Health inequality monitoring: with a special focus on low- and middle-income countries

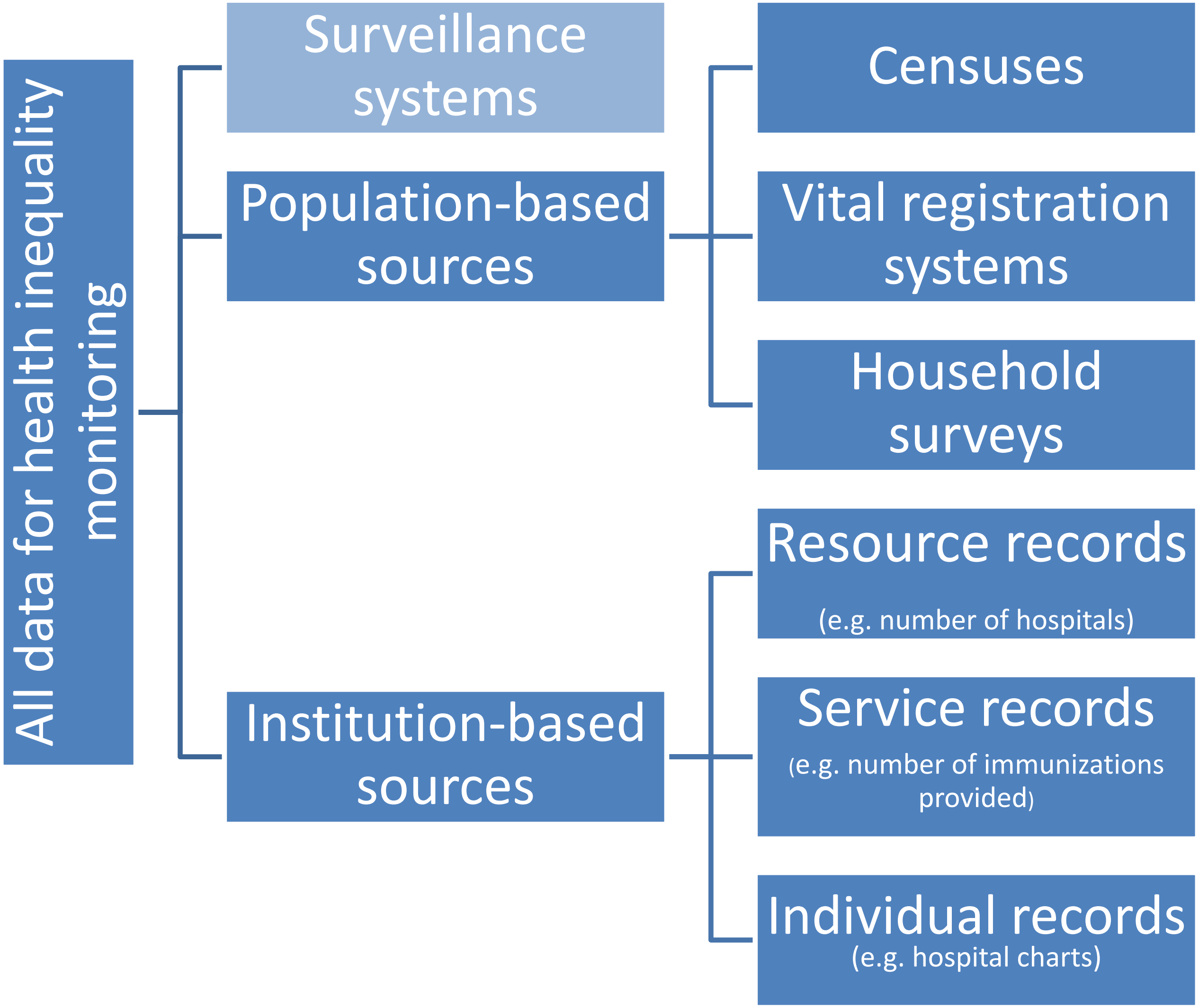
Lecture 3: Data sources

World Health
Organization

Data collection infrastructure

- Ideally, data should come from an information-producing system that:
  - has strong legitimacy
  - has high-level political support
  - is transparent
  - includes policy, technical, academic and civil society constituencies

Data source types



All data for health inequality monitoring

Surveillance systems

Population-based sources

- Censuses
- Vital registration systems
- Household surveys

Institution-based sources

- Resource records (e.g. number of hospitals)
- Service records (e.g. number of immunizations provided)
- Individual records (e.g. hospital charts)

Population-based sources: censuses

- National population and household censuses are implemented every 10 years in most countries
- Data cover the entire population (or nearly so), providing accurate denominator counts for population subgroups
- Censuses may be a good source of information about equity stratifiers, but usually contain only limited information on health
- Possible improvements:
  - include individual or small-area identifiers
  - include mortality and cause of death questions

Population-based sources: vital registration systems

- For example, national birth or death registries
- These systems are the best and most-reliable source for fertility, mortality, life expectancy and cause-of-death statistics
- Vital registration systems can often be linked to information on sex, geographical region, occupation, education
- Incomplete in many low- and middle-income countries
- Possible improvements:
  - Expand coverage
  - Include cause of death, birth weight and gestational age
  - Include at least one socioeconomic indicator

EXTRA INFORMATION

Global status of vital registration systems

- In 2009…
  - only 25% of the world population lived in countries where at least 90% of births and deaths are registered
  - only 34 countries (representing 15% of the global population) had high-quality cause-of-death data
  - 74 countries lacked data altogether about births and deaths
  - In the WHO African Region 42 out of 46 countries had no death registration data

Source: World Health Organization. *World Health Statistics 2012*. Geneva, World Health Organization, 2012.

Population-based sources: household surveys

- Currently the most common and overall most reliable data source for health inequality monitoring in low- and middle-income countries
- Data are representative for a specific population (often national)
- Have rich data on a specific health topic as well as living standards and other complementary variables
- Often repeated over time, allowing for measurement of time trends
- Conducted in multiple countries, allowing for benchmarking
- Sampling and non-sampling errors can be important
- Survey may not be representative of small subpopulations of interest
- Possible improvements:
  - Repeat surveys on a regular basis
  - Enhance comparability over time and between countries by harmonizing survey questions
  - Increase sample sizes

EXTRA INFORMATION

Examples of multinational household survey programmes

Survey name	Organization	Website
AIDS Indicator Survey (AIS)	United States Agency for International Development	http://www.measuredhs.com/What-We-Do/Survey-Types/AIS.cfm
Demographic and Health Survey (DHS)	United States Agency for International Development	http://www.measuredhs.com/
Living Standards Measurement Study (LSMS)	World Bank	http://go.worldbank.org/IPLXWMCNJ0
Malaria Indicator Survey (MIS)	United States Agency for International Development	http://www.malariasurveys.org/
Multiple Indicator Cluster Survey (MICS)	United Nations Children’s Fund	http://www.unicef.org/statistics/index_24302.html
Study on Global Ageing and Adult Health (SAGE)	World Health Organization	http://www.who.int/healthinfo/systems/sage/en/
World Health Survey (WHS)	World Health Organization	http://www.who.int/healthinfo/survey/en/index.html

EXTRA INFORMATION

Data availability in low- and middle-income countries

- Household surveys are the main data source in many low- and middle-income countries
- Health inequality monitoring in low- and middle-income countries is limited to the health indicators for which data are available
  - Often outcome or impact indicators
- Certain health topics may be challenging to monitor, particularly those related to inputs and processes and outputs, which are usually collected from institution-based sources

Institution-based data sources

- Data are readily and quickly available
- Can be used at lower administrative levels (e.g. district level)
- Data may be fragmented or of poor quality
- Often data cannot be linked to other sources
- Data may not be representative of the whole population
- Possible improvements:
    - Include individual or small-area identifiers
    - Standardize electronic records across institutions

Surveillance systems

- Can provide detailed data on a single condition or from selected sites
- Data may be useful for correction of over- or under-reporting
- Not always representative of population
- Some systems may collect little information relevant to equity stratifiers
- Possible improvements:
  - Include individual or small-area identifiers
  - Integrate surveillance functionality into larger health information systems with full coverage

EXTRA INFORMATION

Types of surveillance systems

- **Outbreak disease surveillance**
  - aims to track cases of epidemic-prone diseases as well as their risk factors
  - often relies on frequent reporting by health facilities, such as laboratories
- **Sentinel surveillance**
  - uses a sample of clinics for intensified monitoring
  - is used by disease programmes such as HIV and malaria
- **Risk factor surveillance**
  - describes data collection and analysis in noncommunicable disease monitoring
  - often focuses on data obtained through surveys
- **Demographic surveillance**
  - found in many low- and middle-income countries
  - sites have a longitudinal birth and death registration system for a local population to collect information about cause of death and other health-related data

Data source mapping

- Involves cataloguing and describing all data sources available for a given country, province, district or other administrative unit to determine which sources can be used for health inequality monitoring
- Can also identify important gaps that indicate where a country lacks data about health indicators or equity stratifiers
- Consists of four steps

Data source mapping: step 1

List of data sources by type (partial table)

Data source type	Data source	Year(s) of data collection	Notes
Census	National census	1990, 2000, 2010	
Administrative	Immunization records	2000–2006	Annual collection
Household survey	Standard DHS	1994, 1999, 2004, 2009	
…			

Note: DHS = Demographic and Health Survey

Data source mapping: step 2

List of data sources and equity stratifiers (partial table)

No.	Data source and year	Equity stratifier				Notes
		Sex	Wealth	Place of residence	Province or region	
1	Immunization records 2000–2006				√	
2	DHS 2009	√	√	√	√	17 provinces
3	DHS 2004	√		√	√	13 provinces
	…					

Data source mapping: step 3

List of health topics and corresponding data sources (partial table)

Health topic	Data source number			
Child health	1	2	3	…
Maternal health	2	3	…	
…				

Data source mapping: step 4

Data source map (partial table)

	Equity stratifier			
Health topic	Sex	Wealth	Place of residence	Province or region
Child health	2, 3 …	2 …	2, 3 …	1, 2, 3 …
Maternal health	Not applicable	2 …	2, 3 …	2, 3 …
…				

TIP

Overcoming data unavailability

- If a country wishes to monitor a priority health topic or indicator for which there are currently no data available, immediate analysis is not possible
  - Advocating for the collection of additional data may enable analysis and monitoring in the future
- Strengthening, modifying or expanding existing data sources may be feasible options to generate new information

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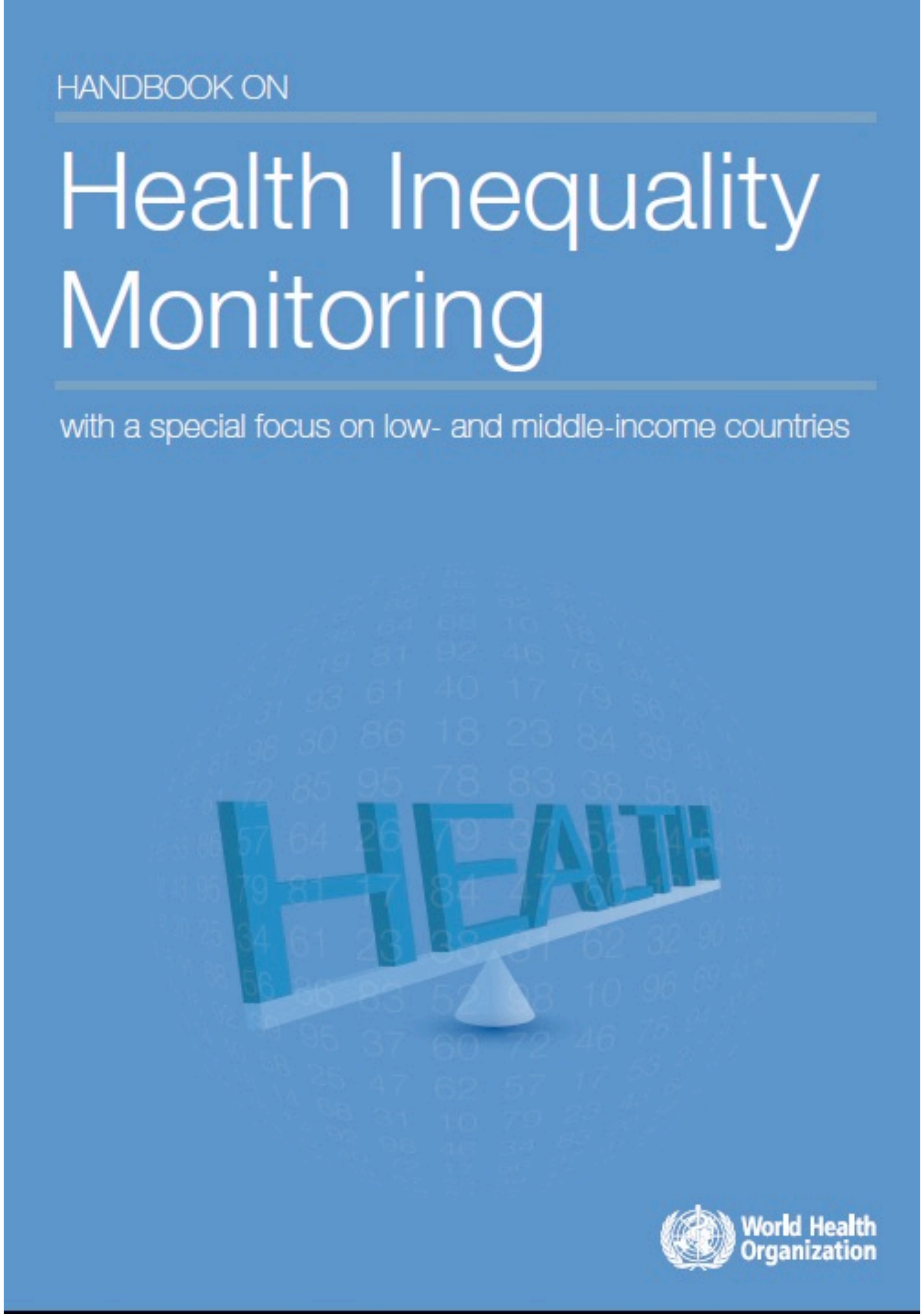
Full text available online:

http://apps.who.int/iris/bitstream/10665/85345/1/9789241548632_eng.pdf



HANDBOOK ON

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World Health Organization