

Causes of death – certification

Presented by Doris Ma Fat (mafatd@who.int)

on behalf of the

**Department of Health Statistics and Information Systems
World Health Organization, Geneva**

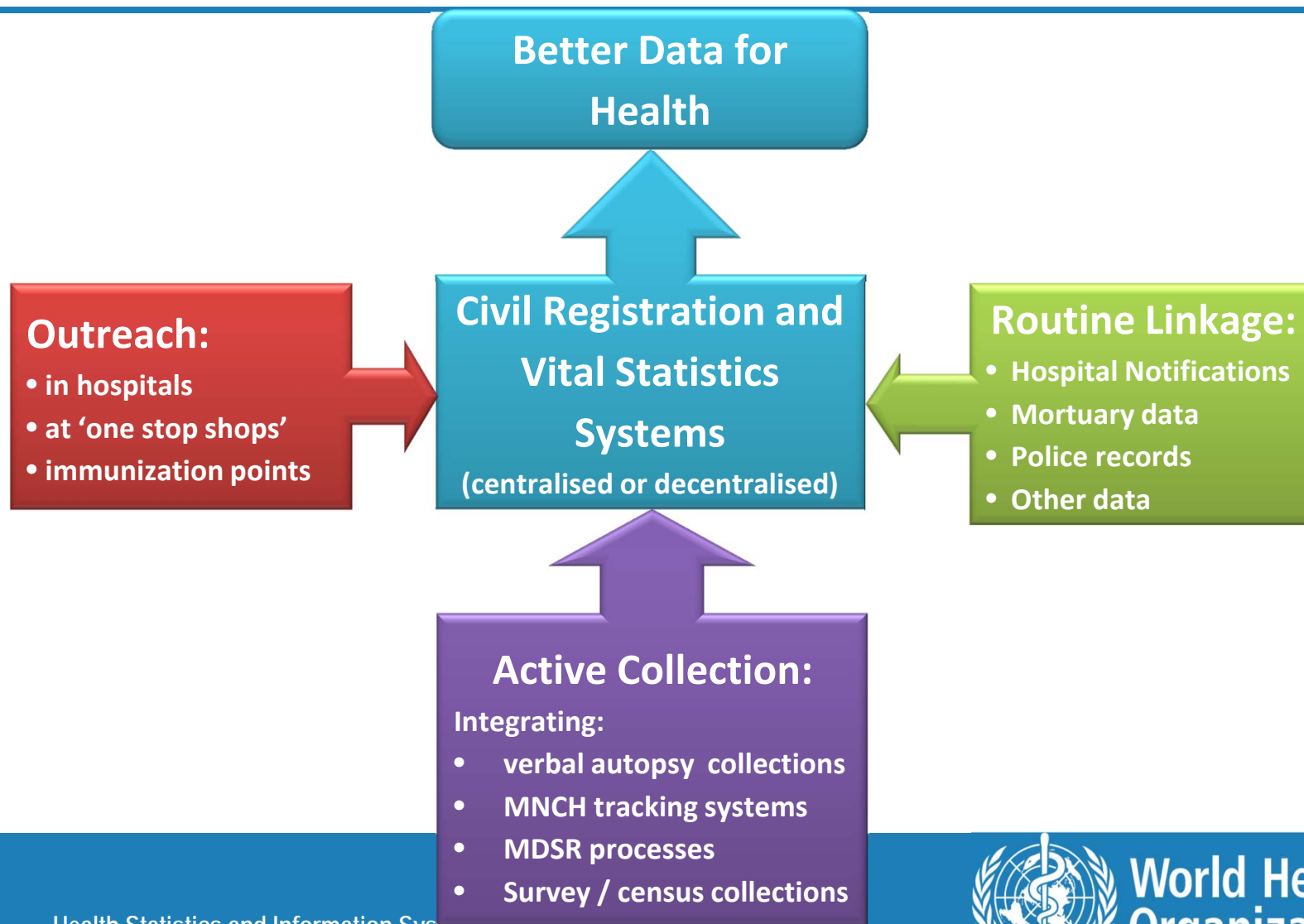
at

United Nations Sub-regional workshop on applying Principles and Recommendations for a Vital Statistics System for implementing the Regional Action Framework for CRVS in Asia

15-18 September 2015, Istanbul, Turkey



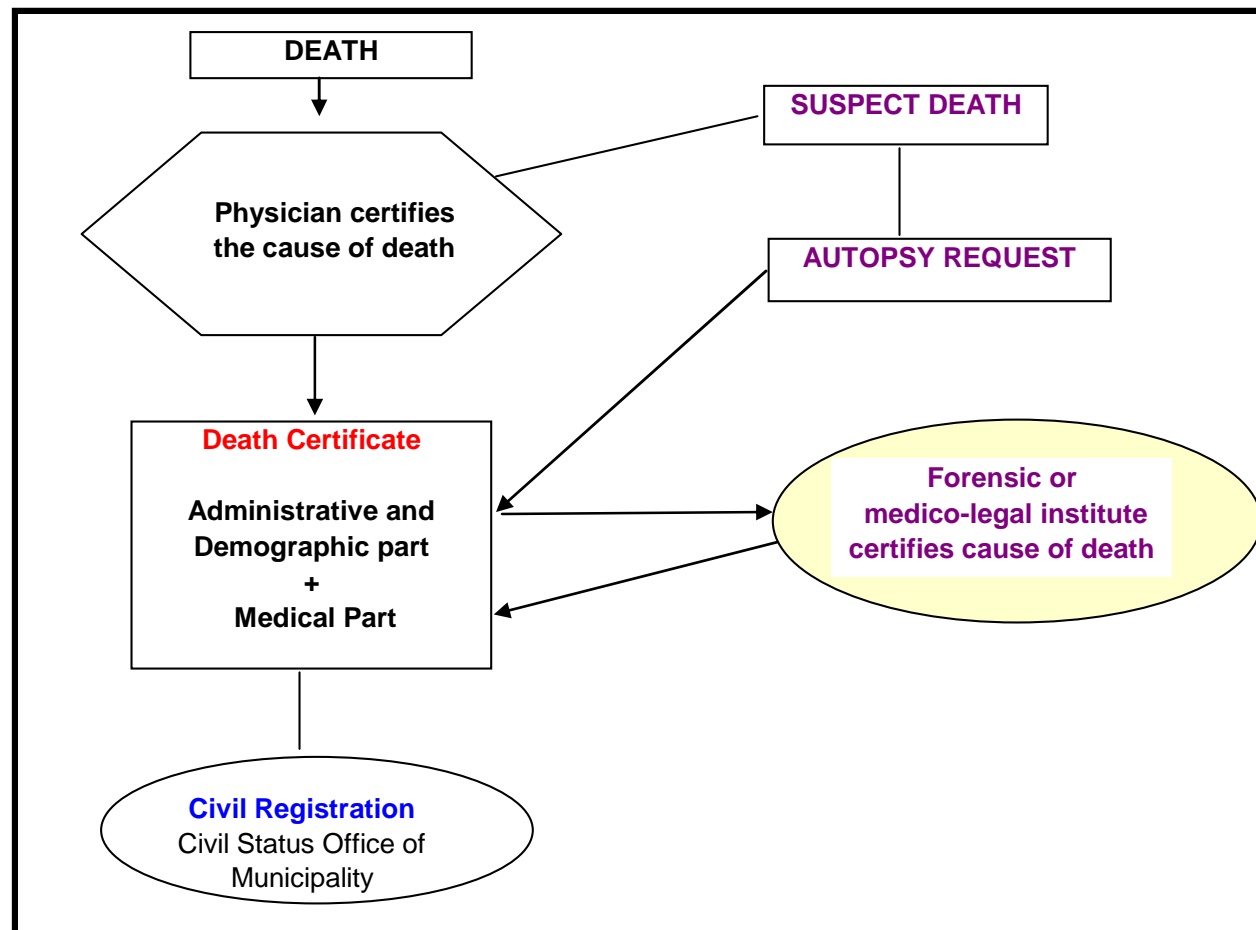
Building CRVS Systems with Innovation



Sources of mortality and COD data

	AGE	SEX	CAUSE OF DEATH	COMMENTS
Civil & sample registration } }	x	x	x	If deaths medically certified or verbal autopsy
Census – deaths in household in last 12 months	x	x	Only if add on verbal autopsy module for reported deaths	Standard demographic techniques needed to assess completeness of birth and death reporting
Health care facilities (HMIS) } }	x	x	x	Only reflect deaths in population using facilities – quality issues
Household surveys – Deaths in last year or Sibling survival or Orphanhood	x	x	Only if add on verbal autopsy module for reported deaths	Problem of assessing completeness of reporting, assigning cause of death from VA

Recording the cause of death at country level involves several institutions



Ministry of Health

Ministry of Justice

Ministry of Interior

National Bureau of Statistics

Steps

- Get the dead
- Examine the dead
- Formulate one diagnosis or a sequence of diagnoses
- Report on form
- Natural death....
- Non natural death....
 - Maybe autopsy – who decides
 - No autopsy = handle like natural death?
- Coding
 - Individual entries
 - Select underlying cause of death



The ideal world

- Notification of death to physician within 1hr
- Physician present within 2 hrs
- Physician examines dead body
 - Surface for colour, signs of injury or disease
 - Verifies all openings for foreign bodies, injuries or suspect colour
 - Explores circumstances with persons living in the same household
 - Verifies environment for signs of vomit, blood, fight, plausibility of described circumstances
 - Checks the drugs taken by dead
 - Reads medical reports or files as present
 - Ideally is able to get in touch with family doctor



After medical certification

- **Notification**
 - By family
 - By undertaker
 - By hospital
- **Identify if natural or non natural death**
 - Non natural: there may be legal issues and police and justice usually are in charge if additional inquiries necessary
 - Natural: fill in medical certificate of cause of death
- **Information to public health services**
- **Information to civil registry**
- Plan B: what when there is no doctor to see the patient

Past

CRVS - System

Birth date,
name, sex,
place of
residence,
place of death
place of birth



Demography,
Civil Registry

Age, name, sex,
cause of
illness, cause
of death,
circumstance
s of birth, place
of birth, place
of death

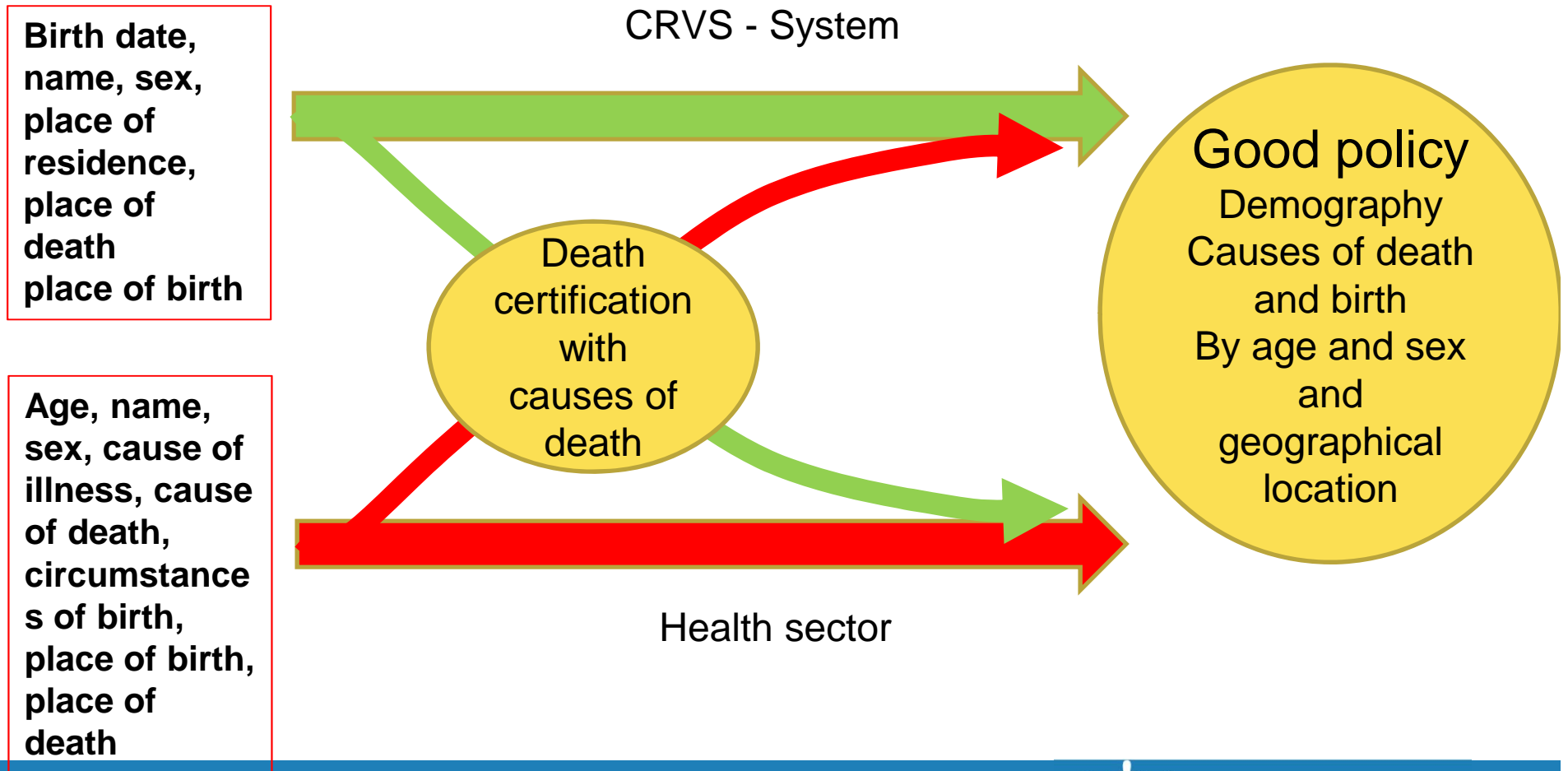


Health sector

Eventually
disease pattern,
by age, sex,
death/morbidity
Some hospital
activity



Ideal



Roles of doctors and coders

- **Doctors – certifier's responsibility**
 - Good quality of diagnosis, operation notes and any other doctor notes
 - Correctness
 - Completeness
 - Specificity
 - Timeliness
 - Readable



Roles of doctors and coders

- **Coders responsibility**

Good quality of ICD-10 codes

- Correctness
- Completeness
- Specificity
- Sequencing
- Timeliness



Global standards enhance the comparability of mortality data

- **The International Statistical Classification of Diseases and Related Health Problems (ICD) – to code and compare causes**
- **The International Form of Medical Certificate of Death – to record all the conditions relating to the death**
- **ICD rules – to select and modify the underlying cause of death**



Definition of the underlying cause of death

"the disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury"



The doctor

- Need medical background to carry out the inquiries and examination and establish the relationships between the facts
- Need training in examination and exploration
- Need to do frequently to keep skills
- Need to know what this is good for



ICD-10 chapters (include natural causes & external causes of death)

- **Chapter Blocks Title**
- I A00-B99 Certain infectious and parasitic diseases
- II C00-D48 Neoplasms
- III D50-D89 Diseases of the blood and blood-forming organs and certain disorders involving
- IV E00-E90 Endocrine, nutritional and metabolic diseases
- V F00-F99 Mental and behavioural disorders
- VI G00-G99 Diseases of the nervous system
- VII H00-H59 Diseases of the eye and adnexa
- VIII H60-H95 Diseases of the ear and mastoid process
- IX I00-I99 Diseases of the circulatory system
- X J00-J99 Diseases of the respiratory system
- XI K00-K93 Diseases of the digestive system
- XII L00-L99 Diseases of the skin and subcutaneous tissue
- XIII M00-M99 Diseases of the musculoskeletal system and connective tissue
- XIV N00-N99 Diseases of the genitourinary system
- XV O00-O99 Pregnancy, childbirth and the puerperium
- XVI P00-P96 Certain conditions originating in the perinatal period
- XVII Q00-Q99 Congenital malformations, deformations and chromosomal abnormalities
- XVIII R00-R99 Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere...
- XIX S00-T98 Injury, poisoning and certain other consequences of external causes
- XX V01-Y98 External causes of morbidity and mortality
- XXI Z00-Z99 Factors influencing health status and contact with health services
- XXI IU00-U99 Codes for special purposes

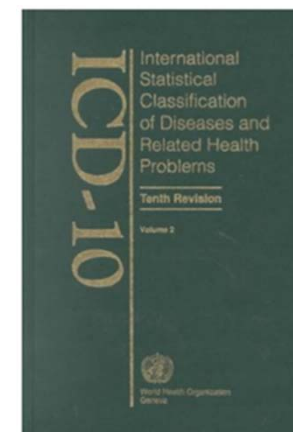


WHO recommends the use of the International Form of Medical Certificate of Cause of Death

An e.g. of certificate filled in the right sequence

INTERNATIONAL FORM OF MEDICAL CERTIFICATE OF CAUSE OF DEATH

Cause of death		Approximate interval between onset and death
I Disease or condition directly leading to death* Antecedent causes Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last	(a) Hepatic failure .....	.....
	due to (or as a consequence of)	
	(b) Bile duct obstruction .....	.....
	due to (or as a consequence of)	
	(c) Carcinoma of head of pancreas .....	.....
	due to (or as a consequence of)	
	(d) .....	.....
II Other significant conditions contributing to the death, but not related to the disease or condition causing it		.....
.....
<i>*This does not mean the mode of dying, e.g. heart failure, respiratory failure. It means the disease, injury, or complication that caused death.</i>		



Underlying cause of death: Carcinoma of head of pancreas C25.0



WHO recommends the use of the International Form of Medical Certification of Cause of Death

An e.g. of certificate filled in the right sequence,

but special selection rules when AIDS/HIV mentioned

INTERNATIONAL FORM OF MEDICAL CERTIFICATE OF CAUSE OF DEATH

Cause of death		Approximate interval between onset and death
I Disease or condition directly leading to death*	(a) AIDS .....	.....
	due to (or as a consequence of)	
Antecedent causes Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last	(b) Blood transfusion .....	.....
	due to (or as a consequence of)	
	(c) Haemophilia .....	.....
	due to (or as a consequence of)	
	(d) .....	.....
<hr/>		
II Other significant conditions contributing to the death, but not related to the disease or condition causing it	.....	.....

*This does not mean the mode of dying, e.g. heart failure, respiratory failure. It means the disease, injury, or complication that caused death.

Inform on relevance of Medical Certification of Mortality and cause of death

- Legal
 - To certify the occurrence of a death
 - To define the nature: natural causes or not
 - Civil Registration / vital statistics
- Statistical
 - Demographic aspects: sex, age, ethnic group, residence, socioeconomic data
- Epidemiology / public health
 - Cause(s)
 - Data for specific groups: infant and maternal deaths



Inform on what is done with the information

- Selection of underlying cause
 - Definition of Underlying cause
 - Coding diagnostic terms
 - General Principle, Sequences, Rules
- Validation and consistency
 - Cause by sex by age
 - Corrections
- Processing
- Analysis
- Decision making
- Dissemination



In the absence of doctors

- **Verbal autopsy is a method used to ascertain the cause of a death based on an interview with next of kin or other caregivers.**

<http://www.who.int/healthinfo/statistics/verbalautopsystandards/en/>

- **The interview is done using a standardized questionnaire that elicits information on signs, symptoms, medical history and circumstances preceding death.**
- **The cause of death, or the sequence of causes that led to death, are assigned based on the data collected by the questionnaire and any other available information.**
- **Rules and guidelines, algorithms or computer programs, may assist in evaluating the information to determine the cause of death**



Verbal autopsy: e.g. of questions

General signs and symptoms associated with final illness

Did (s)he have a fever? *

- Yes
- No
- DK
- Ref

Did (s)he have a cough? *

- Yes
- No
- DK
- Ref

Did (s)he have any breathing problem? *

Explain to the respondent that even if the answer is "no" some more questions will be asked, just to make sure no important detail has been missed.

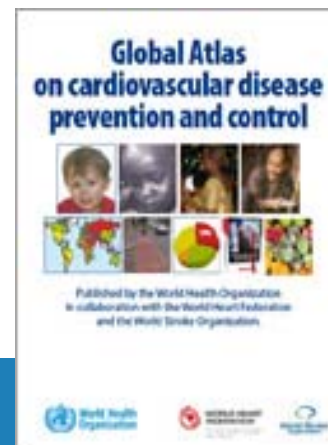
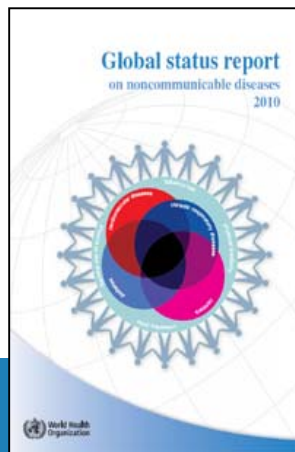
- Yes
- No

Global Value of Mortality Data

- **Millennium Development Goals** – child and maternal mortality goals, HIV/AIDS, tuberculosis, malaria goals.
- **Post 2015 Development Agenda:** mortality as a measurement of progress
 - Maternal mortality
 - Preventable newborn, infant, under 5 deaths
 - Reduce deaths from HIV/AIDS, tuberculosis, malaria, neglected tropical disease
 - Reduce deaths from non communicable disease deaths
 - Deaths from road traffic accidents
 - Deaths from pollution



Selected WHO report with substantial Mortality inputs 2011



Health Statistics and Information Systems



World Health Organization

Mortality data is also a platform for global planning

Mortality data is an essential platform for health planning.

Example: proposed Universal Health Coverage goal:

- Critical reliance on health information for planning health systems. Mortality information is critical to this.
- Better planning information means
 - Improved knowledge of service and access needs, where deaths are occurring and why, what is needed – eg for prevention
 - Determining efficient and effective delivery, for example, medicines and vaccines.



WHO ICD training tool

- **ICD-10 Interactive Self Learning tool**

<http://apps.who.int/classifications/apps/icd/icd10training/>

Start the training

There are two versions of the training tool

- **Full ICD-10 training that contains all modules**
- **Cause of death certificate version, for persons that fill in causes of death on a death certificate.**

Self-learners may have questions while working on one or the other section of the training.

[A website allows interaction with a group of specialists.](#)



Acknowledgements to

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WHO Geneva

