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Directorate F: Social statistics

Avoidable mortality: OECD/Eurostat lists of preventable and treatable causes of death (January 2022 version)

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1. INTRODUCTION

Assessing the performance of health systems is of increasing importance in OECD and EU countries. While avoidable mortality indicators are not meant to be a definite measure of health system performance, they provide a starting point to assess the performance of public health and health care policies in avoiding premature mortality from preventable and treatable causes of death.

In 2018, the OECD and Eurostat worked together with an expert group to develop new joint lists of preventable and treatable causes of mortality. These lists built on earlier work carried out by researchers (e.g., Nolte and McKee, 2004 and 2011), by some OECD countries and by Eurostat. The new OECD-Eurostat lists were approved during the OECD Working Party on Health Statistics meeting in October 2018 and during the Eurostat Working Group on Public Health Statistics in December 2018. For the OECD, it is the first time that such lists of avoidable mortality have been formally endorsed, while for Eurostat these lists are updating and revising the lists that were first adopted at the end of 2013 (Box 1).

Box 1. Revisions to the previous Eurostat lists of avoidable mortality were done in close coordination with OECD work on avoidable mortality

The initiative of establishing indicators on avoidable mortality in the European Union was started by EU countries expressing a need for disseminating death statistics addressing specific public health needs, such as assessing health systems based on preventable and treatable deaths.

In 2012 Eurostat established a Task Force on Satellite lists that was composed of national experts, Eurostat and DG SANTE. The Task Force analysed different existing lists and methodologies and came up with a suggestion for Eurostat's lists for preventable and amenable mortality, which were based on the lists developed by the ONS in England in 2011. These lists of preventable and amenable deaths were approved by EU Member States during Eurostat's annual Working Group on Public Health statistics in December 2013. Eurostat started to report these indicators in 2014.

Both the list of causes of mortality and the age limits reflect current health expectations, medical technology and knowledge, and developments in health policy, and hence might be subject to revision. Therefore, Eurostat, in line with the opinion of the Task Force on Satellite lists, asked Member States in March 2018 to provide their views and comments on the 2013 lists of preventable and amenable mortality.

In 2018, the Eurostat's Technical Group on Causes of Death statistics agreed that it would be useful to work closely with the OECD working group on avoidable mortality to come up with joint lists to achieve consistency in the lists used at the European and OECD levels. Some countries expressed not only their support towards establishing a common OECD-Eurostat list, but also provided suggestions for certain modifications to the lists suggested by the OECD working group. These suggestions were communicated by Eurostat to the OECD working group, carefully reviewed and, where deemed to be scientifically justified, the changes were made.

Many important elements of the 2013 lists of avoidable mortality have remained under the new OECD-Eurostat joint lists that were adopted at the end of 2018, including the general definitions, the selection of many causes of death and the general age threshold. However, there are also some important improvements, including a mutually exclusive allocation of causes of death under the preventable and treatable categories and greater emphasis on preventable causes of death.

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2. DEFINITIONS, GUIDING PRINCIPLES AND SELECTION OF CAUSES OF MORTALITY

2.1. Definitions

Preventable and treatable causes of mortality are defined as follows:

- **Preventable mortality**: Causes of death that can be mainly avoided through effective public health and primary prevention interventions (i.e. before the onset of diseases/injuries, to reduce incidence).
- **Treatable (or amenable) mortality**: Causes of death that can be mainly avoided through timely and effective health care interventions, including secondary prevention and treatment (i.e. after the onset of diseases, to reduce case-fatality).

[Note: The label "amenable" mortality used in the previous Eurostat list was changed to "treatable" to make more explicit the link with the health care interventions.]

2.2. Guiding principles

The following principles were used to guide the development of the lists of preventable and treatable causes of mortality:

1. The selection should build as much as possible on the **three lists used as a reference** -- Nolte and McKee, Eurostat (which is based mainly on ONS), and CIHI/Statistics Canada.[1]
2. The attribution of causes of death to the preventable or treatable mortality category was based on the criteria of whether it is **predominantly** prevention or health care interventions that can reduce these causes of death. There is no implication that each individual death from a cause in either category must necessarily be capable of avoidance through prevention or treatment.
3. For those causes of death that can be both **largely prevented and also treated** once they have occurred, these causes of death were attributed to the preventable category on the rationale that if these diseases are prevented, there would be no need for treatment.
4. Causes of death should generally not be fractioned as being partly preventable and treatable given the lack of evidence to do this accurately and systematically, except when there is no strong evidence of predominance, in which case a **50%-50% allocation** was used.
5. Any **double-counting** of the same causes of death between the two lists was **avoided**, so that the two lists can be used together to provide a broad assessment of the relative importance of prevention and health care interventions in reducing avoidable deaths. [2]
6. Causes of death that account for a **very small number** of deaths were **excluded** to keep the lists as concise as possible.
7. The same age threshold should be used **across all the selected causes of death** in the preventable and treatable mortality categories.[2]
8. The two lists should be **periodically updated** to reflect progress in public health/primary prevention and health care interventions and in life expectancy.

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[1] Annexes B and C provide a comparison of the selected causes of death in the OECD-Eurostat list on preventable causes (Annex B) and treatable causes (Annex C) with the three lists used as a reference.
[2] This is a change from the previous Eurostat approach.

2.3. Selection of causes of mortality for the preventable and treatable categories

Table 1 below presents the selection of causes of death for the lists of preventable and treatable causes of mortality following the application of these guiding principles, along with a brief rationale for their inclusion.

2.4. Age threshold to define premature deaths

Since their initial development in the 1970s, lists of avoidable mortality have focussed on premature deaths (or "untimely" deaths). This involves setting an age threshold to define premature deaths. The general age threshold that has traditionally been used in avoidable mortality lists in developed countries (including in the three reference lists) is under 75 years. This age threshold still reflects the life expectancy at birth in those OECD and EU countries that have the lowest life expectancies.

The OECD/Eurostat lists (January 2022 version) will therefore continue to use this age threshold of under 75 years. Following one of the guiding principles mentioned above, this age threshold will be used consistently across all the selected causes of death in the preventable and treatable categories, as there did not appear to be any strong rationale to use either a lower age or higher threshold for some causes of death.

It is recognised that the age threshold of 75 is arbitrary and only reflects a current definition of premature mortality. This age threshold should be reviewed in the future, in light of future gains in life expectancy. It is also recognised that one implication of this age threshold is that it results in some under-estimation of the overall number of deaths that could potentially be avoided through better prevention (e.g. injury prevention campaigns) or better health care for people aged 75 and over.[3]

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[3] A new project in the context of the UN Titchfield City Group on Ageing is expected to involve the development of a different approach and separate measure of avoidable mortality in the older population (age 75+). This approach would recognise the complexities of the causal pathway to death that increase with age and the tendencies of multimorbidity in older people.

Table 1: Joint OECD/Eurostat lists of preventable and treatable causes of mortality

Group	Causes of deaths	Preventable mortality	Treatable mortality	ICD-10 Code	Age threshold	Rationale for inclusion
Infectious diseases	Intestinal diseases	x		A00-A09	0-74	Most of these infections can be prevented through prevention measures (e.g. improve water and food safety)
	Diphtheria, Tetanus, Poliomyelitis	x		A35, A36, A80	0-74	Most of these infections can be prevented through vaccination.
	Whooping cough	x		A37	0-74	Most of these infections can be prevented through vaccination.
	Meningococcal infection	x		A39	0-74	Most of these infections can be prevented through vaccination.
	Sepsis due to streptococcus pneumonia and depsis due to hemophilus influenzae	x		A40.3, , A41.3	0-74	Most of these infections can be prevented through vaccination.
	Haemophilus inflenza infections	x		A49.2	0-74	Most of these infections can be prevented through vaccination.
	Sexually transmitted infections (except HIV/AIDS)	x		A50-A60, A63, A64	0-74	These infections can be prevented through prevention measures.
	Varicella	x		B01	0-74	Most of these infections can be prevented through vaccination.
	Measles	x		B05	0-74	Most of these infections can be prevented through vaccination.
	Rubella	x		B06	0-74	Most of these infections can be prevented through vaccination.
	Viral Hepatitis	x		B15-B19	0-74	This condition is preventable and will not require treatment if prevented.
	HIV/AIDS	x		B20-B24	0-74	This condition is preventable and will not require treatment if prevented.
	Malaria	x		B50-B54	0-74	This condition is preventable and will not require treatment if prevented.
	Haemophilus and pneumococcal meningitis	x		G00.0, G00.1	0-74	Most of these infections can be prevented through vaccination.
	Tuberculosis	x (50%)	x (50%)	A15-A19, B90, J65	0-74	Reduction in deaths from tuberculosis in several countries has been about evenly achieved through greater prevention (reduction in incidence) and earlier detection and more effective treatment (higher survival rates).

	Scarlet fever		x	A38	0-74	Case-fatality rates can be reduced through early detection and appropriate antibiotic treatment.
	Sepsis		x	A40 (excl. A40.3),A41 (excl. A41.3)	0-74	Case-fatality rates can be reduced through greater quality of care and reduced patient adverse events, and early detection and appropriate antibiotic treatment.
	Cellulitis		x	A46, L03	0-74	Case-fatality rates can be reduced through early detection and appropriate antibiotic treatment.
	Legionnaires disease		x	A48.1	0-74	Case-fatality rates can be reduced through early detection and appropriate antibiotic treatment.
	Streptococcal and enterococci infection		x	A49.1	0-74	Case-fatality rates can be reduced through early detection and appropriate antibiotic treatment.
	Other meningitis		x	G00.2, G00.3, G00.8, G00.9	0-74	Case-fatality rates can be reduced through early detection and appropriate antibiotic treatment.
	Meningitis due to other and unspecified causes		x	G03	0-74	Case-fatality rates can be reduced through early detection and appropriate antibiotic treatment.
Cancer	Lip, oral cavity and pharynx cancer	x		C00-C14	0-74	This condition can be largely prevented through prevention measures (e.g. reduce smoking).
	Oesophageal cancer	x		C15	0-74	This condition can be largely prevented through prevention measures (e.g. reduce smoking).
	Stomach cancer	x		C16	0-74	This condition can be largely prevented through prevention measures (e.g. reduce smoking and alcohol consumption, and improve nutrition).
	Liver cancer	x		C22	0-74	This condition can be largely prevented through prevention measures (e.g. reduce smoking and alcohol consumption).
	Lung cancer	x		C33-C34	0-74	This condition can be largely prevented through prevention measures (e.g. reduce smoking).
	Mesothelioma	x		C45	0-74	This condition can be largely prevented through prevention measures (e.g. reduce asbestos exposure).
	Skin (melanoma) cancer	x		C43	0-74	This condition can be largely prevented through prevention measures (e.g. reduce sun exposure).

Bladder cancer	x			C67	0-74	This condition can be largely prevented through prevention measures (e.g. reduce smoking).
Cervical cancer	x (50%)	x (50%)		C53	0-74	Cervical cancer can be prevented through vaccination and screening can also find pre-cancerous abnormalities that can be treated to prevent cancer, but five-year survival after cancer detection is also relatively high and rising.
Colorectal cancer		x		C18-C21	0-74	Case-fatality rates have been reduced through earlier detection and treatment. Five-year survival after detection is relatively high and rising.
Breast cancer (female only)		x		C50	0-74	Case-fatality rates have been reduced through earlier detection and treatment. Five-year survival after detection is relatively high and rising.
Uterus cancer		x		C54,C55	0-74	Case-fatality rates have been reduced through earlier detection and treatment. Five-year survival after detection is relatively high and rising.
Testicular cancer		x		C62	0-74	Case-fatality rates have been reduced through earlier detection and treatment. Five-year survival after detection is relatively high and rising.
Thyroid cancer		x		C73	0-74	Case-fatality rates have been reduced through early detection and appropriate treatment.
Hodgkin's disease		x		C81	0-74	Case-fatality rates have been reduced through early detection and appropriate treatment.
Lymphoid leukaemia		x		C91.0, C91.1	0-74	Case-fatality rates have been reduced through early detection and appropriate treatment.
Benign neoplasm		x		D10-D36	0-74	Case-fatality rates have been reduced through early detection and appropriate treatment.

Category	Disease			ICD codes	Age	Description
Endocrine and metabolic diseases	Nutritional deficiency anaemia	x		D50-D53	0-74	This condition can be largely prevented through prevention measures (e.g. improve nutrition).
	Diabetes mellitus	x (50%)	x (50%)	E10-E14	0-74	Type 1 diabetes is not preventable, but appropriate treatments can reduce mortality. Type 2 diabetes is largely preventable (e.g. improve nutrition), but appropriate treatments can also reduce mortality.
	Thyroid disorders		x	E00-E07	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Adrenal disorders		x	E24-E25 (except E24.4), E27	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
Diseases of the nervous system	Epilepsy		x	G40,G41	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
Diseases of the circulatory system	Aortic aneurysm	x (50%)	x (50%)	I71	0-74	This condition is both preventable through prevention measures (similar risk factors as for ischaemic heart diseases) and treatable.
	Hypertensive diseases	x (50%)	x (50%)	I10-I13, I15	0-74	This condition is both preventable through prevention measures (e.g. reduce smoking, improve nutrition and physical activity) and treatable.
	Ischaemic heart diseases	x (50%)	x (50%)	I20-I25	0-74	Reduction in deaths from IHD over the past decades in several countries has been about evenly achieved through greater prevention (reduction in incidence) and earlier detection and more effective treatment (higher survival rates).
	Cerebrovascular diseases	x (50%)	x (50%)	I60-I69	0-74	Reduction in deaths from CVD over the past decades in several countries has been about evenly achieved through greater prevention (reduction in incidence) and earlier detection and more effective treatment (higher survival rates).
	Other atherosclerosis	x (50%)	x (50%)	I70, I73.9	0-74	This condition is both preventable through prevention measures (e.g. improve nutrition) and treatable.
	Rheumatic and other heart disease		x	I00-I09	0-74	Case-fatality rates can be reduced through appropriate treatment.

System	Condition			ICD	Age	Notes
	Venous thromboembolism		x *	I26, I80, I82.9	0-74	The majority of venous thrombosis events result from hospitalisations. These cases are treatable to the extent that they are linked to the quality of care that people receive.
Diseases of the respiratory system	Influenza	x		J09-J11	0-74	Most of the deaths can be prevented through prevention measures (e.g. vaccination).
	Pneumonia due to Streptococcus pneumonia or Haemophilus influenza	x		J13-J14	0-74	Most of these infections can be prevented through vaccination.
	Chronic lower respiratory diseases	x		J40-J44	0-74	This condition can be largely prevented through prevention measures (e.g. reduce smoking).
	Lung diseases due to external agents	x		J60-J64, J66-J70, J82, J92	0-74	This condition can be largely prevented through prevention measures (e.g. reduce exposure to chemical, gases and other agents).
	Upper respiratory infections		x	J00-J06, J30-J39	0-74	Case-fatality rates can be reduced through appropriate treatment.
	Pneumonia, not elsewhere classified or organism unspecified		x	J12, J15, J16- J18	0-74	Case-fatality rates can be reduced through early detection and appropriate antibiotic treatment.
	Acute lower respiratory infections		x	J20-J22	0-74	Case-fatality rates can be reduced through appropriate treatment.
	Asthma and bronchiectasis		x	J45-J47	0-74	Case-fatality rates can be reduced through appropriate treatment (e.g. medication).
	Adult respiratory distress syndrome		x	J80	0-74	Case-fatality rates can be reduced through appropriate treatment.
	Pulmonary oedema		x	J81	0-74	Case-fatality rates can be reduced through appropriate treatment.
	Abscess of lung and mediastinum pyothorax		x	J85, J86	0-74	Case-fatality rates can be reduced through appropriate treatment.
	Other pleural disorders		x	J90, J93, J94	0-74	Case-fatality rates can be reduced through appropriate treatment.
Diseases of the digestive system	Gastric and duodenal ulcer		x	K25-K28	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment..
	Appendicitis		x	K35-K38	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Abdominal hernia		x	K40-K46	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.

	Cholelithiasis and cholecystitis		x	K80-K81	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Other diseases of gallbladder or biliary tract		x	K82-K83	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Acute pancreatitis		x	K85.0,1,3,8,9	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Other diseases of pancreas		x	K86.1,2,3,8,9	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
Diseases of the genitourinary system	Nephritis and nephrosis		x	N00-N07	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Obstructive uropathy		x	N13,N20-N21, N35	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Renal failure		x	N17-N19	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Renal colic		x	N23	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Disorders resulting from renal tubular dysfunction		x	N25	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Unspecified contracted kidney, small kidney of unknown cause		x	N26-N27	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Inflammatory diseases of genitourinary system		x	N34.1,N70-N73,N75.0,N75.1,N76.4,6	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
	Prostatic hyperplasia		x	N40	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.
Pregnancy, childbirth and perinatal period	Tetanus neonatorum	x		A33	0-74	Most of these infections can be prevented through vaccination.
	Obstetrical tetanus	x		A34	0-74	Most of these infections can be prevented through vaccination.
	Pregnancy, childbirth and the puerperium		x	O00-O99	0-74	Effective treatment is available in most cases to avoid maternal mortality.
	Certain conditions originating in the perinatal period		x	P00-P96	0-74	Case-fatality rates can be reduced through early detection and appropriate treatment.

Congenital malformations	Certain congenital malformations (neural tube defects)		x		Q00, Q01, Q05	0-74	These conditions can be prevented through prevention measures (improve maternal nutrition, e.g. folic acid consumption).
	Congenital malformations of the circulatory system (heart defects)			x	Q20-Q28	0-74	These conditions can be treated through surgical operations
Adverse effects of medical and surgical care	Drugs, medicaments and biological substances causing adverse effects in therapeutic use			x *	Y40-Y59	0-74	These conditions are treatable through better drug prescription and adherence.
	Misadventures to patients during surgical and medical care			x *	Y60-Y69,Y83-Y84	0-74	These conditions are treatable through better quality of care that patients receive.
	Medical devices associated with adverse incidents in diagnostic and therapeutic use			x *	Y70–Y82	0-74	These conditions are treatable through better quality of care that patients receive.
Injuries	Transport Accidents		x		V01-V99	0-74	Deaths can be prevented through public health interventions (e.g. road safety measures).
	Accidental Injuries		x		W00-X39, X46-X59	0-74	Deaths can be prevented through public health interventions (e.g. injury prevention campaigns).
	Intentional self-harm		x		X66-X84	0-74	Deaths can be prevented through public health interventions (e.g. suicide prevention campaigns).
	Event of undetermined intent		x		Y16-Y34	0-74	Deaths can be prevented through public health interventions (e.g. harm prevention campaigns).
	Assault		x		X86-Y09	0-74	Deaths can be prevented through public health interventions.
Alcohol-related and drug-related deaths	Alcohol-related deaths	Alcohol-specific disorders and poisonings	x		E24.4, F10, G31.2, G62.1, G72.1, I42.6, K29.2, K70, K85.2, K86.0, Q86.0, R78.0, X45, X65, Y15	0-74	Deaths can be largely prevented through public health interventions (e.g. alcohol control policies).
		Other alcohol-related disorders	x		K73, K74.0-K74.2, K74.6	0-74	Deaths can be largely prevented through public health interventions (e.g. alcohol control policies).
	Drug-related deaths**	Drug disorders and poisonings	x		F11-F16, F18-F19, X40-X44, X85, Y10-Y14	0-74	Deaths can be largely prevented through public health interventions (e.g. drug control policies).
		Intentional self-poisoning by drugs	x		X60-X64	0-74	Deaths can be largely prevented through public health interventions (e.g. drug control policies).
Provisional assignment of new diseases		COVID-19	x		U07.1- U07.2	0-74	Most of these infections and deaths can be prevented through prevention measures (including vaccination).

* Some of these conditions that are mainly acquired when people are hospitalised or in contact with health services might also be considered to be preventable, in the sense that the incidence of these health care-associated infections or health problems might be reduced through greater prevention in health care facilities.

** Drug-related deaths include both illegal and legal drugs.

Annex A. Sources and calculations for the indicators of preventable and treatable causes of mortality

OECD

Data for the calculation of treatable and preventable mortality are drawn from the WHO Mortality Database. Annual data on treatable and preventable deaths are provided in absolute numbers and as standardised death rates according to age and sex. The standardisation is based on the 2010 OECD Standard Population.

Eurostat

Data for the calculation of preventable and treatable causes of mortality are drawn from Eurostat's data collection on causes of death. The cause of death is defined as the disease or injury which started the sequence of morbid events which led directly to death, or the circumstances of the accident or violence which produced the fatal injury.

Causes of death data are available for EU Member States on an annual basis. From 2011 onwards, transmission of data on the causes of deaths is mandatory for all EU Member States.

Indicators on preventable and treatable causes of mortality are calculated and published annually. Annual data on treatable and preventable deaths are provided in absolute numbers and as standardised death rates according to age and sex. The standardisation is based on the revised European Standard Population (2013).

Underlying population for the calculation of treatable and preventable mortality are residents dying either inside or outside of their home country.

Annex B. Comparison of three lists of preventable mortality with the OECD/Eurostat list (January 2022 version)

Table 2. Comparison of three lists of preventable mortality with the OECD/Eurostat list (January 2022 version)

Group	Causes of deaths	ICD-10 Code	Nolte and McKee (2011)	Eurostat (2014) based mainly on ONS (2011)	Statistics Canada/CIHI (2012)	Joint OECD/Eurostat list (January 2022 version)
Infectious diseases	Intestinal diseases	A00-A09			x	x
	Tuberculosis	A15-A19, B90		x		x (50%; other 50% treatable)
	Diphtheria, Tetanus, Poliomyelitis	A35, A36, A80		x*	x	x
	Whooping cough	A37		x*	x	x
	Meningococcal infection	A39			x	x
	Sepsis due to Streptococcus pneumonia	A40.3			x	x
	Sepsis due to Haemophilus influenza	A41.3			x	x
	Haemophilus influenza infection, unspecified site	A49.2			x	x
	Sexually transmitted infections, except HIV/AIDS	A50-A60, A63, A64			x	x
	Varicella	B01		x	x	x
	Measles	B05		x*	x	x
	Rubella	B06		x*	x	x
	Hepatitis C	B17.1, B18.2		x	x	x
	Other viral hepatitis	B15-B17.0, B17.2-B18.1, B18.4-B19			x	x
	HIV/AIDS	B20-B24			x	x
	Haemophilus meningitis	G00.0				x
	Pneumococcal meningitis	G00.1				x
Cancer	Lip, oral cavity and pharynx cancer	C00-C14		x	x	x
	Oesophageal cancer	C15		x	x	x
	Stomach cancer	C16		x	x	x
	Colon and rectum cancer	C18-C21		x		
	Liver cancer	C22		x	x	x
	Lung cancer	C33-C34	x	x	x	x
	Skin (melanoma) cancer	C43		x	x	x
	Skin (non-melanoma) cancer	C44			x	(lack of evidence of preventability and insufficient deaths)
	Mesothelioma	C45		x		x
	Breast Cancer	C50		x		(allocated to treatable)
	Cervical cancer	C53		x		x (50%; other 50% to amenable)
	Bladder cancer	C67				x
Endocrine and metabolic diseases	Nutritional deficiency anaemia	D50-D53			x	x
	Diabetes mellitus	E10-E14		x (0-49 years only)	x (50%; other 50% treatable)	x (50%; other 50% treatable)

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Category	Disease	ICD codes				Notes
Diseases of the circulatory system	Rheumatic heart disease	I01, I02, I05–I09			x	(allocated to treatable)
	Ischaemic heart diseases	I20-I25		x	x (50%; other 50% treatable)	x (50%; other 50% treatable)
	Venous thromboembolism	I26, I82.9		x	x	(allocated to treatable)
	Phlebitis and thrombophlebitis	I80.0,I80.4-I80.8			x	(allocated to treatable)
	Other phlebitis and thrombophlebitis	I80.1-I80.3, I80.9		x	x	(allocated to treatable)
	Cerebrovascular diseases	I60-I64,I67,I69			x (50%; other 50% treatable)	x (50%; other 50% treatable)
	Other atherosclerosis	I70,I73.9			x (50%; other 50% treatable)	x (50%; other 50% treatable)
	Aortic aneurysm	I71		x	x	x (50%; other 50% treatable)
Diseases of the respiratory system	Influenza	J09-J11		x	x	x
	Pneumonia due to Streptococcus pneumonia	J13				x
	Pneumonia due to Haemophilus influenza	J14				x
	Chronic obstructive pulmonary disorder	J40-J44		x	x	x
	Lung diseases due to external agents	J60–J64, J66–J70, J82, J92			x	x
Diseases of the digestive system	Chronic liver disease	K73, K74.0,1,2,6			x	x (allocated to alcohol-related deaths)
Unintentional injuries	Transport Accidents	V01-V99	x	x (also 75+ years old)	x	x
	Falls	W00-W19		x (also 75+ years old)	x	x
	Other external causes of accidental injury	W20-W64		x (also 75+ years old)	x	x
	Drowning	W65-W74		x (also 75+ years old)	x	x
	Fires and flames	X00-X09		x (also 75+ years old)	x	x
	Accidental poisonings	X40-X49		x (also 75+ years old)	x	x (X46-X49; X40-X44 allocated to drug-related deaths; X45 allocated to alcohol-related deaths)
	Overexertion, travel and privation	X50-X59		x (also 75+ years old)	x	x
Intentional injuries	Intentional self-harm	X60-X84		x (also 75+ years old)	x	x (X66-X84; X60-X64 allocated to drug-related deaths; X65 allocated to alcohol-related deaths)
	Event of undetermined intent	Y10-Y34		x (also 75+ years old)	x	x (Y16-Y34; Y10-Y14 allocated to drug-related deaths; Y15 allocated to alcohol-related deaths)
	Assault	X85-Y09		x (also 75+ years old)	x	x(X86-Y09; X85 allocated to drug-related deaths)
	Sequelae of intentional self-harm	Y87.0			x	(insufficient deaths)
	Sequelae of assault	Y87.1			x	(insufficient deaths)

Category	Cause	ICD codes	col4	col5	col6	col7
Alcohol-related and drug-related deaths	Alcohol-related deaths	F10, G31.2, K29.2, K70, I42.6, G62.1, K86.0	x	x	x	x (E24.4, F10, G31.2, G62.1, G72.1, I42.6, K29.2, K70, K73, K74.0-K74.2, K74.6, K85.2, K86.0, Q86.0, R78.0, X45, X65, Y15)
	Drug-related deaths	F11-F16, F18-F19		x	x	x (F11-F16, F18-F19, X40-X44, X60-X64, X85, Y10-Y14)
Pregnancy and childbirth	Tetanus neonatorum	A33			x	x
	Spina Bifida	Q05		x		x (Q00, Q01, Q05)
	Obstetrical tetanus	A34	x			x
Factors influencing health status and contacts with health services	Drugs, medicaments and biological substances causing adverse effects in therapeutic use	Y40-Y59			x	(allocated to treatable)
	Misadventures to patients during surgical and medical care	Y60-Y66, Y69		x (also 75+ years old)	x	(allocated to treatable)
	Medical devices associated with adverse incidents in diagnostic and therapeutic use	Y70–Y82			x	(allocated to treatable)
	Surgical and other medical procedures as the cause of abnormal reaction	Y83-Y84		x (also 75+ years old)	x	(allocated to treatable)
Provisional assignment of new diseases	COVID-19	U07.1- U07.2				x

* These causes of death were included in the ONS update of 2015, but not included in the Eurostat list.
Sources: Nolte and McKee (2011), Eurostat (2014), CIHI/Statistics Canada (2012), ONS (2016).

Table 3. Comparison of three lists of treatable causes of mortality with the OECD/Eurostat list (January 2022 version)

Group	Causes of deaths	ICD-10 Code	Nolte and McKee (2011)	Eurostat (2014) based mainly on ONS (2011)	Statistics Canada/ CIHI (2012)	Joint OECD/Eurostat list (January 2022 version)
Infectious diseases	Intestinal infections	A00-A09	x	x*		(allocated to preventable)
	Respiratory tuberculosis, bacteriologically and histologically confirmed	A15	x			x (50%; other 50% to preventable)
	Tuberculosis and sequelae of tuberculosis	A16-A19, B90	x	x	x	x (50%; other 50% to preventable)
	Diphtheria, Tetanus, Poliomyelitis	A35, A36, A80	x	x*		(allocated to preventable)
	Whooping cough	A37	x	x*		(allocated to preventable)
	Scarlet fever	A38		x	x	x
	Meningococcal infection	A39		x		(allocated to preventable)
	Meningitis due to other and unspecified causes	G03		x		x
	Septicaemia	A40 (excl. A40.3),A41 (excl. A41.3)	x	x	x	x
	Sepsis due to Streptococcus pneumonia	A40.3	x	x		(allocated to preventable)
	Sepsis due to Haemophilus influenza	A41.3	x	x		(allocated to preventable)
	Cellulitis	A46, L03		x	x	x
	Legionnaires disease	A48.1		x	x	x
	Streptococcal and enterococci infection, unspecified site	A49.1			x	x
	Varicella	B01		x*		(allocated to preventable)
	Measles	B05	x	x*		(allocated to preventable)
	Rubella	B06		x*		(allocated to preventable)
	Hepatitis C	B17.1,B18.2		x		(allocated to preventable)
	HIV/AIDS	B20-B24		x		(allocated to preventable)
	Malaria	B50-B54		x	x	(allocated to preventable)
	Meningitis	G00.2, G00.3, G00.8, G00.9		x	x	x
	Pneumoconiosis associated with tuberculosis	J65				x (50%; other 50% to preventable)
Cancer	Colorectal cancer	C18-C21	x	x	x	x
	Skin (melanoma) cancer	C43		x		(allocated to preventable)

Category		Code				
	Skin (non-melanoma) cancer	C44	x			(insufficient deaths)
	Breast cancer	C50	x	x	x	x
	Cervical cancer	C53	x	x	x	x (50%; other 50% to preventable)
	Uterus cancer	C54-C55	x	x*	x	x
	Testicular cancer	C62	x	x*	x	x
	Bladder cancer	C67		x	x	(allocated to preventable)
	Thyroid gland	C73		x	x	x
	Hodgkin's disease	C81	x	x	x	x
	Lymphoid leukaemia	C91.0, C91.1	x	x	x	x
	Other lymphoid leukaemia	C91.2-C91.9	x	x		(insufficient evidence of treatability)
	Myeloid leukaemia	C92.0	x	x		(insufficient evidence of treatability)
	Chronic myeloid leukaemia	C92.1	x		x	(insufficient evidence of treatability)
	Other leukaemia	C92.2-C95	x			(insufficient evidence of treatability)
	Benign neoplasm	D10-D36		x	x	x
Endocrine and metabolic diseases	Thyroid disorders	E00-E07	x	x*	x	x
	Diabetes mellitus	E10-E14	x (0-49 years)	x (0-49 years)	x (50%; other 50% preventable)	x (50%; other 50% preventable)
	Cushing's syndrome and adrenogenital disorders	E24,E25			x	X (except E24.4 allocated to alcohol-related deaths in preventable)
	Primary adrenocortical insufficiency	E27.1		x*	x	x
	Other Addison's diseases	E27.2-E27.9			x	x
	Congenital metabolic disorders	E74.0, E74.2			x	(insufficient deaths)
Diseases of the nervous system	Epilepsy	G40-G41	x	x	x	x
Diseases of the circulatory system	Acute rheumatic fever	I01-I04		x		x
	Chronic rheumatic heart disease	I05-I09	x	x		x
	Hypertensive disease	I10-I13, I15	x	x	x	x (50%; other 50% preventable)
	Ischaemic heart disease	I20-I25	x (50%)	x	x (50%; other 50% preventable)	x (50%; other 50% preventable)
	Venous thromboembolism	I26, I80, I82.9				x
	Haemorrhage, stroke, sequelae of cerebrovascular disease	I60-64, I67, I69	x	x	x (50%; other 50% preventable)	x (50%; other 50% preventable)
	Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction	I65	x	x		x (50%; other 50% preventable)
	Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction	I66	x	x		x (50%; other 50% preventable)
	Cerebrovascular disorders in diseases classified elsewhere	I68	x	x		x (50%; other 50% preventable)

Diseases of the respiratory system						
	Other atherosclerosis	I70, I73.9			x (50%; other 50% preventable)	x (50%; other 50% preventable)
	Aortic aneurysm	I71				x (50%; other 50% preventable)
Diseases of the respiratory system	Acute upper respiratory infections	J00-J06	x	x*	x	x
	Influenza due to identified zoonotic or pandemic influenza virus	J09	x	x		(allocated to preventable)
	Influenza due to identified seasonal influenza virus	J10-J11	x	x		(allocated to preventable)
	Pneumonia, not elsewhere classified or organism unspecified	J12, J15, J16, J18	x	x	x	x
	Pneumonia due to Streptococcus pneumonia, due to Haemophilus influenza, and not elsewhere classified	J13, J14, J17	x	x		x (J17)
	Acute lower respiratory infections	J20-J22	x (1-14 years)	x* (1-14 years)	x	x
	Upper respiratory infections	J30-J39	x (1-14 years)	x* (1-14 years)	x	x
	Chronic lower respiratory diseases	J40-J44	x (1-14 years)	x*		
	Asthma	J45	x	x	x	x
	Status asthmaticus	J46	x (1-14 years)	x		x
	Bronchiectasis	J47	x (1-14 years)		x	x
	Adult respiratory distress syndrome	J80		x	x	x
	Pulmonary oedema	J81	x (1-14 years)		x	x
	Pyothorax and abscess of lung and mediastinum	J85,J86	x (1-14 years)		x	x
	Other pleural disorders	J90,J93,J94		x	x	x
	Other respiratory disorders	J98		x	x	(insufficient evidence of treatability)
Diseases of the digestive system	Gastric ulcer, duodenal ulcer, peptic ulcer (site unspecified)	K25-K27	x	x	x	x
	Gastrojejunal ulcer	K28		x	x	x
	Appendicitis	K35-K38	x	x	x	x
	Abdominal hernia	K40-K46	x	x	x	x
	Cholelithiasis and cholecystitis	K80-K81	x	x	x	x
	Other diseases of gallbladder or biliary tract	K82-K83		x	x	x
	Acute pancreatitis	K85.0,1,3,8,9		x	x	x
	Other diseases of pancreas	K86.1-K86.9		x	x	x
	Postcholecystectomy syndrome	K91.5		x		(insufficient deaths)
Diseases of the musculoske-letal system	Osteomyelitis	M86			x	(insufficient deaths)
	Nephritis and nephrosis	N00-N07	x	x	x	x
	Obstructive uropathy	N13,N20-N21, N35		x	x	x

Category	Cause	ICD code				
Diseases of the genitourinary system	Renal failure	N17-N19	x	x	x	x
	Renal colic	N23			x	x
	Disorders resulting from impaired renal tubular function	N25	x	x	x	x
	Unspecified contracted kidney, small kidney of unknown cause	N26-N27	x	x		x
	Prostatic hyperplasia	N40	x	x	x	x
	Inflammatory diseases of genitourinary system	N34.1,N70-N73,N75.0,N75.1,N76.4,6			x	x
	Postprocedural urethral stricture	N99.1		x		(insufficient deaths)
Pregnancy and childbirth	Pregnancy, childbirth and the puerperium	O00-O99	x		x	x
Perinatal deaths	Tetanus neonatorum	A33	x	x		(allocated to preventable)
	Obstetrical tetanus	A34	x			(allocated to preventable)
	Certain conditions originating in the perinatal period	P00-P96	x	x	x	x
Congenital malformations	Other congenital malformations	Q00-Q19, Q30-Q99				x	(Q00, Q01,Q05 allocated to preventable; others excluded due to insufficient evidence of preventability or treatability)
	Congenital cardiovascular anomalies	Q20-Q28	x	x	x	x
Factors influencing health status and contact with health services	Drugs, medicaments and biological substances causing adverse effects in therapeutic use	Y40-Y59				x
	Misadventures to patients during surgical and medical care	Y60-Y69,Y83-Y84	x (also 75+ years old)	x (also 75+ years old)		x
	Medical devices associated with adverse incidents in diagnostic and therapeutic use	Y70–Y82				x

* These causes of death were included in the ONS update of 2015, but not included in the Eurostat list.
Sources: Nolte and McKee (2011), Eurostat (2014), CIHI/Statistics Canada (2012), ONS (2016).

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