

Collection of Statistics on Causes of Death

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ESCWA-UNSD –GCCSTAT Meeting
Muscat-Oman, 14-17 November 2016

Relevance of cause of death information

- 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

The 7steps

standardization = comparability

1. Have a dead
2. Have a form
3. Fill in the form
4. Code causes of death
5. Data checking and validation
6. Data Quality assessment
7. Tabulate and disseminate

Quality
assurance

Feedback

Process
monitoring



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Step 1: Have a dead

- Most difficult step
- Success depends on being able to find death that occur in all different locations
- A functional CRVS system that ensures that all dead interface with a medical facility or a medical practitioner before being buried



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Step 2: Have a form

- Use international form for certification of deaths, 2016 version
- Paper (has to be legible) or electronic format
- Automated system for collection of causes of deaths with validation in data entry- More accurate more timely

<i>Administrative Data</i> (can be further specified by country)																		
Sex	<input type="checkbox"/> Female			<input type="checkbox"/> Male			<input type="checkbox"/> Unknown											
Date of birth	D	D	M	M	Y	Y	Y	Y	Date of death	D	D	M	M	Y	Y	Y	Y	
<i>Frame A: Medical data: Part 1 and 2</i>																		
1																		
Report disease or condition directly leading to death on line a		Cause of death																
	a																	
Report chain of events in due to order (if applicable)	b	Due to:																
	c	Due to:																
State the underlying cause on the lowest used line	d	Due to:																
2																		
Other significant conditions contributing to death (time intervals can be included in brackets after the condition)		-----																
<i>Frame B: Other medical data</i>																		
Was surgery performed within the last 4 weeks?											<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown					
If yes please specify date of surgery											D	D	M	M	Y	Y	Y	Y
If yes please specify reason for surgery (disease or condition)																		
Was an autopsy requested?											<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown					
If yes were the findings used in the certification?											<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown					
Manner of death:																		
<input type="checkbox"/> Disease				<input type="checkbox"/> Assault				<input type="checkbox"/> Could not be determined										
<input type="checkbox"/> Accident				<input type="checkbox"/> Legal intervention				<input type="checkbox"/> Pending investigation										
<input type="checkbox"/> Intentional self harm				<input type="checkbox"/> War				<input type="checkbox"/> Unknown										

Step 3: Fill the form

- Train your physicians on how to complete the deaths certificate to conform with international standards.
- Concept of underlying cause of death.
- Report as many causes as possible if not sure which killed the patient.
- Be careful when transferring from paper to digital- data entry errors.
- Store each death as one record – micro data
- Automated systems have inbuilt validations.
- WHO on-line certification course.
- National workshops.
- DHIS-2 SMoL
- Training materials :Handbook for certification of deaths.

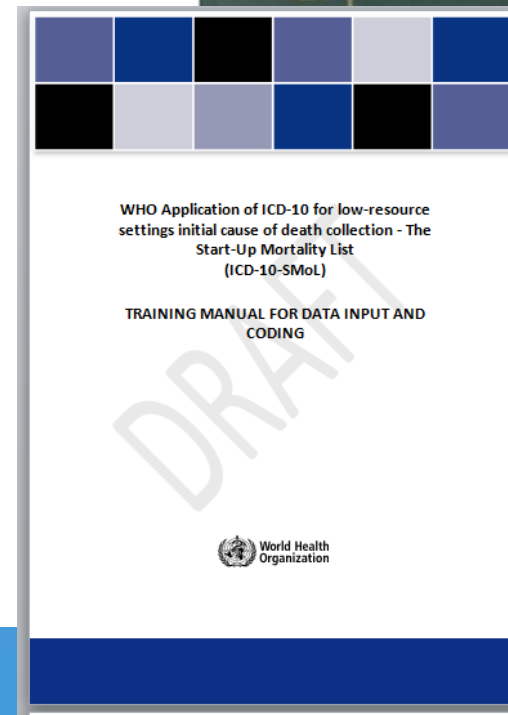
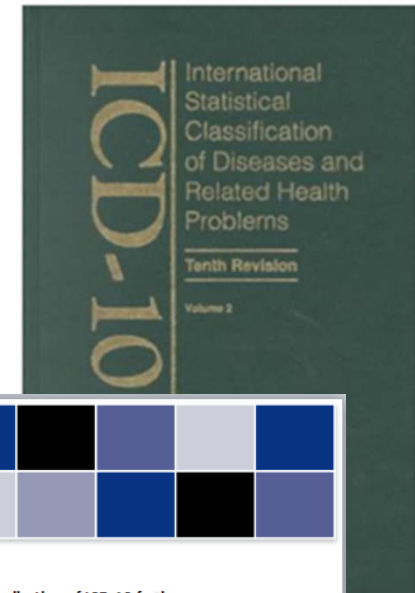


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Step 4: Code causes of death

- Coding centralized or decentralized.
- Manual or automated coding.
- Train your coders on ICD-10 compliant coding (Causal hierarchy).
- Coders to use selection rules to determine cause of death (comparability & standardization).
- Put a validation system in place.
- Manual or automated coding.
- Use full list or SMoL
- WHO ICD-10 on line training course.
- National training courses



Step 5: Data checking and validation

- Use CoDEdit tool for routine checks on data in order to minimize errors.
- Free WHO tool available at http://www.who.int/healthinfo/civil_registration/en/



CoDEdit builds capacity to perform routine checks

File to upload: E:\mort_tools\CodEdit\data for testing\fakeData_forTesting_2008.xlsx

If most of your codes contain 4th characters of ICD-10
eg : C164 then select ICD 10 4 character codes.

If all your codes contain only 3 characters
eg : C16 then select ICD 10 3 character codes.

ICD 10 4 character codes

Upload file

Imported row(s) :	4552
3 character code row(s) imported :	749
4 character code row(s) imported :	3801
Incorrect character code length (<3 characters) row(s) imported :	2

Go to data verification

The file to upload must have the following format

	A	B	C	D	E
1	Sex	Age Value	Age Type	Code	Death Date
2	1	10	Y	A010	2008
3	1	20	Y	A010	2008
4	1	50	Y	A010	2008
5	1	55	Y	A010	2008
6	1	65	Y	A010	2008
7	1	75	Y	A010	2008

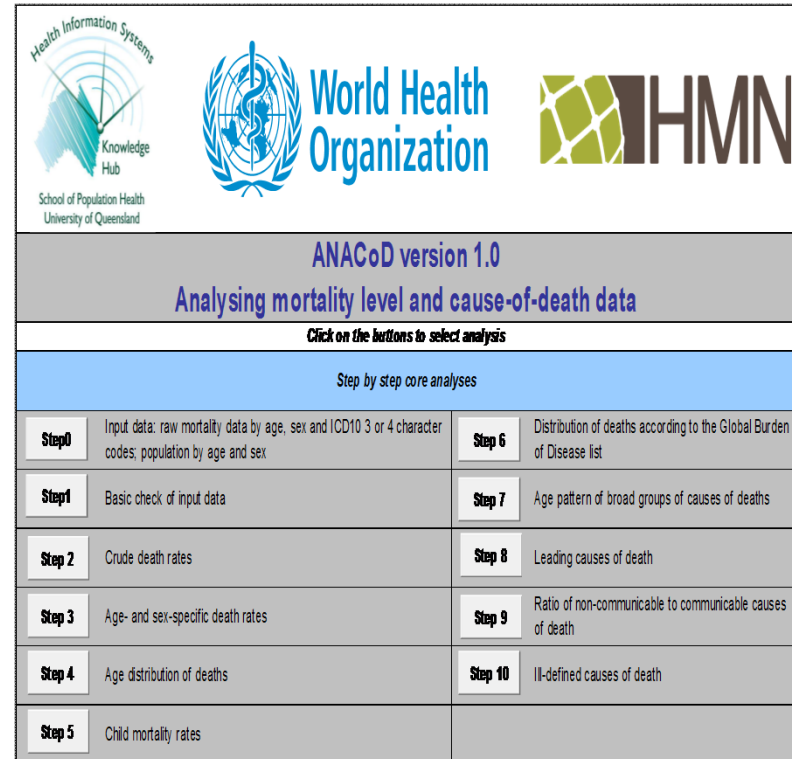
Tool is an MS ACCESS - based application

Tool is automated so knowledge of MS ACCESS is not required.

Basic understanding of ICD-10 is needed

Step 6: Data quality assessment

- Use ANACoD to assess the quality of national mortality statistics
- Two important assessments: coverage and quality of data
- Tool is an Excel-based application, all analyses are automated
- <http://www.who.int/healthinfo/anacod/en/>
- Also, checklist minimum standards and controls



The screenshot displays the ANACoD version 1.0 interface. At the top, there are logos for Health Information Systems Knowledge Hub, World Health Organization, and HMN. Below the logos, the text reads "ANACoD version 1.0" and "Analysing mortality level and cause-of-death data". A button labeled "Click on the buttons to select analysis" is present. Below this, a table lists the steps of the analysis process:

Step by step core analyses			
Step 0	Input data: raw mortality data by age, sex and ICD10 3 or 4 character codes; population by age and sex	Step 6	Distribution of deaths according to the Global Burden of Disease list
Step 1	Basic check of input data	Step 7	Age pattern of broad groups of causes of deaths
Step 2	Crude death rates	Step 8	Leading causes of death
Step 3	Age- and sex-specific death rates	Step 9	Ratio of non-communicable to communicable causes of death
Step 4	Age distribution of deaths	Step 10	II-defined causes of death
Step 5	Child mortality rates		

Minimum standards and controls for generating reliable cause-of-death information within a civil registration and vital statistics system

Check-list

Quality controls on compilation/finalisation of cause-of-death statistics

Which of the following analyses have you undertaken?

If answer is "Yes" on the left, then are the results readily available?

Basic data checks

Yes No

Completeness of data

Yes No

→ Yes No

Proportion of total deaths as coded to ill-defined causes

Yes No

→ Yes No

Leading causes of death

Yes No

→ Yes No

Distribution of age and sex patterns

Yes No

→ Yes No

Proportion of communicable, non-communicable diseases and injuries

Yes No

→ Yes No

Trends over time

Yes No

→ Yes No

Minimum standards and controls for generating reliable cause-of-death information within a civil registration and vital statistics system

Check-list

Global standards in cause-of-death data collection

Definition of the causes of death to be recorded

Do you use WHO definition?

Yes No

Definition of the underlying cause of death

Do you use the concept of the underlying cause of death?

Yes No

Medical certificate of the cause of death

Do you use the International Form of Medical Certificate of Cause of Death?

Yes No

International Classification of Diseases (ICD)

Which version of ICD are you using?

ICD-10 ICD-9 ICD-8 None

Are you using the detailed list of ICD causes or a condensed list for coding?

Detailed Condensed list

Quality controls on data generation procedures

Reporting and non-reporting areas

Do you have a list of areas that are included/excluded?

Yes No

Deaths registered with their causes as medically-certified

What is the proportion of the registered deaths that have a cause of death mentioned?

.....

Deaths occurring outside of health-facilities

What is the proportion of the registered deaths that occurred outside of health-facilities?

.....

Who certifies those deaths?

.....

Standards and reporting requirements

Fetal, perinatal, neonatal and infant mortality

Do you follow WHO standards?

Yes No

Maternal mortality

Do you follow WHO standards?

Yes No



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ANACoD - PART II

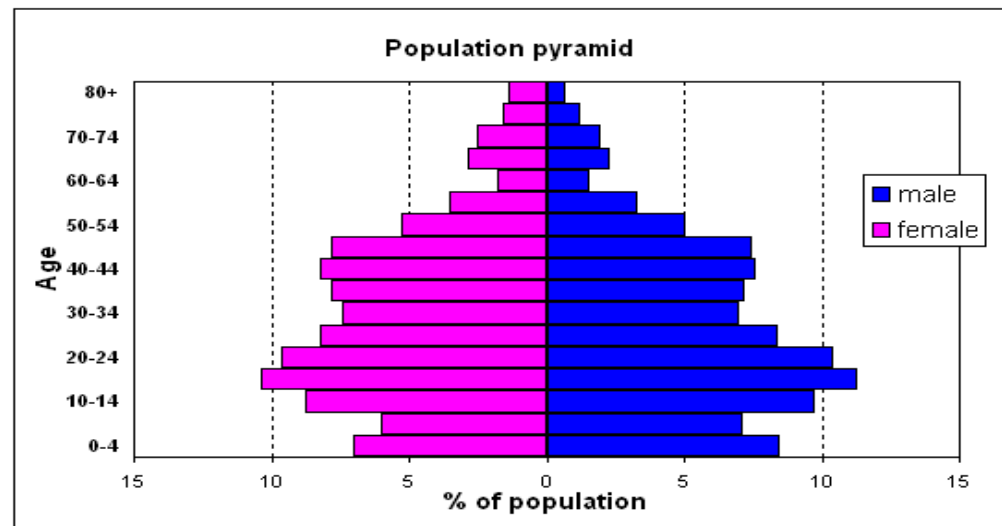


Step 2. Crude deaths rates

Go back to Menu

Age-group (yrs)	No of deaths		Population	
	male	female	male	female
All ages	26 517	23 922	4 231 550	4 349 750
0	889	604	81 100	69 350
1-4	348	250	274 500	235 250
5-9	129	95	299 800	261 950
10-14	148	115	411 400	382 050
15-19	249	143	475 400	452 050
20-24	377	189	437 750	420 050
25-29	428	240	353 550	357 850
30-34	487	219	294 300	322 800
35-39	710	344	303 000	339 900
40-44	1 099	549	318 700	358 550
45-49	1 602	814	314 700	340 200
50-54	1 847	937	210 550	228 900
55-59	2 033	1 126	138 850	153 250
60-64	1 405	904	65 250	77 100
65-69	3 445	2 638	95 800	123 350
70-74	4 374	4 085	81 500	109 000
75-79	3 880	4 475	49 250	67 900
80+	3 067	6 195	26 150	59 683

Azerbaijan 2007



Completeness of civil registration data is estimated by dividing the reported deaths by the UN estimates* =====> 87%

Observed

Crude death rate per 1000 population	Both sexes	→	5.9	Life expectancy at birth (years)	Both sexes	→	74.2
	Males	→	6.3		Males	→	71.3
	Females	→	5.5		Females	→	77.0
% Annual rate of population growth (UN*)	Both sexes	→	1.35				
	Males	→	1.49				
	Females	→	1.21				

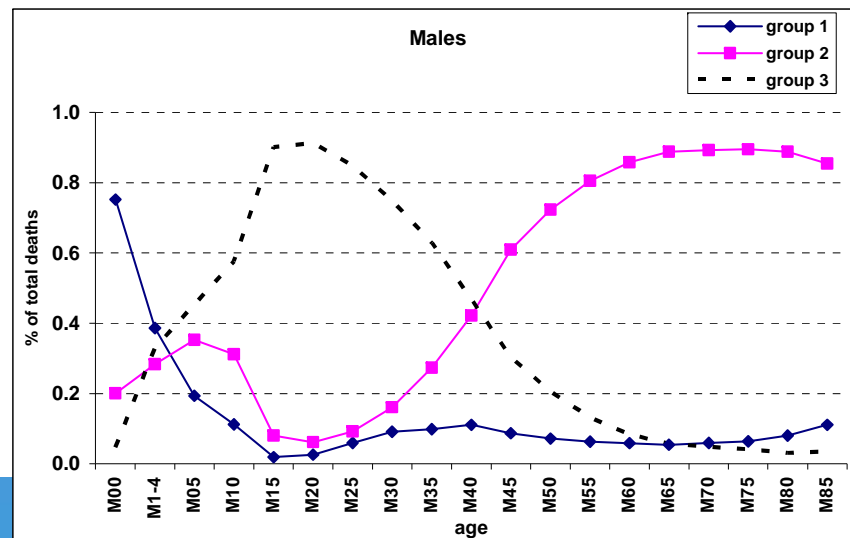
*UN source: United Nations, World Population Prospects the 2010 revision

ANACoD - PART III



20 leading causes of death, all ages			
Both sexes		Nos	%total
1	Other cardiovascular diseases	11,718	23.2
2	Cerebrovascular disease	9,089	18.0
3	Ischaemic heart disease	6,075	12.0
4	Ill-defined diseases (ICD10 R00-R99)	4,197	8.3
5	Other digestive diseases	2,677	5.3
6	Other malignant neoplasms	2,073	4.1
7	Ill-defined injuries/accidents (ICD10 Y10-Y34)	1,877	3.7
8	Other respiratory diseases	1,574	3.1
9	Other neuropsychiatric disorders	1,269	2.5
10	Lower respiratory infections	1,142	2.3
11	Nephritis and nephrosis	1,116	2.2
12	Diabetes mellitus	748	1.5
13	Stomach cancer	608	1.2
14	Cirrhosis of the liver	598	1.2
15	Hypertensive disease	590	1.2
16	Trachea, bronchus and lung cancers	547	1.1
17	Other conditions arising during the perinatal period	414	0.8
18	Tuberculosis	291	0.6
19	Birth asphyxia and birth trauma	281	0.6
20	Liver cancer	260	0.5

Proportion of deaths due to communicable diseases (group 1), non-communicable diseases (group 2) and injuries (group 3)



Step 7: Tabulate and disseminate

- Make your data visible
- Publish causes of deaths in MOH annual reports
- Publish on Website of MOH and CSOs
- Be open and transparent on data limitations
- Identify the gaps in data management and inadequate use of new technologies
- Identify gaps in analytical skills
- Improve presentation of statistical data



Step 7: Tabulate and disseminate (cont)

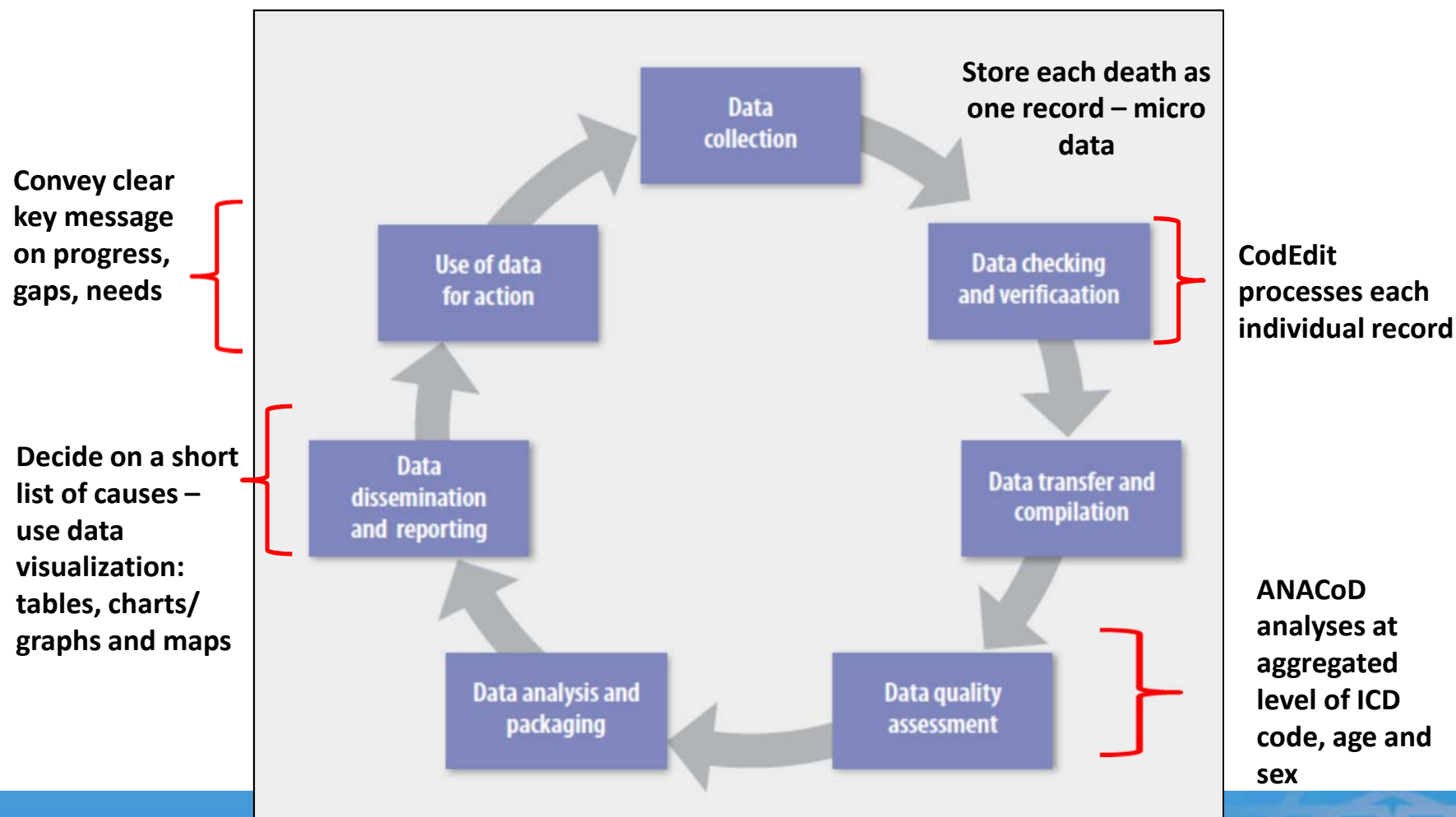
- Reduce the delays between data compilation and dissemination
- Foster interaction between producers and users of statistics
- Publish leading causes of deaths.
- Use causes of deaths in “Policy Briefs” given to policy makers
- Use in national 5 year MOH plans
- Use or build a list of causes that is relevant for public health and prevention

World 2012: Leading causes of death

Rank	Cause	Deaths (000s)	% deaths	cumulative % deaths
0	All Causes	55,859	100.0	
1	Ischaemic heart disease	7,356	13.2	13.2
2	Stroke	6,671	11.9	25.1
3	Chronic obstructive pulmonary disease	3,104	5.6	30.7
4	Lower respiratory infections	3,052	5.5	36.1
5	Trachea, bronchus, lung cancers	1,600	2.9	39.0
6	HIV/AIDS	1,534	2.8	41.7
7	Diarrhoeal diseases	1,498	2.7	44.4
8	Diabetes mellitus	1,497	2.7	47.1
9	Road injury	1,255	2.3	49.4
10	Hypertensive heart disease	1,141	2.0	51.4
11	Preterm birth complications	1,135	2.0	53.4
12	Cirrhosis of the liver	1,021	1.8	55.3
13	Tuberculosis	935	1.7	56.9
14	Kidney diseases	864	1.6	58.5
15	Self-harm	804	1.4	59.9

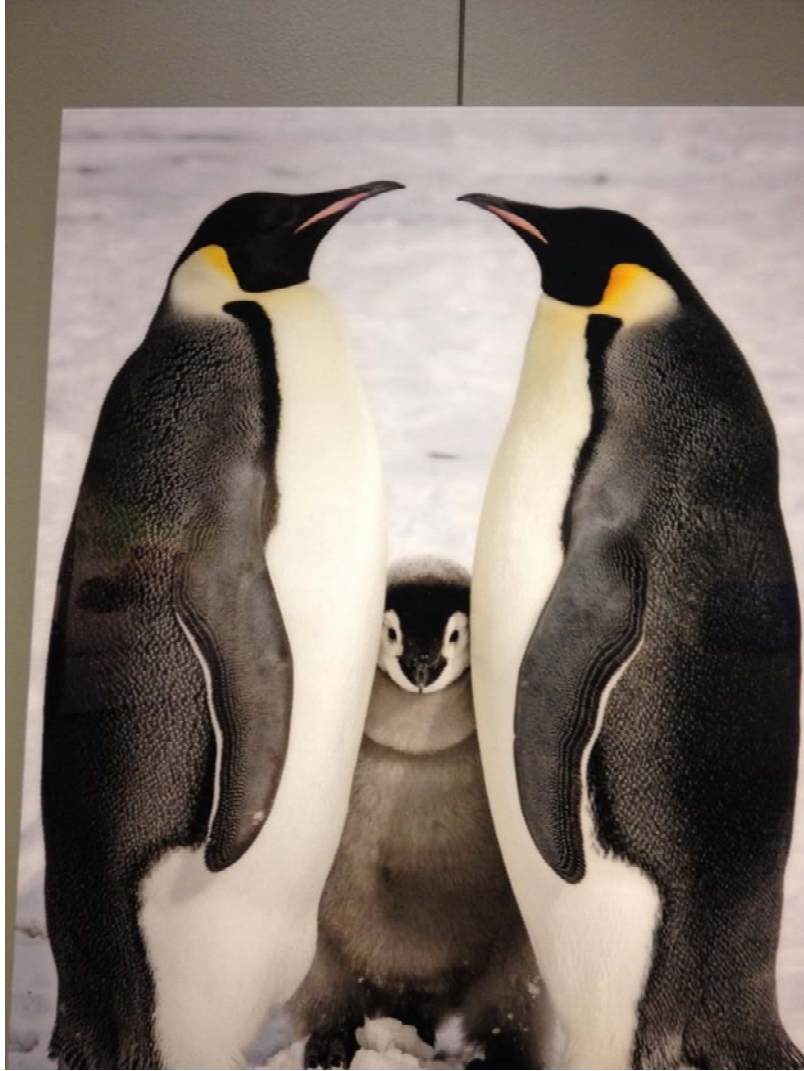


Cycle of data collection, management, analysis and dissemination



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شكراً لكم!

<http://www.emro.who.int/entity/civil-registration-statistics/index.html>

badra@who.int



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