



# The University of Zambia

## DEM 2110

- **Definition**
- **Information collected**
- **Cause of death**
  - Format for collection**
  - Underlying cause of death**
  - Coding cause of death**
  - Supplemental information in medical certification**
  - Verbal autopsy**



Chaloay Wanathong, 69, signs a certificate registering the death of his father at 95, at Ban Pong District Registration office in Rachaburi Province, Thailand. Photo: WHO/Jerome Ming

- Problems with data
- Death is having ***no signs of life after live birth has occurred***

## Statistical definition of Death

the permanent disappearance of all evidence of life at any

From *Principles and Recommendations for a Vital Statistics System, Revision 2*, United Nations, New York, 2001

- **For legal purposes, deaths may be reported by:**

**Family member or head of household**

**Funeral director or mortician who handled disposition of body**

**Obtains information from next of kin**

- **If required, cause of death obtained from**

**Physician in attendance**

**Medical examiner or coroner in some cases**

## Death Information that could be Collected for Legal and Administrative Use

Date of death

Place of death

Facility or place where death occurred

Name of decedent

number

nationality

Name of surviving spouse

Duration at residence

Cause of death

Certifier of death

Name

Address

Type of certifier

License number

Name and address of funeral director handling disposition of the body

Type of disposition

Date of disposition

Name & relationship of informant

Attestation statement with signature of attendant at death, informant or registrar

Date of registration

Place of registration

Death registration number

# Death Information that could be Collected for Statistical Purposes

Additional detail on age if decedent under 1 year of age  
(usually months, days, hours, or minutes)

Educational attainment

Literacy status

Usual occupation

Ethnicity, race or religion

Additional detail related to the cause of death

How injury occurred

Place of injury

Smoking or other risk factors

## Death Information Collected – Derived Data

(Items for statistical purposes not collected directly on death record but derived from those items and added to computer files for tabulation)

Derived Data Item	Source on Death Record
Socio-economic indicator	Education, literacy status and/or occupation
Detail on residence such as urban, rural, regional, etc.	Place of residence
Other geographic groupings	Place of residence or occurrence
Age of decedent	Date of birth and date of death
Tabulation category for deaths Under 1 year of age <ul style="list-style-type: none"><li>▪ Neonatal / Post neonatal</li><li>▪ Under 1 week,</li><li>▪ Under 1 month</li></ul> Other age groups	Date of death, time of death, and date of birth
Detail on injury deaths	Cause of death
Deaths with risk factors	Cause of death
Cause of death groupings	Cause of death



# Cause of Death



- **Collection varies**

  - Part of death registration**

  - Separate from registration**

    - Forwarded to civil registration agency**

    - Or forwarded to vital statistics agency**

    - Or other method**

- **If part of registration, cause of death provided by**

  - Physician in attendance**

  - Coroner or medical examiner under some circumstances**

# Cause of Death

In 1967 the World Health Assembly said causes of death to be entered on the death record were

resulted in or contributed to death and the circumstances of the

*From International Statistical Classification of Diseases and Related Health Problems, 10<sup>th</sup> Revision, Volume 2, Instruction Manual, World Health Organization, Geneva, 1993*

- **Cause of death - *All diseases, disease conditions or injuries that caused the death or contributed to the death. For injuries, include conditions of the accident or violence that produced the injuries.***



# Cause of Death



- **Entering cause of death**

  - Include all relevant information**

  - Should not select some conditions and reject others

- **Analysis of cause of death data**

  - For public health, need to prevent condition leading to death

  - World Health Organization (WHO) Family of International Classifications (FIC) Network**

    - Works with WHO in the **development, dissemination, maintenance, and use** of a classification scheme with rules for coding cause of death

    - Classification scheme is adopted by WHO**

    - Use allows for consistent comparisons between countries**

## ■ Underlying Cause of Death

Main cause of death chosen from all causes in medical certification

Of public health interest; used for tabulation purposes

Defined by WHO as:

“ (a) the **disease or injury which initiated the train of morbid events leading directly to death, or**

**(b) the circumstances of the accident or violence which produced the fatal injury.”**

Not symptoms or modes of dying (respiratory arrest, heart failure)

# Cause of Death

## INTERNATIONAL FORM OF MEDICAL CERTIFICATE OF DEATH

Cause of death		Approximate Interval between onset and death
<b>I</b> Disease or condition directly leading to death *)	a)..... due to (or as a consequence of)	.....
	<b>Antecedent causes</b>	
	b)..... due to (or as a consequence of)	.....
	c)..... due to (or as a consequence of)	.....
<b>II</b> Other significant conditions contributing to the death, but not related to the disease or conditions causing it	d).....	.....
	..... .....	..... .....
<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 (continued)**

## **Part I of form**

**Diseases related to chain of events leading to death**

**Condition leading directly to death on first line**

**Each step in chain of events leading to direct cause of death on following lines**

**Underlying cause starting chain of events leading to death on lowest line**

## **Part II of form**

**Other significant conditions contributing to death but not directly related to the death**

- **Coding Cause of Death - ICD**

*International Statistical Classification of Diseases and Related Health Problems, 10<sup>th</sup> Revision*

Adopted and published by WHO

**Standard coding scheme** for converting cause of death literals

**Rules for choosing the underlying cause**

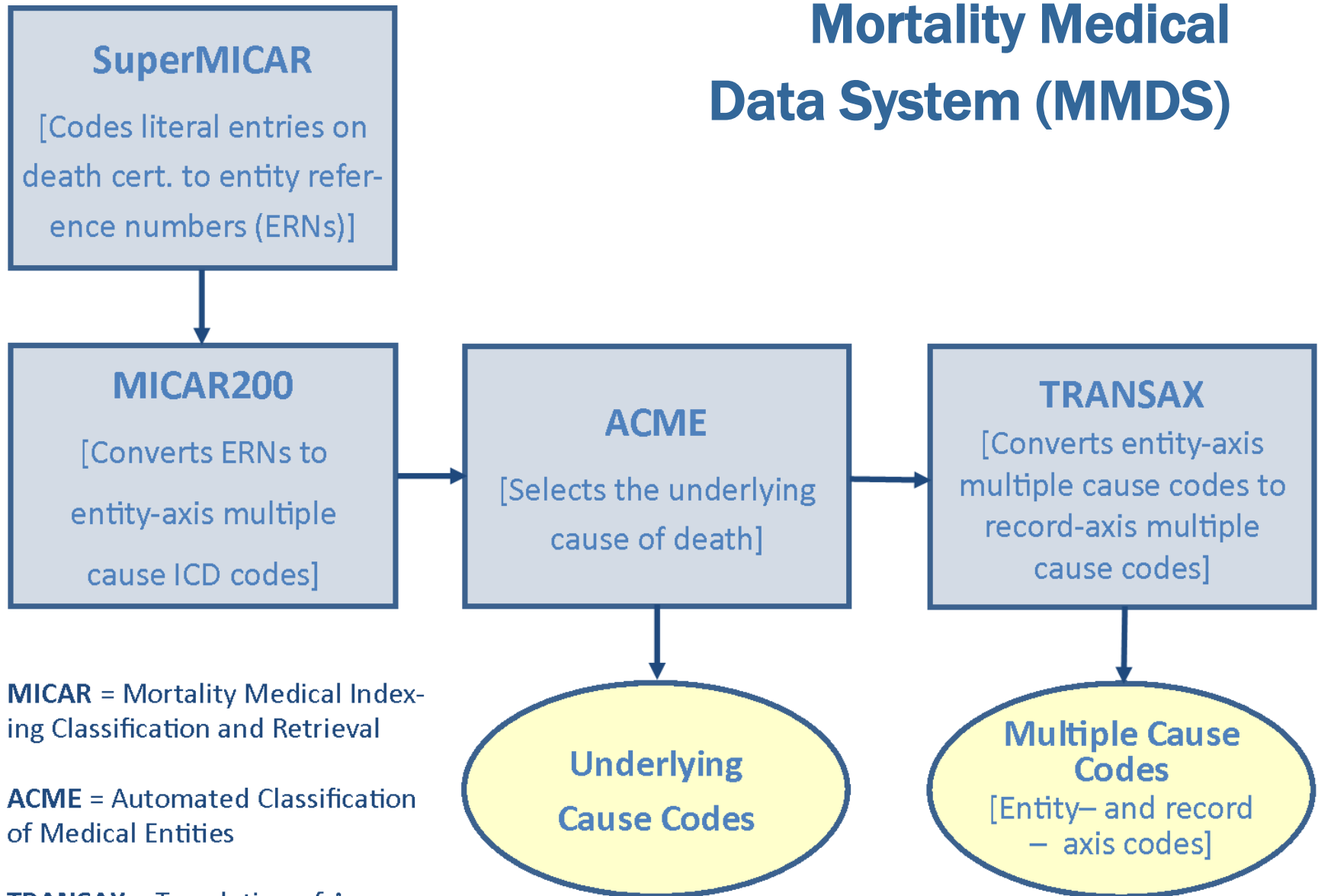
Used since late nineteenth century

Allows for comparisons of mortality data at international level

# International Classification of Diseases-10th Rev

Chapter	Blocks	Title
<a href="#">I</a>	<a href="#">A00-B99</a>	Certain infectious and parasitic diseases
<a href="#">II</a>	<a href="#">C00-D48</a>	Neoplasms
<a href="#">III</a>	<a href="#">D50-D89</a>	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
<a href="#">IV</a>	<a href="#">E00-E90</a>	Endocrine, nutritional and metabolic diseases
<a href="#">V</a>	<a href="#">F00-F99</a>	Mental and behavioural disorders
<a href="#">VI</a>	<a href="#">G00-G99</a>	Diseases of the nervous system
<a href="#">VII</a>	<a href="#">H00-H59</a>	Diseases of the eye and adnexa
<a href="#">VIII</a>	<a href="#">H60-H95</a>	Diseases of the ear and mastoid process
<a href="#">IX</a>	<a href="#">I00-I99</a>	Diseases of the circulatory system
<a href="#">X</a>	<a href="#">J00-J99</a>	Diseases of the respiratory system
<a href="#">XI</a>	<a href="#">K00-K93</a>	Diseases of the digestive system
<a href="#">XII</a>	<a href="#">L00-L99</a>	Diseases of the skin and subcutaneous tissue
<a href="#">XIII</a>	<a href="#">M00-M99</a>	Diseases of the musculoskeletal system and connective tissue
<a href="#">XIV</a>	<a href="#">N00-N99</a>	Diseases of the genitourinary system
<a href="#">XV</a>	<a href="#">O00-O99</a>	Pregnancy, childbirth and the puerperium
<a href="#">XVI</a>	<a href="#">P00-P96</a>	Certain conditions originating in the perinatal period
<a href="#">XVII</a>	<a href="#">Q00-Q99</a>	Congenital malformations, deformations and chromosomal abnormalities
<a href="#">XVIII</a>	<a href="#">R00-R99</a>	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
<a href="#">XIX</a>	<a href="#">S00-T98</a>	Injury, poisoning and certain other consequences of external causes
<a href="#">XX</a>	<a href="#">V01-Y98</a>	External causes of morbidity and mortality
<a href="#">XXI</a>	<a href="#">Z00-Z99</a>	Factors influencing health status and contact with health services
<a href="#">XXII</a>	<a href="#">U00-U99</a>	Codes for special purposes

# Mortality Medical Data System (MMDS)



**MICAR** = Mortality Medical Indexing Classification and Retrieval

**ACME** = Automated Classification of Medical Entities

**TRANSAX** = Translation of Axes

- **Verbal autopsy**

Used in areas lacking civil registration system or medical certification of cause of death

Obtain **probable cause of death**

## Method

**Interview** with family members or caregivers of deceased

**Use questionnaire** to obtain details on signs, symptoms, complaints, and medical history or events of deceased in period before death

- **Verbal autopsy (continued)**

**Cause of death assigned based on data collected**

**Usually assigned by panel of physicians**

**Information at community or population level**

**Research tool for epidemiological studies**

# Cause of Death

- **Verbal autopsy (continued)**

## Development of WHO standards

Increased use of verbal autopsy

Need comparable data from country to country

***Verbal Autopsy Standards* published in 2007**

Standard questionnaires for three age groups

Coding guidelines for applying ICD-10 to verbal autopsy

Cause of death list for verbal autopsy with corresponding ICD-10 codes



## ■ Verbal autopsy

**Used when collection of cause of death not part of civil registration**

**Interview family members or caregivers about symptoms, complaints, circumstances, and/or medical history of deceased**

**WHO developed standards for verbal autopsy questionnaires and for determining cause of death**

**Cause of death is not same as cause of death collected from civil registration**

**Data should not be combined with data from cause of death collected through civil registration**

## Problems with Death Data

Problem	Examples
Source and Accuracy of Information	<ul style="list-style-type: none"> <li>Informant does not know correct information</li> <li>Medical certifier did not recently attend deceased</li> <li>Sensitive information not given correctly</li> </ul>
Missing Records	<ul style="list-style-type: none"> <li>Death records not registered in some geographic areas or for some population groups</li> <li>Late records not included in statistical files</li> <li>Records for infants or children are poorly registered</li> <li>Deaths occurring at home are not registered</li> </ul>
Missing Information	<ul style="list-style-type: none"> <li>Medical certification not complete</li> <li>Data skewed due to missing items for some population groups</li> </ul>
Errors in Preparation and Processing	<ul style="list-style-type: none"> <li>Transcription errors when data entered in record</li> <li>Coding errors and keying errors</li> <li>Errors in computer software programs</li> <li>Medical certification not correctly linked to legal data when separate collection systems used</li> <li>ICD rules not correctly applied for underlying cause of death</li> </ul>