to O4</i>	01
	1 to 9 teeth	2	
	10 to 19 teeth	3	
	20 teeth or more	4	
	Don't know	77	
How would you describe the <b>state of your teeth?</b>	Excellent	1	02
	Very Good	2	
	Good	3	
	Average	4	
	Poor	5	
	Very Poor	6	
	Don't Know	77	
How would you describe the <b>state of your gums?</b>	Excellent	1	03
	Very Good	2	
	Good	3	
	Average	4	
	Poor	5	
	Very Poor	6	
	Don't know	77	
Do you have any <b>removable dentures?</b>	Yes	1	04
	No	2 <i>If No, go to O6</i>	
Which of the following removable dentures do you have? (RECORD FOR EACH)			
An upper jaw denture	Yes	1	05a
	No	2	
A lower jaw denture	Yes	1	05b
	No	2	



(Annex 5, continued)

Question	Response	Code
During the past 12 months, did your teeth or mouth cause any <b>pain or discomfort</b> ?	Yes 1	06
	No 2	
How long has it been since you last <b>saw a dentist</b> ?	Less than 6 months 1	07
	6-12 months 2	
	More than 1 year but less than 2 years 3	
	2 or more years but less than 5 years 4	
	5 or more years 5	
	Never received dental care 6 <i>If Never, go to 09</i>	
What was the <b>main reason for your last visit</b> to the dentist?	Consultation / advice 1	08
	Pain or trouble with teeth, gums or mouth 2	
	Treatment / Follow-up treatment 3	
	Routine check-up treatment 4	
	Other 5 <i>If Other, go to 08other</i>	
	Other (please specify) <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 08other	
How <b>often</b> do you clean your teeth?	Never 1 <i>If Never, go to 013a</i>	09
	Once a month 2	
	2-3 times a month 3	
	Once a week 4	
	2-6 times a week 5	
	Once a day 6	
	Twice or more a day 7	
Do you use <b>toothpaste</b> to clean your teeth?	Yes 1	010
	No 2 <i>If No, go to 012a</i>	
Do you use <b>toothpaste</b> containing <b>fluoride</b> ?	Yes 1	011
	No 2	
	Don't know 77	

(Annex 5, continued)

Question	Response	Code
Do you use any of the following to <b>clean your teeth</b> ? (RECORD FOR EACH)		
Toothbrush	Yes 1	012a
	No 2	
Wooden toothpicks	Yes 1	012b
	No 2	
Plastic toothpicks	Yes 1	012c
	No 2	
Thread (dental floss)	Yes 1	012d
	No 2	
Charcoal	Yes 1	012e
	No 2	
Chewstick / miswak	Yes 1	012f
	No 2	
Other	Yes 1 <i>If Yes, go to 012o-ther</i>	012g
	No 2	
Other (please specify) <input type="text"/>		012other
Have you <b>experienced any of the following problems</b> during the past 12 months because of the <b>state of your teeth</b> ? (RECORD FOR EACH)		
Difficulty in chewing foods	Yes 1	013a
	No 2	
Difficulty with speech/trouble pronouncing words	Yes 1	013b
	No 2	
Felt tense because of problems with teeth or mouth	Yes 1	013c
	No 2	
Embarrassed about appearance of teeth	Yes 1	013d
	No 2	
Avoid smiling because of teeth	Yes 1	013e
	No 2	

(Annex 5, continued)

Question	Response		Code
Sleep is often interrupted	Yes	1	013f
	No	2	
Days not at work because of teeth or mouth	Yes	1	013g
	No	2	
Difficulty doing usual activities	Yes	1	013h
	No	2	
Less tolerant of spouse or people close to you	Yes	1	013i
	No	2	
Reduced participation in social activities	Yes	1	013j
	No	2	

Source: (61).

## Annex 6. Global School-based Student Health Survey (GSHS) – Hygiene Module

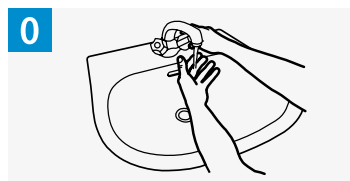
Oral Health	
<p>17. How would you describe the health of your teeth?</p> <ul style="list-style-type: none"> <li>a. Excellent</li> <li>b. Very good</li> <li>c. Good</li> <li>d. Average</li> <li>e. Poor</li> <li>f. Very poor</li> </ul>	<p>18. How would you describe the health of your gums?</p> <ul style="list-style-type: none"> <li>a. Excellent</li> <li>b. Very good</li> <li>c. Good</li> <li>d. Average</li> <li>e. Poor</li> <li>f. Very poor</li> </ul>
<p>19. During the past 12 months, did a tooth ache cause you to miss classes or school?</p> <ul style="list-style-type: none"> <li>a. Yes</li> <li>b. No</li> </ul>	<p>20. During the past 12 months, how often did you have a tooth ache or feel discomfort because of your teeth?</p> <ul style="list-style-type: none"> <li>a. Never</li> <li>b. Rarely</li> <li>c. Sometimes</li> <li>d. Most of the time</li> <li>e. Always</li> </ul>
<p>21. Do you use toothpaste that contains fluoride?</p> <ul style="list-style-type: none"> <li>a. Yes</li> <li>b. No</li> <li>c. I do not know</li> </ul>	<p>22. When was the last time you saw a dentist for a check-up, exam, teeth cleaning, or other dental work?</p> <ul style="list-style-type: none"> <li>a. During the past 12 months</li> <li>b. Between 12 and 24 months ago</li> <li>c. More than 24 months ago</li> <li>d. Never</li> <li>e. I do not know</li> </ul>

Source: <http://www.who.int/chp/gshs/methodology/en/>

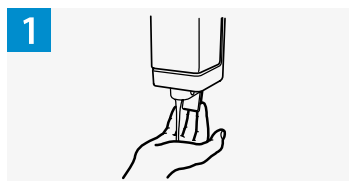
## Annex 7. Hand washing techniques



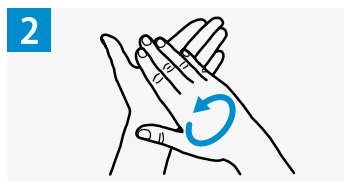
Duration of the entire procedure: 40-60 seconds



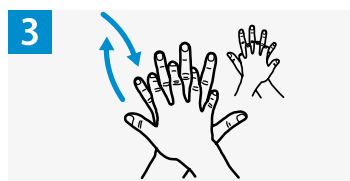
Wet hands with water;



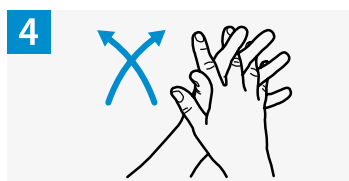
Apply enough soap to cover all hand surfaces;



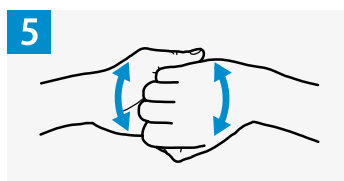
Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;



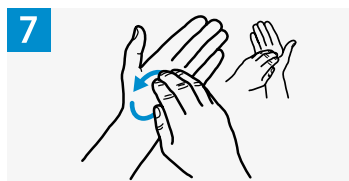
Palm to palm with fingers interlaced;



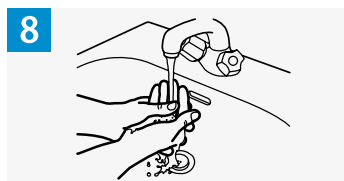
Backs of fingers to opposing palms with fingers interlocked;



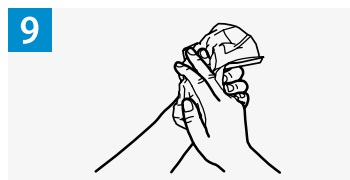
Rotational rubbing of left thumb clasped in right palm and vice versa;



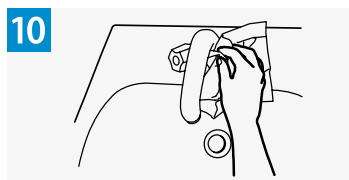
Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



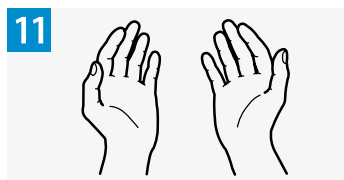
Rinse hands with water;



Dry hands thoroughly with a single use towel;



Use towel to turn off faucet;



Your hands are now safe.

Source: [http://www.who.int/gpsc/clean\\_hands\\_protection/en/](http://www.who.int/gpsc/clean_hands_protection/en/)

# Promoting Oral Health in Africa

## Prevention and control of oral diseases and noma as part of essential noncommunicable disease interventions

Every day, across Africa, people seek relief from pain or discomfort that affects their ability to speak, to eat and to participate in all the routines of normal life. In many cases they can be helped with essential, cost-effective interventions; without such interventions millions of people will continue to suffer needlessly and in some cases die.

*Promoting Oral Health in Africa* is the response by the WHO Regional Office for Africa to requests from across the Region's 47 countries for a reference manual to help prevent and manage oral diseases at the primary health care level. It provides clear, straightforward guidance to health care workers, communities and decision-makers on how to tackle such diseases. As well as the most frequently presenting conditions, such as tooth decay and gum disease, the manual also addresses noma, a "hidden disease" that causes death and severe disfigurement.

This manual aims at the prevention of oral diseases and promotion of good oral health. It emphasizes the fact that improving oral health is an integral part of the essential package of interventions against noncommunicable diseases at the primary health care level. *Promoting Oral Health in Africa* proposes a Basic Package of Oral Care, and includes a set of 10 protocols written specially for primary health care staff to aid in diagnosing and treating specific oral diseases. It also presents the overall rationale for health initiatives within school and community settings, and recommends a set of integrated activities at both levels.

*Promoting Oral Health in Africa* was developed with the participation of experts from the WHO African Region and beyond. The lessons learnt during implementation of the guidance contained in the manual will be used to inform regular updates, ensuring that the manual continues to respond to the needs of African people and fulfil its goal of re-energizing national and local efforts to improve their oral health.



**World Health  
Organization**

REGIONAL OFFICE FOR **Africa**

World Health Organization (WHO)  
Regional Office for Africa  
Noncommunicable Diseases (NCD) Cluster

Cité Djoué P.O. Box 06  
Brazzaville, Republic of Congo  
<http://www.afro.who.int/>

