Tools and Standards for SCORE Essential Interventions
for Health Data Technical Package

Tools and Standards for SCORE Essential Interventions

Made possible by funding from Bloomberg Philanthropies
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## Acronyms

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<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tr>
<td>BMGF</td>
<td>Bill &amp; Melinda Gates Foundation</td>
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<tr>
<td>BMJ</td>
<td>British Medical Journal</td>
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<tr>
<td>BP</td>
<td>Bloomberg Philanthropies</td>
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<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
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<tr>
<td>CSF</td>
<td>Community Systems Foundation</td>
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<tr>
<td>DFID</td>
<td>Department for International Development, United Kingdom</td>
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<td>DHS</td>
<td>Demographic Health Surveys</td>
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<tr>
<td>D4H</td>
<td>Data for Health</td>
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<tr>
<td>FIGO</td>
<td>International Federation of Gynecology and Obstetrics</td>
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<tr>
<td>GAVI</td>
<td>Gavi, the Vaccine Alliance</td>
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<td>GOARN</td>
<td>Global Outbreak Alert and Response Network</td>
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<tr>
<td>GIZ</td>
<td>Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (German Association for Development Cooperation)</td>
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<tr>
<td>ECDC</td>
<td>European Centre for Disease Prevention and Control</td>
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<tr>
<td>HDC</td>
<td>Health Data Collaborative</td>
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<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
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<tr>
<td>ICD</td>
<td>International Classification of Diseases</td>
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<tr>
<td>ICF</td>
<td>International Classification of Functioning, Disability and Health</td>
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<tr>
<td>ICHI</td>
<td>International Classification of Health Interventions</td>
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<tr>
<td>ICDDR</td>
<td>International Centre for Diarrhoeal Disease Research</td>
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<tr>
<td>IHME</td>
<td>Institute for Health Metrics and Evaluation</td>
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<td>IHSN</td>
<td>International Household Survey Network</td>
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<td>ILO</td>
<td>International Labour Organization</td>
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<tr>
<td>Acronym</td>
<td>Description</td>
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<tr>
<td>ISA</td>
<td>International Stillbirth Alliance</td>
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<td>INSERM</td>
<td>Institute National de la Santé et de la Recherche Médicale</td>
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<td>ISQua</td>
<td>International Society for Quality in Health Care</td>
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<tr>
<td>ITU</td>
<td>International Telecommunication Union</td>
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<tr>
<td>JHU</td>
<td>Johns Hopkins University</td>
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<td>LSHTM</td>
<td>London School of Hygiene and Tropical Medicine</td>
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<tr>
<td>ME</td>
<td>Measure Evaluation</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Cooperation and Development</td>
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<tr>
<td>PEPFAR</td>
<td>President’s Emergency Plan for AIDS Relief</td>
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<td>PHMRC</td>
<td>Population Health Metrics Research Consortium</td>
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<td>TGF</td>
<td>The Global Fund to Fight AIDS, Tuberculosis and Malaria</td>
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<td>UNAIDS</td>
<td>The Joint United Nations Programme on HIV/AIDS</td>
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<td>UNDESA</td>
<td>United Nations Department of Economic and Social Affairs</td>
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<td>UNECE</td>
<td>United Nations Economic Commission for Europe</td>
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<td>UNFPA</td>
<td>United Nations Population Fund</td>
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<td>UNICEF</td>
<td>United Nations Children’s Fund</td>
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<td>UNSD</td>
<td>United Nations Statistics Division</td>
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<td>University of Queensland</td>
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<td>United States Agency for International Development</td>
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<td>Vital Strategies</td>
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<td>WHO</td>
<td>World Health Organization</td>
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<td>WBG</td>
<td>World Bank Group</td>
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<td>WHODAS</td>
<td>WHO Disability assessment Schedule</td>
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<tr>
<td>WHOFIC</td>
<td>WHO Family of International Classifications and Terminologies</td>
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<td>UiO</td>
<td>University of Oslo</td>
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Introduction

The new SCORE for Health Data Technical Package forms the cornerstone of WHO’s efforts to strengthen health information systems worldwide, and countries’ capacity to generate, analyse and use health data. The package is published during one of the most data-strained public health crisis responses ever – that of the COVID-19 pandemic1 – which is placing a huge burden on already overstretched health and health-related data systems worldwide.

To meet the increasingly complex demands on countries for health information, the SCORE for Health Data Technical Package brings together for the first time a set of the most effective interventions and tools for addressing critical data gaps, and strengthening country health data for planning and monitoring health priorities. The interventions selected are known to be the most effective, feasible, sustainable and scalable, and, like other technical packages, the aim of this package is to be able to communicate in a way that resonates with policy-makers and health leaders globally.

The SCORE for Health Data Technical Package comprises five key interventions. Interventions S, C and O focus on improving the availability and quality of data from critical data sources, while interventions R and E aim to enhance the synthesis, analysis, access and use of health data for action. Indicators and actions are included for each intervention.

The SCORE for Health Data Technical Package is not intended to replace existing detailed guidance on implementing various components of a health information system. Instead, it provides a coherent framework for countries to focus on priority interventions and elements, and points countries towards good and best practice actions and to existing and new universally accepted standards and tools.

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1 Developed by WHO in close collaboration with key partners, the new SCORE for Health Data Technical Package addresses WHO’s commitment in its 13th Global Programme of Work to support Member States in the effective collection, analysis, reporting and use of data.
INTRODUCTION

SURVEY POPULATIONS AND HEALTH RISKS
- System of regular population-based health surveys
- Surveillance of public health threats
- Regular population census

COUNT BIRTHS, DEATHS AND CAUSES OF DEATH
- Full birth and death registration
- Certification and reporting of causes of death

OPTIMIZE HEALTH SERVICE DATA
- Routine facility reporting system with patient and community monitoring
- Regular system to monitor service availability, quality and effectiveness
- Health service resources: health financing and health workforce

REVIEW PROGRESS AND PERFORMANCE
- Regular analytical reviews of progress and performance, with equity
- Institutional capacity for analysis and learning

ENABLE DATA USE FOR POLICY AND ACTION
- Data and evidence drive policy and planning
- Data access and sharing
- Strong country-led governance of data
What the **SCORE for Health Data Technical Package** includes

The **SCORE for Health Data Technical Package** includes the following components and will be accompanied by the first *Global status report on the status of health data systems* (and regional and country profiles).

**SCORE FOR HEALTH DATA TECHNICAL PACKAGE**

**SCORE Essential Interventions**: An overview to health information systems. For each of the interventions, the document provides the underlying key elements, the indicators used to assess and monitor, and examples of actions to be taken.

**SCORE Tools and Standards**: A list of up-to-date resources for each intervention.

**SCORE Assessment Instrument**: A data collection instrument (and accompanying user guide) to assess a country's health information system and identify gaps.

**SCORE GLOBAL STATUS REPORT AND COUNTRY PROFILES**

**SCORE Global Status Report on Health Data Systems**: Presents results of the global assessment using the SCORE Assessment Instrument.

**SCORE Regional Status Report and Assessment**: Regional summary reports and/or profiles that focus on interventions particularly relevant to specific regions.

**SCORE Country Assessment**: PDFs showing country-specific results.
The **SCORE Tools and Standards** resource

This **SCORE Tools and Standards** document supports implementation of the five interventions in the **SCORE Essential interventions** document, providing information and links to best practice actions, standards and tools.

These links are intended to help countries take a concerted and coherent approach to accelerate improvements in country health data systems and capacities. This is particularly timely, as COVID-19 increases the demand for health data from frontline workers, policy-makers and researchers and countries take action to break chains of transmission, trace contacts, and test and treat cases while maintaining all other essential services.

It is important to note that while this document includes many of the tools and standards currently available, it is not exhaustive. A more detailed online database can be accessed at [https://www.who.int/data/data-collection-tools/score](https://www.who.int/data/data-collection-tools/score), and will be updated regularly as new tools and standards become available.

*Note: **SCORE Global Status Report on Health Data Systems**: Between 2019 and 2020, a global assessment was conducted using the **SCORE** Assessment Instrument to provide a baseline diagnosis of key aspects of countries’ health information systems. The results of these assessments will feed into the **Global Status Report on Health Data Systems**, describing (through comparative analysis) the state of the world’s health data systems, and providing individual country profiles generated by a defined set of indicators that assess the maturity of a country’s health information system (due to be published in late 2020).
Survey populations and health risks to know what makes people sick or at risk

KEY ELEMENTS
S1. System of regular population-based health surveys
S2. Surveillance of public health threats
S3. Regular population census
S1. System of regular population-based health surveys

Bloomberg Philanthropies Data for Health initiative - Noncommunicable Diseases (NCD) Mobile Phone Survey

The core questionnaire collects data on NCDs and associated risk factors, including tobacco use, alcohol use, diet, blood pressure, diabetes, and demographic characteristics. Countries can adapt the core questions to their context and can include additional questions.

**RECOMMENDED USE**

- Relevant in all settings where data are lacking for NCDs and associated risk factors.
- Allows for rapid data collection, analysis and dissemination.
- The data collection tool, Surveda, can be used for any topic of interest and for any sub-population.
- Output includes executive summaries, country fact sheets, and public-use datasets as permitted by in-country data release policies. The initiative encourages countries to make anonymized data publicly available to inform national, regional, and global NCD priorities, promote research, and facilitate cross-country comparisons.

**CONSIDERATIONS**

- Collaboration with mobile network operators or aggregators is required.
- All data files are encrypted, without personally identifiable information, in a password-protected server.
- Currently limited to NCD related surveys.
World Health Survey Plus (WHS+)

DESCRIPTION

The WHS+ is a multi-topic, multi-platform and multi-mode survey system developed and supported by WHO. It addresses essential data gaps using standardized survey modules while retaining the flexibility to customize for countries’ unique data needs. The high-quality data from the WHS+ is vital for countries to monitor their efforts to achieve national health targets and the health-related SDGs. WHS+ will strengthen countries’ data generation capacity and provide data to develop appropriate policies and programmes, allocate resources and prioritize interventions.

RECOMMENDED USE

• Particularly suited to tracking performance and progress towards national health targets aligned with the health-related SDGs, UHC and WHO’s GPW 13 targets.
• Provides disaggregated data to monitor health inequity and inequality.
• Uses efficient data collection mechanisms, including the possibility of using mobile phone studies in conflict- or natural disaster affected areas, or for rapid pre- and post- policy change follow-up surveys.
• Provides easy access to data hub for data hosting and analysis tools.
• Particularly suited to tracking performance and progress towards national health targets aligned with the health-related SGDs, UHC and WHO’s GPW 13 targets.
• Provides disaggregated data to monitor health equity and equality.
• Uses efficient data collection mechanisms, including the possibility of using mobile phone studies in conflict- or natural disaster affected areas, or for rapid pre- and post- policy change follow-up surveys.

CONSIDERATIONS

• Full technical package under development.
International Household Survey Network (IHSN) resources

DESCRIPTION

The IHSN’s mission is to improve the availability, accessibility, and quality of survey data within developing countries, and to encourage the analysis and use of this data by national and international development decision-makers, the research community, and other stakeholders. The activities of the IHSN include:

- **Improvement of data collection methods and practices** – IHSN produces technical and methodological guidelines for all stages of the survey cycle and also develops and maintains a Question Bank, a central repository of international survey guidelines, definitions of related concepts and indicators, interviewer instructions, and classifications. This will include development of a common set of questions is essential to obtaining comparable data and to enhance the reliability and validity of survey questions.

- **Development and maintenance of tools and guidelines** to help data producers improve the documentation, preservation, anonymization, cataloguing, dissemination, and archiving of survey and census microdata such as the metadata editor compliant with Data Documentation Initiative (DDI) 2.n and Dublin Core XML metadata standards; a microdata cataloguing tool – the National Data Archive (NADA); and the SDC Micro – for generation of protected microdata for researchers and public use (as most data from statistical agencies or other institutions are confidential).

- **Maintenance of survey and census catalogues** – includes a searchable list of surveys and censuses conducted in low- and middle-income countries. The catalogue provides metadata available including, when available, survey questionnaires, manuals and reports.

RECOMMENDED USE

- Country governments building a survey programme or wishing to perform surveys based on international standards and best practices can access the comprehensive IHSN resources from the network’s website.

- Other entities who need access to internationally recommended standards for surveys.

- Entities requiring information on surveys conducted in countries and links to microdata where available.

- Data producers making their metadata and microdata available (with appropriate anonymizations) to researchers to add value to their data.

CONSIDERATIONS

The survey catalogue has broader coverage on surveys from more established survey programmes and surveys conducted by statistical offices. Information on ad hoc health surveys is more sparse.
WHO STEPwise approach to noncommunicable disease risk factor Surveillance (STEPS)

**AUTHOR**
WHO

**PUBLICATION DATE**
2017

**LANGUAGES**
English (contact information included for availability in other languages)

**LINK**
http://www.who.int/chp/steps/en/

**DESCRIPTION**
The WHO STEPwise approach to Surveillance (STEPS) is a simple, standardized method for collecting, analysing and disseminating data on risk factors for noncommunicable diseases. The approach encourages the collection of small amounts of useful information on a regular and continuing basis. The STEPS Instrument covers three different levels or “steps” of risk factor assessment: Step 1: Questionnaire; Step 2: Physical measurements; and Step 3: Biochemical measurements.

**RECOMMENDED USE**
- Relevant in all settings where data on risk factors for noncommunicable diseases are not widely available.
- Phased modular approach fosters enhancement of capacities to generate data, starting with asking people to self-report behavioural risk factors; taking physical measurements and blood pressure; and taking specimens to measure biomedical indicators such as fasting blood glucose, total cholesterol levels and urinary sodium.
- Can be used as the starting point for the conduct of national health examination surveys.

**CONSIDERATIONS**
- Initial modules rely on the truthfulness of individual responses to questions about behavioural risk factors.
- Taking physical and biomedical samples can be challenging in the field.

Multiple Indicator Cluster Survey 6 (MICS6)

**AUTHOR**
UNICEF

**PUBLICATION DATE**
2017

**LANGUAGES**
Arabic, Chinese, English, French, Russian, Spanish

**LINK**
http://mics.unicef.org/

**DESCRIPTION**
The Multiple Indicator Cluster Survey (MICS) is an international household survey programme developed and supported by UNICEF. Implemented through collaboration between UNICEF, country ministries of health and statistics offices, MICS is designed to collect estimates of key indicators that can be used to assess the situation of children and women, including on child protection and early childhood education. MICS also acts as a major source of data on child health and nutrition. Topics recently developed for MICS6 include: rapid water-quality testing, social transfers, foundational learning
skills (children aged 7-14), child and adult functioning, migration status, use of clean fuels and technology, and victimization. MICS PLUS follows a standard MICS survey by continuing to collect information via mobile phones, accumulating longitudinal data which can be rapidly analysed and disseminated.

RECOMMENDED USE

- Useful for all countries facing data limitations in relation to child and maternal survival, health and development.
- Generates cross-sectoral data on determinants of child health and development such as safe water and sanitation, nutrition, inequities, violence, social protection and education.
- Can produce needed data relatively quickly in challenging situations, for example conflict, war, migration, human trafficking and forced migration.
- Includes support for data collection, analysis, dissemination, and use; implementation and capacity-strengthening; country accountability and ownership of survey data.

- Questionnaire and methods are harmonized to a significant extent with Demographic Health Surveys (see below) so that the two can be complementary.

CONSIDERATIONS

- Mainly focused on young children and mothers; more recently has included attention to adolescent health and development, and violence against women.
- Does not cover certain issues in depth, particularly sexual and reproductive health, including family planning.
- Countries should implement MICS surveys as part of a national household survey programme to maximize efficiency and avoid overlap and duplication of surveys; and ensure that survey instruments are adapted to meet the information needs across multiple programme areas.

Demographic and Health Surveys Program (DHS)

DESCRIPTION

Demographic and Health Surveys (DHS) are nationally representative household surveys that provide data for a wide range of health and demographic monitoring and impact evaluation indicators. Surveys can focus on topics such as child health, nutrition, HIV/AIDS, malaria, gender, domestic violence, and tobacco use, but can include other topics depending on requirements.

RECOMMENDED USE

- Useful for all countries facing data limitations, especially in relation to population data and the health status of children and women.
- Aims to enhance the capacity of country partners to implement, disseminate and use data from a range of household and facility surveys.
SCORE FOR HEALTH DATA TECHNICAL PACKAGE: TOOLS AND STANDARDS FOR SCORE ESSENTIAL INTERVENTIONS

WHO Study on Global AGEing and Adult Health (SAGE)

DESCRIPTION

WHO’s SAGE is a longitudinal study collecting data on adults aged 50 years and older, plus a smaller comparison sample of adults aged 18–49 years, from nationally representative samples in China, Ghana, India, Mexico, Russian Federation and South Africa.

CONSIDERATIONS

- Support for country implementation limited to countries of high priority for development assistance from the USA.
- Questionnaire can be very long, with risks of increasing respondent fatigue.
- Countries should implement DHS surveys as part of a national household survey programme to maximize efficiency and avoid overlap and duplication of surveys and ensure that survey instruments are adapted to meet the information needs across multiple programme areas.

RECOMMENDED USE

- Relevant in all settings where information on adult health is sparse and information is needed on the evolution of patterns of ill-health in ageing populations.

AUTHOR

WHO

PUBLICATION DATE

2002

LANGUAGE

English

LINK

http://www.who.int/healthinfo/sage/en/

- Includes collection of geographic information to help link survey data with routine health data, health facility locations, local infrastructure such as roads and rivers, and environmental conditions.
- Modules include collection of clinical measurements and biomarkers that permit more objective assessment of nutrition status and risk factors than interviewee responses alone.
- Questionnaire and methods are harmonized to a significant extent with MICS surveys so that the two can be complementary.
Living Standards Measurement Study (LSMS)

**DESCRIPTION**

The Living Standards Measurement Study (LSMS) explores ways of improving the type and quality of household data collected by statistical offices in developing countries. The goal is to foster increased use of household data as a basis for policy decision-making. Modules include: consumption, education, health employment, anthropometry, non-labour income, housing, price data, environmental issues, fertility, household income, savings, household enterprises, and time use.

**RECOMMENDED USE**

- Relevant in all settings (though its wide scope can be challenging to implement where survey capacities are in the early stages of development).
- Designed to support policy decisions in health, education, economic activities, housing and utilities, etc.
- Aims to improve the quality of household survey data, increase the capacity of statistical institutes to perform household surveys, and enhance the capacity of statistical institutes to analyse household survey data for policy needs.
- Designed to improve policy-makers’ understanding of the determinants of observed social and economic outcomes.

**CONSIDERATIONS**

- Requires considerable technical and financial support from the World Bank.
- Countries should implement LSMS surveys as part of a national household survey programme to maximize efficiency and avoid overlap and duplication of surveys, and ensure that survey instruments are adapted to meet the information needs across multiple programme areas.
- Some of the topics are also covered in the MICS and DHS surveys with possible risks of duplication and discordance.

**AUTHOR**

World Bank Group

**PUBLICATION DATE**

2000

**LANGUAGE**

English

**LINK**

http://surveys.worldbank.org/lsms
S2. Surveillance of public health threats

World Health Organization (WHO) Health Emergency Dashboard

It also includes information available to the public through official websites like WHO or Ministry of Health websites relating to public health emergencies. The “News and Publications” dialogue box includes a list of WHO publications, including the disease outbreak news and other WHO news relating to reported events. These publications provide epidemiological information, WHO risk assessment of the event, WHO advice to the public and an overall summary.

RECOMMENDED USE

• Share information about public health events and emergencies.

CONSIDERATIONS

• The WHO Health Emergency Dashboard is not a comprehensive representation of all the events and emergencies to which WHO is responding.

• The events displayed are a subset of those reported through official channels as mandated by the International Health Regulations (IHR 2005).

• The content of the WHO Health Emergency Dashboard is for general information only. It is subject to change without notice.
Early Warning, Alert and Response System (EWARS)

DESCRIPTION
The Early Warning, Alert and Response System (EWARS) is designed to improve disease outbreak detection in emergency settings, such as in countries in conflict or following a natural disaster. It is a simple and cost-effective way to rapidly set up a disease surveillance system.

RECOMMENDED USE
- “EWARS in a box” contains all the equipment needed to establish surveillance and response in difficult and remote field settings without reliable internet or electricity.
- Deployed during an emergency as an adjunct to the national disease surveillance system. After the emergency, EWARS should re-integrate back into the national system.
- Designed to generate indicator-based reports and alerts based on weekly report thresholds and active call outs to communities.
- Allows the uploading of forms by provincial surveillance staff and automated generation of weekly bulletins.
- Facilitates risk assessment, investigation, and management for all alerts.

CONSIDERATIONS
- Not designed to handle contact tracing (see GoData).
- Requires at least periodic access to mobile networks.
- Requires validation of data for quality.


DESCRIPTION
In response to the exponential increase in international travel and trade, and emergence and re-emergence of international disease threats and other health risks, 194 countries across the globe have agreed to implement the International Health Regulations (2005) (IHR). The stated purpose and scope of the IHR are “to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade.” The State
Party self-assessment Annual reporting tool (SPAR) is an IHR monitoring questionnaire that is sent to national IHR focal points for a self-assessment of their capacity to address international disease threats and other health risks, and send the results to WHO. There is also a guidance document that accompanies the SPAR tool.

**RECOMMENDED USE**

- A self-assessment tool to be used by national authorities across government sectors that focuses on national IHR capacities across relevant sectors for the detection and response to potential public health emergencies.

- The SPAR tool can measure 13 capacities including: legislation and financing; coordination and national IHR focal point functions; zoonotic events and human-animal interface; food safety; laboratory capacity; surveillance; human resources; national health emergency framework; health service provision; risk communication; points of entry; chemical events and radiation emergencies.

**CONSIDERATIONS**

- To do full justice to this comprehensive self-assessment requires collective participation from different government sectors. There is risk of key stakeholders missing during the self-assessment exercise resulting in a partial or incorrect picture of IHR core capacities.

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Joint External Evaluation tool: International Health Regulations as part of the IHR (2005) monitoring and evaluation framework

**DESCRIPTION**

The Joint External Evaluation tool is intended to assess country capacity to prevent, detect, and respond to public health threats independently of whether they are naturally occurring, deliberate, or accidental. It includes a section on surveillance as one of the core capacities and provides a checklist and recommended indicators for countries to assess and monitor progress in core capacity development. It was developed by WHO in collaboration with partners and initiatives such as the Global Health Security Agenda.

**RECOMMENDED USE**

- Relevant in all settings.
- Designed to assess country capacity to prevent, detect, and rapidly respond to public health threats.
SURVEY POPULATIONS AND HEALTH RISKS

- Allows countries to identify the most urgent needs within their health security system, to prioritize opportunities for enhanced preparedness, response and action, and to engage with current and prospective donors and partners to target resources effectively.
- The first external evaluation establishes a baseline measurement of the country’s capacity and capabilities. Subsequent evaluations identify progress made and ensure any improvements in capacity are sustained.

CONSIDERATIONS
- Success depends on transparency in reporting emerging public health threats.

Go.Data Managing complex data in outbreaks

DESCRIPTION
Go.Data is an outbreak investigation tool for field data collection during public health emergencies. The tool includes functionality for case investigation, contact follow-up, visualization of chains of transmission including secure data exchange and is designed for flexibility in the field, to adapt to the wide range of outbreak scenarios. The tool is targeted at any outbreak responder.

RECOMMENDED USE
- Designed for outbreak investigators and epidemiologists.
- Easy to use case and contact data collection and visualization of disease transmission that can help responders choose the right interventions to stop a disease from spreading.
- Allows for more rapid data entry, offer better visualization of chains of transmission, and runs in stand-alone and connected modes, enabling more flexible ways of working and improved data sharing.
- Allows access though mobile devices, especially to support work of the contact tracing teams.

CONSIDERATIONS
- Requires some preliminary training for operating the tool.

AUTHORS
WHO and Global Outbreak Alert and Response Network (GOARN)

PUBLICATION DATE
2015

LANGUAGE
English

LINK
https://www.who.int/godata
Early detection, assessment and response to acute public health events: implementation of early warning and response with a focus on event-based surveillance

**DESCRIPTION**

The goal of this document is to provide national health authorities, and stakeholders supporting them, with guidance for implementing or enhancing all-hazards early warning and response mechanisms within national surveillance systems. It aims to provide direction regarding the implementation of surveillance capacities, especially event-based surveillance, in order to detect and to respond rapidly to all acute health events and risks from any origin. The document was coordinated by WHO with inputs from partners including CDC and ECDC and ministries of health.

**RECOMMENDED USE**

- Relevant in all country settings.
- Designed to measure disease burden with a focus on acute events and notifiable diseases, including monitoring morbidity/mortality trends, in order to effectively guide disease control programmes and the corresponding allocation of resources.
- Aims to achieve early detection of public health events requiring rapid investigation and response, in order to ensure that events of all origins are rapidly detected and controlled.
- Aims to be sensitive and to detect and respond rapidly to signals and alerts coming from both formal and informal sources, within and outside of the health sector.

**CONSIDERATIONS**

- Highly complex to implement in low-resource settings where capacities are limited. Draws upon multiple sources of information beyond traditional disease-based surveillance (including laboratory confirmation) and syndromic surveillance.
- Sources encompass environmental/ecological surveillance and health-related behavioral information such as monitoring of absenteeism in schools or in workplaces, medicine sales and paramedical products such as insect repellent, activities on internet or social networks.
Outbreak surveillance and response in humanitarian emergencies

RECOMMENDED USE

- Targeted at settings facing humanitarian emergencies with displacement of populations and associated high population densities, inadequate food and shelter, unsafe water, poor sanitation and lack of infrastructure; and ensuring risks of transmission of communicable diseases and other conditions, especially epidemic-prone diseases that can be a major cause of morbidity (disease) and mortality during emergencies.
- Aim is to ensure rapid detection and prompt response.

CONSIDERATIONS

- Reliant on a network of people to collect, investigate, report, analyse and disseminate information from the field up the reporting chain to the central level.
- Health facilities need to have well-trained staff and adequate resources to ensure complete, reliable and regular reporting.
- Important to use appropriate tools for data management, and standardized data collection and reporting forms to minimize data errors.
- Maintaining up-to-date records is important for monitoring performance and for performing validity checks.

DESCRIPTION

The purpose of this document is to provide a standard framework and best current practice for implementation of an Early Warning and Response Network (EWARN) and its operation in the field following humanitarian emergencies. These guidelines are intended for all individuals responsible for disease surveillance activities at all levels, including health facility staff, surveillance officers, epidemiologists, data analysts and statisticians, government health officials, sanitarians, managers of the Expanded Programme on Immunization (EPI), public health officers, laboratory personnel and community health workers.

AUTHOR
WHO

PUBLICATION DATE
2012

LANGUAGE
English

LINK
S3. Regular population census

United Nations principles and recommendations for population and housing censuses, Revision 3

**RECOMMENDED USE**

- All countries should conduct a census, at a minimum every decade, using standards such as those set out in this document.
- The census generates rich, cross-sectional material about changing demographics that can be used to plan and deliver health and social services and provide the basic information on population size and distribution that underpin monitoring and evaluation activities across multiple sectors, and for the SDGs.
- Population denominators for the calculation of indicator rates and ratios are largely derived from intercensal projections.
- Should be implemented as a component of an integrated statistical system with data derived from administrative sources, including civil registration and vital statistics (CRVS) and household surveys.

**DESCRIPTION**

The UN principles and recommendations for population and housing censuses, Revision 3, provide international principles and recommendations for use by national statistical offices and census officials worldwide in planning and organizing their censuses. The document is based on many years of experience and offers guidance on emerging issues, such as new data collection techniques and analysis.

**CONSIDERATIONS**

- Requires considerable resources, financial and human, as well as organizational skills.
- Costly to implement and requires engagement of the population and willingness to participate in census activities.
- Census operations and quality maybe compromised by excessively lengthy questionnaires that increase average interview time and fieldwork.
- Successful census implementation requires trained enumerators, which may be a problem, in countries where such staff may be scarce.

**AUTHOR**

UNSD

**PUBLICATION DATE**

2017

**LANGUAGE**

English

**LINK**

United Nations handbook on the management of population and housing censuses, Revision 2

**DESCRIPTION**
This handbook provides guidance for the process of planning, collecting, compiling, evaluating, disseminating and analysing demographic, economic and social data for all persons in a country or in a well-delimited part of a country at a specified time, and at the smallest possible geographical level.

**RECOMMENDED USE**
- Relevant in all settings where a census is needed or conducted.
- Provides the detailed operational and technical guidance needed to implement the census according to the UN principles and recommendations for population and housing censuses (see below).
- Includes country examples to illustrate key points.

**CONSIDERATIONS**
- Requires considerable resources, financial and human, as well as organizational skills.
- The census operations and quality maybe compromised by excessively lengthy questionnaires that increase average interview time and complicate fieldwork.
- Successful census implementation requires trained enumerators, which may be a problem, in countries where such staff may be scarce.
- Security issues and environmental developments may prevent census activities from being properly carried out.

**AUTHOR**
UN Statistical Division (UNSD)

**PUBLICATION DATE**
2016

**LANGUAGE**
English

**LINK**
Count births, deaths and causes of death to know who is born and what people die from

KEY ELEMENTS

C1 Full birth and death registration
C2 Certification and reporting of causes of death
C1. Full birth and death registration

The ‘Ten CRVS Milestones’ framework for understanding civil registration and vital statistics systems

DESCRIPTION

The Ten CRVS Milestones framework has been developed to help policy-makers, managers and other CRVS stakeholders understand CRVS systems, capturing complexity by focusing on the 10 milestones that must be achieved in any CRVS system. Each milestone summarizes the actions that community, local and national stakeholders must take to ensure that every birth or death is officially registered and included in country vital statistics systems.

RECOMMENDED USE

- Relevant to all countries with nascent or emerging capacities for CRVS.
- Supports stakeholder understanding of CRVS processes, describing actions, responsibilities and processes at various levels.
- Provides a framework for the development of standard operating procedures for CRVS stakeholders.
- Can be used as the basis for a CRVS monitoring framework.

CONSIDERATIONS

- Is a summary of longer processes described elsewhere, for example in the CRVS eLearning course and the CRVS Knowledge Gateway Learning Centre (see p.24).

AUTHORS
Cobos Muñoz D, Abouzahr C, de Savigny D.

PUBLICATION DATE
2018

LANGUAGE
English

LINK
https://gh.bmj.com/content/bmjgh/3/2/e000673.full.pdf
Handbook on civil registration and vital statistics systems: management, operations, maintenance, Revision 1

RECOMMENDED USE

- Relevant in all settings where CRVS improvement is needed.
- Makes a clear case for the use of routine civil registration for generating vital statistics in preference to other methods such as household surveys.
- Provides operational and management guidance for implementation of UN CRVS standards.
- Includes practical examples of country experiences from a variety of settings.
- Includes sections on emerging issues such as population registers, national ID systems, digital CRVS, potential of mobile technologies, blockchain.

CONSIDERATIONS

- Does not include a strategic framework for prioritization of activities.
- No guidance on costing or cost-effectiveness of alternative CRVS institutional and administrative models.
- Length and complexity may discourage counties embarking on CRVS development.
- Does not address particular challenges facing countries with very low levels of CRVS capacity.
- Limited guidance on ensuring equity across population groups.
- Limited guidance on cause of death ascertainment and links to CRVS.
- Offers limited advice on CRVS in conflict, archiving, data security.

DESCRIPTION

This handbook offers specifications and practical examples for the improvement and/or establishment of civil registration, vital statistics and identity management systems. It presents model organizational and legal arrangements, as well as ideal descriptions, processes and protocols that are considered the gold standard.
CRVS Knowledge Gateway Learning Centre

**AUTHORS**
University of Melbourne, Data for Health, Bloomberg Philanthropies

**PUBLICATION DATE**
2018

**LANGUAGE**
English

**LINK**
https://crvsgateway.info/learningcentre

**RECOMMENDED USE**
- Relevant to countries with nascent or developing CRVS capacities.
- Readily accessible online.
- Covers all topics included in the WHO CRVS Resource Kit (see below) with updates to include emerging experiences and knowledge.
- Comprises a mix of technical documents, videos and self-learning exercises.
- Links to CRVS face-to-face courses on aspects of CRVS delivered by the University of Melbourne.

**CONSIDERATIONS**
- Focuses solely on births, deaths and causes of death.

**DESCRIPTION**
The CRVS Knowledge Gateway Learning Centre consolidates available knowledge, tools, guidelines and standards, providing countries with a convenient resource to help accelerate their CRVS improvement strategies. This Learning Centre comprises the most advanced techniques and knowledge from global experts in CRVS systems and is continuously updated.

CRVS eLearning course

**AUTHOR**
World Bank Group

**PUBLICATION DATE**
2017

**LANGUAGE**
English

**LINK**
https://olc.worldbank.org/content/civil-registration-and-vital-statistics-systems-basic-level-self-paced-format

**DESCRIPTION**
The CRVS eLearning course comprises 13 technical modules that aim to train policy-makers, public and civil servants, researchers, development practitioners and civil society organizations using practical tools and approaches to building and maintaining CRVS systems that are linked to identity management systems and tailored to local contexts. The World Bank Group coordinated the development of the eLearning course, with contributions from partners including CDC, UNICEF, UNFPA, WHO and D4H.
SCORE FOR HEALTH DATA TECHNICAL PACKAGE: TOOLS AND STANDARDS FOR SCORE ESSENTIAL INTERVENTIONS

RECOMMENDED USE

- Relevant to all countries with nascent or emerging CRVS capacity.
- Provides a comprehensive overview of all aspects of CRVS and covers all vital events.
- Addresses CRVS in settings affected by conflict.
- Is offered as a self-learning tool with external facilitation so that participants can develop capacities in their own time.
- Includes self-applied learning exercises as well as assignments that are externally assessed and graded.
- Successful candidates receive a certificate upon completion.
- The email discussion forum allows participants to share their experiences, fostering continuing collaboration when the course ends.

CONSIDERATIONS

- Is delivered online and therefore offers limited interaction with technical experts.
- Some complex topics may be challenging for certain participants. For example, it might be advisable to target cause of death certification by physicians to users with medical knowledge.

Civil registration and vital statistics legal and regulatory review: tool and methodology

AUTHORS
Vital Strategies and Global Health Advocacy Incubator

PUBLICATION DATE
2017

LANGUAGE
English

LINK

DESCRIPTION
This toolkit provides a guide for analysing existing CRVS laws to identify legal obstacles and opportunities. Even though CRVS systems should serve the same principal functions, every country has different approaches based on its legal structure, history, and culture. Countries also differ in their CRVS organization, implementation, processes, scale, partners, and capacities. This toolkit attempts to provide a standardized methodology to capture and evaluate this range of approaches and needs.

RECOMMENDED USE

- Relevant for countries at all levels of CRVS capacity, especially those where legal frameworks have not recently been updated.
- Sets out a highly detailed and structured approach to reviewing the legal framework for CRVS.
- Covers all aspects of CRVS law and regulations, from global to local levels, covering definitions, roles and responsibilities of different stakeholders.
- Provides a forum for bringing together CRVS stakeholders from multiple sectors – legal, health, registration, judicial, statistical, etc.
- Describes opportunities for introducing changes to rules and regulations in cases where legal change is not possible.

CONSIDERATIONS

- Requires effort to document all relevant laws, rules and regulations, with inputs from local legal and technical experts.
Training course on civil registration and vital statistics systems

DESCRIPTION
The International Statistics Program has developed a training course CRVS systems to provide information to epidemiologists, statisticians, demographers, and others working in public health about vital statistics data gathered from a national civil registration system. Even though CRVS systems may differ somewhat from country to country, there are internationally accepted principles and recommendations for national CRVS systems. Accordingly, the course contains a general description of the administrative process of civil registration and fundamentals of vital statistics generated from a national civil registration system.

RECOMMENDED USE
- Provides background information for people using vital statistics data so they understand how those data are obtained, ways to use and disseminate the data, and some problems and limitations of the data.

CONSIDERATIONS
- Does not cover the detailed legal and administrative issues that would be of use to persons working in a country’s office of civil registration.

AUTHOR
Centers for Disease Control (CDC)

PUBLICATION DATE
2016

LANGUAGES
English (basic version is available in French)

LINK
https://www.cdc.gov/nchs/isp/isp_fetp.htm
United Nations principles and recommendations for a vital statistics system, Revision 3

**RECOMMENDED USE**

- Relevant in all settings where CRVS improvement is needed.
- Provides international normative standards for CRVS systems.
- Includes key definitions, data collection forms; tabulations; quality assurance methods; generation and dissemination of vital statistics.
- Describes a variety of methods for generating vital statistics, including CRVS but also census, household surveys, etc.

**CONSIDERATIONS**

- Sets standards to be aimed for but does not provide guidance on how to implement the standards in diverse settings.
- Largely based on a “traditional” model of CRVS, historically implemented in high-income settings.
- No country examples of CRVS implementation.
- Does not adequately address challenges for countries with very limited CRVS capacities.
- Inclusion of alternative methods of producing vital statistics draws attention away from CRVS.
- Limited guidance on ensuring equity across population groups.
- Has little to say about CRVS in conflict.
- Does not sufficiently address emerging issues of relevance, such as CRVS business process mapping, digitization, linkages with national ID systems; CRVS and population registers.
- Has limited guidance on the specifics of cause-of-death ascertainment and links to CRVS.

**DESCRIPTION**

UN principles and recommendations for a vital statistics system, Revision 3, provides guidance on establishing a functioning system for collecting, processing and disseminating vital statistics; improving sources of vital statistics, primarily the functioning of the CRVS and its components; and the role of complementary sources of vital statistics, such as population censuses, household surveys and public health records. The document was prepared by the UN Statistics Division.

**AUTHOR**

UN Department for Economic and Social Affairs (UNDESA)

**PUBLICATION DATE**

2014

**LANGUAGES**

Arabic, Chinese, English, French, Russian and Spanish

**LINK**

Improving mortality statistics through civil registration and vital statistics systems: strategies for country and partner support

the best options for generating mortality statistics, proposes principles for selecting data sources, and identifies priority actions for strengthening CRVS while improving the availability and quality of mortality statistics. It concludes with recommendations on the contents of CRVS investment plans based on country starting points and capacities. The document was developed by WHO with contributions from partners including USAID, JHU, BMGF, GAVI, WBG, UNAIDS, UNICEF and TGF.

RECOMMENDED USE
• Relevant mainly for settings with weak CRVS capacity.
• Offers a short overview of key CRVS challenges in relation to births and deaths.
• Provides principles for partner support to country CRVS strengthening.

CONSIDERATIONS
• Of limited utility for CRVS assessment, prioritization and planning purposes.

Strengthening civil registration and vital statistics for births, deaths and causes of death: resource kit

This resource kit supports countries in planning and implementing improvements to their CRVS systems. Compiled using critically assessed materials drawn from many sources, this user-friendly resource is accessible to both experts and users with a general interest in evidence-based decision-making. The resource kit was developed by the University of Queensland, National Institute of Health Sciences (Sri Lanka), the Swiss Tropical and Public Health Institute, and the Australian Bureau of Statistics, with financial support from WHO and the Australian Agency for International Development.
SCORE FOR HEALTH DATA TECHNICAL PACKAGE: TOOLS AND STANDARDS FOR SCORE ESSENTIAL INTERVENTIONS

RECOMMENDED USE

- Relevant mainly in settings with nascent or emerging CRVS capacity.
- Provides guidance on strategic prioritization based on country status.
- Provides an overview of key principles and methods for birth and death registration.
- Enables all users to identify, locate and make use of core standards, tools, materials and country experiences.
- Includes guidance on ascertaining cause of death in health facilities and in the community.

CONSIDERATIONS

- Focuses on births and deaths only; does not address other vital events.
- Requires updating to include emerging standards and practices.

Rapid assessment of national civil registration and vital statistics systems

RECOMMENDED USE

- Relevant in settings with nascent or emerging CRVS capacity.
- Promotes multi-stakeholder analysis of current CRVS performance based on defined criteria (vignettes).
- Helps to build consensus among stakeholders on key areas requiring improvement.
- Serves to develop an advocacy case for CRVS strengthening.
- Has been applied in many low- and middle-income countries.

CONSIDERATIONS

- Is implemented through a consensus process among CRVS stakeholders and is therefore dependent on the composition of the group and not independently verifiable.
- Is not intended for ongoing CRVS performance monitoring because vignettes are insufficiently specific.
- Is somewhat dated and has not been revised to take account of emerging standards and practices.

DESCRIPTION

This rapid assessment tool consists of 25 questions to quickly evaluate the strengths and weaknesses of a country’s current CRVS system. The results of this rapid assessment can then be used to make the case for a more detailed assessment. This rapid assessment tool has been developed to accompany the comprehensive guide, “Improving the quality and use of birth, death and cause-of-death information: guidance for a standards-based review of country practices,” and countries are advised to apply it before undertaking a full review of their systems (see below). The University of Queensland oversaw the development of the tool, with financial support from the Government of Japan, WHO, and the University of Queensland.
Improving the quality and use of birth, death and cause-of-death information: guidance for a standards-based review of country practices

AUTHORS
WHO/University of Queensland

PUBLICATION DATE
2010

LANGUAGE
English

LINK
http://www.who.int/healthinfo/tool_cod_2010.pdf

DESCRIPTION
This tool provides comprehensive guidance on how to systematically evaluate the quality and functioning of CRVS systems against established international standards with a focus on births, deaths and causes of death. The aim is to help responsible authorities obtain a clear and comprehensive understanding of the strengths and weaknesses of birth and death registration and generate the evidence base for corrective action. The University of Queensland oversaw the development of the tool, with financial support from the Government of Japan, WHO, and the University of Queensland.

RECOMMENDED USE
- Relevant in settings with nascent or emerging CRVS capacity in relation to the registration of births and deaths and ascertainment of causes of death.
- Provides guidance on priority actions for countries at different levels of CRVS development.
- Describes international good practices in CRVS and common weaknesses in country systems that impede CRVS performance.
- Promotes multi-stakeholder analysis of current CRVS performance based on defined criteria.
- Has been applied in a small number of low- and middle-income countries.

CONSIDERATIONS
- Requires considerable time and effort as well as external support to implement.
- Contents replicated and updated in CRVS Knowledge Gateway Learning Centre (see p.24).
C2. Certification and reporting of causes of death

Global COVID-19 weekly mortality data entry platform

**DESCRIPTION**

When considering health emergencies such as the COVID-19 pandemic, cause-specific deaths that are routinely captured through CRVS systems provide a crucial source of information with which to monitor the mortality impact attributable to the emergency. However, within the period over which the emergency is occurring, many resources integral to the systems are restricted and it may not always be possible to accurately identify, correctly quantify and comprehensively record the emergency related deaths.

Death certificates are official government documents for declaring deaths as well as providing information about the causes of death. Reporting timely, accurate and complete weekly mortality data from death certificates will contribute to a better immediate understanding of the impact of COVID-19 on mortality by location, sex and age of the deceased in the context of a global health emergency. Comparing the overall mortality numbers as recorded during the emergency to those from recent years as recorded in the CRVS systems can be used to determine the excess mortality. This provides a more realistic picture of the impact, both direct and indirect, that can be attributed to the health emergency.

A simple data entry tool has been designed for Member States to enter the disaggregated mortality data by week from death certificates. Data can be submitted directly on the platform each week, or submitted as an Excel file, or submitted as a bulk upload for several weeks. The data collected are analyzed, compared with other streams of datasets and visualized. The platform extends to the WHO regional offices and countries and easily configurable to support regional needs.

**RECOMMENDED USE**

- Monitor weekly changes in mortality during the COVID-19 pandemic based on information on death certificates.
- Raise awareness that medical certification is key to obtaining good quality cause of death statistics and is particularly critical during pandemic.

**CONSIDERATIONS**

- The quality of the data is highly dependent on the quality of the medical certification of the cause of death.
- Countries with partial CRVS coverage will not have nationally-representative data.
- Only designated officers in Member States’ focal institutions have access to the data submission platform and data are currently limited to internal WHO use.
Revealing the toll of COVID-19: A technical package for rapid mortality surveillance and epidemic response

The document provides:
- Rationale for and conceptual model of RMS
- Guidance for facility- and community-based surveillance and analysis, visualization and use of the data.
- Checklist for establishing a rapid mortality surveillance system
- Discusses integration with other surveillance systems and the inclusion of information on the manner or cause of death.

RECOMMENDED USE
- To implement rapid mortality surveillance (RMS) and measure excess mortality in the context of the COVID-19 pandemic, with a focus on implementation in low resource settings. This includes settings with largely paper-based systems of data collection.

CONSIDERATIONS
- The guiding principles of RMS should be those that pertain to any system innovation: country ownership and leadership; capacity building; adaptability; and sustainability.
- RMS should, wherever possible, be integrated into the national CRVS system—the essential nature of which, even under pandemic conditions, has been made clear by the United Nations.

DESCRIPTION

Compared with only using COVID-19 confirmed deaths as a measure of impact, rapid mortality surveillance generates daily or weekly counts of mortality data by age, sex, date of death, place of death and place of usual residence. The Technical Package provides a more complete picture of impact, particularly for deaths that may be indirectly related to COVID-19. This also addresses the indirect impact caused by disruptions in healthcare access and supply chains.

When policy-makers can compare estimated weekly number of excess deaths related to COVID-19 compared with pre-pandemic levels, they have a powerful tool to inform their national response and recovery planning.
DESCRIPTION

The CRVS best-practice and advocacy resources are based on a combination of technical knowledge, country experiences and scientific literature.

Approaches and methods for estimating excess deaths due to COVID-19: Outlines the challenges, and introduces approaches and methods for researchers and statisticians to measure excess mortality due to COVID-19 in systems with various levels of death registration completeness (high, medium and low completeness levels).

Correctly certifying deaths due to COVID-19: guidance for physicians: Guidance and information for physicians on how to correctly certify deaths due to COVID-19. The document provides overview and guidance for physicians on cause of death certification, certifying deaths due to COVID-19, and common mistakes to avoid when certifying deaths due to COVID-19 with case studies.

Correctly coding deaths due to COVID-19: Guidance for Iris automated mortality coders

Provides information for Iris automated mortality coders to correctly code deaths due to COVID-19. The document provides guidance on:
- COVID-19 mortality coding guidelines.
- Emergency ICD codes for COVID-19.
- Coding COVID-19: case examples for automated coders.
- Dictionary updates for COVID-19 codes.
- How to update the Iris dictionary.

Correctly coding deaths due to COVID-19: Guidance for manual mortality coders: Provides information for manual mortality coders to correctly code deaths due to COVID-19. The document provides guidance on:
- COVID-19 mortality coding guidelines.
- Emergency ICD codes for COVID-19.

RECOMMENDED USE

- Stimulate debate and ideas for in-country CRVS policy, planning, and capacity building.
- Promote the adoption of best practices to code death certificates of patients who have died from COVID-19 with guidance customized to different roles that contribute to a strong CRVS system.
- Estimate excess deaths due to COVID-19.

CONSIDERATIONS

- Recent population data disaggregated by age, sex and location, are needed to calculate excess deaths.
- Knowledge of COVID-19 sequelae is constantly changing which may lead to changes and updates to the guidance.
**EuroMOMO: European Mortality Monitoring Activity**

The overall objective of the original European Mortality Monitoring Project was to design a routine public health mortality monitoring system aimed at detecting and measuring, on a real-time basis, excess number of deaths related to influenza and other possible public health threats across participating European countries.

Official national mortality statistics are provided weekly from the 24 European countries in the EuroMOMO collaborative network, supported by the European Centre for Disease Prevention and Control (ECDC) WHO, and hosted by Statens Serum Institut, Denmark.

**Recommended Use**
- To detect and measure excess deaths related to seasonal influenza, pandemics and other public health threats.

**ICD-11 Coding tool**

The 11th edition of the International Classification of Disease (ICD–11) is the international standard for systematic recording, reporting, analysis, interpretation and comparison of mortality and morbidity data. It provides up-to-date clinical content and state-of-the-art digital infrastructure. For the first time, ICD is fully electronic, currently providing access to 17,000 diagnostic categories, with over 100,000 medical-diagnostic index terms.

The ICD-11 Coding tool provides easy, fast and accurate coding of causes of death. The tool’s index-based, “smart-search” algorithm interprets more than 1.6 million terms.

The ICD-11 Coding Tool can be used for free, and is available for online and offline use.
RECOMMENDED USE

- Mortality coding and reporting in all WHO Member States.

CONSIDERATIONS

- The quality of cause-of-death coding is dependent on the quality of medical record-keeping.

ICD-11 Reference guide, and ICD-10 Volume 2

DESCRIPTION

The ICD-11 Reference guide (and its predecessor, ICD-10 Volume 2), are the global standard reference for recording, coding and statistical reporting of mortality and morbidity. Both versions include the international form of medical certificate of cause of death (MCCD), instructions to physicians for completing the MCCD, minimum standards for medical records, and detailed instructions in relation to age groups, live birth and maternal mortality.

The ICD-11 Reference guide includes further rules for recording and reporting in relation to patient safety, quality, and traditional medicine.

RECOMMENDED USE

- The reference guide serves as international reference for coding of mortality. Content relating to certification of death is particularly targeted at physicians.

CONSIDERATIONS

- The quality of cause-of-death coding is dependent on the quality of medical record-keeping.
ICD-11 Application Programming Interface (API) and Embedded Coding Tool (ECT) based cause-of-death app in DHIS-2

**AUTHOR**
WHO

**PUBLICATION DATE**
2020

**LANGUAGE(S)**
English, Spanish, Arabic, Chinese (14 other languages forthcoming)

**LINK**
https://icd.who.int/icdapi

**DESCRIPTION**
The ICD-11 Application Programming Interface (API) allows access to the International Classification of Diseases (ICD) for software developers who would like to incorporate the ICD-API into their software. The ICD API is a HTTP-based representational state transfer (REST) API that covers ICD-11 content as well as the index-based search algorithm of ICD-11. It is possible to use ICD-10 as well, but with limitations imposed by the outdated structure of ICD-10. The container version of the ICD-API can be deployed locally using “docker” technology.

WHO also provides the ICD-11 Embedded Coding Tool (ECT) which allows integration of a complete ICD-11 Coding Tool into any web application. In collaboration with ICD-11 early adopter countries, WHO is enabling the integration of ICD API and ECT within MCCoD app in DHIS-2 and other mortality software.

**RECOMMENDED USE**
- Mortality coding and reporting in all WHO Member States.

**CONSIDERATIONS**
- The quality of cause-of-death coding is dependent on the quality of medical record-keeping.

ICD-11 based automated UCoD tool

**AUTHOR**
WHO

**PUBLICATION DATE**
2020

**LANGUAGE**
English (other languages are forthcoming)

**LINK**
https://icd.who.int

**DESCRIPTION**
The ICD-11 based automated Underlying Cause of Death (UCoD) tool builds on and refines the rules of the ICD-10 Startup Mortality List (SMoL). The tool allows processing of both ICD-11 and ICD-10 coded data and constitutes an important step towards building an ICD-11 based automated mortality coding system in collaboration with the IRIS group.
SCORE FOR HEALTH DATA TECHNICAL PACKAGE: TOOLS AND STANDARDS FOR SCORE ESSENTIAL INTERVENTIONS

RECOMMENDED USE

• Relevant in all countries as it provides the universal standards for reporting diseases, disorders, injuries and causes of death, including statistical coding.

CONSIDERATIONS

• The quality of cause-of-death coding is dependent on the quality of medical record-keeping.

ICD-FIT coding training and self-evaluation tool – Mortality module

AUTHOR

WHO

PUBLICATION DATE

2019

LANGUAGE(S)

English, Spanish (other languages forthcoming)

LINK

https://icd.who.int/icdfit/login.php

DESCRIPTION

The ICD Field Implementation Tool (ICD-FIT) is a web-based coding training and self-evaluation tool for ICD-11. In the mortality module, users practice using pre-coded code term sets extracted from cause of death certificates using the embedded ICD-11 coding tool. After completing the coding of a given term set, users get immediate feedback on their coding accuracy. The user’s code assignment for a given diagnostic term is compared with the gold standard and a summary score of the users coding performance is computed. The tool also provides a ranking of overall coding performance by users and measures the time spend by users when making the code assignment for each term.

Within the mortality module user can choose to code international and national term set.

RECOMMENDED USE

• Mortality coding training in all WHO Member States.

CONSIDERATIONS

• The training tool has variable level of detail; level of training undertaken should be tailored to the needs of the end-users.
ICD-11 Training tool and WHO Academy course

**DESCRIPTION**

The ICD-11 Training Tool and the upcoming WHO Academy course, entitled: “ICD-11: Interactive skill training for coding mortality and morbidity data” is designed to build-up and enhance ICD-11 coding competency among the health coding workforce and other producers of ICD-coded data, by developing a basic understanding of the ICD-11 content, structure and implementation benefits and requirements. The tool also helps health policy-makers and other health professionals who are users of coded ICD data to develop digital health solutions or decide on the implementation of ICD-11 in their health information system. 

Aims to build capacities in the application of ICD rules for the classification of diseases and causes of death and is designed for self-learning and classroom use. It describes the structure of the classification and statistical coding according to ICD criteria.

**RECOMMENDED USE**

- Relevant in all countries as it provides universal standards for reporting diseases, disorders, injuries and causes of death, including statistical coding.
- Can be used for initial training as well as for updates and refresher training.

- Includes a summary reference guide for completing MCCD in line with ICD-11 and ICD-10.
- Provides links to all key resources for ICD-11 implementation, including the WHO standard certification for medical certification of cause of death and all three ICD-10 volumes.
- Offers materials for a range of potential users, including an introduction to ICD concepts and principles, to detailed guidance on medical certification and coding.
- Can be tailored to fit the needs of specific user groups.
- Suitable for both classroom and individual use.
- Self-paced learning tool, particularly suitable for use in refresher training following initial in-person training.
- A website is available to permit interactions with specialist certifiers and coders.

**CONSIDERATIONS**

- ICD implementation requires the availability of physicians with the necessary diagnostic skills in all hospitals.
- In addition, there is a need for trained statistical coders to convert physician diagnoses into statistical categories in accordance with the ICD rules.
- Not appropriate for implementation in settings with nascent capacity, where medical certification of cause of death according to international standards is not practiced in any medical institutions.
- For countries with emerging capacities, requires in-person introduction, guidance and ongoing technical support for implementation.
- Requires updating to incorporate the WHO 2016 medical certificate of cause of death.
- There are some constraints on the use of the ICD for studies of financial aspects, such as billing or resource allocation.

DESCRIPTION

The Start-Up Mortality List (SMoL) has been designed to be in line with the International Classification of Diseases (ICD 10th Revision) and provides a succinct, easy-to-apply summary of the ICD selection rules. The SMoL is designed to be a first step towards standardized reporting of causes of death in low-resource settings where capacity to code causes of death using ICD is low. It condenses the more than 10,000 ICD-10 cause-of-death codes into an aggregated list of 107 causes.

RECOMMENDED USE

- Relevant for settings with nascent or emerging capacity seeking to implement cause-of-death certification according to international standards and statistical coding aligned with the ICD.
- Offers a simplified summary distillation of ICD selection rules for statistical coding of the underlying cause of death.

- Introduces ICD coding, based on an aggregated set of ICD causes derived from the ICD cause-of-death list.
- Can be applied to the analysis of medical certificates of causes of death from individual hospitals.
- Can be rolled out in countries using a “training of trainers” approach.
- Can be used as an initial introduction to medical certification and coding of causes of death to build sufficient capacities in preparation for full ICD-10 implementation.
- Cause-of-death data can be linked automatically to DHIS2 (see p.55) and ANACoD (see p.40) (see below) to generate reports of cause of death distributions.
- Permits analysis of aggregated data using analytical tools such as ANACoD/ANACoDA. Experience shows that once countries have become proficient in the use of the SMoL they are able to build capacity for complete ICD implementation in all hospitals.

CONSIDERATIONS

- In many settings, the use of ICD is limited to hospital settings where physicians are available.
- Requires initial, face-to-face introduction and training by a skilled physician and coding trainers.
- Needs to be complemented by attention to the quality of medical record-keeping.
- Requires regular quality assessment by expert certifiers and coders, especially during introductory phase.
Analysing mortality levels and causes of death (ANACoD)

DESCRIPTION
The ANACoD electronic tool provides a step-by-step approach to enable users to quickly conduct a comprehensive analysis of data on mortality levels and causes of death. The tool automatically reviews the data for errors, tabulates the information, presents the results in easy-to-use tables and charts, and provides the opportunity to compare findings with those from other groups of countries.

RECOMMENDED USE
• Appropriate for all countries with limited and developing capacities where medical certification of cause of death is being implemented. Does not require advanced statistical or digital skills.
• Provides an easy-to-use, Excel-based toolkit to enable analysis of cause-of-death by age group, sex, and cause of death.
• Can be used to provide an initial check of data quality; generate key mortality indicators; and produce statistical analyses of mortality data.
• Users can automatically produce a summary report of findings including charts and tables.
• Can be applied to both hospital data (for analysis of numerator data, that is deaths by cause) and for population-based data (requires both numerator data and data on the reference population).

CONSIDERATIONS
• Requires a separate analysis for each annual data set; does not generate trend data.
• Potential challenges in handling of large datasets in MS-Excel.

Analysing mortality levels and causes of death (ANACoDA)

DESCRIPTION
ANACoDA is another option for doing a data quality assessment of mortality. The platform provides a comprehensive step-by-step framework for interrogating mortality data. Featuring a detailed guide for users, it offers a series of data checks that are based on decades of epidemiological and demographic research into mortality patterns in different populations.
Integrating community-based verbal autopsy into civil registration and vital statistics

DESCRIPTION
Verbal autopsy (VA) to ascertain the probable cause of death is the best alternative to generate mortality statistics in the absence of medical certification. Data collection using electronic VA questionnaires on mobile devices and computer algorithms to analyse responses and estimate probable cause of death has increased the potential for VA to be routinely applied in CRVS systems. However, a number of CRVS and health system integration issues should be considered in planning, piloting and implementing system-wide VA intervention. These include addressing the multiplicity of stakeholders and sub-systems involved, integration with existing CRVS work processes and information flows, linking VA results to civil registration records, information technology requirements and data quality assurance. This paper identifies and discusses the major system-level issues and emerging practices, provides a planning checklist of system-level considerations and proposes an overview for how VA can be integrated into routine CRVS systems.

The document was produced with multiple authors associated with the implementation of verbal autopsy in the context of country CRVS systems through the Data for Health Initiative.

RECOMMENDED USE
● For use in settings with nascent or emerging capacities where significant proportions of deaths occur in the community and in the absence of medical supervision.
● Provides guidance on VA governance and institutional and implementation strategies, including costing and sampling considerations.
● Supports the development of a business case for routine VA implementation within CRVS.
● Describes financial, human resources, infrastructure and IT issues.
● Provides a planning checklist to help countries understand the implications of integrating VA in their CRVS system; supports decision-making regarding type of VA method, changes in legislation or regulations, acceptability, feasibility and sustainability; and the consideration of how resulting mortality data will be used.

CONSIDERATIONS
● Requires multi-stakeholder collaboration as well as technical support.

AUTHORS
De Savigny D, Riley I, Chandramohan D, Odhiambo F, Nichols E, Notzon S et al.

PUBLICATION DATE
2017

LANGUAGE
English

LINK
IRIS automated coding system for causes of death

DESCRIPTION

IRIS is an automatic system for coding multiple causes of death and for selecting the underlying cause of death. It can be used in batch or interactively. The dual aims of IRIS are to:

- provide a system in which the language-dependent aspects are separated from the software itself. Moreover, the language-dependent parts are stored in database tables and can easily be modified.

- improve international comparability. IRIS is based on the international death certificate form provided by WHO in Volume 2 of ICD-10 and the causes of death are coded according to ICD-10 rules. Updates to ICD-10 are included according to the WHO timelines.

RECOMMENDED USE

- Relevant for all settings where medical certification of cause of death is done according to WHO standards, even if only in hospital settings.

- Users can apply software tools, standard dictionaries, and accompanying manuals and documentation, and can use the shared data dictionary and adapt it to local circumstances over time.

- Can be used to enable much faster processing of cause-of-death certificates, the majority of which do not require expert coder (nosologist) skills.

- Can be introduced in countries graduating from applying SMoL to full ICD coding implementation.

- Users can integrate the outputs into analytical tools, such as ANACoD.

CONSIDERATIONS

- Not yet suitable for ICD-11 (for ICD-11 see p.36).

- Does not remove the need for skilled ICD coders.

- Is not suitable for coding external causes of death, which will generally require judicial investigation to determine underlying cause of death.

- Cannot deal automatically with all death records; some will require inputs from expert coders.

- Requires technical inputs at the phase of introduction and careful training of mortality certifiers.
SmartVA-Analyze Application

AUTHORS
Institute for Health Metrics and Evaluation (IHME)

PUBLICATION DATE
2017

LANGUAGE
English

LINK
http://www.healthdata.org/verbal-autopsy/tools

DESCRIPTION
SmartVA is an application that implements the Tariff 2.0 Method for computer certification of VA. It takes VA interview data as input and produces cause of death estimates at the individual and population levels. The SmartVA cause of death assignment system was designed and validated with the Population Health Metrics Research Consortium (PHMRC) Gold Standard VA database, collected as part of the PHMRC Gold Standard VA Validation Study.

RECOMMENDED USE
• For use in settings with nascent or emerging capacities where significant proportions of deaths occur in the community and without medical supervision.
• Primary purpose is to generate data on cause-specific mortality fractions in the population in order to inform public health decision-making.
• Offers an integrated package consisting of VA questionnaires for deaths in neonates, children and adults along with a single automated diagnostic algorithm (Tarif2.0).
• When used to notify civil registration authorities of deaths, this can enable families to obtain legal documentation relating to deaths, thus increasing the completeness of death registration.
• Generates data on 46 separate causes of death.
• Technical support can be provided through the University of Melbourne CRVS Knowledge Gateway Learning Centre.

CONSIDERATIONS
• Requires considerable technical support for successful implementation, especially in settings with nascent capacity.
• Produces cause of death data that are plausible and useful at the population level but not appropriate for determining individual causes of death or for legal purposes.
• Does not generate detailed causes of death analogous to the full ICD.
• Analysis and interpretation of results can be complex.
• Diagnostic algorithm is not open source.
• Questionnaire is only a subset of the WHO VA questionnaire; therefore, data cannot be processed reliably with the other algorithms currently in place.
Verbal autopsy standards: the 2016 WHO verbal autopsy instrument

- Offers an integrated package consisting of verbal autopsy (VA) questionnaires for deaths in neonates, children and adults, along with several optional automated diagnostic algorithms (InterVA5, InSilico, Tarif2.0) to enable comparisons.
- Includes an open narrative section that can be used (with physician review) to aid understanding of the outcomes of the automated diagnostic algorithms.
- Diagnostic algorithms are based on open source software to enable local users to view and assess how causes of death are assigned based on the VA responses.
- When used to notify civil registration authorities of deaths, this can enable families to obtain legal documentation relating to deaths, thus increasing the completeness of death registration.
- Generates data on 64 separate causes of death.
- Technical support available through the WHO Verbal Autopsy Reference Group.

DESCRIPTION
This questionnaire and analytical tool is designed for use in settings where deaths occur outside the health sector and medical certification of cause of death is not available in order to ascertain cause-of-death distributions in a population. The 2016 version of the WHO verbal autopsy instrument is suitable for routine use and is designed for all age groups, including maternal and perinatal deaths, and deaths caused by injuries. The tool was developed in collaboration by WHO, BMGF, D4H, CDC, JHU, UNFPA, INDEPTH Network, ICDDR, IHME, LSHTM, University of Queensland, Umea University, Ohio State University and Australian National University.

RECOMMENDED USE
- For use in settings with nascent or emerging capacities where significant proportions of deaths occur in the community without medical supervision.
- Primary purpose is to generate data on cause-specific mortality fractions in the population in order to inform public health decision-making.

CONSIDERATIONS
- Requires considerable technical support for successful implementation, especially in settings with nascent capacity.
- Produces cause of death data that are plausible and useful at the population level but not appropriate for determining individual causes of death or for legal purposes.
- Analysis and interpretation of results can be complex.
- Does not generate detailed causes of death analogous to the full ICD.
Performing basic checks on cause-of-death data (CoDEdit)

**DESCRIPTION**
The CoDEdit electronic tool is intended to strengthen the capacity of producers of cause-of-death statistics to perform routine data checks. The CoDEdit tool is applied at data compilation stage, and its primary purpose is to warn and flag basic gross errors, alert about possible misuse of codes and provide a data set summary.

**RECOMMENDED USE**
- Relevant for settings with nascent capacity and limited availability of electronic data management tools.
- Provides a structure for cause-of-death data entry, storage, and validation, for individual records or batch records.
- Identifies common errors in the data set and provides guidance to enable the user to edit and/or correct records as necessary.
- Generates short summary reports from cleaned data that can subsequently be analysed using ANACoD.

**CONSIDERATIONS**
- Should be used as part of broader efforts to improve capacities for data collection and quality assurance.

Maternal death surveillance and response technical guidance: information for action to prevent maternal death

**DESCRIPTION**
Maternal death surveillance and response (MDSR) contributes to better information for action by promoting routine identification and timely notification of maternal deaths, review of maternal deaths, and implementation and monitoring of steps to prevent similar deaths in the future. The technical guidance was developed by agencies including Canadian Network for Maternal, Newborn and Child Health, FIGO, ISA, DFID, UNFPA, CDC and WHO.
**RECOMMENDED USE**

- Relevant for all settings where maternal mortality is a public health priority, especially those with nascent or emerging capacities.
- Can be used for deaths in health facilities as a first step.
- Can be used to promote active case finding of maternal deaths and to support the classification of maternal deaths as notifiable events, with reporting by way of community and/or facility committees.
- Enables determination of underlying causes of death and follow-up action to avert such deaths in the future.
- Generates estimates of the proportion of maternal deaths not captured through the routine reporting system; this can be used as a correction factor applied to routine data sources such as civil registration.

**CONSIDERATIONS**

- MDSR is focused only on maternal deaths and does not address other possible causes of death among women of reproductive age.
- Requires significant resources for ongoing implementation across the whole country. A phased approach is advised.
- Cannot be used to calculate maternal mortality ratios in cases where there is a lack of reliable numerator data (total live births).
- Success depends critically on the ability to identify the total numbers of deaths among women of reproductive age and to correctly ascertain those due to maternal causes.
- Implementation challenges include lack of knowledge and skills related to conducting reviews and fear of blame and repercussions related to the findings. Requires policies and procedures to protect confidentiality and independence.

**INDEPTH resource kit for demographic surveillance systems**

**DESCRIPTION**

In many settings where availability of data on fertility and mortality is limited, a number of health and demographic surveillance sites (HDSS) have been established that generate an ongoing stream of detailed information on fertility, mortality, causes of death and migration that can be used, for example, to evaluate the effectiveness of specific health interventions, such as the impact of distribution of insecticide-treated bednets to prevent malaria. In most instances, the sites are selected on the basis of convenience to serve as sentinel sites. However, in some countries, health and demographic surveillance is conducted in statistically sampled population clusters representative of the whole population in order to generate nationally representative statistics (Sample Registration with Verbal Autopsy or SAVVY). In both circumstances, verbal autopsy is used to generate information on causes of death. Statistics from HDSS sites can be used on an interim basis to generate national and subnational estimates of fertility and cause-specific mortality to support decision-making. The INDEPTH Resource
Kit brings together best practices and experiences of a number of HDSS sites to provide detailed technical guidance, examples of all instruments and a vast array of manuals, tools, software and statistical code (such as for Stata).

RECOMMENDED USE

- The kit is particularly relevant to countries with no civil registration or with weak and dysfunctional systems, but where decision-makers need to know something of the levels, trends and patterns of fertility and mortality.
- The guide shows how HDSS sites generate a vast quantity of quality data on detailed aspects of health, fertility and development and provide valuable opportunities for testing and evaluating research and interventions that can be used to underpin policy and planning.

CONSIDERATIONS

- HDSS and SAVVY are interim data-collection methods are only intended to serve as temporary sources of information on vital events pending the attainment of full civil registration and medical certification of all deaths.
- HDSS sites do not generate nationally representative data although the detailed information they provide is nonetheless useful for policy and planning.
- These methods should not be regarded as sufficient to meet country needs for disaggregated health and social statistics covering different populations.
- Neither HDSS nor SAVVY are linked to CRVS systems in most settings, although there are exceptions.
Optimize health service data to ensure equitable, quality services for all

**KEY ELEMENTS**

**01** Routine facility reporting system with patient and community monitoring

**02** Regular system to monitor service availability, quality and effectiveness

**03** Health service resources: health financing and health workforce
**01. Routine facility reporting system with patient and community monitoring**

International Classification of Health Interventions (ICHI)

**DESCRIPTION**

ICHI is the companion classification to the International Classification of Diseases (ICD) and the International Classification of Functioning, Disability and Health (ICF). The classification provides Member States, service providers, managers, and researchers with a common tool for reporting and analysing health interventions including rehabilitation, allied health, mental health, nursing and public health interventions. ICHI contains more than 7000 interventions to describe what health systems do. Further detail, such as medical or assistive products, can be added using extension codes.

**AUTHOR**
WHO

**PUBLICATION DATE**
2019 ICHI Beta-2, ICHI release version scheduled for Dec 2020

**LANGUAGE**
English (other languages forthcoming)

**LINK**
https://www.who.int/classifications/ichi/en/

**RECOMMENDED USE**

- ICHI is used to describe interventions and packages of interventions delivered to individuals, groups, or populations at all levels of health systems.
- As an international standard, ICHI provides a common structure to which codes in national classifications can be mapped to compile international data enabling comparison of data between countries and services.
- ICHI can be used directly for data collection or as a base for developing national classifications.

**CONSIDERATIONS**

- The quality of coding results is dependent on the quality of medical record-keeping.
ICHI Training course

DESCRIPTION
The ICHI Training course aims to build basic understanding of the capacities in the application of ICHI classification for coding and reporting health interventions. The learning objectives are focused on the structure of the classification and statistical coding according to ICHI criteria.

RECOMMENDED USE
• The course is designed for self-learning and classroom use for intervention coding training in all WHO Member States.

CONSIDERATIONS
• The training tool has variable level of detail; level of training undertaken should be tailored to the needs of the end-users.

ICD-FIT coding training and self-evaluation tool – Morbidity module

DESCRIPTION
The ICD Field Implementation Tool (ICD-FIT) is a web-based coding training and self-evaluation tool for ICD-11. In the morbidity module, users practice using pre-coded code term sets extracted from cause-of-death certificates using the embedded ICD-11 coding tool. After completing the coding of a given term set, users get immediate feedback on their coding accuracy. The user’s code assignment for a given diagnostic term is compared with the gold standard and a summary score of the user’s coding performance is computed. The tool also provides a ranking of overall coding performance by users and measures the time spent by users when making the code assignment for each term.

RECOMMENDED USE
• The course is designed for self-learning and classroom use for morbidity coding training in all WHO Member States.

CONSIDERATIONS
• The training tool has variable level of detail; level of training undertaken should be tailored to the needs of the end-users.
Analysis and use of health facility data

RECOMMENDED USE
- To ensure adherence to global standards, the minimum set of key indicators with standard metadata can be used when changes are being made to the HMIS.
- Provides guidance on the minimum required programme analyses. It should be used by planners and managers regularly (at least monthly) to see trends in their respective areas.
- The data quality metrics should be applied routinely to ensure that data reflects reality. These can be used in individual programme areas as well as by HMIS and policy/planning managers.
- The curriculum with exercises and accompanying materials can be used for training of users of the data.

CONSIDERATIONS
- As this is a modular toolkit that aims to meet country-specific requirements. Its component parts can be accessed and incorporated in whole or part. Programme-specific indicators, dashboards and analysis guidance can be accessed and used by programme managers. While programmes can individually update and incorporate the standards, it is recommended these standards are applied broadly to the country HMIS.
- Some of the programmatic areas are still in the process of developing/finalizing their standards. This toolkit will continue to evolve as additional materials are developed. However, due to the modular nature of the toolkit, countries can incorporate sections that are applicable to their context.

DESCRIPTION
Based on WHO-recommended service delivery and programmatic standards, this toolkit comprises a set of resources to optimize the collection, analysis and use of data gathered through routine health facility information systems, also known as health management information systems (HMIS). The current and forthcoming standards include key disease and programme areas such as immunization, malaria, HIV, TB, reproductive, maternal, newborn, child, and adolescent health (RMNCAH), hepatitis B, neglected tropical diseases (NTDs), and noncommunicable diseases. The comprehensive toolkit includes:

- A minimum list of key indicators with standard metadata across the health sector for an integrated/interoperable HMIS based on overall health and programmatic standards;
- Guidance on minimum recommended analytics (graphs, tables, etc.) required to understand the relevance of collected data for health planners and programme-specific managers;
- Guidance on minimum data quality standards that need to be met (for more information on DQR please see p.59 of this document);
- Curriculum to build institutional capacity in analysis and use;
- Machine-readable configuration packages.
Master facility list (MFL) resource package: guidance for countries wanting to strengthen their MFL

**DESCRIPTION**

The MFL resource package guides countries through the process of establishing or strengthening a complete, up-to-date authoritative listing of their health facilities. The package includes case studies from various countries, and links to tools and practical resources that will be helpful to the implementation team as well as training resources. The package harmonizes multiple efforts to provide guidance to countries and was developed through a multi-partner initiative led by the DHS Program and WHO, with financial support from USAID and PEPFAR.

**RECOMMENDED USE**

- Relevant for all settings with nascent and emerging capacities in routine health information systems.
- Useful for all those interested in establishing or strengthening a master facility list (MFL).
- The package is targeted at individuals and organizations involved in establishing an MFL, whether at the planning stage or during implementation. The audience may include ministry of health officials, implementing partners, programme managers, and donors interested in understanding the process and requirements for establishing a fully functional MFL that is complete, up-to-date, and capable of integration with other information systems.
- The package consists of 10 modules, each of which addresses a specific aspect of MFL implementation. The modules can be used together or individually, depending on the specific needs of the country.

**CONSIDERATIONS**

- Factors such as resource constraints (financial or other), parallel facility lists, tracking the opening and closing of facilities can negatively impact the development or maintenance of an MFL. It is critical to keep these elements in mind when developing the MFL. In addition, it is also important to have a robust governance structure and a system for storing, managing and sharing the MFL.

**AUTHORS**

DHS Program/WHO/USAID/PEPFAR

**PUBLICATION DATE**

2019

**LANGUAGE**

English

**LINK**

http://www.who.int/healthinfo/country_monitoring_evaluation/mfl/en/
Digital Health Package for DHIS2

DESCRIPTION

Parallel, disease-specific reporting systems are increasingly being integrated into a single platform at country level (e.g., DHIS 2). As part of the toolkit on analysis and use of health facility data (see p. 52), the WHO health app for DHIS 2 incorporates globally recommended health standards, including core indicators; data quality metrics and methods; cross-cutting and programme-specific analytical outputs; dashboards; and reports and data collection forms. The WHO health app incorporates standards for key programmes such as immunization, HIV, TB, malaria, RMNCAH and continues to incorporate others. It also includes the Startup Mortality List (SMoL) (see p. 39) to simplify the recording of cause-of-death information using a list of most common causes from ICD-10. DQR metrics and analytics (see p. 59).

RECOMMENDED USE

• For countries starting to implement a new DHIS 2 system, the health app will ensure incorporation of globally recommended standards in the health management information system.
• For countries undertaking updates of their DHIS 2 system, the health app will ensure countries have access to the latest metadata and recommended analytics.
• For programmes updating their facility reported data systems in DHIS 2, the health app incorporates the latest programmatic data standards for aggregate data.

CONSIDERATIONS

• While these configuration packages can be adapted by countries to a programme-specific DHIS 2, it is recommended that these standards are incorporated as part of a broader alignment of parallel reporting systems into an integrated DHIS 2 or interoperable with DHIS 2.
• Configuration packages are not ready for all programme areas though a number are already available online. This work will continue to evolve as more programme configuration packages are finalized.
• An update to include ICD-11, ICF and ICHI has been initiated. Until that implantation, the encoding will be limited to the broad diagnostic entities of ICD-10 and use of dropdown lists for coding which may bias the results.

AUTHORS
WHO/University of Oslo

PUBLICATION DATE
2019 (for some programmatic areas)

LANGUAGES
English (French upcoming)

LINK
https://www.dhis2.org/who
DHIS2 – a Digital Tool for WHO RHIS standards

DESCRIPTION

DHIS2 is an open source, web-based software platform for health data collection, management, and analysis. To date, DHIS2 is the world’s largest Health Information Management System (HMIS) platform in use by ministries of health in 72 low and middle-income countries, including national-scale deployments in 58 countries. With the capacity of collecting and reporting both individual and aggregate data from health facilities which feed in the national RHIS/HMIS integrated platform, the system enables analysis and use for health information management at national and sub-national levels.

DHIS2 has been perceived as a strategic tool by an increasing number of health programmes in WHO to disseminate and operationalise standards for collection, quality assurance, and use of data for monitoring key targets in country RHIS. DHIS2 is so far the only digital solution to incorporate digital WHO data packages for each health programme for data collection, analysis and use. The flexibility of the platform administration interface allows countries to adapt and customise the system to enhance the relevant use of data as evidence for decision making.

RECOMMENDED USE

- For countries starting to implement a new DHIS2 system, harmonising the national health facility list while adapting the existing HMIS will create a strong foundation for the application of programme data standards, analysis and use while strengthening RHIS governance.
- For countries undertaking updates of their DHIS2 system, the adaptation of WHO RHIS standards will ensure standardisation and harmonisation of RHIS metadata and reporting flows.
- For collection of person identifiable data within specific programmes, it is advisable to consider separate DHIS2 instances to ensure confidentiality and security, accompanied by feeding of anonymized or aggregate data into an integrated national warehouse platform to enable consolidated analysis and presentation.

CONSIDERATIONS

- The use of DHIS2 as a tool for RHIS works most effectively as an integrated routine health facility data platform, using a single DHIS2 instance for all programme aggregate reporting with standardised reporting mechanism. The WHO recommended standards should be incorporated as part of a broader alignment of parallel reporting systems into an integrated DHIS2 national platform.

2 https://www.dhis2.org/inaction
Routine Health Information Systems (RHIS) rapid assessment tool

AUTHORS
Measure Evaluation/John Snow, Inc./USAID/WHO/Data for Health

PUBLICATION DATE
2018

LANGUAGES
English, French

LINK

DESCRIPTION
This tool helps health information system (HIS) managers and evaluators to address gaps and weaknesses in the RHIS by comparing a country’s RHIS to global standards and identifying where resources should be invested to improve the system.

A rapid assessment can be conducted by bringing together representatives from different levels of the health system and different programme areas into a workshop setting to determine the extent to which the RHIS adheres to standards, or by emailing the assessment to RHIS stakeholders and compiling their responses. A more in-depth assessment of adherence to health information standards can be made through site visits and sample interviews with staff in RHIS sub-national management units and health facilities.

The tool includes an implementation guide, data entry module and an analysis and dashboard module.

RECOMMENDED USE
- The RHIS rapid assessment tool can be applied as a one-off assessment prior to RHIS reform or as a regular aspect of RHIS performance assessments.

CONSIDERATIONS
- It is recommended to not administer the tool more than once every 2–3 years to enable detection of changes in RHIS which take time. If administered prior to a one-time RHIS reform effort, the tool should be applied well in advance (several months) of RHIS reform planning so that the information obtained is readily available for the planning efforts.
- Comprehensiveness of the assessment (including site visits) is dependent on resource availability.
Performance of Routine Information System Management (PRISM)

DESCRIPTION
The Performance of Routine Information System Management (PRISM) framework consists of tools to assess RHIS performance, identify technical, behavioural and organizational factors that affect RHIS, help design priority interventions to improve performance, and improve quality and use of routine health data. Initiated in 2011, the PRISM approach has been used in many low- and middle-income settings in order to assess the reliability and timeliness of an RHIS for making evidence-based decisions and identify and address RHIS gaps. The toolkit has been revised to create a broad array of materials: the “PRISM Series.” The PRISM materials include:
- a toolkit
- a user’s kit
- a PRISM training kit (with participant and facilitator manuals and presentation slides).

RECOMMENDED USE
- All countries with nascent or emerging capacities interested in strengthening their routine health information systems in order to generate the information needed for health planning and management.

CONSIDERATIONS
- Strong facilitation is required to fully implement all the tools.
- Makes significant time demands on staff responsible for routine health information.

AUTHORS
Measure Evaluation/USAID

PUBLICATION DATE
2018

LANGUAGE
English

LINK
https://www.measureevaluation.org/resources/tools/health-information-systems/prism
Routine Health Information Systems (RHIS): a curriculum on basic concepts and practice

The curriculum was jointly developed by MEASURE Evaluation (funded by USAID) and WHO in collaboration with experts at the universities of Brussels, Oslo, and Queensland; the Instituto Nacional de Salud Pública, Mexico City; the Public Health Foundation of India, New Delhi; and the Agence Européenne pour le Développement et la Santé, Brussels.

RECOMMENDED USE

- All countries with nascent or emerging capacities seeking to enhance knowledge and skills of health information staff at all levels of the health system.
- A range of teaching methods, such as lectures, discussions, case studies, exercises, and group work are used to address the varying learning styles of course participants.
- Course materials include PowerPoints, handouts, practical case studies to illustrate challenges in producing reliable data to inform decisions at all levels of the health system.
- Includes materials on system-wide issues such as governance and the contribution of information and communication technology.
- Participants receive certificates if they can demonstrate the attainment of key competencies.

CONSIDERATIONS

- Strong facilitation is required and can be offered by the authors.
- Careful selection of facilitators is important to ensure they are familiar with routine health information systems across multiple settings.
- The length of the course – equivalent to 2 weeks – is likely to inhibit many eligible students to participate, especially if they are already employed within the country health system.
- The course is largely designed for classroom purposes, and therefore has limited field experience components. Course participants are encouraged to use the resource materials cited in each module and to pursue advanced courses.

DESCRIPTION

This curriculum (including a syllabus, facilitator’s guide, and modules) provides training to help low- and middle-income countries meet the challenge of strengthening their routine health information system (RHIS). Its purpose is to enhance participants’ capacity to conceptualize, design, develop, govern, and manage an RHIS—and use the information the system generates to improve public health practice and service delivery. The 60-hour, 10-module curriculum comprises:

- Module 1: Health systems and health information systems
- Module 2: Indicators and data collection and reporting
- Module 3: Guidelines for data management standards in routine health information systems
- Module 4: RHIS data quality
- Module 5: RHIS data analysis
- Module 6: RHIS data demand and use
- Module 7: RHIS governance and management of resources
- Module 8: Information and communication technology for RHIS
- Module 9: RHIS performance assessment
- Module 10: RHIS design and reform
Data quality review (DQR): a toolkit for facility data quality assessment

DESCRIPTION
The DQR toolkit provides a framework to assess the quality of data generated from health facilities. It provides standard metrics and methods to measure data quality that can apply across all programme areas (allowing users to determine if data quality issues are systemic or specific to certain programme areas), and harmonizes multiple disease- and donor-specific data quality tools and review processes. The modular toolkit provides guidance for routine desk review of data quality as well as an in-facility assessment of data quality. To make it simpler for users and managers of facility data to conduct routine data quality checks, these standards have also been incorporated into DHIS 2 (for those countries that have DHIS 2). The DQR toolkit includes:

- Guidelines on data quality methods and metrics (3-part module):
  - Framework and metrics
  - Desk review of data quality
  - Data verification and system assessment
- Analytical tools for desk review of data quality (in Excel and DHIS 2).
- Data collection and analysis tools for survey-based assessment of data quality.
- Training modules for institutional capacity building.

RECOMMENDED USE
- The Data Quality Review toolkit aims to support managers and users of health facility data to systematically evaluate and ultimately improve the quality of their routine facility for both regular programmatic monitoring as well as for planning.
- The data quality metrics and methods can be used in the regular and routine monitoring of data by planners, managers, and other users of data.
- The methods can be applied before an annual review to ascertain the quality of data being used to measure progress of health sector priorities.
- The methods and metrics can also be used for programme-specific in-depth assessment of data quality.

CONSIDERATIONS
- The DQR is limited to routine data from health facilities.
- The DQR is focused on the analysis of aggregated data to identify potential data quality problems. It does not provide tools for identification of data quality issues in individual records from health facilities.
- Data quality checks can be done as a desk review of existing routine facility data and as part of an in-facility assessment of data and record-keeping systems. These can be combined or done separately, based on available resources.
- It requires technical support for training prior to set up and use.

AUTHORS
WHO, the Global Fund, Gavi, and USAID/Measure Evaluation

PUBLICATION DATE
2017

LANGUAGES
English, French

LINK
http://www.who.int/healthinfo/tools_data_analysis/en/
Guidance on unique identifiers for patient monitoring

DESRIPTION

WHO “Guidance and recommendations on the use of unique patient identifiers” is a chapter in the 2017 WHO Consolidated guidelines on person-centered HIV patient monitoring and case surveillance. Although developed in the context of HIV, the guidance can be adapted and customized to fit other health settings where the availability of unique patient identifiers is valuable, especially in relation to the management of chronic conditions. The guidelines were developed by WHO with support from PEPFAR and BMGF.

RECOMMENDED USE

- Relevant in all settings where the health strategy envisages a progressive transition from name- and paperbased individual records and registers maintained at health facilities and aggregate reporting of services, to an electronic record coded with a unique identifier.
- The guidelines propose that the transition be undertaken in three broad stages:
  - stage 1: switch from name-based records to unique identifiers associated with a single individual in a paperbased health record system;
  - stage 2: move to the widespread use of unique identifiers and the deployment of an electronic data system with a mixture of online and offline elements; and
  - stage 3: patient data are linked by unique identifiers in a fully online electronic health information system linked across services, facilities, and community care.
- The guidance proposes a generic development pathway for implementation of unique identifiers and electronic patient records: assigning and using unique identifiers; investing in databases and interoperability; confidentiality and security; data analysis, quality, and use; transition from paper to electronic systems; and sustainability of programme improvements.

CONSIDERATIONS

- Successful implementation depends on strong policy support and coordination among country agencies and development partners.
- Important to assess the availability of communications infrastructure and human skills and capacities prior to implementation.
Planning and developing population-based cancer registries in low- and middle-income settings

DESCRIPTION

This guidance document provides technical advice to planners and health specialists in low- and middle-income countries wishing to implement and develop population-based cancer registries (PBCRs) as information systems that inform cancer control policy. NCD surveillance is critical to providing the information needed for policy and programme development, and to support the monitoring and evaluation of the progress made in implementing NCD policies and programmes. Cancer registries are the only disease-specific registries that are in use for NCDs and are therefore of pivotal importance not only in assessing the cancer burden but also in measuring the impact of interventions in cancer prevention and control.

RECOMMENDED USE

- Useful for countries in which noncommunicable diseases are becoming increasingly important contributors to the overall burden of disease.
- PBCRs are critical for collecting and collating incidence data to assess how cancer patterns and trends are affecting populations and how different cancers are evolving.
- PBCRs provide a solid basis for the establishment, monitoring, and evaluation of cancer control programmes.

CONSIDERATIONS

- The data demands for a successful cancer registry are significant and likely to be challenging for countries with nascent health information systems.
- PBCRs require the active collaboration and support of key stakeholders who will be providing data and ensuring the registry’s sustainability.
- Success depends on the collaboration of clinicians, pathologists, and staff in administration in ensuring access to their data.
International Classification of Functioning, Disability and Health (ICF)

**DESCRIPTION**

The ICF is the international standard to document and code the functional status information of a person with a health condition. ICF is a multipurpose classification intended for a wide range of uses in different sectors and includes the following tools:

- Statistical tool for the collection and recording of functioning data (e.g. in population studies and surveys or in health information systems).
- Clinical tool for needs assessment, matching treatments with specific conditions, vocational assessment, rehabilitation and outcome evaluation.
- Health and social policy tool in disability assessment and evaluation, reimbursement, social security planning, policy design and implementation.
- Educational tool for curriculum design and to raise awareness and undertake social action.
- Research tool to measure outcomes, quality of life or environmental factors.

**RECOMMENDED USE**

- Documentation and coding of functional status information at individual and population level in all Member States.

**CONSIDERATIONS**

- The quality of coding results is dependent on the quality of medical record-keeping.

ICF eLearning tool

**DESCRIPTION**

The ICF eLearning tool provides a basic introduction to ICF as a classification system. The tool is designed for self-learning and classroom use. The learning objectives are focused on gaining a basic understanding of the ICF content, structure and its application for different uses.

**RECOMMENDED USE**

- Basic ICF familiarization for documentation and coding of functional status information at individual and population level in all Member States.
ICD-11 Functioning section including WHO Disability Assessment Schedule (WHO DAS 2.0)

WHO DAS 2.0 is short, simple and easy to administer (5 to 20 minutes), applicable across cultures in both clinical and general population settings and allows the generation of an overall and domain-specific summary score.

RECOMMENDED USE

- Measuring and reporting functional status information at individual and population level in all Member States.

CONSIDERATIONS

- The quality of coding results is dependent on the quality of medical record-keeping.
O2. Regular system to monitor service availability, quality and effectiveness

Standardized health facility survey tools – modular approach to health facility assessments

DESCRIPTION

In order to provide a comprehensive assessment of the functioning of a health system and its impact on health, data from health facilities are needed. Routine facility reporting systems provide key information for monitoring and evaluation of service use and resource availability. Health facility surveys periodically collect information from health facilities that are not included in routine reports and can provide a holistic picture of how inputs, processes and systems come together at a service site to influence outputs and outcomes. They provide external validation to self-reports and are an efficient way to collect information complementary to routine reporting that is needed for monitoring service quality and identifying where change is needed to strengthen the health system.

Over the years, a number of international health facility assessment tools (e.g. SARA, SPA, SDI) have been designed and used for measuring health system capacity to provide quality services. These surveys either collected much of the same information in different ways making it difficult to standardize and compare information; were implemented in an uncoordinated fashion, leading to inefficiencies in the use of resources; or were focused on only a specific aspect of facility care such as quality of care in a specific service area, for e.g. newborn care or HIV care.

To address this, WHO and partners examined key information collected in the different surveys, looked at emerging health programme needs and developed a harmonized set of key indicators and topics and standard questions (core and extended) to measure them. In addition, as changes in the different key topics follow different timelines, these modules can be implemented at different periodicities based on country need and context. These key topics include:

- Availability of resources and services such as staff and beds, medicines, diagnostics, and services offered;
- Readiness to provide specific services to a defined minimum standard, including systems to support quality and safety, provider knowledge;
- Quality of care and safety, assessed by: adherence to standards in the patient care process and patient outcomes; patient perspective/satisfaction; management and finance practices to support continuous service availability and quality; utilization & efficiency; quality assurance; health worker absenteeism.

They key tools that were used in the development of the harmonized health facility survey modules, SARA, SPA and SDI are described below.
**RECOMMENDED USE**

- Health facility surveys can be used to verify data collected through routine information systems.
- As an independent assessment of health facility services and quality, they can be used to as a key tool to monitor the progress and performance of health sector priorities (baseline, annual, endline). Independent facility assessments are also a valuable tool in countries that do not have a robust accreditation system.
- They provide independent assessment of health services for health insurance programmes, and at a regional or global level, standardized indicators can provide information on the status of health facility services for a broader geographic region as well as enable comparisons across countries.

**CONSIDERATIONS**

- There needs to be coordination between countries and any funding donors on the periodicity and implementation of the modules. This is especially important if any of the individual surveys that contributed to the harmonized facility survey modules are implemented.

**Service Availability and Readiness Assessment (SARA)**

**DESCRIPTION**

The Service Availability and Readiness Assessment (SARA) was developed by WHO and USAID to fill critical gaps in measuring and tracking progress in health systems strengthening. As a health facility assessment tool, it is designed to assess and monitor service availability and readiness, and to generate evidence to support ongoing planning and management. The objective of SARA is to generate reliable and regular information on service delivery (such as the availability of key human and infrastructure resources); on the availability of basic equipment, basic amenities, essential medicines, and diagnostic capacities; and on the readiness of health facilities to provide basic health-care interventions relating to family planning, child health services, basic and comprehensive emergency obstetric care, HIV, TB, malaria, and noncommunicable diseases. The service availability and service readiness sections of the standardized health facility survey tool (see p.64) are the same as the SARA.

**RECOMMENDED USE**

- Relevant in all settings with nascent or emerging capacities in health information.
- Generates reliable information on the supply and readiness of the health services needed for health systems management, monitoring, and evaluation.
- Provides a mechanism for country monitoring of health services, covering the public, private-for-profit, and the private not-for-profit sectors, and their readiness to deliver key interventions.
- Supports accountability and results at country and global levels by tracking how health systems respond to increased inputs and improved processes over time, and the impact such inputs and processes have on improved health outcomes and better health status.
CONSIDERATIONS

- The SARA is incorporated into the SPA to measure the inventory and readiness of services. The SDI also incorporated some of the same topics as the SARA. It is essential to coordinate implementation (if the surveys are implemented separately) to avoid duplication.

The Service Provision Assessment (SPA) survey is a health facility assessment that provides a comprehensive overview of a country’s health service delivery. SPA looks at availability of health services; the extent to which facilities are ready to provide health services (do they have the necessary infrastructure, resources and support systems?); the extent to which service delivery processes meet accepted standards and quality of care; and if clients and providers are satisfied with the service delivery environment.

RECOMMENDED USE

- Useful in all settings where there are data gaps and potential concerns about the availability and quality of health services.
- SPA can be used in a similar way to SARA – as a verification tool for data gained via the routine health information system and to assess progress and performance of health care services and health sector priorities.

CONSIDERATIONS

- As the availability and readiness sections of the SPA and SARA are the same, it is critical to coordinate implementation to avoid duplication.
- Changes in health care standards on availability, readiness and quality of care reflected in the standardized health facility survey tool modules (see p.64) has not yet been incorporated into the SPA. Funding and technical support is available through USAID, which may limit funding to specific countries.
Service Delivery Indicators (SDI) survey

**DESCRIPTION**
The Service Delivery Indicators (SDI) survey collects actionable data on service delivery in schools and health facilities. The SDI data are used to assess the quality and performance of health services so that decision-makers can track progress over time, and so that citizens can hold governments accountable for public spending. The SDI initiative is a partnership of the World Bank, the African Economic Research Consortium, and the African Development Bank.

**RECOMMENDED USE**
- The SDI has a similar purpose to the SARA and SPA in the health area, where it monitors the performance of health facilities. However, in addition, it also provides information for the education sector on the status of schools in the country.

**CONSIDERATIONS**
- As there is some overlap in the information collected on health services among the SDI, SPA and SARA, it is important for country governments to avoid duplication if multiple surveys are planned simultaneously.
- On the different health services, it is not as holistic or comprehensive as the SPA or SARA though it does collect data on health worker absenteeism that the other surveys do not. However, the forthcoming standardized health facility survey tool (see p.64) modules have incorporated key indicators from the SDI. Funding and technical support is provided by the World Bank.

Health Resources Availability Monitoring System (HeRAMS)

**DESCRIPTION**
HeRAMS is an approach for monitoring health facilities, services, and resource availability in emergencies. It is designed to provide timely identification of needs and gaps in order to underpin evidence-based decision-making and coordination, efficient planning and implementation, response monitoring, and advocacy and resource mobilization. HeRAMS can be applied in a range of emergencies, post-emergencies, recovery and development contexts. The HeRAMS App provides a monitoring feature that can track the evolution of the situation over time and help re-adjust objectives and priorities as the situation evolves. It is supported by an online application (https://primewho.org/) that maximizes data entry and data management processes and provides real-time analysis of the situation.
Guidance on designing health care external evaluation programmes, including accreditation

In addition to setting up accreditation programmes this document also addresses how to set up other external programmes such as certification and licensing which have different scopes and organizational coverage but are based on the same principle – evaluating and improving performance against a defined set of standards or criteria and using external evaluators to improve the safety and quality of health services for the public.

RECOMMENDED USE

• Guide to countries or other entities that are setting up external evaluation programmes for health or social care such as accreditation, certification, or licensing.

CONSIDERATIONS

• The effectiveness and sustainability of an external evaluation organization or programmes is dependent on the unique country or organizational context.

• Some key threats to new external evaluation programmes are inconsistency of government policy, unstable politics, unrealistic expectations and lack of professional/stakeholder support, continuing finance and/or incentives.

• This publication provides information on the factors that will need to be considered when establishing an external evaluation programme, and what type of external evaluation might be the most suitable for the country/organization context.
O3. Health service resources: health financing and health workforce

A System of Health Accounts (2017 revised edition)

DESCRIPTION

The System of Health Accounts – SHA 2011 – is a statistical reference manual giving a comprehensive description of the financial flows in health care. It provides a set of revised classifications of health care functions, and providers of health care goods and services and financing schemes. The SHA is currently used as a basis for a joint data collection by OECD, Eurostat and WHO on health care expenditure. The SHA classifications build on common concepts, boundaries, definitions and accounting rules for measuring consumption of health care goods and services, and its use clearly enhances the coherence and comparability of health care expenditure statistics over time and between countries.

The SHA is used by countries to guide the implementation of national health accounts (NHA). The NHA seek to describe four critical aspects of health financing: sources of funds (public/private health insurance and government-funded programmes); financial management; health providers (hospitals and health centres); and health care functions (prevention, patient services, medicines, equipment), health systems governance and regulation.

Included with the reference manual are a health accounts production tool (HAPT) and health accounts analysis tool (HAAT).

The HAPT provides step-by-step directions to guide country teams through the health accounts production and estimation process. The HAAT guides health accounts teams through the analysis of health expenditure data by automatically producing relevant graphs and charts using data entered into the production tool.

RECOMMENDED USE

- For all countries and development partners supporting health development.

CONSIDERATIONS

- Requires data collection from multiple primary and secondary sources. Primary sources include institutional surveys and household health expenditure surveys to estimate total spending on health by households, including out-of-pocket payments. Secondary sources include government budget and expenditure reports, DHS, service provision assessments, public expenditure reviews, and health information systems.

- Requires considerable technical support for implementation.
National Health Workforce Accounts (NHWA): a handbook

**DESCRIPTION**

National Health Workforce Accounts (NHWA) is a system by which countries progressively improve the availability, quality, and use of data on their health workforce through monitoring of a set of indicators to support achievement of UHC, the SDGs and other health objectives. The purpose of NHWA is to facilitate the standardization of a health workforce information system for interoperability, as well as to support tracking human resources for health (HRH) policy performance towards UHC.

NHWA build on the WHO Minimum Data Set Registry and the Toolkit for Monitoring and Evaluation of Human Resources for Health (HRH) (described below).

The NHWA handbook contains a set of 78 core indicators, organized around 10 modules, that aim to provide comprehensive information on individual countries’ health workforce situation and trends. These indicators are of relevance to country, regional and global reporting across the spectrum of health workforce priorities. The indicators require information from several sectors such as health, education, finance, migration to produce a holistic assessment of human resources for health (HRH).

Key supporting resources developed to guide the production of health workforce accounts for countries include:

- NHWA Handbook.
- NHWA Implementation Guide – to help countries sustainably implement NHWA manner.
- Web platform to store data, monitor their indicators and report key national statistics on their health workforce.
- NHWA Online Data Platform – enables countries to record, analyse and visualize health workforce (HWF) information primarily for their own use.
- NHWA Web Portal – developed to display aggregated data validated by countries. This publicly available portal serves as a global public good for dissemination of globally harmonized health workforce data.

**RECOMMENDED USE**

- Relevant in settings with emerging capacities to generate data on the health workforce and a need to develop improved workforce planning and management strategies.
- Designed to help countries improve human resource data systems, improve data quality and standardize data systems.
- Designed to support human resource planners to establish a centralized database or a series of interoperable databases, so that they can analyse the national workforce situation, monitor trends and report indicators internationally.
CONSIDERATIONS

• Requires a multi-stakeholder, intersectoral approach, involving national statistical offices, ministries of health, finance, labour, education and immigration, and also professional associations or councils and communities.

• Health workforce data are produced from five major sources, all of which must be fully functional to enable planners and managers to build an accurate picture of human resource capacities and needs: national population censuses, labour force and employment surveys, health facility assessments, routine administrative information systems and health professional associations’ records or registries.

• A complete NHWA is very complex and places heavy demands on country health information systems due to the lack of required human resource data from multiple sources. However, countries can use this guidance to progressively build the data system needed to track human resources.

International Standard Classification of Occupations (ISCO-08)

DESCRIPTION

ISCO is a tool for organizing jobs into a clearly defined set of groups according to the tasks and duties the job entails. Its main aims are to provide a basis for the international reporting, comparison and exchange of statistical and administrative data about occupations; a model for the development of national and regional classifications of occupations; and a system that can be used directly in countries that have not developed their own national classifications.

RECOMMENDED USE

• Relevant in all settings as it sets the basic standards for classifying human resources and occupations, thus improving comparability, and fostering the interoperability of multiple human resource data systems.

• Facilitates harmonization of health workforce information from multiple data sources across sectors.

CONSIDERATIONS

• Requires adaptation to individual country circumstances and to the vast range of different standards and roles of health workers.
Review progress and performance to make informed decisions

KEY ELEMENTS

R1 Regular analytical reviews of progress and performance, with equity

R2 Institutional capacity for analysis and learning
R1. Regular analytical reviews of progress and performance, with equity

Triple Billion dashboard

The Triple Billion targets are an ambitious initiative to improve the health of billions of people by 2023. They are the foundation of WHO’s Thirteenth General Programme of Work (GPW 13) acting as both a measurement and a policy strategy. The GPW13 and the Triple Billions approach will only be of value if they are tied to interventions that drive impact within countries. They are an integral part of the GPW 13’s Results Framework.

The Triple Billion targets are:
- Universal health coverage: One billion more people benefitting from universal health coverage.
- Health emergencies: One billion more people better protected from health emergencies.
- Healthier populations: One billion more people enjoying better health and well-being.

RECOMMENDED USE
- To track global progress towards the Triple Billion targets and health-related SDGs.
Leading by example: A resource for global health decision-makers

AUTHORS
Exemplars in Global Health/BMGF

PUBLICATION DATE
2020

LANGUAGE
English

LINK
https://www.exemplars.health/learn-more/about

DESCRIPTION
Created to help decision-makers around the world quickly learn how countries have solved major challenges related to human resources for health. The goal is to ensure that research helps countries take action.

The resource aims to help public health decision-makers around the world to learn from the strategies successfully used by their peers elsewhere to improve the availability of their human resources for health, and to adapt elements of those strategies to their own settings. With input from in-country and global experts, countries that have made extraordinary progress in important health outcomes are analysed and the key takeaways disseminated.

The Exemplars in Global Health platform uses all available and globally accepted data sets within an identified time horizon to pinpoint countries that outperformed peers in key areas of public health, controlling for factors such as economic growth. Guided by global and in-country experts, with consideration for geographic diversity, data availability, and research feasibility to select Exemplar candidates. Further research and analysis are done to validate our initial assessment.

RECOMMENDED USE

• Resource for leaders committed to improving health and achieving success in their countries.

CONSIDERATIONS

• Data are not always available or of robust enough quality for valid quantitative analysis, requiring the use of proxies in some cases.

• Qualitative analysis is difficult in remote locations due to limitations of time and distance.

Health inequality monitoring resources

AUTHOR
WHO

PUBLICATION DATE
Various

LANGUAGE
English

LINK
https://www.who.int/gho/health_equity/en/

DESCRIPTION
Monitoring health inequalities is crucial to identify differences in health between different population subgroups. This provides evidence on who is being left behind and informs health policies, programmes and practices that aim to close existing gaps and achieve health equity. The WHO Health equity monitor provides evidence on existing health inequalities and makes available tools and resources for health inequality monitoring, including:
Health equity monitor database – a large database of disaggregated data, which currently includes data for more than 30 reproductive, maternal, newborn and child health indicators, disaggregated by six dimensions of inequality, from over 360 international household health surveys conducted in 112 countries between 1991–2017.

Interactive data visualizations – interactive presentation of data visualization from the Health Equity Monitor database.

Health Equity Assessment Toolkit – Includes HEAT and HEAT Plus.

HEAT is a software application for assessing health inequalities in countries. The HEAT database is populated with data from 330 Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS) and Reproductive Health Surveys (RHS) conducted in 111 countries between 1991 and 2015. Inequalities can be assessed using disaggregated data and summary measures that are visualized in a variety of customized tables and graphs. Results can be exported and saved in different formats.

HEAT Plus is the Upload-Database Edition of the Health Equity Assessment Toolkit and allows users to upload and work with their own data. Databases of disaggregated data have to be in a specified format in order to be uploaded to HEAT Plus. Once uploaded successfully, disaggregated data and summary measures (calculated in HEAT Plus based on the uploaded disaggregated data) can be used to assess in-country health inequalities.

Handbook on health inequality monitoring: with a special focus on low- and middle-income countries – Provides an overview for health inequality monitoring in low- and middle-income countries, and is a resource for those involved in spearheading, improving or sustaining health-related monitoring systems. Principally designed for technical staff of ministries of health to build capacity for health inequality monitoring, it can also be of interest to public health professionals, researchers, students etc. It is a comprehensive resource that discusses key data sources, health inequality monitoring processes and implications.

National health equity monitoring: a step-by-step manual – The manual is designed to serve as a highly accessible, practical reference for the practice of health inequality monitoring. Organized according to a flow chart, the manual helps readers to anticipate and navigate practical considerations that underlie health inequality monitoring.

Recommended Use

- Relevant and important in all settings, especially where national averages may mask important differences between population groups or locations.
- Relevant in settings seeking to strengthen capacity for health inequality monitoring.
- Applicable across countries with varied priorities, capabilities, resources and/or data availability.
- Designed to foster regular reporting of inequalities in diverse health topics and encourage greater integration of the results of health inequality monitoring within policies, programmes and practices.

Considerations

- It is important that those involved in health inequality monitoring develop the ability to draw conclusions from the analyses, effectively communicate the results on health inequality monitoring to policy-makers and support the integration of this new knowledge into health policies, programmes and practices.
- Assumes basic statistical knowledge and some familiarity with monitoring related issues.
- Can help develop the in-country expertise needed not only to conduct health inequality analyses, but also to thoroughly understand the applicability and implications of various measures of inequality.
OneHealth Tool

**DESCRIPTION**

The OneHealth Tool is a software tool designed to inform national strategic health planning in low- and middle-income countries. While many costing tools take a narrow disease-specific approach, the OneHealth Tool attempts to link strategic objectives and targets of disease control and prevention programmes to the required investments in health systems. The tool provides planners with a single framework for scenario analysis, costing, health impact analysis, budgeting and financing of strategies for all major diseases and health system components. It is thus primarily intended to inform sector-wide national strategic health plans and policies. The detailed manual is accompanied by an online support function.

The development of the tool was overseen by the UN Inter-Agency Working Group on Costing (IAWG-COSTING) established in 2008 (WHO, UNICEF, WB, UNAIDS, UNFPA, UNDP) in collaboration with the Futures Institute. Technical inputs were solicited from expert advisory groups and country planners.

**RECOMMENDED USE**

- Relevant in all settings conducting strategic health planning at national level.
- Provides projected cost scenarios for health plans.
- Designed for use by governments and health sector planners.
- Should be implemented by way of a multi-disciplinary team including health sector planners (ministry of health, department of planning); disease-specific programme planners (e.g. EPI, malaria), health system programmes (such as human resource departments); nongovernmental organizations and other agencies in countries; donors, academics and UN agencies.

**CONSIDERATIONS**

- Effective use depends on the availability of sound information on costs, coverage of interventions and health service availability.

**AUTHOR**
Avenir Health

**PUBLICATION DATE**
2017

**LANGUAGE**
English

**LINK**
http://www.who.int/choice/onehealthtool/en/
Lives Saved Tool (LiST)

**DESCRIPTION**

The Lives Saved Tool (LiST) estimates the impact of scaling up health and nutrition interventions on maternal, newborn and child health, and stillbirths. LiST is a part of Spectrum, a software package maintained by Avenir Health. The model been used for over 10 years and is regularly updated to incorporate the latest evidence from the scientific literature and household survey data. The tool was developed by JHBSPH with financial support from BMGF.

LiST calculates changes in cause-specific mortality based on intervention-coverage change, intervention effectiveness for that cause, and the percentage of cause-specific mortality sensitive to that intervention. Default coverage data comes from large-scale validated surveys – typically DHS, MICS and WHO/UNICEF Joint Monitoring Programme. Default effectiveness values come from systematic reviews, meta-analyses, Delphi estimations, and randomized control trials. Affected fractions are built using data from the Child Health Epidemiology Reference Group (CHERG) and the UN Inter-agency Group for Child Mortality Estimation (IGME). These high-quality data sources as inputs translate into estimates that can be trusted. Additionally, users who have more recent or better data can easily replace default data with their own.

**RECOMMENDED USE**

- Useful in all settings where there is information scarcity to guide decision-making in health.
- Consists of web-based materials including help files, training materials, user forums and webinars.
- Supports strategic planning by helping to identify which interventions will have the highest impact on which type of mortality. Running a LiST analysis has allowed users to review their plans to remove low-impact, high-cost interventions, thus freeing up funds to re-orient towards higher impact endeavours.
- Can be used in project or programme evaluation where its modeling approach can be used in settings in which mortality is difficult to measure due the timing and costs of evaluation.
- Using LiST allows users to advocate for focusing on a specific programmatic area or on a certain intervention or package of interventions by quantifying potential impact on mortality or intermediate outcomes.

**CONSIDERATIONS**

- List is limited to maternal, newborn, and child health, and nutrition (MNCH&N) interventions.
Modeling physical accessibility to health care and geographic coverage (AccessMod©)

DESCRIPTION
AccessMod is a free toolbox developed by WHO to help countries examine the geographic aspects of their health system. Using geographic information systems (GIS) it measures physical accessibility to health care and estimates geographic coverage of an existing health facility network, and then links the results to national policy and planning discussions.

AccessMod includes:
- Physical accessibility analysis: Assessing travel time and thereby how physically accessible existing health services are to the target population.
- Geographic coverage analysis: Taking into account the coverage capacity of each health facility to estimate the share of the target population that could be seen with a certain quantity of inputs (i.e., health workforce, infrastructure). As a next logical step, determining whether coverage capacity is (in) sufficient to provide care to everyone living within the facility’s catchment area.
- Referral analysis: Calculating distance and travel time between different types of health system facility.
- Zonal statistics: Estimating the percentage share of the population with coverage in each subnational division to examine inequities.
- Scaling up scenario analysis: Identifying the optimal location for building new health facilities.

RECOMMENDED USE
- Useful in all settings where access to services is inadequate.
- Models how physically accessible existing health services are to the target population. Also enables estimation of the part of the target population that would not receive care despite being nearby as a result of poor capacity in these services (human or equipment).
- Measures referral times and distances between health facilities, and identifies where to place new health facilities to increase population coverage through the scaling up analysis.
- Is based on open source libraries and tools packaged in a virtual machine, which makes it easy to use and install on any desktop computer, without worrying about dependencies and configurations, license fees or operating systems.

CONSIDERATIONS
- Assumes sufficient available staff familiar with basic geographic analysis tools.
- Does not include external technical support.
- Does not include online help and support services.
Equitable Impact Sensitive Tool (EQUIST)

**DESCRIPTION**

EQUIST is a web-based analytical platform used for strategic planning and prioritization of maternal, newborn and child health interventions, as well as allocation of related resources in low- and middle-income countries. The explicit goal of EQUIST is to reduce health disparities between marginalized mothers and young children and their better-off counterparts. EQUIST helps policy-makers select strategies that balance the principles of equity, effectiveness and efficiency by leading them through a logical process to identify the most rational and cost-effective solutions for their context.

**RECOMMENDED USE**

- To help UNICEF and its partners work with national partners using an evidence-based, equity-focused planning tool to improve country strategies and plans, and boost the coverage of high-impact reproductive, maternal, newborn and child and adolescent health and nutrition (RMNCAH&N) interventions.

**CONSIDERATIONS**

- Requires initial capacity building and technical support to start using the tool. However, there are resources that can be downloaded to jump-start self-learning.
- Mainly focused on RMNCAH&N so it is not as useful for broader health sector planning.

AUTHORS
UNICEF/Community Systems Foundation (CSF)

PUBLICATION DATE
2016

LANGUAGE
English

LINK
http://www.equist.info/
R2. Institutional capacity for analysis and learning

Analysis and use of health facility data

**DESCRIPTION**

Based on WHO-recommended service delivery and programmatic standards, this toolkit comprises a set of resources to optimize the collection, analysis and use of data gathered through routine health facility information systems, also known as health management information systems (HMIS). The current and forthcoming standards include key disease and programme areas such as immunization, malaria, HIV, TB, reproductive, maternal, newborn, child, and adolescent health (RMNCAH), hepatitis B, neglected tropical diseases (NTDs), and noncommunicable diseases. The comprehensive toolkit includes:

- A minimum list of key indicators with standard metadata across the health sector for an integrated/interoperable HMIS based on overall health and programmatic standards;
- Guidance on minimum recommended analytics (graphs, tables, etc.) required to understand the relevance of collected data for health planners and programme-specific managers;
- Guidance on minimum data quality standards that need to be met (for more information on DQR please see p.59 of this document);
- Curriculum to build institutional capacity in analysis and use;
- Machine-readable configuration packages.
Data Quality Review: a toolkit for facility data quality assessment

DESCRIPTION
The DQR toolkit provides a framework to assess the quality of data generated from health facilities. It provides standard metrics and methods to measure data quality that can apply across all programme areas. It harmonizes multiple disease- and donor-specific data quality tools and review processes. The use of standard metrics across different programmes allows users to compare across programmes and determine if data quality issues are systemic or specific to certain programme areas. For more information on the DQR toolkit, see p.59 in this document.

RECOMMENDED USE
- The Data Quality Review toolkit aims to support managers and users of health facility data to systematically evaluate and ultimately improve the quality of their routine facility for both regular programmatic monitoring as well as for planning.
- The data quality metrics and methods can be used in the regular and routine monitoring of data by planners, managers, and other users of data.
- The methods can be applied before an annual review to ascertain the quality of data being used to measure progress of health sector priorities.
- The methods and metrics can also be used for programme-specific in-depth assessment of data quality.

CONSIDERATIONS
- The DQR is limited to routine data from health facilities.
- The DQR is focused on the analysis of aggregated data to identify potential data quality problems. It does not provide tools for identification of data quality issues in individual records from health facilities.
- Data quality checks can be done as a desk review of existing routine facility data and as part of an in-facility assessment of data and record-keeping systems. These can be combined or done separately, based on available resources.
- It requires technical support for training prior to set up and use.
Routine Health Information Systems (RHIS): a curriculum on basic concepts and practice

**DESCRIPTION**

This curriculum (including a syllabus, facilitator’s guide and modules) meets the need to provide training in low- and middle-income countries to meet the challenge of strengthening RHIS. Its purpose is to enhance participants’ capacity to conceptualize, design, develop, govern, and manage an RHIS – and use the information the system generates to improve public health practice and service delivery. The length of the training is for 60 hours. For more information on this curriculum, please go to p.58 in the “Optimize health services data” section.
Enable data use for policy and action to accelerate improvement

**KEY ELEMENTS**

**E1** Data and evidence drive policy and planning

**E2** Data access and sharing

**E3** Strong country-led governance of data
E1. Data and evidence drive policy and planning

WHO Global Observatory on Health Research and Development

RECOMMENDED USE

- Relevant in all settings where governments, policy-makers, funders and researchers are seeking to build an accurate picture of current research and development and identify gaps in order to ensure that funds and resources are used in the best possible way.

- Enables governments, policy-makers, funders, researchers and civil society to: review and query information on current trends, for example, in investment in health R&D, products in the pipeline and clinical trials; compare R&D activities between countries, diseases and in relation to relevant information such as burden of disease or macroeconomic indicators; review global indicators on health R&D in the context of the SDGs; or more generally consult comprehensive disease-specific analyses on identified needs.

CONSIDERATIONS

- Likely to be of most interest to researchers, rather than to health information officers.

- Policy-makers will likely be indirect users, working on the advice of researchers and data brokers.

DESCRIPTION

The Global Observatory on Health R&D (hereafter called “the Observatory”) is a global-level initiative that aims to help identify health R&D priorities based on public health needs, by: consolidating, monitoring and analysing relevant information on the health R&D needs of developing countries; building on existing data collection mechanisms; and supporting coordinated actions on health R&D; providing a centralized and comprehensive source of information and analysis on global health R&D activities for human diseases. It builds on existing data and reports from a wide range of data sources, and gathers new information (where needed and feasible) with the aim of enabling decisions on priorities in R&D.
Tools for data demand and use in the health sector: a quick guide

DESCRIPTION

A set of tools for improving the demand for, and use of, data to inform health policy and decision-making. The set identifies the barriers and constraints to data use and sets out effective approaches to address them. The toolkit comprises sections on: assessing constraints to data use; an information-use map; a framework for linking data with action; stakeholder engagement; and PRISM tools (see “Optimize Health Service Data” section). These tools can be used independently or in combination, depending on need and context. The tool or series of tools selected to improve data use should respond to the particular context and be suitable for the scope of the activity, timeline, and available budget.

RECOMMENDED USE

- Relevant in all settings, especially where routine health information systems are nascent or emerging and capacities are limited.
- Each of the tools presented can be modified and adapted to fit the needs, timeline, and budget of the context in which they are being used.

CONSIDERATIONS

- Implementation of the full set of tools is likely to be time-consuming and requires active participation of staff at different levels of the routine health information system, including at policy level.
Making data meaningful: four practical guides


- Part 2: A guide to presenting statistics (2009) – provides guidelines and examples on preparing effective tables, charts and maps, and using other forms of visualizations to make data meaningful. It also offers advice on how to avoid bad or misleading visual presentations.

- Part 3: A guide to communicating with the media (2011) – aims to help producers of statistics find the best way to get their message across and to communicate effectively with the media. It contains suggestions, guidelines and examples.

- Part 4: A guide to improving statistical literacy (2014) – provides an overview of current initiatives and defines strategies for improving the statistical literacy of different user groups.

**DESCRIPTION**

Making data meaningful comprises four practical guides to help managers, statisticians and media relations officers use text and visualizations to bring statistics to life for non-statisticians; find the best way to get their message across or define strategies for improving statistical literacy.


**RECOMMENDED USE**

- Relevant in all settings and with multiple audiences, including producers and users of statistics at local and national levels.
- Highlights examples of good and bad practice.
- User friendly and available in multiple languages.

**CONSIDERATIONS**

- Approaches to presentation of data, practical and cultural differences vary from country to country and need to be taken into consideration.
E2. Data access and sharing

Policy statement on data sharing by the World Health Organization in the context of public health emergencies

**DESCRIPTION**

The primary purpose of data sharing by WHO during a public health emergency is to permit analyses that allow the fullest possible understanding of the emergency, and to ensure that decisions are based on the best available evidence. This policy statement sets out WHO’s position in providing access to data in three categories: surveillance and monitoring; emergency response; and health facilities.

**RECOMMENDED USE**

- Relevant in all countries.
- Covers data from surveillance and monitoring (informing epidemiology), from the emergency response (e.g. contact tracing, vaccination, treatment), and data concerning health facilities (e.g. the numbers and locations of in-patient and out-patient centres, and the staff and medical facilities available at these centres).
- Addresses the importance of anonymization to remove all personal identifiers and locators and comply with personal data protection requirements of the IHR.
- Stresses the importance of data curation so as to increase their utility.
- Covers core topics, including: genetic sequence data / information; observational studies and clinical trials; and security of data held at WHO.

**CONSIDERATIONS**

- Is limited to sharing of data by WHO in the context of public health emergencies.
- Does not provide guidance on data sharing, confidentiality, data security, ethical issues etc. at country level.

**AUTHOR**

WHO

**PUBLICATION DATE**

2016

**LANGUAGE**

English

**LINK**

http://www.who.int/ihr/procedures/SPG_data_sharing.pdf
E3. Strong country-led governance of data

WHO Guideline: recommendations on digital interventions for health system strengthening

By reviewing the evidence of different digital interventions against comparative options, as well as assessing the risks, this guideline aims to equip health policy-makers and other stakeholders with recommendations and implementation considerations for making informed investments into digital health interventions.

RECOMMENDED USE

- For health policy-makers decision-makers in ministries of health, public health practitioners and other stakeholders to guide informed investments into digital health interventions.
- Guide which digital health interventions have an evidence base to address health system needs.

CONSIDERATIONS

- Digital health interventions are not a substitute for functioning health systems, and that there are significant limitations to what digital health is able to address.
- Digital health interventions should complement and enhance health system functions through mechanisms such as accelerated exchange of information but will not replace the fundamental components needed by health systems such as the health workforce, financing, leadership and governance, and access to essential medicines.
- An understanding of which health system challenges, along with an assessment of the ecosystem's ability to absorb such digital interventions is needed to inform investments in digital health.
- Additionally, the adoption of the recommendations in this guideline should not exclude or jeopardize the provision of quality non-digital services in places where there is no access to the digital technologies or they are not acceptable or affordable for target communities.
Guidance for Investing in Digital Health: ADB Sustainable Development working paper series

DESCRIPTION

Guidance for Investing in Digital Health provides a guide on how to think about the digital health investment process and helps digital health specialists tasked with assembling the data needed to enable a well-informed investment decision to be made. A digital health impact framework (DHIF) is introduced to do this.

Governments will reflect on their understanding of the issues involved in maximizing the benefits and minimizing the risks of digital health by developing well-formed digital health strategies and associated investment plans, and will ensure that digital health investments, large or small, take advantage of the DHIF approach in the appropriate level of detail.

The overarching goal is to meet the SDGs and, in particular, universal health coverage (UHC) by investing in digital health. Health care systems in both developed and developing nations have begun to embrace the transformative power of information and communication technology, from electronic health records that integrate and organize medical data and enable providers to share it easily, to mobile technology that spurs better informed decisions by people and health workers in rural areas and hospitals. There are many digital health solutions already in place, and many are planned. The question is what investments in knowledge, people, policies, and equipment will maximize the impact of digital health. Some investments in digital health are best carried out by governments. Other stakeholders can then build their digital health solutions on these.

This guide will help governments consider the interests of all those stakeholders when planning investments in digital health. It also provides a digital health impact framework, illustrated with five cases, to show how to assess costs, benefits, and timescales; manage expectations; and ensure affordable strategies.

RECOMMENDED USE

- To guide decision-makers about the issues to be considered when making small or large investments in digital health.
- Used by decision-makers may be senior government officials, but this document is also intended to be of use to those within the health system (e.g., health managers), or to those supporting the health system (e.g., donors).

CONSIDERATIONS

- Deploying digital health requires knowledge of local barriers to benefits realization and how to mitigate risks, like cybersecurity.
- Governments have particular responsibilities when it comes to investing in an enabling digital infrastructure, both technical and managerial. Building a strong case for these investments requires stakeholders to be ready and able to realize the benefits.
Digital Health Platform Handbook: Building a Digital Information Infrastructure (Infostructure) for Health

DESCRIPTION

The Digital Health Platform Handbook [DHPH] aims to assist countries with the advancement of their national digital health system, specifically through the use of a digital health platform, or DHP. This digital platform provides the underlying foundation for the various digital health applications and systems used to support health and care services. It enables individual applications and systems to interoperate and work together in an integrated manner.

Working behind the scenes rather than directly with users, the DHP ties applications together through a standards-based, information infrastructure, called the ‘infostructure’, that consists of an integrated set of common and reusable components. DHP components are core technology services required by many (or even all) applications running in your digital health system, such as registries, identity authentication, or data repositories.

The concept of the DHP emerged from a recognition that most digital health progress thus far has arrived in the form of individual applications and information systems. While they do successfully accomplish specific tasks, these digital tools often operate independently from each other. They collect, manage, or process data within a siloed, ‘vertical’ environment, resulting in islands of isolated information that have yet to generate efficiency and improve health outcomes as hoped.

The DHP’s common infostructure serves as the foundation for a cohesive system. Its integration capabilities and use of core, reusable components tie together standalone applications and systems; in this manner, the DHP provides the ‘horizontal’ foundation for the ‘vertical’ applications. This use of common components also streamline your digital health system and makes your investments more cost effective. Instead of investing and re-investing in the development and deployment of application components that can be provided more efficiently by a DHP, your digital health budgets can focus on innovation and ongoing sustainability.

RECOMMENDED USE

• Primarily designed for health sector planners and enterprise architects who are responsible for the design of a national digital health system.

• Used by software developers and solutions providers to understand how their efforts can integrate with and benefit from the digital health platform.

• Can be used by countries at varying levels of digital health maturity improve how health applications and systems work together and accelerate innovation.

• Countries with relatively advanced digital health systems will learn how to better integrate and optimize their assets. Countries in earlier stages of digital maturity will learn how to lay down an initial foundation on which all future innovations will be built.

• The DHPH helps you to outline your initial infostructure architecture and requirements, leading you through the various design and implementation questions that you need to consider.
CONSIDERATIONS

- Building this cohesive digital health system requires multiple tasks and development phases building upon a country’s national eHealth Strategy, or similar digital health roadmap.
- An important part of this process is identifying the technology components that are common to multiple applications in your system design; these generic, reusable components will form the basis of your DHP.
- Decisions will need to be made about overall design principles, standards for ensuring interoperability, software type and licensing, and implementation paths.
- You will also need to formulate an operations plan for governing the DHP infrastructure as well as activities to promote uptake and innovations that will be built on the new platform—essential steps for successful implementation and ongoing sustainability.

Global reference list of 100 core health (plus SDG-related) indicators

AUTHOR
WHO

PUBLICATION DATE
2018

LANGUAGE
English

LINK

DESCRIPTION
This reference list is a standard set of core health indicators prioritized by the global health community to provide concise information on the health situation and trends of a country. The updated 2018 edition reflects the recommended health and health-related indicators of the SDGs as well as updates to indicator metadata elements. It was developed by WHO with inputs from partners, and financial support from D4H and GIZ.

RECOMMENDED USE

- Relevant for all countries, especially those with nascent and emerging health information systems that are in receipt of external funding and face many demands for monitoring and evaluation of performance.
- Provides a mechanism to reduce excessive and duplicative reporting requirements, enhance efficiency of data collection investments in countries, increase availability and quality of data, and improve transparency and accountability.
- Provides criteria for prioritizing indicators.
- Describes metadata for all selected indicators.

CONSIDERATIONS

- The Global List may not meet all the data needs of countries, so it is essential for countries to retain flexibility in focusing on indicators most relevant to their situation.
- In order to foster country ownership, it is important to have open and transparent processes both for indicator section and analysis and presentation of results.
- While technical soundness is essential when selecting indicators, policy priorities also drive indicators and some indicators will be aspirational rather than measurable in settings with weak health information systems.
Health Information Systems (HIS) Interoperability Maturity Toolkit

The HIS interoperability maturity model identifies the major components of HIS interoperability and lays out an organization’s growth pathway through these components. Countries can use the assessment tool to determine their HIS interoperability maturity level systematically. Using the assessment results, countries can create a path toward strengthening their HIS interoperability and building resilient systems. Includes country examples from Ghana and Uganda.

**RECOMMENDED USE**
- Relevant in all settings where electronic health data systems are in use or planned.
- Suitable for nascent and emerging settings as well as those at the level of institutionalization of electronic data systems.

**DESCRIPTION**
This toolkit is designed to facilitate exchange of data between disparate health information systems – or “interoperability” – and offers guidance and tools to assess country capacity to implement such systems. The kit contains: a maturity model, an assessment tool, and a users’ guide.
Strategizing national health in the 21st century: a handbook

DESCRIPTION
This handbook provides up-to-date and practical guidance on national health planning and strategizing and establishes a set of best practices to support strategic plans for health. Detailed chapters cover a wide array of topics:

- Population consultation on needs and expectations.
- Situation analysis of the health sector.
- Priority-setting for national health policies, strategies and plans.
- Strategic planning: transforming priorities into plans.
- Operational planning: transforming plans into action.
- Estimating cost implications of a national health policy, strategy or plan.
- Budgeting for health.
- Monitoring, evaluation and review of national health policies, strategies and plans.
- Law, regulation and strategizing for health.
- Strategizing for health at subnational level.
- Intersectoral planning for health and health equity.
- Strategizing in distressed health contexts.

RECOMMENDED USE
• Targets health ministries and other relevant stakeholders involved in national health planning.
• Likely to be of particular use to health systems specialists, planners and development partners.
• Covers the main steps of a national health strategic plan of approximately 3–7 years.
• Seeks to capture the innovative realities of national planning at country level, taking into account the policy dialogue process in ensuring the success of the plan.

CONSIDERATIONS
• The length of the document may dissuade some readers, although each of the chapters can be used independently.

AUTHOR
WHO
PUBLICATION DATE
2016
LANGUAGE
English
LINK
OpenHIE

AUTHOR
Regenstrief Institute

PUBLICATION DATE
2013

LANGUAGE
English

LINK
https://ohie.org/

DESCRIPTION
OpenHIE is a global community of practice that aims to improve health through open and collaborative development and support of country driven, large-scale health information-sharing. It does so by enabling health information interoperability, offering freely available standards-based approaches and reference technologies; and uses peer technical-assistance communities to provide any support/assistance.

The OpenHIE community supports interoperability by creating a reusable architectural framework that leverages health information standards and enables flexible implementation by country partners.

RECOMMENDED USE
- The community seeks to support mainly low- and middle-income countries working to enhance interoperability across different elements of the health system.
- OpenHIE is user-driven and designed to be responsive to specific country challenges.
- A number of topic-focused communities have been established: the health management information system community; the health worker registry community; client and facility registry communities; the interoperability community; the shared health record community; and the terminology services community.

CONSIDERATIONS
- Some of the resources listed on the website do not appear to be functional.

National eHealth Strategy Toolkit

AUTHOR
WHO/ITU

PUBLICATION DATE
2012

LANGUAGE
Arabic, Chinese, English, French

LINK
https://www.itu.int/pub/D-STR-E_HEALTH.05-2012

DESCRIPTION
The National eHealth Strategy Toolkit is an expert practical guide providing governments, their ministries and stakeholders with a solid basis for developing and implementing a national eHealth vision, action plan and monitoring framework. This practical, comprehensive, step-by-step guide, is directed chiefly towards the most relevant government departments and agencies, particularly ministries of health and ministries of information technology and communication.

The toolkit is designed in three parts:
- Part 1: A national eHealth vision that responds to health and development goals
- Part 2: A national eHealth action plan that reflects country priorities
- Part 3: A plan to monitor implementation and manage associated risks
SCORE FOR HEALTH DATA TECHNICAL PACKAGE: TOOLS AND STANDARDS FOR SCORE ESSENTIAL INTERVENTIONS

RECOMMENDED USE

- Relevant for all countries, whatever their level of development.
- The toolkit can be adapted to suit diverse country circumstances.

CONSIDERATIONS

- Successful application of the toolkit requires a team experienced in strategic planning, analysis and communication processes.
- Ongoing engagement with essential health and non-health stakeholders must be maintained. Success in implementing a national eHealth vision is dependent on having the continued support and guidance of stakeholders.

AUTHOR
WHO
PUBLICATION DATE
2011
LANGUAGE
English
LINK
http://apps.who.int/iris/bitstream/10665/85877/1/9789241502276_eng.pdf

DESCRIPTION
This document provides guidance to countries and partners for strengthening monitoring, evaluation and review (M&E) of national health plans and strategies (NHS). It outlines the key attributes and characteristics of a sound, country-led platform for monitoring, evaluation and review of health sector progress and performance. It also aims to show how development partners can contribute to the strengthening of such a platform.

RECOMMENDED USE

- Relevant for all countries, especially those with nascent or emerging health information systems where data collection and analytical capacities are limited.

The platform can serve as a strong and harmonized M&E component of the NHS, covering all major disease programmes as well as health system actions.

Can be used to assess, improve or develop the M&E component of the NHS, or of a specific programme (such as HIV/AIDS, maternal health or immunization), or to assess health system strengthening actions.

Helps align partners around a shared set of monitoring and evaluation activities (such as data collection, data analysis, and reporting) for the NHS.

Supports streamlined global reporting with country planning and review cycles, in terms of timing, methods and content, thus avoiding overlap and duplication.

Offers a mechanism for subnational, national and global reporting, aligning partners at country and global levels around a common approach to country support and reporting requirements.

CONSIDERATIONS

- Relevant for countries and for global health partnerships, donors and agencies.

- Successful application of the toolkit requires a team experienced in strategic planning, analysis and communication processes.
- Ongoing engagement with essential health and non-health stakeholders must be maintained. Success in implementing a national eHealth vision is dependent on having the continued support and guidance of stakeholders.

- The platform can serve as a strong and harmonized M&E component of the NHS, covering all major disease programmes as well as health system actions.

- Can be used to assess, improve or develop the M&E component of the NHS, or of a specific programme (such as HIV/AIDS, maternal health or immunization), or to assess health system strengthening actions.

- Helps align partners around a shared set of monitoring and evaluation activities (such as data collection, data analysis, and reporting) for the NHS.

- Supports streamlined global reporting with country planning and review cycles, in terms of timing, methods and content, thus avoiding overlap and duplication.

- Offers a mechanism for subnational, national and global reporting, aligning partners at country and global levels around a common approach to country support and reporting requirements.

- Relevant for countries and for global health partnerships, donors and agencies.

- Success depends on the willingness of country programmes and development partners to align around the common framework and avoid making additional demands on the country.
- Does not include any specific activities designed to enhance country capacities in relation to data collection, analysis and use.