# 4. Rules and guidelines for mortality and morbidity coding

This section concerns the rules and guidelines adopted by the World Health Assembly regarding the selection of a single cause or condition for routine tabulation from death certificates and morbidity records. Guidelines are also provided for the application of the rules and for coding of the condition selected for tabulation.

## 4.1 Mortality: guidelines for certification and rules for coding

Mortality statistics are one of the principal sources of health information and in many countries they are the most reliable type of health data.

### 4.1.1 Causes of death

In 1967, the Twentieth World Health Assembly defined the causes of death to be entered on the medical certificate of cause of death as "all those diseases, morbid conditions or injuries which either resulted in or contributed to death and the circumstances of the accident or violence which produced any such injuries". The purpose of the definition is to ensure that all the relevant information is recorded and that the certifier does not select some conditions for entry and reject others. The definition does not include symptoms and modes of dying, such as heart failure or respiratory failure.

When only one cause of death is recorded, this cause is selected for tabulation. When more than one cause of death is recorded, selection should be made in accordance with the rules given in Section 4.1.5. The rules are based on the concept of the underlying cause of death.

### 4.1.2 Underlying cause of death

It was agreed by the Sixth Decennial International Revision Conference that the cause of death for primary tabulation should be designated the underlying cause of death.

From the standpoint of prevention of death, it is necessary to break the chain of events or to effect a cure at some point. The most effective public health objective is to prevent the precipitating cause from operating. For this purpose, the underlying cause has been defined 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".

### 4.1.3 International form of medical certificate of cause of death

The above principle can be applied uniformly by using the medical certification form recommended by the World Health Assembly. It is the responsibility of the medical practitioner signing the death certificate to indicate which morbid conditions led directly to death and to state any antecedent conditions giving rise to this cause.

The medical certificate shown below is designed to facilitate the selection of the underlying cause of death when two or more causes are recorded. Part I of the form is for diseases related to the train of events leading directly to death, and Part II is for unrelated but contributory conditions.

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) ..... | ..... |
| | 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) ..... | ..... |
| | due to (or as a consequence of) | |
| | (c) ..... | ..... |
| | 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 | ..... | ..... |
| | ..... | ..... |

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

The medical practitioner or other qualified certifier should use his or her clinical judgement in completing the medical certificate of cause of death. Automated systems must not include lists or other prompts to guide the certifier as these necessarily limit the range of diagnoses and therefore have an adverse effect on the accuracy and usefulness of the report.

In 1990, the Forty-third World Health Assembly adopted a recommendation that, where a need had been identified, countries should consider the possibility of an additional line, (d), in Part I of the certificate. However, countries may adopt, or continue to use, a certificate with only three lines in Part I where a fourth line is unnecessary, or where there are legal or other impediments to the adoption of the certificate shown above.

The condition recorded on the lowest used line of Part I of the certificate is usually the underlying cause of death used for tabulation. However, the procedures described in sections 4.1.4-4.1.5 may result in the selection of another condition as the underlying cause of death. To differentiate between these two possibilities, the expression *originating antecedent cause* (originating cause) will be used to refer to the condition proper to the last used line of Part I of the certificate, and the expression *underlying cause of death* will be used to identify the cause selected for tabulation.

If there is only one step in the chain of events, an entry at line I(a) is sufficient. If there is more than one step, the direct cause is entered at (a) and the originating antecedent cause is entered last, with any intervening cause entered on line (b) or on lines (b) and (c). An example of a death certificate with four steps in the chain of events leading directly to death is:

(a) pulmonary embolism
(b) pathological fracture
(c) secondary carcinoma of femur
(d) carcinoma of breast.

Part II is for any other significant condition that contributed to the fatal outcome, but was not related to the disease or condition directly causing death.

After the words "due to (or as a consequence of)", which appear on the certificate, should be included not only the direct cause or pathological process, but also indirect causes, for example where an antecedent condition has predisposed to the direct cause by damage to tissues or impairment of function, even after a long interval.

Noting the approximate interval (minutes, hours, days, weeks, months or years) between the onset of each condition and the date of death helps the certifying doctor to establish the chain of events that led to the death, and is also useful subsequently in guiding the coder to choose the appropriate code.

In 1990, the World Health Assembly adopted a recommendation that countries should consider the inclusion on death certificates of questions about current pregnancy and pregnancy within one year preceding death.

### 4.1.4 Procedures for selection of the underlying cause of death for mortality tabulation

When only one cause of death is reported, this cause is used for tabulation.

When more than one cause of death is recorded, the first step in selecting the underlying cause is to determine the originating antecedent cause proper to the lowest used line in Part I of the certificate by application of the General Principle or of selection rules 1, 2 and 3.

In some circumstances, the ICD allows the originating cause to be superseded by one more suitable for expressing the underlying cause in tabulation. For example, there are some categories for combinations of conditions, or there may be overriding epidemiological reasons for giving precedence to other conditions on the certificate.

The next step therefore is to determine whether one or more of the modification rules A to F (see Section 4.1.9), which deal with the above situations, apply. The resultant code number for tabulation is that of the underlying cause.

Where the originating antecedent cause is an injury or other effect of an external cause classified to Chapter XIX, the circumstances that gave rise to that condition should be selected as the underlying cause for tabulation and coded to V01–Y89. The code for the injury or effect may be used as an additional code.

### 4.1.5 Rules for selection of the originating antecedent cause

#### *Sequence*

The term ‘sequence’ refers to two or more conditions entered on successive lines of Part I, each condition being an acceptable cause of the one entered on the line above it.

*Example 1:*

I (a) Bleeding of oesophageal varices
(b) Portal hypertension
(c) Liver cirrhosis
(d) Hepatitis B

If there is more than one cause of death in a line of the certificate, it is possible to have more than one reported sequence. In the example below, four sequences are reported.

*Example 2:*

I (a) Coma
(b) Myocardial infarction and cerebrovascular accident
(c) Atherosclerosis hypertension

The sequences are:

- atherosclerosis (leading to) myocardial infarction (leading to) coma;
- atherosclerosis (leading to) cerebrovascular accident (leading to) coma;
- hypertension (leading to) myocardial infarction (leading to) coma;
- hypertension (leading to) cerebrovascular accident (leading to) coma.

### *General Principle*

The General Principle states that when more than one condition is entered on the certificate, the condition entered alone on the lowest used line of Part I should be selected only if it could have given rise to all the conditions entered above it.

### *Selection rules*

***Rule 1.*** If the General Principle does not apply and there is a reported sequence terminating in the condition first entered on the certificate, select the originating cause of this sequence. If there is more than one sequence terminating in the condition mentioned first, select the originating cause of the first-mentioned sequence.

***Rule 2.*** If there is no reported sequence terminating in the condition first entered on the certificate, select this first-mentioned condition.

***Rule 3.*** If the condition selected by the General Principle or by Rule l or Rule 2 is obviously a direct consequence of another reported condition, whether in Part I or Part II, select this primary condition.

## 4.1.6 Some considerations on selection rules

In a properly completed certificate, the originating antecedent cause will have been entered alone on the lowest used line of Part I and the conditions, if any, that arose as a consequence of this initial cause will have been entered above it, one condition to a line in ascending causal order.

*Example 3:*

I (a) Uraemia
(b) Hydronephrosis
(c) Retention of urine
(d) Hypertrophy of prostate

*Example 4:*

I (a) Bronchopneumonia
(b) Chronic bronchitis
II Chronic myocarditis

In a properly completed certificate, therefore, the General Principle will apply. However, even if the certificate has not been properly completed, the General Principle may still apply provided that the condition entered alone on the lowest used line of Part I could have given rise to all the conditions above it, even though the conditions entered above it have not been entered in the correct causal order.

*Example 5:*

| | | | |
|---|---|---|---|
| I | (a) | Generalized metastases | 5 weeks |
| | (b) | Bronchopneumonia | 3 days |
| | (c) | Lung cancer | 11 months |

The General Principle does not apply when more than one condition has been entered on the lowest used line of Part I, or if the single condition entered could not have given rise to all the conditions entered above it. Guidance on the acceptability of different sequences is given at the end of the rules, but it should be borne in mind that the medical certifier's statement reflects an informed opinion about the conditions leading to death and about their interrelationships, and should not be disregarded lightly.

Where the General Principle cannot be applied, clarification of the certificate should be sought from the certifier whenever possible, since the selection rules are somewhat arbitrary and may not always lead to a satisfactory selection of the underlying cause. Where further clarification cannot be obtained, however, the selection rules must be applied. Rule l is applicable only if there is a reported sequence, terminating in the condition first entered on the certificate. If such a sequence is not found, Rule 2 applies and the first-entered condition is selected.

The condition selected by the above rules may, however, be an obvious consequence of another condition that was not reported in a correct causal relationship with it, e.g. in Part II or on the same line in Part I. If so, Rule 3 applies and the originating primary condition is selected. It applies, however, only when there is no doubt about the causal relationship between the two conditions; it is not sufficient that a causal relationship between them would have been accepted if the certifier had reported it.

### 4.1.7 Examples of the General Principle and selection rules

#### *General Principle*

**When more than one condition is entered on the certificate, select the condition entered alone on the lowest used line of Part I only if it could have given rise to all the conditions entered above it.**

*Example 6:*

| | | |
|---|---|---|
| I | (a) | Abscess of lung |
| | (b) | Lobar pneumonia |

Select lobar pneumonia (J18.1).

*Example 7:*

I (a) Hepatic failure
(b) Bile duct obstruction
(c) Carcinoma of head of pancreas

Select carcinoma of head of pancreas (C25.0).

*Example 8:*

I (a) Cerebral haemorrhage
(b) Hypertension
(c) Chronic pyelonephritis
(d) Prostatic adenoma

Select prostatic adenoma (D29.1).

*Example 9:*

I (a) Traumatic shock
(b) Multiple fractures
(c) Pedestrian hit by truck (traffic accident)

Select pedestrian hit by truck (V04.1).

*Example 10:*

I (a) Bronchopneumonia
II Secondary anaemia and chronic lymphatic leukaemia

Select bronchopneumonia. But Rule 3 also applies; see Example 26.

### *Rule 1*

**If the General Principle does not apply and there is a reported sequence terminating in the condition first entered on the certificate, select the originating cause of this sequence. If there is more than one sequence terminating in the condition mentioned first, select the originating cause of the first-mentioned sequence.**

*Example 11:*

I (a) Bronchopneumonia
(b) Cerebral infarction and hypertensive heart disease

Select cerebral infarction (I63.9). There are two reported sequences terminating in the condition first entered on the certificate; bronchopneumonia due to cerebral infarction, and bronchopneumonia due to hypertensive heart disease. The originating cause of the first-mentioned sequence is selected.

*Example 12:*

I (a) Oesophageal varices and congestive heart failure
(b) Chronic rheumatic heart disease and cirrhosis of liver

Select cirrhosis of liver (K74.6). The sequence terminating in the condition first entered on the certificate is oesophageal varices due to cirrhosis of liver.

*Example 13:*

I (a) Acute myocardial infarction
(b) Atherosclerotic heart disease
(c) Influenza

Select atherosclerotic heart disease. The reported sequence terminating in the condition first entered on the certificate is acute myocardial infarction due to atherosclerotic heart disease. But Modification Rule C also applies; see Example 45.

*Example 14:* I (a) Pericarditis
(b) Uraemia and pneumonia

Select uraemia. There are two reported sequences terminating in the condition first entered on the certificate: pericarditis due to uraemia and pericarditis due to pneumonia. The originating cause of the first-mentioned sequence is selected. But Modification Rule D also applies; see Example 60.

*Example 15:* I (a) Cerebral infarction and hypostatic pneumonia
(b) Hypertension and diabetes
(c) Atherosclerosis

Select atherosclerosis. There are two reported sequences terminating in the condition first entered on the certificate: cerebral infarction due to hypertension due to atherosclerosis and cerebral infarction due to diabetes. The originating cause of the first-mentioned sequence is selected. But Modification Rule C also applies; see Example 46.

***Rule 2***

**If there is no reported sequence terminating in the condition first entered on the certificate, select this first-mentioned condition.**

*Example 16:* I (a) Pernicious anaemia and gangrene of foot
(b) Atherosclerosis

Select pernicious anaemia (D51.0). There is no reported sequence terminating in the first entered condition.

*Example 17:* I (a) Rheumatic and atherosclerotic heart disease

Select rheumatic heart disease (I09.9). There is no reported sequence; both conditions are on the same line.

*Example 18:* I (a) Fibrocystic disease of the pancreas
(b) Bronchitis and bronchiectasis

Select fibrocystic disease of the pancreas (E84.9). There is no reported sequence.

*Example 19:* I (a) Senility and hypostatic pneumonia
(b) Rheumatoid arthritis

Select senility. There is a reported sequence - hypostatic pneumonia due to rheumatoid arthritis - but it does not terminate in the condition first entered on the certificate. But Modification Rule A also applies; see Example 33.

*Example 20:* I (a) Bursitis and ulcerative colitis

Select bursitis. There is no reported sequence. But Modification Rule B also applies; see Example 41.

*Example 21:* I (a) Acute nephritis, scarlet fever

Select acute nephritis. There is no reported sequence. But Rule 3 also applies; see Example 28.

***Rule 3***

**If the condition selected by the General Principle or by Rule l or Rule 2 is obviously a direct consequence of another reported condition, whether in Part I or Part II, select this primary condition.**

*Assumed direct consequences of another condition*

Kaposi sarcoma, Burkitt lymphoma and any other malignant neoplasm of lymphoid, haematopoietic and related tissue, classifiable to C46.- or C81–C96, should be considered to be a direct consequence of HIV disease, where this is reported. No such assumption should be made for other types of malignant neoplasm.

Any infectious disease classifiable to A00–B19, B25–B49, B58–B64, B99 or J12–J18 should be considered to be a direct consequence of reported HIV disease.

Certain postoperative complications (pneumonia (any type), haemorrhage, thrombophlebitis, embolism, thrombosis, sepsis, cardiac arrest, renal failure (acute), aspiration, atelectasis and infarction) can be considered direct consequences of an operation, unless surgery was carried out four weeks or more before death.

Heart failure (I50.-) and unspecified heart disease (I51.9) should be considered an obvious consequence of other heart conditions.

Pulmonary edema (J81) should be considered an obvious consequence of heart disease (including pulmonary heart disease); of conditions affecting the lung parenchyma, such as lung infections, aspiration and inhalation, respiratory distress syndrome, high altitude, and circulating toxins; of conditions causing fluid overload, such as renal failure and hypoalbuminemia; and of congenital anomalies affecting the pulmonary circulation, such as congenital stenosis of pulmonary veins.

Lobar pneumonia, unspecified (J18.1) should be considered an obvious consequence of dependence syndrome due to use of alcohol (F10.2). Any pneumonia in J12–J18 should be considered an obvious consequence of conditions that impair the immune system. Pneumonia in J15.0–J15.6, J15.8–J15.9, J16.8, J18.0 and J18.2–J18.9 should be considered an obvious consequence of wasting diseases (such as malignant neoplasm and malnutrition) and diseases causing paralysis (such as cerebral haemorrhage or thrombosis), as well as serious respiratory conditions, communicable diseases, and serious injuries. Pneumonia in J15.0–J15.6, J15.8–J15.9, J16.8, J18.0 and J18.2–J18.9, J69.0, and J69.8 should also be considered an obvious consequence of conditions that affect the process of swallowing. Pneumonia in J18.- (except lobar pneumonia) reported with immobility or reduced mobility should be coded to J18.2.

Other common secondary conditions (such as pulmonary embolism, decubitus ulcer, and cystitis) should be considered an obvious consequence of wasting diseases (such as malignant neoplasms and malnutrition) and diseases causing paralysis (such as cerebral haemorrhage or thrombosis) as well as communicable diseases, and serious injuries. However, such secondary conditions should not be considered an obvious consequence of respiratory conditions.

Acidosis (E87.2); Other specified metabolic disorders (E88.8); Other mononeuropathies (G58.-); Polyneuropathy, unspecified (G62.9); Other disorders of peripheral nervous system (G64); amyotrophy not otherwise specified in Other primary disorders of muscles (G71.8), Disorder of autonomic nervous system, unspecified (G90.9), and Neuralgia and neuritis, unspecified (M79.2); Iridocyclitis (H20.9); Cataract, unspecified (H26.9); Chorioretinal inflammation, unspecified (H30.9); Retinal vascular occlusions (H34); Background retinopathy and retinal vascular changes (H35.0); Other proliferative retinopathy (H35.2); Retinal haemorrhage (H35.6); Retinal disorder, unspecified (H35.9); Peripheral vascular disease, unspecified (I73.9); Atherosclerosis of arteries of extremities (I70.2); Arthritis, unspecified (M13.9); Nephrotic syndrome (N03–N05); Chronic kidney disease, (N18.-); Unspecified kidney failure (N19); Unspecified contracted kidney (N26); renal disease in Disorder of kidney and ureter, unspecified (N28.9) and Persistent proteinuria, unspecified (N39.1); Gangrene, not elsewhere classified (R02); Coma, unspecified (R40.2); and Other specified abnormal findings of blood chemistry (R79.8) for acetonemia, azotemia, and related conditions should be considered an obvious consequence of Diabetes mellitus (E10–E14).

Conditions in the categories listed below should be considered obvious consequences of wasting and paralyzing conditions. Conditions in categories flagged with an “M” (Maybe) should be considered obvious consequences of wasting and paralyzing conditions only if they meet the prerequisite for code assignment noted in the final column of the table.

| Code(s) | Description | Conditional response | Qualifier |
|---|---|---|---|
| E86 | Volume depletion | | |
| G81–G83 | Other paralytic syndromes | | |
| I26.0–I26.9 | Pulmonary embolism | | |
| I74.2–I74.4 | Arterial embolism and thrombosis of extremities | | |
| I80.1–I80.3 | Phlebitis and thrombophlebitis of lower extremities | | |
| I80.9 | Phlebitis and thrombophlebitis of unspecified site | | |
| I82.9 | Embolism and thrombosis of unspecified vein | | |
| K55.0 | Acute vascular disorder of intestine | M | The condition in K55.0 must be specified as an embolism |
| K56.4 | Other impaction of intestine | | |
| K59.0 | Constipation | | |
| L89 | Decubitus ulcer | | |
| N10–N12 | Tubulo-interstitial nephritis | M | Diseases causing paralysis or inability to control bladder |
| N17–N19 | Kidney disease acute or unspecified | | |
| N28.0 | Ischaemia and infarction of kidney | M | The condition in N28.0 must be specified as an embolism of the renal artery |
| N30.0–N30.2 | Cystitis, acute, interstitial and other chronic | M | Diseases causing paralysis or inability to control bladder |

| Code(s) | Description | Conditional response | Qualifier |
|---|---|---|---|
| N30.9 | Cystitis, unspecified | M | Diseases causing paralysis or inability to control bladder |
| N31 | Neuromuscular dysfunction of bladder, not elsewhere classified | | |
| N34.0–N34.2 | Urethritis | M | Diseases causing paralysis or inability to control bladder |
| N35.1–N35.9 | Urethral stricture (non-traumatic) | M | Diseases causing paralysis or inability to control bladder |
| N39.0 | Urinary tract infection, site not specified | M | Diseases causing paralysis or inability to control bladder |

Diseases described or qualified as "embolic" may be assumed to be a direct consequence of venous thrombosis, phlebitis or thrombophlebitis, valvular heart disease, childbirth or any operation. However, there must be a clear route from the place where the thrombus formed and the place of the embolism. Thus, venous thrombosis or thrombophlebitis may cause pulmonary embolism. Thrombi that form in the left side of the heart (for example on mitral or aortic valves), or are due to atrial fibrillations, may cause embolism to the arteries of the body circulation. Similarly, thrombi that form around the right side heart valves (tricuspid and pulmonary valves) may give rise to embolism in the pulmonary arteries. Also, thrombi that form in the left side of the heart could pass to the right side if a cardiac septal defect is present.

Arterial embolism in the systemic circulation should be considered an obvious consequence of atrial fibrillation. When pulmonary embolism is reported due to atrial fibrillation, the sequence should be accepted. However, pulmonary embolism should not be considered an obvious consequence of atrial fibrillation.

Dementia, without mention of a specified cause, should be considered a consequence of conditions that typically involve irreversible brain damage. However, when a specified cause is given, only a condition that **may** lead to irreversible brain damage should be accepted as cause of the dementia, even if irreversible brain damage is not a typical feature of the condition.

Any disease described as secondary should be assumed to be a direct consequence of the most probable primary cause entered on the certificate.

Secondary or unspecified anaemia, malnutrition, marasmus or cachexia may be assumed to be a consequence of any malignant neoplasm, paralytic disease, or disease which limits the ability to care for oneself, including dementia and degenerative diseases of the nervous system.

Any pyelonephritis may be assumed to be a consequence of urinary obstruction from conditions such as hyperplasia of prostate or ureteral stenosis.

Nephritic syndrome may be assumed to be a consequence of any streptococcal infection (scarlet fever, streptococcal sore throat, etc.).

Acute renal failure should be assumed as an obvious consequence of a urinary tract infection, provided that there is no indication that the renal failure was present before the urinary tract infection.

Dehydration should be considered an obvious consequence of any intestinal infectious disease.

Primary atelectasis of newborn (P28.0) should be considered an obvious consequence of congenital kidney conditions (Q60, Q61.0–Q61.1, Q61.3–Q61.9, Q62.1, Q62.3, Q62.4), premature rupture of membranes (P01.1) and oligohydramnios (P01.2).

Fetus and newborn affected by premature rupture of membranes or oligohydramnios (P01.1–P01.2) should be assumed to be a direct consequence of congenital kidney conditions (Q60, Q61.0–Q61.1, Q61.3–Q61.9, Q62.1, Q62.3, Q62.4).

An operation on a given organ should be considered a direct consequence of any surgical condition (such as malignant tumour or injury) of the same organ reported anywhere on the certificate.

Haemorrhage should be considered an obvious consequence of anticoagulant poisoning or overdose. However, haemorrhage should not be considered an obvious consequence of anticoagulant therapy without mention of poisoning or overdose. Gastric haemorrhage should be considered an obvious consequence of steroid, aspirin, and nonsteroidal anti-inflammatory drugs (NSAIDs).

Mental retardation should be considered an obvious consequence of perinatal conditions in P00–P04 (Fetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery), P05 (Slow fetal growth and fetal malnutrition), P07 (Disorders related to short gestation and low birth weight, not elsewhere classified), P10 (Intracranial laceration and haemorrhage due to birth injury), P11.0 (Cerebral oedema due to birth injury), P11.1 (Other specified brain damage due to birth injury), P11.2 (Unspecified brain damage due to birth injury), P11.9 (Birth injury to central nervous system, unspecified), P15.9 (Birth injury, unspecified), P20 (Intrauterine hypoxia), P21 (Birth asphyxia), P35 (Congenital viral diseases), P37 (Other congenital infectious and parasitic diseases), P52 (Intracranial nontraumatic haemorrhage of fetus and newborn), P57 (Kernicterus), P90 (Convulsions of newborn) and P91 (Other disturbances of cerebral status of newborn).

*Example 22:*

I (a) Kaposi sarcoma
II AIDS

Select HIV disease resulting in Kaposi sarcoma (B21.0).

*Example 23:*

I (a) Cancer of ovary
II HIV disease

Select malignant neoplasm of ovary (C56).

*Example 24:*

I (a) Tuberculosis
II HIV disease

Select HIV disease resulting in mycobacterial infection (B20.0).

*Example 25:*

I (a) Cerebral toxoplasmosis and herpes zoster
(b) Burkitt lymphoma, HIV disease

Select HIV disease resulting in multiple diseases classified elsewhere (B22.7). Cerebral toxoplasmosis, selected by Rule 2, can be considered a direct consequence of HIV disease.

*Example 26:*

I (a) Bronchopneumonia
II Secondary anaemia and chronic lymphatic leukaemia

Select chronic lymphatic leukaemia (C91.1). Bronchopneumonia, selected by the General Principle (see Example 10), and secondary anaemia can both be considered direct sequels of chronic lymphatic leukaemia.

*Example 27:*

I (a) Cerebral haemorrhage
(b) Hypertension
(c) Chronic pyelonephritis and prostatic obstruction

Select prostatic obstruction (N40). Chronic pyelonephritis, selected by Rule l, can be considered a direct sequel of prostatic obstruction.

*Example 28:* I (a) Acute nephritis, scarlet fever

Select scarlet fever (A38). Acute nephritis, selected by Rule 2 (see Example 21), can be considered a direct sequel of scarlet fever.

*Example 29:* I (a) Nephrectomy
II Clear cell carcinoma of kidney 

Select clear cell carcinoma of kidney (C64). There is no doubt that the nephrectomy was performed for the malignant neoplasm of kidney.

*Example 30:* I (a) Acute anaemia
(b) Haematemesis
(c) Bleeding of oesophageal varices
(d) Portal hypertension
II Cirrhosis of liver

Select cirrhosis of liver (K74.6). Portal hypertension, selected by the General Principle, can be considered a direct consequence of cirrhosis of liver.

*Example 31:* I (a) Hypostatic pneumonia, cerebral
(b) Haemorrhage and cancer of breast

Select cerebral haemorrhage (I61.9). Hypostatic pneumonia, selected by Rule 2, can be considered a direct sequel of either of the other conditions reported; the one mentioned first is selected.

*Example 32:* I (a) Pulmonary infarction
II Left pneumonectomy for carcinoma of lung 3 weeks ago

Select carcinoma of lung (C34.9).

### 4.1.8 Modification of the selected cause

The selected cause of death is not necessarily the most useful and informative condition for tabulation. For example, if senility or some generalized disease such as hypertension or atherosclerosis has been selected, this is less useful than if a manifestation or result of aging or disease had been chosen. It may sometimes be necessary to modify the selection to conform with the requirements of the classification, either for a single code for two or more causes jointly reported or for preference for a particular cause when reported with certain other conditions.

The modification rules that follow are intended to improve the usefulness and precision of mortality data and should be applied after selection of the originating antecedent cause. The interrelated processes of selection and modification have been separated for clarity.

Some of the modification rules require further application of the selection rules, which will not be difficult for experienced coders, but it is important to go through the process of selection, modification and, if necessary, reselection. After application of the modification rules, selection Rule 3 should be reapplied.

### 4.1.9 The modification rules

#### *Rule A. Senility and other ill-defined conditions*

Where the selected cause is ill-defined and a condition classified elsewhere is reported on the certificate, reselect the cause of death as if the ill-defined condition had not been reported, except to take account of that condition if it modifies the coding. The following conditions are regarded as ill-defined: I46.1 (Sudden cardiac death, so described); I46.9 (Cardiac arrest, unspecified); I95.9 (Hypotension, unspecified); I99 (Other and unspecified disorders of circulatory system); J96.0 (Acute respiratory failure); J96.9 (Respiratory failure, unspecified); P28.5 (Respiratory failure of newborn); R00–R94 and R96–R99 (Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified). Note that R95 (Sudden infant death syndrome) is not regarded as ill-defined.

If all other conditions reported on the certificate are ill-defined or trivial, the cause of death should not be reselected. That is, Rule A does not apply.

#### *Rule B. Trivial conditions*

Where the selected cause is a trivial condition unlikely to cause death (see Appendix 7.1) and a more serious condition (any condition except an ill-defined or another trivial condition) is reported, reselect the underlying cause as if the trivial condition had not been reported. If the death was the result of an adverse reaction to treatment of the trivial condition, select the adverse reaction.

When a trivial condition is reported as causing any other condition, the trivial condition is not discarded, i.e. Rule B is not applicable.

#### *Rule C. Linkage*

Where the selected cause is linked by a provision in the classification or in the notes for use in underlying cause mortality coding with one or more of the other conditions on the certificate, code the combination.

Where the linkage provision is only for the combination of one condition specified as due to another, code the combination only when the correct causal relationship is stated or can be inferred from application of the selection rules.

Where a conflict in linkages occurs, link with the condition that would have been selected if the cause initially selected had not been reported. Make any further linkage that is applicable.

### *Rule D. Specificity*

Where the selected cause describes a condition in general terms and a term that provides more precise information about the site or nature of this condition is reported on the certificate, prefer the more informative term. This rule will often apply when the general term becomes an adjective, qualifying the more precise term.

### *Rule E. Early and late stages of disease*

Where the selected cause is an early stage of a disease and a more advanced stage of the same disease is reported on the certificate, code to the more advanced stage. This rule does not apply to a 'chronic' form reported as due to an 'acute' form unless the classification gives special instructions to that effect.

### *Rule F. Sequelae*

Where the selected cause is an early form of a condition for which the classification provides a separate "Sequelae of ..." category, and there is evidence that death occurred from residual effects of this condition rather than from those of its active phase, code to the appropriate "Sequelae of ..." category.

"Sequelae of ..." categories are as follows: B90–B94, E64.-, E68, G09, I69, O97 and Y85–Y89.

## 4.1.10 Examples of the modification rules

### *Rule A. Senility and other ill-defined conditions*

**Where the selected cause is ill-defined and a condition classified elsewhere is reported on the certificate, reselect the cause of death as if the ill-defined condition had not been reported, except to take account of that condition if it modifies the coding. The following conditions are regarded as ill-defined: I46.1 (Sudden cardiac death, so described); I46.9 (Cardiac arrest, unspecified); I95.9 (Hypotension, unspecified); I99 (Other and unspecified disorders of circulatory system); J96.0 (Acute respiratory failure); J96.9 (Respiratory failure, unspecified); P28.5 (Respiratory failure of newborn); R00–R94 and R96–R99 (Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified). Note that R95 (Sudden infant death syndrome) is not regarded as ill-defined.**

**If all other conditions reported on the certificate are ill-defined or trivial, the cause of death should not be reselected. That is, Rule A does not apply.**

*Example 33:* I (a) Senility and hypostatic pneumonia
(b) Rheumatoid arthritis

Code to rheumatoid arthritis (M06.9). Senility, selected by Rule 2 (see Example 19), is ignored and the General Principle applied.

*Example 34:* I (a) Anaemia
(b) Splenomegaly

Code to splenomegalic anaemia (D64.8). Splenomegaly, selected by the General Principle, is ignored but modifies the coding.

*Example 35:* I (a) Myocardial degeneration and
(b) emphysema
(c) Senility

Code to myocardial degeneration (I51.5). Senility, selected by the General Principle, is ignored and Rule 2 applied.

*Example 36:* I (a) Cough and haematemesis

Code to haematemesis (K92.0). Cough, selected by Rule 2, is ignored.

*Example 37:* I (a) Terminal pneumonia
(b) Spreading gangrene and
(c) cerebrovascular infarction

Code to cerebrovascular infarction (I63.9). Gangrene, selected by Rule 1, is ignored and the General Principle is applied.

### *Rule B. Trivial conditions*

**(A) Where the selected cause is a trivial condition unlikely to cause death (see Appendix 7.1) and a more serious condition (any condition except an ill-defined or another trivial condition) is reported, reselect the underlying cause as if the trivial condition had not been reported.**

*Example 38:* I (a) Dental caries
II Diabetes

Code to diabetes (E14.9). Dental caries, selected by the General Principle, is ignored.

*Example 39:* I (a) Ingrowing toenail and acute renal failure

Code to acute renal failure (N17.9). Ingrowing toenail, selected by Rule 2, is ignored.

**(B) If the death was the result of an adverse reaction to treatment of the trivial condition, select the adverse reaction.**

*Example 40:* I (a) Intraoperative haemorrhage
(b) Tonsillectomy
(c) Hypertrophy of tonsils

Code to haemorrhage during surgical operation (Y60.0). Code to the adverse reaction to treatment of the hypertrophy of tonsils, selected by the General Principle.

**(C) When a trivial condition is reported as causing any other condition, the trivial condition is not discarded, i.e. Rule B is not applicable.**

Example 41: I (a) Septicaemia
(b) Impetigo

Code to impetigo (L01.0). The trivial condition selected by the General Principle is not discarded since it is reported as the cause of another condition.

*Example 42:* I (a) Respiratory insufficiency
(b) Upper respiratory infections

Code to upper respiratory infection (J06.9). The trivial condition selected by the General Principle is not discarded since it is reported as the cause of another condition.

### *Rule C. Linkage*

**Where the selected cause is linked by a provision in the classification or in the notes for use in underlying cause mortality coding with one or more of the other conditions on the certificate, code the combination.**

**Where the linkage provision is only for the combination of one condition specified as due to another, code the combination only when the correct causal relationship is stated or can be inferred from application of the selection rules.**

**Where a conflict in linkages occurs, link with the condition that would have been selected if the cause initially selected had not been reported. Make any further linkage that is applicable.**

*Example 43:* I (a) Intestinal obstruction
(b) Femoral hernia

Code to femoral hernia with obstruction (K41.3).

*Example 44:* I (a) Right bundle-branch block and Chagas disease

Code to Chagas disease with heart involvement (B57.2). Right bundle-branch block, selected by Rule 2, links with Chagas disease.

*Example 45:* I (a) Acute myocardial infarction
(b) Atherosclerotic heart disease
(c) Influenza

Code to acute myocardial infarction (I21.9). Atherosclerotic heart disease, selected by Rule l (see Example 13), links with acute myocardial infarction.

*Example 46:* I (a) Cerebral infarction and hypostatic pneumonia
(b) Hypertension and diabetes
(c) Atherosclerosis

Code to cerebral infarction (I63.9). Atherosclerosis, selected by Rule l (see Example 15), links with hypertension, which itself links with cerebral infarction.

*Example 47:* I (a) Cardiac dilatation and renal sclerosis
(b) Hypertension

Code to hypertensive heart and renal disease (I13.9). All three conditions combine.

*Example 48:* I (a) Stroke
(b) Atherosclerosis and hypertensive heart disease

Code to hypertensive heart disease (I11.9). Atherosclerosis, selected by Rule l, links with hypertensive heart disease since hypertensive heart disease would have been selected by the General Principle if atherosclerosis had not been reported.

*Example 49:* I (a) Stroke and hypertensive
(b) Heart disease
(c) Atherosclerosis

Code to stroke (I64). Atherosclerosis, selected by the General Principle, links with stroke since this condition would have been selected by Rule 2 if atherosclerosis had not been reported.

*Example 50:* I (a) Secondary polycythaemia
(b) Pulmonary emphysema
(c) Chronic bronchitis

Code to obstructive chronic bronchitis (J44.8). Chronic bronchitis, selected by the General Principle, links with emphysema.

*Example 51:*
I (a) Cardiac dilatation
(b) Hypertension
II Atrophy of the kidneys

Code to hypertensive heart and renal disease I13.9. All three conditions combine.

*Example 52:*
I (a) Bronchopneumonia (aspiration)
(b) Convulsions
(c) Tuberculous meningitis
II Pulmonary tuberculosis

Code to pulmonary tuberculosis (A16.2). Tuberculous meningitis, selected by the General Principle, is not to be used with mention of pulmonary tuberculosis.

*Example 53:*
I (a) Occipital fracture
(b) Fall following epileptic convulsions

Code to epileptic convulsions (G40.9). Fall, selected by Rule 1, links with epileptic convulsions.

*Example 54:*
I (a) Cardiac arrest
II Chagas disease

Code to Chagas disease with heart involvement (B57.2). Cardiac arrest, selected by the General Principle, links with Chagas disease.

*Example 55:*
I (a) Pneumocystis carinii [jirovecii] pneumonia
(b) HIV

Code to B20.6. HIV, selected by the General Principle, links with Pneumocystis carinii [jirovecii] pneumonia.

*Example 56:*
I (a) Respiratory failure
(b) HIV

Code to B24. Respiratory failure is an ill-defined condition and does not link to any of the categories in B20–B23.

### *Rule D. Specificity*

**Where the selected cause describes a condition in general terms and a term that provides more precise information about the site or nature of this condition is reported on the certificate, prefer the more informative term. This rule will often apply when the general term becomes an adjective, qualifying the more precise term.**

*Example 57:* I (a) Cerebral infarction
(b) Cerebrovascular accident

Code to cerebral infarction (I63.9).

*Example 58:* I (a) Rheumatic heart disease, mitral stenosis

Code to rheumatic mitral stenosis (I05.0).

*Example 59:* I (a) Meningitis
(b) Tuberculosis

Code to tuberculous meningitis (A17.0). The conditions are stated in the correct causal relationship.

*Example 60:* I (a) Severe hypertension in pregnancy
II Eclamptic convulsions

Code to eclampsia in pregnancy (O15.0).

*Example 61:* I (a) Aneurysm of aorta
(b) Syphilis

Code to syphilitic aneurysm of aorta (A52.0). The conditions are stated in the correct causal relationship.

*Example 62:* I (a) Pericarditis
(b) Uraemia and pneumonia

Code to uraemic pericarditis (N18.5). Uraemia, selected by Rule l (see Example 14), modifies the pericarditis.

### *Rule E.* Early and late stages of disease

**Where the selected cause is an early stage of a disease and a more advanced stage of the same disease is reported on the certificate, code to the more advanced stage. This rule does not apply to a 'chronic' form reported as due to an 'acute' form unless the classification gives special instructions to that effect.**

*Example 63:* I (a) Tertiary syphilis
(b) Primary syphilis

Code to tertiary syphilis (A52.9).

*Example 64:* I (a) Eclampsia during pregnancy
(b) Pre-eclampsia

Code to eclampsia during pregnancy (O15.0).

*Example 65:* I (a) Chronic myocarditis
(b) Acute myocarditis

Code to acute myocarditis (I40.9).

*Example 66:* I (a) Chronic nephritis
(b) Acute nephritis

Code to chronic nephritis, unspecified (N03.9), as special instruction is given to this effect.

### *Rule F. Sequelae*

**Where the selected cause is an early form of a condition for which the classification provides a separate "Sequelae of ..." category, and there is evidence that death occurred from residual effects of this condition rather than from those of its active phase, code to the appropriate "Sequelae of ..." category.**

"Sequelae of ..." categories are as follows: B90–B94, E64.-, E68, G09, I69, O97 and Y85–Y89.

*Example 67:* I (a) Pulmonary fibrosis
(b) Old pulmonary tuberculosis

Code to sequelae of respiratory tuberculosis (B90.9).

*Example 68:* I (a) Bronchopneumonia
(b) Curvature of spine
(c) Rickets in childhood

Code to sequelae of rickets (E64.3).

*Example 69:* I (a) Hydrocephalus
(b) Tuberculous meningitis

Code to sequelae of tuberculous meningitis (B90.0).

*Example 70:* I (a) Hypostatic pneumonia
(b) Hemiplegia
(c) Cerebrovascular accident (l0 years)

Code to sequelae of cerebrovascular accident (I69.4).

*Example 71:* I (a) Chronic nephritis
(b) Scarlet fever

Code to sequelae of other specified infectious and parasitic diseases (B94.8). The description of the nephritis as chronic implies that the scarlet fever is no longer in its active phase.

## 4.1.11 Notes for use in underlying cause mortality coding

The following notes often indicate that if the provisionally selected code, as indicated in the left-hand column, is present with one of the conditions listed

below it, the code to be used is the one shown in bold type. There are two types of combination:

"with mention of" means that the other condition may appear anywhere on the certificate;

"when reported as the originating antecedent cause of" means that the other condition must appear in a correct causal relationship or be otherwise indicated as being "due to" the originating antecedent cause.

A00–B99 Certain infectious and parasitic diseases

Except for human immunodeficiency virus [HIV] disease (B20-B24), *when reported as the originating antecedent cause of* a malignant neoplasm, code **C00–C97**.

A15.- Respiratory tuberculosis, bacteriologically and histologically confirmed

A16.- Respiratory tuberculosis, not confirmed bacteriologically or histologically

*with mention of:*

J60-J64 (Pneumoconiosis), code **J65**

A17.- Tuberculosis of nervous system

A18.- Tuberculosis of other organs

*with mention of:*

A15 or A16 (Respiratory tuberculosis), code **A15, A16**, unless reported as the originating antecedent cause of and with a specified duration exceeding that of the condition in A15.- or A16.-

A39.2 Acute meningococcaemia

A39.3 Chronic meningococcaemia

A39.4 Meningococcaemia, unspecified

*with mention of:*

A39.0 (Meningococcal meningitis), code **A39.0**
A39.1 (Waterhouse-Friderichsen syndrome), code **A39.1**

A40.- Streptococcal sepsis

A41.- Other sepsis

A46 Erysipelas

Code to these diseases when they follow a superficial injury (any condition in S00, S10, S20, S30, S40, S50, S60, S70, S80, S90, T00, T09.0, T11.0), or first-degree burn; when they follow a more serious injury, code to the external cause of the injury.

B16.- Acute hepatitis B
B17.- Other acute viral hepatitis

*when reported as the originating antecedent cause of:*

K72.1 (Chronic hepatic failure), code **B18.-**
K74.0–K74.2, K74.4–K74.6 (Fibrosis and cirrhosis of liver), code **B18.-**

B20–B24 Human immunodeficiency virus [HIV] disease

Modes of dying, ill-defined and trivial conditions reported as complications of HIV infection should not be linked to categories in B20–B23, unless there is a specific entry in Volume 3 to that effect.

Conditions classifiable to two or more subcategories of the same category should be coded to the .7 subcategory of the relevant category (B20 or B21). If desired, additional codes from within the block B20–B24 may be used to specify the individual conditions listed.

B22.7 HIV disease resulting in multiple diseases classified elsewhere

This subcategory should be used when conditions classifiable to two or more categories from B20–B22 are listed on the certificate. If desired, additional codes from within the block B20–B24 may be used to specify the individual conditions listed.

B95–B97 Bacterial, viral and other infectious agents

Not to be used for underlying cause mortality coding.

C97 Malignant neoplasms of independent (primary) multiple sites

Not to be used for underlying cause mortality coding. When multiple but independent malignant neoplasms are reported on the death certificate, select the underlying cause by applying the Selection and Modification Rules in the normal way. See also section 4.2.7 Malignant Neoplasms.

D50–D89 Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism

*as the cause of:*

B20-B24 Human immunodeficiency virus [HIV] disease and where the certificate indicates that the HIV disease is a result of a blood transfusion given as treatment for the originating condition, code **B20–B24**

E10–E14 Diabetes mellitus

*when reported as the originating antecedent cause of:*

| | |
|---|---|
| E87.2 | (Acidosis), code **E10–E14** with fourth character **.1** |
| E88.8 | (Other specified metabolic disorders), code **E10–E14** with fourth character **.1** |
| G58.- | (Other mononeuropathies), code **E10–E14** with fourth character **.4** |
| G62.9 | (Polyneuropathy, unspecified), code **E10–E14** with fourth character **.4** |
| G64 | (Other disorders of peripheral nervous system) code **E10–E14** with fourth character **.4** |
| G70.9 | (Myoneural disorders of muscle), code **E10–E14** with fourth character **.4** |
| G71.8 | (Other primary disorders of muscle), code **E10–E14** with fourth character **.4** |
| G90.9 | (Disorders of autonomic nervous system, unspecified) code **E10–E14** with fourth character **.4** |
| H20.9 | (Iridocyclitis), code **E10–E14** with fourth character **.3** |
| H26.9 | (Cataract, unspecified), code **E10–E14** with fourth character **.3** |
| H30.9 | (Chorioretinal inflammation, unspecified), code **E10–E14** with fourth character **.3** |
| H34 | (Retinal vascular occlusion), code **E10–E14** with fourth character **.3** |
| H35.0 | (Background retinopathy and retinal vascular changes), code **E10–E14** with fourth character **.3** |
| H35.2 | (Other proliferative retinopathy), code **E10–E14** with fourth character **.3** |
| H35.6 | (Retinal haemorrhage), code **E10–E14** with fourth character **.3** |
| H35.9 | (Retinal disorder, unspecified), code **E10–E14** with fourth character **.3** |
| H49.9 | (Paralytic strabismus, unspecified), code **E10–E14** with fourth character **.3** |
| H54 | (Blindness and low vision), code **E10–E14** with fourth character **.3** |
| I70.2 | (Atherosclerosis of arteries of extremities), code **E10–E14** with fourth character **.5** |
| I73.9 | (Peripheral vascular disease, unspecified), code **E10–E14** with fourth character **.5** |

I99 (Other and unspecified disorders of circulatory system), if angiopathy, code **E10–E14** with fourth character **.5**

L30.9 (Dermatitis, unspecified), code **E10–E14** with fourth character **.6**

L92.1 (Necrobiosis lipoidica, not elsewhere classified), code **E10–E14** with fourth character **.6**

M13.9 (Arthritis, unspecified), code **E10–E14** with fourth character **.6**

M79.2 (Neuralgia and neuritis, unspecified), code **E10–E14** with fourth character **.6**

M89.9 (Disorders of bone, unspecified), code **E10–E14** with fourth character **.6**

N03–N05 (Nephrotic syndrome), code **E10–E14** with fourth character **.2**

N18.- (Chronic kidney disease, unspecified), code **E10–E14** with fourth character **.2**

N19 (Unspecified renal failure), code **E10–E14** with fourth character **.2**

N26 (Unspecified contracted kidney), code **E10–E14** with fourth character **.2**

N28.9 (Disorder of kidney and ureter, unspecified), code **E10–E14** with fourth character **.2**

N39.0 (Urinary tract infection, site not specified) code **E10–E14** with fourth character **.6**

N39.1 (Proteinuria, unspecified), code **E10–E14** with fourth character **.2**

R02 (Gangrene, not elsewhere classified), code **E10–E14** with fourth character **.5**

R40.2 (Coma, unspecified), code **E10–E14** with fourth character **.0**

R79.8 (Other specified abnormal findings of blood chemistry), if acetonemia, azotemia and related conditions, code **E10–E14** with fourth character **.1**

Any of above in combination, code **E10–E14** with fourth character .7

E86 Volume depletion

*with mention of:*

A00–A09 (Intestinal infectious diseases), code **A00–A09**

E89.- Postprocedural endocrine and metabolic disorders, not elsewhere classified

Not to be used for underlying cause mortality coding. See Operations, 4.2.6.

F03–F09 Organic, including symptomatic, mental disorders

Not to be used if the underlying physical condition is known.

F10–F19 Mental and behavioural disorders due to psychoactive substance use

*with mention of:*

X40–X49 (Accidental poisoning by and exposure to noxious substances), code **X40–X49**
X60–X69 (Intentional self-poisoning by and exposure to noxious substances), code **X60–X69**
X85–X90 (Assault by noxious substances), code **X85–X90**
Y10–Y19 (Poisoning by and exposure to drugs, chemicals and noxious substances), code **Y10–Y19**

Fourth character .0 (Acute intoxication), code **X40–X49, X60–X69, X85–X90** or **Y10–Y19**

Fourth character .5 (Psychotic disorder) *with mention of* Dependence syndrome (.2), code **F10–F19** with fourth character **.2**

F10.- Mental and behavioural disorders due to use of alcohol

*with mention of:*

E24.4 (Alcohol-induced Cushing's syndrome), code **E24.4**
G31.2 (Degeneration of the nervous system due to alcohol), code **G31.2**
G62.1 (Alcoholic polyneuropathy), code **G62.1**
G72.1 (Alcoholic myopathy), code **G72.1**
I42.6 (Alcoholic cardiomyopathy), code **I42.6**
K29.2 (Alcoholic gastritis), code **K29.2**
K70.- (Alcoholic liver disease), code **K70.-**
K72.- (Hepatic failure, not elsewhere classified), code **K70.4**
K73.- (Chronic hepatitis, not elsewhere classified), code **K70.1**
K74.0 (Hepatic fibrosis), code **K70.2**
K74.1 (Hepatic sclerosis), code **K70.2**
K74.2 (Hepatic fibrosis with hepatic sclerosis), code **K70.2**
K74.6 (Other and unspecified cirrhosis of liver), code **K70.3**
K75.9 (Inflammatory liver disease, unspecified), code **K70.1**
K76.0 (Fatty (change) of liver, not elsewhere classified), code **K70.0**

K76.9 (Liver disease, unspecified), code **K70.9**
K85.2 (Alcohol-induced acute pancreatitis), code **K85.2**
K86.0 (Alcohol-induced chronic pancreatitis), code **K86.0**
O35.4 (Maternal care for (suspected) damage to foetus from alcohol), code, **O35.4**

F10.0 Acute intoxication due to use of alcohol

*with mention of:*

F10.2 (Dependence syndrome due to use of alcohol), code **F10.2**

F10.2 Dependence syndrome due to use of alcohol

*with mention of:*

F10.4, F10.6, F10.7 Withdrawal state with delirium, Amnesic syndrome, Residual and late-onset psychotic disorder, code **F10.4, F10.6, F10.7**

F17.- Mental and behavioural disorders due to use of tobacco

Not to be used if the resultant physical condition is known

F70–F79 Mental retardation

Not to be used if the underlying physical condition is known

G25.5 Other chorea

*with mention of:*

I00–I02 (Acute rheumatic fever), code **I02.-**
I05–I09 (Chronic rheumatic heart disease), code **I02.-**

G81.- Hemiplegia
G82.- Paraplegia and tetraplegia
G83.- Other paralytic syndromes

Not to be used if the cause of the paralysis is known.

G97.- Postprocedural disorders of nervous system, not elsewhere classified

Not to be used for underlying cause mortality coding.
See Operations, 4.2.6.

H54.- Blindness and low vision

Not to be used if the antecedent condition is known.

H59.- Postprocedural disorders of eye and adnexa, not elsewhere classified

Not to be used for underlying cause mortality coding.
See Operations, 4.2.6.

H90.- Conductive and sensorineural hearing loss
H91.- Other hearing loss

Not to be used if the antecedent condition is known.

H95.- Postprocedural disorders of ear and mastoid process, not elsewhere classified

Not to be used for underlying cause mortality coding.
See Operations, 4.2.6.

I05.8 Other mitral valve diseases
I05.9 Mitral valve disease, unspecified

*when of unspecified cause with mention of:*

I34.- (Nonrheumatic mitral valve disorders), code **I34.-**

I08.- Multiple valve diseases

Not to be used for multiple valvular diseases of specified, but non-rheumatic origin. When multiple valvular diseases of non-rheumatic origin are reported on the same death certificate, the underlying cause should be selected by applying the General Principle or Rules 1, 2, or 3 in the normal way.

I09.1 Rheumatic diseases of endocardium, valve unspecified
I09.9 Rheumatic heart disease, unspecified

*with mention of:*

I05-I08 (Chronic rheumatic heart disease), code **I05–I08**

I10 Essential (primary) hypertension

*with mention of:*

I11.- (Hypertensive heart disease), code **I11.-**
I12.- (Hypertensive renal disease), code **I12.-**
I13.- (Hypertensive heart and renal disease), code **I13.-**
I20–I25 (Ischaemic heart disease), code **I20–I25**
I60–I69 (Cerebrovascular disease), code **I60–I69**
N00.- (Acute nephritic syndrome), code **N00.-**
N01.- (Rapidly progressive nephritic syndrome), code **N01.-**
N03.- (Chronic nephritic syndrome), code **N03.-**
N04.- (Nephrotic syndrome), code **N04.-**
N05.- (Unspecified nephritic syndrome), code **N05.-**
N18.- (Chronic kidney disease), code **I12.-**

N19 (Unspecified renal failure), code **I12.-**
N26 (Unspecified contracted kidney), code **I12.-**

*when reported as the originating antecedent cause of:*

H35.0 (Background retinopathy and other vascular changes), code **H35.0**
I05-I09 (Conditions classifiable to I05-I09 but not specified as rheumatic), code **I34–I38**
I34-I38 (Nonrheumatic valve disorders), code **I34–I38**
I50.- (Heart failure), code **I11.0**
I51.4- (Complications and ill-defined
I51.9 descriptions of heart disease), code **I11.-**

I11.- Hypertensive heart disease

*with mention of:*

I12.- (Hypertensive renal disease), code **I13.-**
I13.- (Hypertensive heart and renal disease), code **I13.-**
I20-I25 (Ischaemic heart disease), code **I20–I25**
N18.- (Chronic kidney disease), code **I13.-**
N19 (Unspecified renal failure), code **I13.-**
N26 (Unspecified contracted kidney), code **I13.-**

I12.- Hypertensive renal disease

*with mention of:*

I11.- (Hypertensive heart disease), code **I13.-**
I13.- (Hypertensive heart and renal disease), code **I13.-**
I20-I25 (Ischaemic heart disease), code **I20–I25**

*when reported as the originating antecedent cause of:*

I50.- (Heart failure), code **I13.0**
I51.4- (Complications and ill-defined
I51.9 descriptions of heart disease), code **I13.-**

I13.- Hypertensive heart and renal disease

*with mention of:*

I20-I25 (Ischaemic heart disease), code **I20–I25**

I15.0 Renovascular hypertension

Not to be used if the antecedent condition is known or can be inferred by an application of Rule 3. If the antecedent condition is not known or cannot be inferred, code to I15.0.

I15.1 Hypertension secondary to other renal disorders

Not to be used if the antecedent condition is known or can be inferred by an application of Rule 3. If the antecedent condition is not known or cannot be inferred, code to N28.9.

I15.2 Hypertension secondary to endocrine disorders

Not to be used if the antecedent condition is known or can be inferred by an application of Rule 3. If the antecedent condition is not known or cannot be inferred, code to E34.9.

I15.8 Other secondary hypertension

Not to be used if the antecedent condition is known or can be inferred by an application of Rule 3. If the antecedent condition is not known or cannot be inferred, code to I15.8.

I15.9 Secondary hypertension, unspecified

Not to be used if the antecedent condition is known or can be inferred by an application of Rule 3. If the antecedent condition is not known or cannot be inferred, code to I15.9.

I20.- Angina pectoris
I24.- Other acute ischaemic heart diseases
I25.- Chronic ischaemic heart disease

*with mention of:*

I21.- (Acute myocardial infarction), code **I21.-**
I22.- (Subsequent myocardial infarction), code **I22.-**

I21.- Acute myocardial infarction

*with mention of:*

I22.- (Subsequent myocardial infarction), code **I22.-**

I23.- Certain current complications following acute myocardial infarction

Not to be used for underlying cause mortality coding. Use code **I21.-** or **I22.-** as appropriate.

I24.0 Coronary thrombosis not resulting in myocardial infarction

Not to be used for underlying cause mortality coding. For mortality the occurrence of myocardial infarction is assumed and assignment made to **I21.-** or **I22.-** as appropriate

I25.2 Old myocardial infarction

Not to be used for underlying cause mortality coding. If the cause is not stated, code to Other forms of chronic ischaemic heart disease (I25.8).

I27.9 Pulmonary heart disease, unspecified

*with mention of:*

M41.- (Scoliosis), code **I27.1**

I44.- Atrioventricular and left bundle-branch block
I45.- Other conduction disorders
I46.- Cardiac arrest
I47.- Paroxysmal tachycardia
I48 Atrial fibrillation and flutter
I49.- Other cardiac arrhythmias
I50.- Heart failure
I51.4- Complications and ill-defined descriptions of heart
I51.9 disease

*with mention of:*

B57.- (Chagas disease), code **B57.-**
I20-I25 (Ischaemic heart diseases), code **I20**–**I25**

I50.- Heart failure
I51.9 Heart disease, unspecified

*with mention of:*

M41.- (Scoliosis), code **I27.1**

I50.9 Heart failure, unspecified
I51.9 Heart disease, unspecified

*with mention of:*

J81 (Pulmonary oedema), code **I50.1**

I60–I69 Cerebrovascular diseases

*when reported as the originating antecedent cause of* conditions in:

F01–F03 (Dementia), code **F01.-**

I65.- Occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction
I66.- Occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction

Not to be used for underlying cause mortality coding. For mortality, the occurrence of cerebral infarction is assumed and assignment made to **I63.-**.

I67.2 Cerebral atherosclerosis

*with mention of:*

I60–I66 (Cerebral haemorrhage, cerebral infarction or stroke, occlusion and stenosis of precerebral and cerebral arteries), code **I60–I64**

*when reported as the originating antecedent cause of conditions in:*

F03 (Unspecified dementia), code **F01.-**
G20 (Parkinson's disease), code **G21.4**
G21.9 (Secondary parkinsonism, unspecified), code **G21.4**

I70.- Atherosclerosis

*with mention of:*

I10–I13 (Hypertensive disease), code **I10–I13**
I20–I25 (Ischaemic heart diseases), code **I20–I25**
I50.- (Heart failure), code **I50.-**
I51.4 (Myocarditis, unspecified), code **I51.4**
I51.5 (Myocardial degeneration), code **I51.5**
I51.6 (Cardiovascular disease, unspecified), code **I51.6**
I51.8 (Other ill-defined heart diseases), code **I51.8**
I60–I69 (Cerebrovascular diseases), code **I60–I69**

*when reported as the originating antecedent cause of:*

I05–I09 (Conditions classifiable to I05-I09 but not specified as rheumatic), code **I34–I38**
I34–I38 (Nonrheumatic valve disorders), code **I34–I38**
I51.9 (Heart disease, unspecified), code **I25.1**
I71–I78 (Other diseases of arteries, arterioles and capillaries), code **I71–I78**
K55.- (Vascular disorders of intestine), code **K55.-**
N03.- (Chronic nephritis), code **I12.-**
N26 (Unspecified contracted kidney), code **I12.-**

I70.9 Generalized and unspecified atherosclerosis

*with mention of:*

R02 (Gangrene, not elsewhere classified), code **I70.2**

*when reported as the originating antecedent cause of:*

F01.- (Vascular dementia), code **F01.-**
F03 (Unspecified dementia), code **F01.-**
G20 (Parkinson's disease), code **G21.4**
G21.9 (Secondary parkinsonism, unspecified), code **G21.4**

I97.- Postprocedural disorders of circulatory system, not elsewhere classified

Not to be used for underlying cause mortality coding. See Operations, 4.2.6.

J00 Acute nasopharyngitis [common cold]
J06.- Acute upper respiratory infections of multiple and unspecified sites

*when reported as the originating antecedent cause of:*

G03.8 (Meningitis), code **G03.8**
G06.0 (Intracranial abscess and granuloma), code **G06.0**
H65-H66 (Otitis media), code **H65–H66**
H70.- (Mastoiditis and related conditions), code **H70.-**
J09–J18 (Influenza and pneumonia), code **J09–J18**
J20–J21 (Bronchitis and bronchiolitis), code **J20–J21**
J40–J42 (Unspecified and chronic bronchitis), code **J40–J42**
J44.- (Other chronic obstructive pulmonary disease), code **J44.-**
N00.- (Acute nephritic syndrome), code **N00.-**

J18.- Pneumonia, organism unspecified

*with mention of:*

R26.3 (Immobility), code **J18.2**

J20.- Acute bronchitis

*with mention of:*

J41.- (Simple and mucopurulent chronic bronchitis), code **J41.-**
J42 (Unspecified chronic bronchitis), code **J42**
J44 (Other chronic obstructive pulmonary disease), code **J44**

J40 Bronchitis, not specified as acute or chronic
J41.- Simple and mucopurulent chronic bronchitis
J42 Unspecified chronic bronchitis

*with mention of:*

J43.- (Emphysema) code **J44.-**
J44.- (Other chronic obstructive pulmonary disease) code **J44.-**

*when reported as the originating antecedent cause of:*

J45.- (Asthma), code **J44.-** (but see also note at J45.-, J46, below)

J43.- Emphysema

*with mention of:*

J40 (Bronchitis, not specified as acute or chronic), code **J44.-**
J41.- (Simple and mucopurulent chronic bronchitis), code **J44.-**
J42 (Unspecified chronic bronchitis), code **J44.-**

J44.8–J44.9 Other and unspecified chronic obstructive pulmonary disease

*with mention of:*

J12–J18 (Pneumonia), code **J44.0**
J20–J22 (Other acute lower respiratory infections), code **J44.0**

J45.- Asthma
J46 Status asthmaticus

When asthma and bronchitis (acute)(chronic) or other chronic obstructive pulmonary disease are reported together on the medical certificate of cause of death, the underlying cause should be selected by applying the General Principle or Rules 1, 2 or 3 in the normal way. Neither term should be treated as an adjectival modifier of the other.

J60–J64 Pneumoconiosis

*with mention of:*

A15–A16 (Respiratory tuberculosis), code **J65**

J81 Pulmonary oedema

*with mention of:*

I50.9 (Heart failure, unspecified), code **I50.1**
I51.9 (Heart disease, unspecified), code **I50.1**

J95.- Postprocedural respiratory disorders, not elsewhere classified

Not to be used for underlying cause mortality coding. See Operations, 4.2.6.

K71 Toxic liver disease

*with mention of:*

T51.- (Toxic effect of alcohol), code **K70.-**

K72.- Hepatic failure, not elsewhere classified

*with mention of:*

F10.- (Mental and behavioural disorders due to use of alcohol), code **K70.4**

T51.- (Toxic effect of alcohol), code **K70.4**

K73.- Chronic hepatitis, not elsewhere classified

*with mention of:*

F10.- (Mental and behavioural disorders due to use of alcohol), code **K70.1**

T51.- (Toxic effect of alcohol), code **K70.1**

K74.0 Hepatic fibrosis
*with mention of:*

F10.- (Mental and behavioural disorders due to use of alcohol), code **K70.2**

T51.- (Toxic effect of alcohol), code **K70.2**

K74.1 Hepatic sclerosis
*with mention of:*

F10.- (Mental and behavioural disorders due to use of alcohol), code **K70.2**

T51.- (Toxic effect of alcohol), code **K70.2**

K74.2 Hepatic fibrosis with hepatic sclerosis

*with mention of:*

F10.- (Mental and behavioural disorders due to use of alcohol), code **K70.2**

T51.- (Toxic effect of alcohol), code **K70.2**

K74.6 Other and unspecified cirrhosis of liver

*with mention of:*

F10.- (Mental and behavioural disorders due to use of alcohol), code **K70.3**

T51.- (Toxic effect of alcohol), code **K70.3**

K75.9 Inflammatory liver disease, unspecified

*with mention of:*

F10.- (Mental and behavioural disorders due to use of alcohol), code **K70.1**

T51.- (Toxic effect of alcohol), code **K70.1**

K76.0 Fatty (change of) liver, not elsewhere classified

*with mention of:*

F10.- (Mental and behavioural disorders due to use of alcohol), code **K70.0**

T51.- (Toxic effect of alcohol), code **K70.0**

K76.9 Liver disease, unspecified

*with mention of:*

F10.- (Mental and behavioural disorders due to use of alcohol), code **K70.9**

T51.- (Toxic effect of alcohol), code **K70.9**

K85.9 Acute pancreatitis, unspecified

*with mention of:*

F10.- (Mental and behavioural disorders due to use of alcohol), code **K85.2**

K91.- Postprocedural disorders of digestive system, not elsewhere classified

Not to be used for underlying cause mortality coding. See Operations, 4.2.6.

M41.- Scoliosis

*with mention of:*

I27.9 (Pulmonary heart disease, unspecified), code **I27.1**
I50.- (Heart failure), code **I27.1**
I51.9 (Heart disease, unspecified), code **I27.1**

M96.- Postprocedural musculoskeletal disorders, not elsewhere classified

Not to be used for underlying cause mortality coding. See Operations, 4.2.6.

N00.- Acute nephritic syndrome

*when reported as the originating antecedent cause of:*

N03.- (Chronic nephritic syndrome), code **N03.-**

N18.- Chronic kidney disease
N19 Unspecified renal failure

N26 Unspecified contracted kidney

*with mention of:*

I10 (Essential (primary) hypertension), code **I12.-**
I11.- (Hypertensive heart disease), code **I13.-**
I12.- (Hypertensive renal disease), code **I12.-**

N46 Male infertility
N97.- Female infertility

Not to be used if the causative condition is known.

N99.- Postprocedural disorders of genitourinary system, not elsewhere classified

Not to be used for underlying cause mortality coding. See Operations, 4.2.6.

O08.- Complications following abortion and ectopic and molar pregnancy

Not to be used for underlying cause mortality coding. Use categories O00–O07.

O30.- Multiple gestation

Not to be used for underlying cause mortality coding if a more specific complication is reported.

O32.- Maternal care for known or suspected malpresentation of fetus

*with mention of :*

O33.- (Maternal care for known or suspected disproportion), code **O33.-**

O33.9 Fetopelvic disproportion

*with mention of:*

O33.0-O33.3 (Disproportion due to abnormality of maternal pelvis), code **O33.0–O33.3**

O64.- Obstructed labour due to malposition and malpresentation of fetus

*with mention of:*

O65.- (Obstructed labour due to maternal pelvic abnormality), code **O65.-**

O80–O84 Method of delivery

Not to be used for underlying cause mortality coding. If no other cause of maternal mortality is reported, code to Complication of labour and delivery, unspecified (O75.9)

P07.- Disorders related to short gestation and low birth weight, not elsewhere classified

P08.- Disorders related to long gestation and high birth weight

Not to be used if any other cause of perinatal mortality is reported. This does not apply if the only other cause of perinatal mortality reported is respiratory failure of newborn (P28.5).

P70.3–P72.0 Transitory endocrine and metabolic disorders specific to fetus and newborn

Not to be used for underlying cause mortality coding. If no other perinatal cause is reported, code to condition originating in the perinatal period, unspecified (P96.9**)**

P72.2–P74 Transitory endocrine and metabolic disorders specific to fetus and newborn

Not to be used for underlying cause mortality coding. If no other perinatal cause is reported, code to condition originating in the perinatal period, unspecified (P96.9**)**

R57.2 Septic shock

R65.0 Systemic inflammatory response syndrome of infectious origin without organ failure

R65.1 Systemic inflammatory response syndrome of infectious origin with organ failure

Not to be used for underlying cause mortality coding. Code to the originating infectious disease (**A00–B99**). If no originating infectious disease is mentioned, code to unspecified sepsis (**A41.9**).

R69.- Unknown and unspecified causes of morbidity

Not to be used for underlying cause mortality coding. Use R95-R99 as appropriate.

S00–T98 Injury, poisoning and certain other consequences of external causes

Not to be used for underlying cause mortality coding except as an additional code to the relevant category in V01–Y89.

When a disease of bone density is reported on the same line or as the originating antecedent cause of a fracture, the fracture should be considered pathological, code **M80.-**

S02.- Fracture of skull and facial bones

When more than one site is mentioned, code to multiple fractures involving skull and facial bones, **S02.7**

S06.- Intracranial injury

When a fracture of the skull or facial bones is associated with an intracranial injury, priority should be given to the fracture.

*with mention of:*

S02.- (Fracture of skull or facial bones), code **S02.-**

T79.- Certain early complications of trauma, not elsewhere classified

Not to be used if the nature of the antecedent injury is known.

V01–X59 Accidents

*with mention of:*

A35 (Tetanus), code **A35**

*resulting from:*

G40-G41 (Epilepsy), code **G40–G41**

Y90–Y98 Supplementary factors related to causes of morbidity and mortality classified elsewhere

Not to be used for underlying cause mortality coding.

Z00–Z99 Factors influencing health status and contact with health services

Not to be used for underlying cause mortality coding.

### 4.1.12 Summary of linkages by code number

When the selected cause is listed in the first column of Table 1, and one or more of the causes listed in the second column have been entered anywhere on the certificate, code as indicated in the fourth column.

When the selected cause is listed in the first column and appears on the certificate as a cause of one of the diseases listed in the third column, code as indicated in the fourth column.

***Table 1. Summary of linkages by code number***

| Selected cause | With mention of: | As cause of: | Resulting linked code |
|---|---|---|---|
| A00–B19 } | | | |
| B25–B99 } | | C00–C97 | C00–C97 |
| A15.-, A16.- | J60–J64 | | J65 |
| A17.-, A18.- | A15.-, A16.- | | A15.-, A16.- |
| A39.2–A39.4 | A39.0, A39.1 | | A39.0, A39.1 |
| A40.-, A41.-, A46 | | | See 4.1.11 |
| B16.- } | | K72.1 | B18.- |
| B17.- } | | K74.0–2, K74.4–6 | B18.- |
| B20–B24 | | | See 4.1.11 |
| D50–D89 | B20–B24 | | B20–B24 |
| E86 | A00–A09 | | A00–A09 |
| E10–E14 | | E87.2 | E10–E14 (E1x.1) |
| | | E88.8 | E10–E14 (E1x.1) |
| | | G58 | E10–E14 (E1x.4) |
| | | G62.9 | E10–E14 (E1x.4) |
| | | G64 | E10–E14 (E1x.4) |
| | | G70.9 | E10–E14 (E1x.4) |
| | | G71.8 | E10–E14 (E1x.4) |
| | | G90.9 | E10–E14 (E1x.4) |
| | | H20.9 | E10–E14 (E1x.3) |
| | | H26.9 | E10–E14 (E1x.3) |
| | | H30.9 | E10–E14 (E1x.3) |
| | | H34 | E10–E14 (E1x.3) |
| | | H35.0 | E10–E14 (E1x.3) |
| | | H35.2 | E10–E14 (E1x.3) |
| | | H35.6 | E10–E14 (E1x.3) |
| | | H35.9 | E10–E14 (E1x.3) |
| | | H49.9 | E10–E14 (E1x.3) |
| | | H54 | E10–E14 (E1x.3) |
| | | I70.2 | E10–E14 (E1x.5) |
| | | I73.9 | E10–E14 (E1x.5) |
| | | L30.9 | E10–E14 (E1x.6) |
| | | L92.1 | E10–E14 (E1x.6) |
| | | M13.9 | E10–E14 (E1x.6) |
| | | M79.2 | E10–E14 (E1x.4) |
| | | M89.9 | E10–E14 (E1x.6) |
| | | N03–N05 | E10–E14 (E1x.2) |
| | | N18.- | E10–E14 (E1x.2) |
| | | N19 | E10–E14 (E1x.2) |
| | | N26 | E10–E14 (E1x.2) |
| | | N28.9 | E10–E14 (E1x.2) |
| | | N39.0 | E10–E14 (E1x.6) |

| Selected cause | With mention of: | As cause of: | Resulting linked code |
|---|---|---|---|
| *E10–E14 Continued* | | N39.1 | E10–E14 (E1x.2) |
| | | R02 | E10–E14 (E1x.5) |
| | | R40.2 | E10–E14 (E1x02) |
| F10–F19 } | X40–X49 | | X40–X49 |
| } | X60–X69 | | X60–X69 |
| } | X85–X90 | | X85–X90 |
| } | Y10–Y19 | | Y10–Y19 |
| F10–F19(F1x.5) | F10–F19 (F1x.2) | | F1x.2 |
| F10.- | E24.4 | | E24.4 |
| | G31.2 | | G31.2 |
| | G62.1 | | G62.1 |
| | G72.1 | | G72.1 |
| | I42.- | | I42.6 |
| | K29.2 | | K29.2 |
| | K70.- | | K70.- |
| | K72.- | | K70.4 |
| | K73.- | | K70.1 |
| | K74.0-2 | | K70.2 |
| | K74.6 | | K70.3 |
| | K75.9 | | K70.1 |
| | K76.0 | | K70.0 |
| | K76.9 | | K70.9 |
| | K85.2 | | K85.2 |
| | K86.0 | | K86.0 |
| | O35.4 | | O35.4 |
| F10.2 | F10.4, F10.6, F10.7 | | F10.4, F10.6, F10.7 |
| G25.5 | I00–I02 | | I02.- |
| | I05–I09 | | I02.- |
| I05.8 } | | | |
| I05.9 } | | | |
| (of unspecified } | | | |
| cause) } | I34.- | | I34.- |
| I08.- | | | See 4.1.11 |
| I09.1 } | | | |
| I09.9 } | I05–I08 | | I05–I08 |
| I10 | I11.- | | I11.- |
| | I12.- | | I12.- |
| | I13.- | | I13.- |
| | I20–I25 | | I20–I25 |
| | I60–I69 | | I60–I69 |

| Selected cause | With mention of: | As cause of: | Resulting linked code |
|---|---|---|---|
| *I10 Continued* | N00.- | | N00.- |
| | N01.- | | N01.- |
| | N03–N05 | | N03–N05 |
| | N18.- | | I12.- |
| | N19 | | I12.- |
| | N26 | | I12.- |
| | | H35.0 | H35.0 |
| | | I05–I09 (not specified as rheumatic) | I34–I38 |
| | | I34–I38 | I34–I38 |
| | | I50.- | I11.0 |
| | | I51.4–I51.9 | I11.- |
| I11.- | I12.- | | I13.- |
| | I13.- | | I13.- |
| | I20–I25 | | I20–I25 |
| | N18.- | | I13.- |
| | N19 | | I13.- |
| | N26 | | I13.- |
| I12.- | I11.- | | I13.- |
| | I13.- | | I13.- |
| | I20–I25 | | I20–I25 |
| | | I50.- | I13.0 |
| | | I51.4–I51.9 | I13.- |
| I13.- | I20–I25 | | I20–I25 |
| I20.- } | | | |
| I24.- } | I21.- | | I21.- |
| I25.- } | I22.- | | I22.- |
| I21.- | I22.- | | I22.- |
| I27.9 | M41.- | | I27.1 |
| I44–I50 } | B57.- | | B57.- |
| I51.4–I51.9 } | I20–I25 | | I20–I25 |
| I50.- } | | | |
| I51.9 } | M41.- | | I27.1 |
| I50.9 } | | | |
| I51.9 } | J81 | | I50.1 |
| I60–I69 | | F01–F03 | F01.- |
| I67.2 | I60–I66 | | I60–I64 |
| | | F03 | F01.- |
| | | G20 | G21.4 |
| I70.- | I10–I13 | | I10–I13 |
| | I20–I25 | | I20–I25 |
| | I50.- | | I50.- |

| Selected cause | With mention of: | As cause of: | Resulting linked code |
|---|---|---|---|
| *I70.- Continued* | I51.4 | | I51.4 |
| | I51.5 | | I51.5 |
| | I51.6 | | I51.6 |
| | I51.8 | | I51.8 |
| | I60–I69 | | I60–I69 |
| | | I05–I09 (not speficied as rheumatic) | I34–I38 |
| | | I34–I38 | I34–I38 |
| | | I51.9 | I25.1 |
| | | I71–I78 | I71–I78 |
| | | K55.- | K55.- |
| | | N03.- | I12.- |
| | | N26 | I12.- |
| I70.9 | R02 | | I70.2 |
| | | F01.- | F01.- |
| | | F03 | F01.- |
| | | G20 | G21.4 |
| | | G21.9 | G21.4 |
| J00 } J06.- } | | G03.8 | G03.8 |
| | | G06.0 | G06.0 |
| | | H65–H66 | H65–H66 |
| | | H70.- | H70.- |
| | | J09–J18 | J09–J18 |
| | | J20–J21 | J20–J21 |
| | | J40–J42 | J40–J42 |
| | | J44.- | J44.- |
| | | N00.- | N00.- |
| J20.- | J41.- | | J41.- |
| | J42 | | J42 |
| | J44.- | | J44.- |
| J40 } J41.- } J42 } | J43.- | | J44.- |
| | J44.- | | J44.- |
| | | J45.- | J44.- |
| J43.- | J40 | | J44.- |
| | J41.- | | J44.- |
| | J42 | | J44.- |
| J44.8–J44.9 | J12–J18 | | J44.0 |
| | J20–J22 | | J44.0 |
| J60–J64 | A15.- | | J65 |
| | A16.- | | J65 |
| J81 | I50.9 | | I50.1 |

| Selected cause | With mention of: | As cause of: | Resulting linked code |
|---|---|---|---|
| *J81 Continued* | I51.9 | | I50.1 |
| K72.- } | F10.- | | K70.4 |
| K73.- } | | | K70.1 |
| K74.0–2 } | | | K70.2 |
| K74.6 } | | | K70.3 |
| K75.9 } | | | K70.1 |
| K76.0 } | | | K70.0 |
| K76.9 } | | | K70.9 |
| K85.9 } | | | K85.2 |
| M41.- | I27.9 | | I27.1 |
| | I50.- | | I27.1 |
| | I51.9 | | I27.1 |
| N00.- | | N03.- | N03.- |
| N18.- } | | | |
| N19 } | | | |
| N26 } | I10 | | I12.- |
| | I11.- | | I13.- |
| | I12.- | | I12.- |
| O32.- | O33.- | | O33.- |
| O33.9 | O33.0–O33.3 | | O33.0–O33.3 |
| O64.- | O65.- | | O65.- |
| R57.2 | A00–B99 | | A00–B99 |
| R65.0–.1 | A00–B99 | | A00–B99 |
| S06.- | S02.- | | S02.- |
| V01–X59 | A35 | | A35 |

### *Table 2. Summary of codes not to be used in underlying cause mortality coding* [a]

| Codes not to be used for underlying cause mortality coding (code to item in parentheses; if no code is indicated, code to R99) | | Not to be used if the underlying cause is known |
|---|---|---|
| B95–B97 | | F03–F09 |
| C97 | | |
| E89.- | | F70–F79 |
| F10.0 | (code to X45, X65, X85, or Y15) | G81.- |
| F11.0 | (code to X42, X62, X85, or Y12) | G82.- |
| F12.0 | (code to X42, X62, X85, or Y12) | G83.- |
| F13.0 | (code to X41, X61, X85, or Y11) | H54.- |
| F14.0 | (code to X42, X62, X85, or Y12) | H90–H91 |
| F15.0 | (code to X41, X61, X85, or Y11) | I15.0 |
| F16.0 | (code to X42, X62, X85, or Y12) | I15.8 |

| Codes not to be used for underlying cause mortality coding (code to item in parentheses; if no code is indicated, code to R99) | | Not to be used if the underlying cause is known |
|---|---|---|
| F17.0 | (code to X49, X69, X89, or Y19) | I15.9 |
| F18.0 | (code to X46, X66, X89, or Y16) | N46 |
| F19.0 | (code to X40–X49, X60–X69, X85–X90, or Y10–Y19) | N97.- |
| G97.- | | O30.- |
| H59.- | | P07.- |
| H95.- | | P08.- |
| I15.1 | (code to N28.9 if not known) | T79.- |
| I15.2 | (code to E34.9 if not known) | |
| I23.- | (code to I21 or I22) | |
| I24.0 | (code to I21 or I22) | |
| I25.2 | (code to I25.8) | |
| I65.- | (code to I63) | |
| I66.- | (code to I63) | |
| I97.- | | |
| J95.- | | |
| K91.- | | |
| M96.- | | |
| N99.- | | |
| O08.- | | |
| O80–O84 | (code to O75.9) | |
| P70.3–P72.0 | (code to P96.9) | |
| P72.2–P74 | (code to P96.9) | |
| R57.2 | (code to A41.9) | |
| R65.0–1 | (code to A41.9) | |
| R69.- | (code to R95–R99) | |
| S00–T98 | (code to V01–Y89) | |
| Y90–Y98 | | |
| Z00–Z99 | | |

[a] In addition to asterisk codes (see Section 3.1.3).

## 4.2 Notes for interpretation of entries of causes of death

The foregoing rules will usually determine the underlying cause of death to be used for primary mortality tabulation. Each country will need to amplify the rules, depending upon the completeness and quality of medical certification. The information in this section will help in formulating such additional instructions.

### 4.2.1 Assumption of intervening cause

Frequently on the medical certificate, one condition is indicated as due to another, but the first one is not a direct consequence of the second one. For example, haematemesis may be stated as due to cirrhosis of the liver, instead of being reported as the final event of the sequence, liver cirrhosis→portal hypertension→ruptured oesophageal varices→haematemesis.

The assumption of an intervening cause in Part I is permissible in accepting a sequence as reported, but it must not be used to modify the coding.

*Example 1:*

I (a) Cerebral haemorrhage
(b) Chronic nephritis

Code to chronic nephritis (N03.9). It is necessary to assume hypertension as a condition intervening between cerebral haemorrhage and the underlying cause, chronic nephritis.

*Example 2:*

I (a) Mental retardation
(b) Premature separation of placenta

Code to premature separation of placenta affecting fetus or newborn (P02.1). It is necessary to assume birth trauma, anoxia or hypoxia as a condition intervening between mental retardation and the underlying cause, premature separation of placenta.

### 4.2.2 Accepted and rejected sequences for the selection of underlying cause of death for mortality statistics

This section lists sequences of causes of death that should be accepted or rejected when selecting the underlying cause of death. The purpose of these lists is to produce the most useful mortality statistics possible.[1] Thus, whether a sequence is listed as "rejected" or "accepted" may reflect interests of importance for public health rather than what is acceptable from a purely medical point of view. The following instructions always apply, therefore, whether the relationship is considered medically correct or not.

[1] The expression "highly improbable" was previously used in the ICD to indicate a causal relationship that was not to be accepted when applying the selection rules.

## A. Rejected sequences

When applying the General Principle and the selection rules, the relationships below should be rejected.

### (a) Infectious diseases

The following infectious diseases should not be accepted as "due to" any other disease or condition, except when reported as "due to" human immunodeficiency virus [HIV] disease, malignant neoplasms and conditions impairing the immune system:

- typhoid and paratyphoid fevers, other *Salmonella* infections, shigellosis (A01–A03)
- tuberculosis (A15–A19).

The following infectious and parasitic diseases should not be accepted as "due to" any other disease or condition (not even HIV/AIDS, malignant neoplasms or immunosuppression):

- cholera (A00)
- botulism (A05.1)
- plague, tularaemia, anthrax, brucellosis (A20–A23)
- leptospirosis (A27)
- tetanus, diphtheria, whooping cough, scarlet fever, meningococcal disease (A33–A39)
- diseases due to Chlamydia psittaci (A70)
- rickettsioses (A75–A79)
- acute poliomyelitis (A80)
- Creutzfeldt-Jakob disease (A81.0)
- subacute sclerosing panencephalitis (A81.1)
- rabies, mosquito-borne viral encephalitis, tick-borne viral encephalitis, unspecified viral encephalitis (A82–A86)
- dengue haemorrhagic and other mosquito-borne viral fevers (A91–A92)
- yellow fever (A95)
- Junin and Machupo haemorrhagic fevers, Lassa fever (A96.0–A96.2)
- other viral haemorrhagic fevers (A98)
- smallpox, monkeypox, measles, rubella (B03–B06)
- acute hepatitis B and C (B16–B17.1)
- mumps (B26)
- malaria, leishmaniasis, Chagas disease (B50–B57)
- sequelae of tuberculosis (B90)
- sequelae of poliomyelitis (B91)
- sequelae of leprosy (B92)
- sequelae of trachoma (B94.0)
- sequelae of viral encephalitis (B94.1)
- sequelae of viral hepatitis (B94.2)
- other emerging diseases reportable to WHO (e.g. U04 SARS, J09 Avian flu).

(b) Malignant neoplasms

A malignant neoplasm should not be accepted as "due to" any other disease, *except* human immunodeficiency virus [HIV] disease.

(c) Haemophilia

Haemophilia (D66, D67, D68.0–D68.2) as "due to" any other disease.

(d) Diabetes

Diabetes (E10–E14) should not be accepted as "due to" any other disease *except* for conditions causing damage to the pancreas, and listed in Appendix 7.2 for a list of the conditions that can cause diabetes.

(e) Rheumatic fever

Rheumatic fever (I00–I02) or rheumatic heart disease (I05–I09) should not be accepted as "due to" any disease *except:*

- scarlet fever (A38)
- streptococcal septicaemia (A40)
- streptococcal sore throat (J02.0)
- acute tonsillitis (J03).

(f) Hypertension

Hypertensive conditions should not be accepted as "due to" any neoplasm *except:*

- endocrine neoplasms,
- renal neoplasms,
- carcinoid tumours.

(g) Chronic ischaemic heart disease

Chronic ischaemic heart disease (I20, I25) should not be accepted as "due to" any neoplasm.

(h) Cerebrovascular disease

(1) Cerebrovascular disease and diseases of the digestive system

Cerebrovascular diseases (I60–I69) should not be accepted as "due to" a disease of the digestive system (K00–K92), *except* cerebral haemorrhage (I61.-) due to diseases of liver (K70–K76).

(2) Cerebrovascular infarction and endocarditis

The following cerebrovascular conditions should not be accepted as "due to" endocarditis (I05–I08, I09.1, I33–I35):

- cerebral infarction due to thrombosis of precerebral arteries (I63.0)
- cerebral infarction due to unspecified occlusion of precerebral arteries (I63.2)
- cerebral infarction due to thrombosis of cerebral arteries (I63.3)
- cerebral infarction due to unspecified occlusion of cerebral arteries (I63.5)
- cerebral infarction due to cerebral venous thrombosis, nonpyogenic (I63.6)
- other cerebral infarction (I63.8)
- cerebral infarction, unspecified (I63.9)
- stroke, not specified as haemorrhage or infarction (I64)
- other cerebrovascular diseases (I67)
- sequelae of stroke, not specified as haemorrhage or infarction (I69.4)
- sequelae of other and unspecified cerebrovascular diseases (I69.8)
- occlusion and stenosis of precerebral arteries, not resulting in cerebral infarction (I65), *except* embolism
- occlusion and stenosis of cerebral arteries, not resulting in cerebral infarction (I66), *except* embolism
- sequelae of cerebral infarction (I69.3), *except* embolism.

(i) Atherosclerosis

Any condition described as arteriosclerotic [atherosclerotic] should not be accepted as "due to" any neoplasm.

(j) Influenza

Influenza (J09–J11) should not be accepted as "due to" any other disease.

(k) Congenital anomalies

A congenital anomaly (Q00–Q99) should not be accepted as "due to" any other disease of the individual, including immaturity *except*:

- a congenital anomaly should be accepted as "due to" a chromosome abnormality or a congenital malformation syndrome
- pulmonary hypoplasia should be accepted as "due to" a congenital anomaly.

(l) Conflicting durations

A condition of stated date of onset "X" should not be accepted as "due to" a condition of stated date of onset "Y", when "X" predates "Y" (but see also Example 5 in Section 4.1.6).

(m) Accidents

Accidents (V01–X59) should not be accepted as "due to" any other cause outside this chapter *except*:

- any accident (V01–X59) should be accepted as "due to" epilepsy (G40–G41)
- a fall (W00–W19) should be accepted as "due to" a disorder of bone density (M80–M85)
- a fall (W00–W19) should be accepted as "due to" a (pathological) fracture caused by a disorder of bone density
- asphyxia caused by aspiration of mucus, blood (W80) or vomitus (W78) should be accepted as "due to" disease conditions
- aspiration of food (liquid or solid) of any kind (W79) should be accepted as "due to" a disease which affects the ability to swallow.

(n) Suicide

Suicide (X60–X84) should not be accepted as "due to" any other cause.

The above list does not cover all sequences that should be rejected, but in other cases the General Principle should be followed unless otherwise indicated.

**B. Acceptable sequences**

When applying the General Principle and the selection rules, the following are acceptable sequences.

a) Infectious diseases due to other conditions

Infectious diseases other than those noted in 4.2.2 A.(a) reported as "due to" other conditions.

(b) Infectious diseases due to HIV

The following infectious diseases when reported as "due to" human immunodeficiency virus [HIV] disease, malignant neoplasms and conditions impairing the immune system:

- typhoid and paratyphoid fevers, other *Salmonella* infections, shigellosis (A01–A03)
- tuberculosis (A15–A19).

(c) Malignancies and HIV

A malignant neoplasm should be accepted as "due to" human immunodeficiency virus (HIV) disease.

(d) Diabetes

Diabetes (E10–E14) should be accepted as "due to" diseases causing damage to the pancreas.

See Appendix 7.2 for a list of the conditions that can cause diabetes.

(e) Rheumatic fever

Rheumatic fever (I00–I02) or rheumatic heart disease (I05–I09) should be accepted as "due to":

- scarlet fever (A38)
- streptococcal septicaemia (A40.0-)
- streptococcal sore throat (J02.0)
- acute tonsillitis (J03.-).

(f) Hypertension

Any hypertensive condition reported as "due to":

- endocrine neoplasms,
- renal neoplasms,
- carcinoid tumours.

(g) Cerebrovascular diseases

Cerebral haemorrhage (I61.-) should be accepted as "due to" diseases of liver (K70–K76).

Embolism causing:

- occlusion and stenosis of precerebral arteries (I65)
- occlusion and stenosis of cerebral arteries (I66)
- sequelae of cerebral infarction (I69.3)

should be accepted as "due to" endocarditis (I05–I08, I09.1, I33–I38).

(h) Congenital anomalies

- a congenital anomaly reported as "due to" a chromosome abnormality or a congenital malformation syndrome
- pulmonary hypoplasia reported as "due to" a congenital anomaly.

(i) Accidents

- Any accident (V01–X59) should be accepted as "due to" epilepsy (G40–G41).
- A fall (W00–W19 should be accepted as "due to" a disorder of bone density (M80–M85).
- A fall (W00–W19) should be accepted as "due to" a (pathological) fracture caused by a disorder of bone density.
- Asphyxia caused by aspiration of mucus, blood (W80) or vomitus (W78) should be accepted as "due to" disease conditions.
- Aspiration of food (liquid or solid) of any kind (W79) should be accepted as "due to" a disease which affects the ability to swallow.

(j) Acute or terminal circulatory diseases

Acute or terminal circulatory diseases reported as due to malignant neoplasm, diabetes or asthma should be accepted as possible sequences in Part I of the certificate. The following conditions are regarded as acute or terminal circulatory diseases:

- acute and subsequent myocardial infarction (I21–I22)
- other acute ischaemic heart disease (I24)
- pulmonary embolism (I26)
- acute pericarditis (I30)
- acute and subacute endocarditis (I33)
- acute myocarditis (I40)
- atrioventricular and left bundle branch block (I44)
- other conduction disorders (I45)
- cardiac arrest (I46)
- paroxysmal tachycardia (I47)
- atrial fibrillation and flutter (I48)
- other cardiac arrhythmias (I49)
- heart failure (I50)
- other ill-defined heart diseases (I51.8) cerebrovascular diseases in I60–I66, I67.6–I67.8 and I69.

### 4.2.3 Effect of duration on classification

In evaluating the reported sequence of the direct and antecedent causes, the interval between the onset of the disease or condition and time of death must be considered. This would apply in the interpretation of "highly improbable" relationships (see above) and in Modification Rule F (sequelae).

Categories O95 (Obstetric death of unspecified cause), O96 (Death from any obstetric cause occurring more than 42 days but less than one year after delivery) and O97 (Death from sequelae of direct obstetric causes) classify obstetric deaths according to the time elapsed between the obstetric event and the death of the woman. Category O95 is to be used when a woman dies during pregnancy, labour, delivery, or the puerperium and the only information provided is "maternal" or "obstetric" death. If the obstetric cause of death is specified, code to the appropriate category. Category O96 is used to classify deaths from direct or indirect obstetric causes that occur more than 42 days but less than a year after termination of the pregnancy. Category O97 is used to classify deaths from any direct obstetric cause which occur one year or more after termination of the pregnancy.

Conditions classified as congenital malformations, deformations and chromosomal abnormalities (Q00–Q99), even when not specified as congenital on the medical certificate, should be coded as such if the interval between onset and death and the age of the decedent indicate that the condition existed from birth.

The classification has specific categories for indicating certain diseases and injuries as the cause of sequelae or late effects. In many cases, these sequelae include conditions present one year or more after the onset of the disease or injury (see also Sequelae below).

### 4.2.4 Sequelae

Certain categories (B90–B94, E64.-, E68, G09, I69.-, O97 and Y85–Y89) are to be used for underlying cause mortality coding to indicate that death resulted from the late (residual) effects of a given disease or injury rather than during the active phase. Modification Rule F applies in such circumstances. Conditions reported as sequelae or residual effects of a given disease or injury should be classified to the appropriate sequela category, irrespective of the interval between the onset of the disease or injury and death. For certain conditions, deaths occurring one year or more after the onset of the disease or injury are assumed to be due to a sequela or residual effect of the condition, even though no sequela is explicitly mentioned. Guidance in interpreting sequelae is given under most of the "Sequelae of ..." categories in the tabular list.

#### *B90.- Sequelae of tuberculosis*

The sequelae include conditions specified as such or as late effects of past tuberculous disease, and residuals of tuberculosis specified as arrested, cured, healed, inactive, old, or quiescent, unless there is evidence of active tuberculosis.

#### *B94.0 Sequelae of trachoma*

The sequelae include residuals of trachoma specified as healed or inactive and certain specified sequelae such as blindness, cicatricial entropion and conjunctival scars, unless there is evidence of active infection.

#### *B94.1 Sequelae of viral encephalitis*

The sequelae include conditions specified as such, or as late effects, and those present one year or more after onset of the causal condition.

#### *B94.8 Sequelae of other infectious and parasitic diseases*

The sequelae include conditions specified as such or as late effects and residuals of these diseases described as arrested, cured, healed, inactive, old or quiescent, unless there is evidence of active disease. Sequelae also include chronic conditions reported as due to, or residual conditions present one year or more after onset of, conditions classifiable to categories A00–B89.

#### *E64.3 Sequelae of rickets*

The sequelae include any condition specified as rachitic or due to rickets and present one year or more after onset, or stated to be a sequela or late effect of rickets.

### *G09 Sequelae of inflammatory diseases of central nervous system*

This category is provided for the coding of sequelae of conditions classifiable to G00.-, G03–G04, G06.- and G08. Sequelae of inflammatory diseases of the central nervous system subject to dual classification (G01*–G02*, G05.-* and G07*) should be coded to the categories designated for sequelae of the underlying condition (e.g. B90.0 Sequelae of central nervous system tuberculosis). If there is no sequelae category for the underlying condition, code to the underlying condition itself.

## 4.2.5 Consistency between sex of patient and diagnosis

Certain categories are limited to one sex (see section 3.1.5). If, after verification, the sex and cause of death on the certificate are not consistent, the death should be coded to "Other ill-defined and unspecified causes of mortality" (R99).

## 4.2.6 Operations

If an operation appears on the certificate as the cause of death without mention of the condition for which it was performed or of the findings at operation, and the alphabetical index does not provide a specific code for the operation, code to the residual category for the organ or site indicated by the name of the operation (e.g. code "nephrectomy" to N28.9). If the operation does not indicate an organ or site, e.g. "laparotomy", code to "Other ill-defined and unspecified causes of mortality" (R99), unless there is a mention of a therapeutic misadventure classifiable to **O74, O75.4** or Y60–Y84 or a postoperative complication. If there is mention of a misadventure at the time of the procedure, code to **O74, O75.4** or Y60–Y69. If there is a mention of an abnormal reaction of the patient, without mention of misadventure at the time of the procedure, code to **O74, O75.4** or Y83–Y84.

Whenever a complication of a procedure is not indexed or is not a synonym of an inclusion or indexed term, code early complications and mechanical complications to **T80–T88.** Code late complications and functional complications to the appropriate system chapter.

*Example 1:* I (a) Pulmonary embolism
(b) Appendectomy

Code to unspecified disease of appendix (K38.9).

*Example 2:* I (a) Accidental puncture of aorta
(b) Laparotomy

Code to unintentional puncture during surgical operation (Y60.0).

Code complications of obstetrical surgery to the reason for the surgery. If no reason for the obstetrical surgery is stated, code to O75.4.

*Example 3:* I (a) Postoperative haemorrhage
(b) Caesarean section
(c) Prolonged labour

Code to long labour unspecified (O63.9).

*Example 4:* I (a) Amniotic fluid embolism
(b) Caesarean section

Code to other complication of obstetric surgery and procedures (O75.4).

### 4.2.7 Malignant neoplasms

#### 4.2.7.1 Introduction

Coding malignant neoplasms is no different from coding other conditions. The selection and modification rules should be applied as usual to death certificates mentioning malignant neoplasms, and as in all mortality coding, the coder has to take all information given on the Death Certificate into account when assigning ICD codes.

For neoplasms, it is especially important to consider information on behaviour, morphology and site. When behaviour morphology and site are well described by the physician the coder will have no difficulty in finding the correct code for the term in Volume 3. However, the terms stated on the death certificate are not always complete or clear enough. These instructions will help coders to assign codes in such cases. They also show that the same selection and modification rules apply to death certificates mentioning malignant neoplasms as to deaths from other causes.

*(a) Behaviour, morphology and site*

Behaviour, morphology and site must all be considered when coding neoplasms. The *behaviour* of a neoplasm is the way it acts within the body, i.e. how a tumour is likely to develop. The following ICD grouping refers to behaviour:

| | |
|---|---|
| C00–C96 | Malignant (invades surrounding tissue or disseminates from its point of origin and begins to grow at another site) |
| D00–D09 | In situ (malignant but still confined to the tissue in which it originated) |
| D10–D36 | Benign (grows in place without the potential for spread) |
| D37–D48 | Uncertain or unknown behaviour (undetermined whether benign or malignant). |

*Morphology* describes the type and structure of cells or tissue and the behaviour of neoplasms. The ICD provides for classification of several major morphology groups including the following:

- carcinomas, including squamous cell carcinoma and adenocarcinoma
- sarcomas and other soft tissue tumours, including mesotheliomas site-specific types that indicate the site of the primary neoplasm, such as hepatoma (C22.0)
- lymphomas, including Hodgkin lymphoma and non-Hodgkin lymphoma
- leukaemias
- other specified morphological groups, such as malignant melanoma (C43.-).

The ICD categories will give the *site* of the neoplasm and also distinguish between the different behaviours of the neoplasm. The categories are:

| | |
|---|---|
| C00–C75 | Malignant neoplasms, stated or presumed to be primary, of specified sites and in different types of tissue, except lymphoid |
| C76 | Malignant neoplasms of other and ill-defined |
| C77–C79 | Malignant secondary neoplasms, stated or presumed to be spread from another site, regardless of morphological type of neoplasm<br>Note: These categories (C77–C79) are not to be used for underlying cause of death |
| C80 | Malignant neoplasm of unspecified site |
| C81–C96 | Malignant neoplasms, stated or presumed to be primary, of lymphoid, haematopoietic and related tissues. |

*(b) Using the Alphabetic Index*

The entry "Neoplasm" in the Volume 3 Alphabetical Index gives guidance notes, listing of sites, and up to five codes depending on the behaviour of the neoplasm. However, it is important to look up the morphological type in the Alphabetical Index before referring to the listing under "Neoplasm" for the site. The entry for the morphological type will either state a code to use, or direct you to the correct entry under the main term "Neoplasm".

Not all combinations of prefixes in compound morphological terms are indexed. For example, the term chondrofibrosarcoma does not appear in the Alphabetical Index, but fibrochondrosarcoma does. Since the two terms have the same prefixes, though in a different order, code the chondrofibrosarcoma the same as fibrochondrosarcoma.

Unless it is specifically indexed, code a morphological term ending in "osis" in the same way as the tumour name to which "osis" has been added. For example, code neuroblastomatosis in the same way as neuroblastoma. However, do not code haemangiomatosis, which is specifically indexed to a different category, in the same way as haemangioma. Widespread metastasis of a carcinoma is often called carcinomatosis. See sections 4.2.7.5 and 4.2.7.6 for more detailed coding instructions on metastasizing neoplasms.

If an unqualified nonspecific term such as carcinoma or sarcoma appears with a term describing a more specific histology of the same broad group, code to the site of the more specific morphology, assuming the nonspecific to be metastatic.

*(c) Selection Rules*

Note that a malignant neoplasm does not automatically take precedence over other causes of death mentioned on the death certificate. A death should be assigned to a malignant neoplasm only if the selection rules, strictly applied, lead to the selection of the neoplasm as the underlying cause of death.

*Example 1:*

I (a) Liver cirrhosis
(b) Viral hepatitis
II Hepatocellular carcinoma

Code to viral hepatitis (B19.9). Viral hepatitis is selected by the General Principle. It is not an obvious consequence of hepatocellular carcinoma, which should not be selected as the underlying cause of death.

*Example 2:*

I (a) Renal failure
(b) Nephropathy
(c) Diabetes mellitus
(d) Malignant neoplasm of breast

Code to diabetes with renal complications (E14.2). According to the instructions on cause of diabetes section 4.2.2, malignant neoplasm of breast is rejected as a cause of diabetes. Diabetes is selected as the underlying cause by Rule 1.

### 4.2.7.2 Implication of malignancy

A mention anywhere on the certificate that a neoplasm has produced secondaries means that the neoplasm must be coded as malignant, even though the neoplasm without mention of metastases would be classified differently.

*Example 3:* I (a) Brain metastasis
(b) Lung tumour

Code to malignant lung cancer (C34.9). The lung tumour is considered malignant since it has produced brain metastasis. The General Principle applies.

*Example 4:* I (a) Metastatic involvement of chest wall
(b) Carcinoma in situ of breast

Code to malignant carcinoma of the breast (C50.9). Since the breast tumour has spread to the chest wall it is no longer in situ. The General Principle applies.

This also applies to other types of growths that are not indexed to Chapter II, for example certain polyps. If they are reported as the cause of metastases or secondary tumours, they should be considered malignant and coded as malignant neoplasms.

*Example 5:* I (a) Secondary malignant neoplasm of lung
(b) Polyp of stomach

Code to primary malignant neoplasm of stomach (C16.9). Since the polyp is reported as the cause of secondary spread it is considered malignant. The General Principle applies.

### 4.2.7.3 Primary site

When a malignant neoplasm is considered to be the underlying cause of death, it is most important to determine the primary site. When the death certificate is ambiguous as to the primary site, every effort should be made to obtain clarification from the certifier. The following instructions in sections 4.2.7.3–4.2.7.9 should be applied only when clarification cannot be obtained.

#### *A. Primary site indicated*

*(a) A neoplasm specified as primary*

If one malignant neoplasm is specified as primary, and other neoplasms are mentioned but not described as primary, then consider these other neoplasms as secondary. Also consider them as an obvious consequence of the neoplasm specified as primary.

*Example 6:* I (a) Transitional cell carcinoma of bladder
II Transitional cell carcinoma, primary in kidney

The transitional cell bladder carcinoma on I (a), selected by the General Principle, is not specified as primary. There is a neoplasm described as primary reported in Part II. Therefore, Rule 3 applies,

and the transitional cell bladder carcinoma on I (a) is considered an obvious consequence of the primary kidney tumour reported in Part II. Code to malignant neoplasm of kidney (C64).

This does not apply if the neoplasms have a different morphology.

*Example 7:* I (a) Transitional cell carcinoma of bladder
II Osteosarcoma, primary in knee

The transitional cell bladder carcinoma on I (a) is not specified as primary. Use the General Principle to select transitional cell carcinoma of bladder as the temporary underlying cause of death. The malignant neoplasm reported in Part II is of a different morphology. Since a transitional cell carcinoma is not a consequence of an osteosarcoma, Rule 3 does not apply. Code to malignant neoplasm of bladder (C67.9).

For further instructions on certificates with more than one neoplasm specified as primary, see Section C below.

*(b) Other neoplasm specified as secondary*

Secondary malignant neoplasms should be accepted as due to other malignant neoplasms. Also, malignant neoplasms on the list of common sites of metastases (see Section 4.2.7.5 Table 3), should be accepted as due to other malignant neoplasms.

*Example 8:* I (a) Secondaries in lung, pleura brain and liver
(b) Carcinoma of breast

A carcinoma of breast may cause secondaries in pleura, brain, and liver. The General Principle applies. Select malignant neoplasm of breast (C50.9) as the underlying cause of death.

A malignant neoplasm specified as secondary should be considered an obvious consequence of a neoplasm specified as primary.

*Example 9:* I (a) Secondary carcinoma lung
II Primary in kidney

First, use the General Principle to select secondary carcinoma of lung as the temporary underlying cause. However, the secondary neoplasm is an obvious consequence of the primary kidney tumour. Rule 3 applies, and malignant neoplasm of kidney (C64) is selected as underlying cause of death.

Also, if all sites but one are specified as secondary, consider the site not specified as secondary as the primary one. Consequently, Rule 3 applies.

*Example 10:* I (a) Secondaries in lymph nodes, vertebrae and peritoneum
II Prostate cancer

All sites mentioned in Part I are specified as secondary. There is one site reported that is not specified as secondary, namely prostate. First, apply Rule 2 to select the secondary neoplasm in lymph nodes as the temporary underlying cause. Then apply Rule 3, since the secondary spread is an obvious consequence of prostate cancer reported in Part II. Select malignant neoplasm of prostate (C61) as the underlying cause of death.

*(c) A neoplasm reported as due to a disease that increases the risk of malignancy*

When a malignant neoplasm is reported as caused by a condition generally considered to increase the risk of a malignancy of that site, code the neoplasm as primary. This applies even if the site is on the list of common sites of metastases (see Table 3 in Section 4.2.7.5).

*Example 11:* I (a) Cancer of liver and lung
(b) Chronic hepatitis

Code to unspecified malignant neoplasm of liver (C22.9), since chronic hepatitis increases the risk of primary liver cancer.

*Example 12:* I (a) Cancer of lung
(b) Cancer of liver
(c) Prolonged exposure to vinyl chloride

Code to unspecified malignant neoplasm of liver (C22.9), since vinyl chloride increases the risk of primary liver cancer. Using Section 4.2.7.5, the cancer of lung is regarded as secondary.

*Example 13:* I (a) Cancer of chest wall
(b) Cancer of lung
(c) Smoking

Code to malignant neoplasm of bronchus or lung, unspecified (C34.9). Tobacco increases the risk of primary lung cancer. Using Section 4.2.7.5, the cancer of chest wall is considered secondary.

*Example 14:* I (a) Mesotheliomas of pleura and lymph nodes
(b) Prolonged inhalation of asbestos dust

Code to mesothelioma of pleura (C45.0). Exposure to asbestos increases the risk of pleural mesothelioma, which is considered primary. The malignant neoplasm of lymph nodes is considered secondary (see Section 4.2.7.5 D).

*Example 15:* I (a) Malignant neoplasm of mediastinum and liver
(b) Prolonged inhalation of asbestos dust

Code to malignant neoplasm of mediastinum (C38.3). Exposure to asbestos increases the risk of cancer in the mediastinum, and the liver neoplasm is considered secondary.

For further information on conditions considered to increase the risk of malignancy, please refer to the WHO website on ICD-10 in classification of mortality.

*(d) Site specific morphology*

Note that the Alphabetical Index assigns some morphologies to a specific primary site.

*Example 16:* I (a) Generalized metastatic spread
(b) Pseudomucinous adenocarcinoma

Select pseudomucinous adenocarcinoma using the General Principle. Code to malignant neoplasm of ovary (C56), since pseudomucinous adenocarcinoma of unspecified site is assigned to the ovary in the Alphabetical Index.

If two or more morphologies are indicated, code according to Section 4.2.7.3 C.

*(e) Durations do not indicate primary site*

Durations should not be used to establish the primary site, since the same patient could develop several primary malignant neoplasms. Also, stated duration may refer to the date of diagnosis rather than the duration of the disease.

*Example 17:* I (a) Malignant neoplasm of throat, 8 months
II Malignant neoplasm of breast, 12 years

A condition selected by the General Principle or Rules 1 or 2 should be considered an obvious consequence of a condition reported elsewhere on the certificate only if there is no doubt about the relationship. In this case, the different durations do not necessarily indicate that the malignant neoplasm of throat is a metastatic spread from the breast malignancy, since the patient may have developed two independent primary malignancies. Consequently, Rule 3 does not apply. Code to malignant neoplasm of throat (C14.0) selected by the General Principle.

*Example 18:* I (a) Malignant neoplasm of kidney 8(7 months) and prostate (5 years)

As in Example 17, the different durations do not necessarily indicate that the more recent neoplasm is a metastatic spread from the one with longer duration. Rule 3 does not apply. Both malignant neoplasms are considered primary. Code to malignant neoplasm of kidney (C64), selected by Rule 2.

***B. Primary site unknown***

If the certificate states that the primary site is unknown, code to the category for unspecified site for the morphological type involved. For example, code adenocarcinoma to C80.0, fibrosarcoma to C49.9, and osteosarcoma to C41.9. Disregard any other sites mentioned elsewhere on the certificate.

*Example 19:*

I (a) Secondary carcinoma of liver
(b) Primary site unknown

The certificate states that the primary site is unknown. Disregard stomach and colon mentioned on line I (c), and code to carcinoma without specification of site (C80.0).

*Example 21:*

I (a) Generalized metastasess
(b) Melanoma
(c) Primary site unknown

Code to malignant melanoma of unspecified site (C43.9). If the morphological type is not indicated, code to unspecified malignant neoplasm (C80.9).

*Example 20:*

I (a) Metastases of liver

The certificate does not specify the primary site. If possible, clarification should be sought from the certifier. If this is not possible, code to malignant neoplasm of unspecified site (C80.9).

***C. More than one primary neoplasm***

The presence of more than one primary neoplasm could be indicated in several ways, for example:

- mention of two or more different anatomical sites
- two or more distinct morphological types
- by a mix of a morphological type that implies a specific site, plus another site.

When a death certificate mentions more than one primary malignant neoplasm, the certifier should be asked to specify one of the malignant neoplasms as the underlying cause of death. If no clarification can be obtained, the selection rules should be applied in the usual way.

*(a) Two or more different anatomical sites*

A primary malignant neoplasm of one site should not be accepted as due to a primary neoplasm of another site.

*Example 22:* I (a) Cancer of stomach
(b) Cancer of breast

Stomach is not on the list of common sites of metastases (see Section 4.2.7.5 Table 3) and both cancer of stomach and cancer of breast are regarded as primary. However, one primary malignant neoplasm is not accepted as due to another. Rule 2 applies, and cancer of stomach (C16.9) is selected as the underlying cause.

*Example 23:* I (a) Cancer of prostate
II Cancer of stomach

Two different primary neoplasms are mentioned, stomach cancer and cancer of prostate. Use the General Principle to select cancer of prostate (C61), which is mentioned in Part I.

*Example 24:* I (a) Cancer
II Cancer of prostate

Use the General Principle to select unspecified cancer (C80.9) as the temporary underlying cause. Then apply Rule D, Specificity, to select the more specific term "cancer of prostate" (C61), reported in Part II.

*(b) Two or more different morphologies*

A malignant neoplasm of a specific morphology should not be accepted as due to a neoplasm of a different morphology.

*Example 25:* I (a) Hypemephroma
(b) Oat cell carcinoma

Hypernephroma and oat cell carcinoma are different morphologies. Therefore, hypernephroma is not accepted as due to oat cell carcinoma. Use Rule 2 to select hypernephroma (C64) as underlying cause of death.

Do not regard the term "cancer" as a specific morphology. It is often used as a synonym of "malignant neoplasm".

*Example 26:* I (a) Liver cancer
(b) Malignant melanoma of colon

Do not regard "liver cancer" and "malignant melanoma" as different morphologies. Use the General Principle to select malignant melanoma of colon, and code to malignant neoplasm of colon (C18.9). Consider the liver cancer secondary.

However, a neoplasm in lymphoid, haematopoietic or related tissue (C81–C96) may develop into another type of neoplasm in lymphoid, haematopoietic or related tissue. Therefore, if the certificate reports a sequence of such neoplasms, the sequence is accepted.

*Example 27:* I (a) Acute lymphocytic leukaemia
(b) Non-Hodgkin lymphoma

A non-Hodgkin lymphoma may develop into an acute lymphocytic leukaemia. The sequence is accepted, and non-Hodgkin lymphoma (C85.9) is selected as underlying cause according to the General Principle.

Acute exacerbation of, or blastic crisis (acute) in, chronic leukaemia is considered an obvious consequence of the chronic form.

*Example 28:* I (a) Acute and chronic lymphocytic leukaemia

The acute lymphocytic leukaemia, mentioned first on line I (a), is selected as the temporary underlying cause according to Rule 2. However, it is an obvious consequence of the chronic lymphocytic leukaemia. Rule 3 also applies, and chronic lymphocytic leukaemia (C911) is selected as the underlying cause of death.

*(c) Site-specific morphology reported with other sites*

Some morphologies are specific for a particular site or type of tissue (see the Alphabetical Index). A malignant neoplasm of a particular site or tissue should not be accepted as due to a neoplasm of another site or type of tissue. Apply the selection rules in the usual way, if a site-specific morphology is reported with a malignant neoplasm of another site.

*Example 29:* I (a) Hodgkin lymphoma
(b) Carcinoma of bladder

Two different morphological types are mentioned, which indicates the presence of two different primary neoplasms, Hodgkin lymphoma and bladder carcinoma. One primary malignant neoplasm should not be accepted as due to another. Therefore, Rule 2 applies, and Hodgkin disease (C81.9) is selected as the underlying cause.

*Example 30:* I (a) Hepatoma
(b) Cancer of breast

The morphology "hepatoma" indicates a primary malignant neoplasm of liver. A primary malignant neoplasm of liver should not be accepted as due to cancer of breast, since both the hepatoma and the breast cancer are considered primary. Code to hepatoma (C22.0), using Rule 2.

### 4.2.7.4 Malignant neoplasms of overlapping sites

The introduction to Chapter II in Volume 1 (Notes, Section 5) describe the contents and the intended use of subcategory .8, malignant neoplasms of overlapping sites. In mortality coding, however, the codes for malignant neoplasms of overlapping sites should be used only if the lesion has been expressly described as overlapping, or if the anatomical term used on the death certificate indicates an overlapping site. Do not use the codes for overlapping lesions if a malignant neoplasm has spread from one part of an organ or organ system to another part of the same organ or organ system.

*Example 31:* I (a) Overlapping malignant neoplasm of tongue and floor of mouth

Code to C14.8, overlapping lesion of lip, oral cavity and pharynx. The neoplasm is described as overlapping.

*Example 32:* I (a) Malignant neoplasm of rectosigmoid colon

Code to C19, malignant neoplasm of rectosigmoid junction. The term "rectosigmoid" indicates an overlapping site.

It is not sufficient that the certificate enumerates contiguous sites. In that case, select the underlying cause by applying the selection and modification rules in the normal way.

*Example 33:* I (a) Malignant neoplasm of colon and gallbladder

There is no statement that the "colon and gallbladder" refers to an overlapping neoplasm. Therefore, they are considered as two independent primary sites. Malignant neoplasm of colon (C18.9) is selected as underlying cause of death according to Rule 2, since it is mentioned first on the certificate.

### 4.2.7.5 Common sites of metastases

#### *A. List of common sites of metastases*

Although malignant cells can metastasize anywhere in the body, certain sites are more common than others and must be treated differently. These sites are listed in Table 3 below.

### *Table 3. Common sites of metastases*

| | |
|---|---|
| Bone | Mediastinum |
| Brain | Meninges |
| Diaphragm | Peritoneum |
| Ill-defined sites (sites classifiable to C76) | Pleura |
| Liver | Retroperitoneum |
| Lung (see special instructions) | Spinal cord |
| Lymph nodes (see special instructions) | |

### *B. Common sites of metastases: how to use list*

*(a) A common site of metastases reported with other sites*

If several sites are reported on the death certificate and the primary site is not indicated, consider neoplasms of sites in Table 3 as secondary, and those not in Table 3 as primary. Then select the underlying cause by applying the selection rules in the usual way.

*Example 34:* I (a) Brain cancer
(b) Cancer of breast

Breast is not in Table 3 and is, therefore, considered primary. Brain is in Table 3 and is considered secondary. A secondary malignancy could, of course, be due to a primary one. Breast cancer (C50.9) is selected as the underlying cause according to the General Principle.

*Example 35:* I (a) Peritoneal cancer
(b) Cancer of breast

Peritoneum is in Table 3 and is considered secondary. Breast is not in Table 3 and is considered primary. First, apply the General Principle to select peritoneal cancer as the temporary underlying cause. However, the (secondary) peritoneal cancer is an obvious consequence of the (primary) cancer of breast, see Section 4.2.7.3 A (b). Therefore, apply Rule 3 and select cancer of breast (C50.9) as the underlying cause of death.

*Example 36:* I (a) Cancer of liver
(b) Cancer of colon
(c) Cancer of bladder

Liver is in Table 3 and is considered secondary. Colon and bladder are not in Table 3 and are both assumed to be primary. However, a primary cancer of colon should not be accepted as due to a primary cancer of bladder. There is still an acceptable sequence on

the certificate, namely (secondary) liver cancer due to (primary) cancer of colon. Use Rule 1 to select malignant neoplasm of colon (C18.9) as underlying cause of death.

Note:
1) A neoplasm of a site listed in Table 3 is considered primary when it is reported as due to a condition that increases the risk of a malignancy of that site or tissue, see Section 4.2.7.3 A (c).

2) When a malignant neoplasm of one of the sites listed in Table 3 is the only malignant neoplasm mentioned on a death certificate, and it is not qualified as "metastatic", it is also considered primary.

*(b) A common site of metastases reported with other morphological sites*

If a neoplasm of a site in Table 3 is reported together with a neoplasm of a different morphology, consider the neoplasm in Table 3 as secondary, and those of a different morphology as primary. Then select the underlying cause by applying the selection rules in the usual way.

*Example 37:* I (a) Liver cancer
(b) Adenocarcinoma of colon
(c) Malignant melanoma of skin of thigh

Liver is in Table 3 and is considered secondary. Colon and skin are not in Table 3 and are both assumed to be primary. However, the colon and skin malignancies are of different morphology. Consequently, adenocarcinoma of colon is not accepted as due to malignant melanoma of intestine. A (secondary) liver cancer, however, can be due to adenocarcinoma of colon, so there is a sequence ending with the liver cancer reported on line I (a). Malignant neoplasm of colon is selected as underlying cause according to Rule 1.

Do not regard "liver cancer" as a separate morphology, see Section 4.2.7.3 C (b).

*(c) All reported sites are on the list of common sites of metastases*

If all reported sites are in Table 3, they should all be considered secondary. This means that no primary tumour is reported, and the case should be coded to malignant neoplasm of unspecified site (C80.9).

*Example 38:* I (a) Cancer of brain, ribs, pleura and peritoneum

The sites mentioned are all in Table 3 and are all considered secondary. Code the case to malignant neoplasm of unspecified site (C80.9).

Note that special instructions apply to cases where lung is reported with other sites listed in Table 3. See Section 4.2.7.5 C.

### *C. Special instruction: lung*

The lung poses special problems in that it is a common site for both metastases and primary malignant neoplasms. It is considered primary or secondary, depending on other neoplasms reported on the certificate, if any.

*(a)* *Lung considered a primary neoplasm*

If lung is the only site mentioned on the certificate, it is considered primary.

*Example 39:* I (a) Lung cancer

Lung is the only site mentioned, and therefore lung is considered primary. The General Principle applies and carcinoma of lung (C34.9) is selected as the underlying cause of death.

Also, if all other sites are in Table 3, lung is considered primary.

*Example 40:* I (a) Cancer of liver
(b) Carcinoma of lung

Liver is in Table 3, and therefore lung is considered primary. The General Principle applies and carcinoma of lung (C34.9) is selected as the underlying cause of death.

When a malignant neoplasm of bronchus or bronchogenic cancer is mentioned, this neoplasm should also be considered primary.

*Example 41:* I (a) Carcinoma of bronchus
(b) Carcinoma of breast

Neither bronchus nor breast are in Table 3, and therefore both are considered primary. One primary neoplasm is not accepted as due to another, and therefore Rule 2 applies. Select malignant neoplasm of bronchus (C34.9) as underlying cause of death.

Note: A neoplasm of lung is considered primary when it is reported as due to a condition that increases the risk of lung cancer, see Section 4.2.7.3 A (c).

*(b)* *Lung considered a secondary neoplasm*

If an unspecified malignant neoplasm of lung is reported as due to another malignant neoplasm, the lung neoplasm is considered secondary and the sequence accepted.

*Example 42:* I (a) Lung cancer
(b) Stomach cancer

Stomach cancer is selected by the General Principle, since (secondary) lung cancer is accepted as due to the stomach cancer.

Lung should also be considered secondary whenever it appears in Part I with sites that are not mentioned in Table 3.

*Example 43:* I (a) Carcinoma of lung and breast

Lung carcinoma is considered secondary since it is reported with breast, which is not in Table 3. Rule 3 applies, and the secondary lung carcinoma is considered an obvious consequence of the carcinoma of breast. Code to malignant neoplasm of breast (C50.9).

Note: A neoplasm of lung is considered primary when it is reported as due to a condition that increases the risk of lung cancer, see Section 4.2.7.3 A (c).

An unspecified malignant neoplasm of lung should not be considered an obvious consequence of a malignant neoplasm reported elsewhere on the death certificate.

*Example 44:* I (a) Lung cancer
II Stomach cancer

The lung cancer is not specified as either secondary or metastatic. Therefore, it is not considered an obvious consequence of stomach cancer reported in Part II, and Rule 3 does not apply. Select lung cancer (C34.9) as underlying cause of death, according to the General Principle.

***D. Special instruction: lymph node***

Malignant neoplasm of lymph nodes not specified as primary should be assumed to be secondary.

*Example 45:* I (a) Cancer of cervical lymph nodes

Code to malignant neoplasm of unspecified site (C80.9). The cancer of cervical lymph nodes is considered secondary to an unspecified primary malignant neoplasm.

### 4.2.7.6 Metastatic cancer

Note: The expression “metastatic” is a problem mainly in the English language. Other countries should translate only as much as needed of Section 4.2.7.6.

Neoplasms qualified as metastatic are always malignant, either primary or secondary.

However, the adjective "metastatic" is used in two ways, sometimes meaning a secondary from a primary elsewhere and sometimes denoting a primary that has given rise to metastases.

*(a) Malignant neoplasm "metastatic from"*

If a malignant neoplasm is described as "metastatic from" a specified site, that site should be considered primary.

*Example 46:* I (a) Metastatic teratoma from ovary

The expression "metastatic teratoma from ovary" implies that the neoplasm originated in the ovary. Code to malignant neoplasm of ovary (C56).

This also applies to sites on the list of common sites of metastases.

*Example 47:* I (a) Metastatic mesothelioma from peritoneum

A "metastatic mesothelioma from peritoneum" is primary in the peritoneum, although peritoneum is one of the sites listed in Table 3. Code to malignant mesothelioma of peritoneum (C45.1).

*(b) Malignant neoplasm "metastatic to"*

A malignant neoplasm described as "metastatic to" a specified site should be interpreted as a secondary neoplasm of the specified site, whether the site is on the list of common sites of metastases or not. Code to malignant neoplasm of unknown primary site (C80.9) if no primary site is indicated.

*Example 48:* I (a) Metastatic carcinoma to the rectum

The expression "metastatic to" indicates that rectum is a secondary site. Code malignant neoplasm of unknown primary site (C80.9) as underlying cause of death, since no primary site is indicated.

If a morphology classifiable to C40–C47, C49 or C70–C72 is reported, code to the "unspecified site" subcategory of that morphological type.

*Example 49:* I (a) Metastatic osteosarcoma to brain

The expression "metastatic to brain" indicates that brain is a secondary site. However, the osteosarcoma is indexed to malignant neoplasm of bone in the Alphabetical Index. Code

unspecified malignant neoplasm of bone (C41.9) as underlying cause of death.

*(c) Malignant neoplasm metastatic of site A to site B*

A malignant neoplasm described as metastatic of site A to site B should be interpreted as primary of site A and secondary of site B.

*Example 50:* I (a) Metastatic cancer of liver to brain
II Oesophageal cancer

The expression "metastatic of liver to brain" indicates that the malignancy originated in the liver and spread to the brain. When selecting the underlying cause of death, code to primary cancer of liver (C22.9).

Since there is an indication that liver is the primary site, the instructions in Section 4.2.7.5 B (a) on sites in Table 3 reported with other sites do not apply. Liver is still considered the primary site, even though oesophageal cancer is also mentioned.

*(d) "Metastatic" malignant neoplasm on the list of common sites of metastases*

A "metastatic" neoplasm is considered secondary if the site is on the list of common sites of metastases.

*Example 51:* I (a) Bowel obstruction
(b) Metastatic cancer of peritoneum
(c) Sarcoma of uterus

Metastatic cancer of peritoneum is considered secondary, since peritoneum is in Table 3. Sarcoma of uterus (C55) is selected as underlying cause by the General Principle.

Use Rule 3 if applicable.

*Example 52:* I (a) Metastatic cancer of pleura
II Cancer of stomach

The pleura cancer is described as metastatic and is considered secondary. Stomach cancer is also reported and is considered primary (see Section 4.2.7.3 A (b)). First, apply the General Principle to select the pleural cancer as the temporary underlying cause. However, (secondary) pleura cancer is considered an obvious consequence of (primary) stomach cancer, according to Rule 3. Stomach cancer (C16.9) is selected as underlying cause of death.

A neoplasm of a site in Table 3 is considered secondary, even if no other neoplasm is mentioned on the certificate. Note that a secondary malignant neoplasm should not be selected as the underlying cause of death. If no primary tumour is reported, code the case to malignant neoplasm of unspecified site (C80.9).

*Example 53:* I (a) Metastatic brain cancer

Brain is one of the sites in Table 3, and the "metastatic" brain cancer is considered secondary. There is no primary neoplasm reported. Therefore, code to malignant neoplasm of unknown primary site (C80.9).

Note: A neoplasm of a site listed in Table 3 is considered primary when it is reported as due to a condition that increases the risk of a malignancy of that site or tissue, see Section 4.2.7.3 A (c).

*(e) "Metastatic" malignant neoplasm not on the list of common sites of metastases*

If a site that is not on the list of common sites of metastases is qualified as "metastatic" or "metastatic of", consider it primary and code to malignant primary of that particular site.

*Example 54:* I (a) Cervix cancer, metastatic

Cervix is not in Table 3, and the "metastatic" cervix cancer is therefore considered primary. Code to malignant neoplasm of cervix (C53.9).

Apply the selection rules in the usual way.

*Example 55:* I (a) Metastatic adenocarcinoma of prostate
(b) Metastatic adenocarcinoma of colon

Prostate and colon are not in Table 3, and both neoplasms are considered primary. One primary neoplasm is not accepted as due to another. Rule 2 applies, and malignant neoplasm of prostate (C61) is selected as underlying cause.

*(f) "Metastatic" cancer of lung*

If the only malignancy mentioned is "metastatic" neoplasm of lung, code to primary malignant neoplasm of lung.

*Example 56:* I (a) Metastatic carcinoma of lung

Code to primary malignant neoplasm of lung (C34.9) since no other site is mentioned.

Also consider a "metastatic" neoplasm of lung primary, if all other neoplasm sites reported on the death certificate are on the list of common sites of metastases.

*Example 57:*

I (a) Metastatic cancer of lung
II Cancer of pleura, liver and brain

"Metastatic cancer of lung" is considered primary, since pleura, liver, and brain are all in Table 3. Select malignant neoplasm of lung (C34.9) as underlying cause of death.

If another malignancy is mentioned that is not on the list of common sites of metastases, consider lung secondary.

*Example 58:*

I (a) Metastatic cancer of lung
II Stomach cancer

Since stomach cancer is also mentioned, "metastatic cancer of lung" is considered secondary. First use the General Principle to select the (secondary) lung cancer as the temporary underlying cause. Then apply Rule 3, and consider (secondary) cancer of lung an obvious consequence of the stomach cancer mentioned in Part II. Select stomach cancer (C16.9) as the underlying cause of death.

Note: A neoplasm of lung is considered primary when it is reported as due to a condition that increases the risk of lung cancer, see Section 4.2.7.3 A (c).

*(g) "Metastatic" neoplasm of a specific morphology*

If the morphological type is classifiable to C40–C47, C49 or C70–C72 and the site reported on the certificate indicates the same type of tissue, code to the appropriate subcategory for the morphological type.

*Example 59:*

I (a) Metastatic osteosarcoma of femur

Code to malignant neoplasm of long bones of lower limb (C40.2).

If the morphological type is classifiable to C40–C47, C49 or C70–C72 and the site reported on the certificate indicates a different type of tissue, code to the unspecified site for the morphological type.

*Example 60:*

I (a) Metastatic rhabdomyosarcoma
(b) of hilar lymph nodes

Code to unspecified site for rhabdomyosarcoma (C49.9).

### 4.2.7.7 Sites with prefixes or imprecise definitions

Neoplasms of sites prefixed by "peri," "para," "pre," "supra," "infra," etc. or described as in the "area" or "region" of a site, unless these terms are specifically indexed, should be coded as below.

For malignant neoplasms classifiable to one of the categories:

C40, C41 (bone and articular cartilage)
C43 (malignant melanoma of skin)
C44 (other malignant neoplasms of skin)
C45 (mesothelioma)
C46 (Kaposi sarcoma)
C47 (peripheral nerves and autonomic nervous system)
C49 (connective and soft tissue)
C70 (meninges)
C71 (brain)
C72 (other parts of central nervous system)

code to the appropriate subdivision of that category.

*Example 61:* I (a) Fibrosarcoma in the region of the pancreas

Code to malignant neoplasm of connective and soft tissue of abdomen (C49.4).

*Example 62:* I (a) Peridiaphragmatic angiomyosarcoma

Code to malignant neoplasm of connective and soft tissue of thorax (C49.3).

For other morphological types code to the appropriate subdivision of C76 (other and ill-defined sites).

*Example 63:* I (a) Carcinoma in the lung area

Code to malignant neoplasm of other and ill-defined sites within the thorax. (C76.1)

*Example 64:* I (a) Paravertebral carcinoma

Code to malignant neoplasm of other ill-defined sites (C76.7).

*Example 65:* I (a) Malignant neoplasm, infradiaphragmal

Code to malignant neoplasm of abdomen (C76.2).

### 4.2.7.8 Malignant neoplasms of unspecified site with other reported conditions

When the site of a primary malignant neoplasm is not specified, no assumption of the site should be made from the location of other reported conditions such as perforation, obstruction, or haemorrhage. These conditions may arise in sites unrelated to the neoplasm, e.g. intestinal obstruction may be caused by the spread of an ovarian malignancy.

*Example 66:* I (a) Obstruction of intestine
(b) Carcinoma

Code to malignant neoplasm without specification of site (C80.9).

*Example 67:* I (a) Respiratory insufficiency
(b) Obstruction of trachea
(c) Malignancy

Code to malignant neoplasm without specification of site (C80.9).

### 4.2.7.9 Infectious diseases and malignant neoplasms

*(a) Infections due to malignant neoplasm*

Owing to the effect of chemotherapy on the immune system, some cancer patients become prone to infectious diseases and die of them. Therefore, any infectious disease classified to A00–B19 or B25–B64 reported as "due to" cancer will be an acceptable sequence.

*Example 68:* I (a) Zoster
(b) Chronic lymphocytic leukaemia

Chronic lymphocytic leukaemia could cause a zoster infection. The sequence is accepted, and chronic lymphocytic leukaemia (C91.1) is selected as the underlying cause of death.

*(b) Malignant neoplasm due to infections*

There is evidence for strong aetiological links between some infections and particular cancers, e.g. human papilloma virus and cervical cancer, or chronic hepatitis C viral infection and liver cancer. However, reporting of such risk factors on death certificates is incomplete. For purposes of vital statistics and public health, it is regarded as important to be able to count all the deaths due to particular cancers, whatever their causal factors. Therefore, except for human immunodeficiency virus [HIV] disease, no infectious or parasitic disease should be accepted as causing a malignant neoplasm.

*Example 69:*

I (a) Hepatocellular carcinoma
(b) Hepatitis B virus

Hepatitis B increases the risk of liver cancer. However, it is considered more important to register the number of liver cancer deaths, and the sequence is not accepted. Use Rule 2 to select hepatocellular carcinoma (C22.0) as underlying cause of death.

*Example 70:*

I (a) Kaposi sarcoma
(b) HIV

HIV is accepted as causing malignant neoplasms. First, use the General Principle to select HIV as the temporary underlying cause. Then use Rule C (Linkage) to code HIV disease resulting in Kaposi sarcoma (B21.0) as underlying cause of death.

#### 4.2.7.10 Malignant neoplasms and circulatory disease

The following acute or fatal circulatory diseases will be accepted as due to malignant neoplasms, if certified in a "due to" sequence in Part I:

| | |
|---|---|
| I21–I22 | Acute myocardial infarction |
| I24.- | Other acute ischaemic heart diseases |
| I26.- | Pulmonary embolism |
| I30.- | Acute pericarditis |
| I33.- | Acute and subacute endocarditis |
| I40.- | Acute myocarditis |
| I44.- | Atrioventricular and left bundle-branch block |
| I45.- | Other conduction disorders |
| I46.- | Cardiac arrest |
| I47.- | Paroxysmal tachycardia |
| I48 | Atrial fibrillation and flutter |
| I49.- | Other cardiac arrhythmias |
| I50.- | Heart failure |
| I51.8 | Other ill-defined heart diseases |
| I60–I69 | Cerebrovascular diseases, except I67.0–I67.5, I67.9, I69. |

The following circulatory diseases will not be accepted as "due to" malignant neoplasms:

| | |
|---|---|
| I00–I09 | Rheumatic fever and rheumatic heart disease |
| I10–I15 | Hypertensive disease (except when reported as due to endocrine neoplasms, renal neoplasms and carcinoid tumours) |
| I20.- | Angina pectoris |
| I25.- | Chronic ischaemic heart disease |
| I70.- | Atherosclerosis. |

### 4.2.8 Involvement of multiple types of substance use

If a condition classifiable to F10–F19 or F55 is selected as underlying cause, and one or more other conditions also classified to F10–F19 or F55 are mentioned on the death certificate, proceed as follows:

i) if one condition is specified as the cause of death, code to that condition;

**ii) when no single condition is specified as the main cause of death, clarification should be sought from the certifier;**

iii) when no such clarification can be obtained, select the underlying cause in the following order of priority:

1) Mental and behavioural disorders due to use of opioids (F11)

2) Mental and behavioural disorders due to use of cocaine (F14)

3) Mental and behavioural disorders due to use of other stimulants, including caffeine (F15)

4) Mental and behavioural disorders due to use of synthetic narcotics, in F19

5) Abuse of antidepressants and non-opioid analgesics, in F55

6) Mental and behavioural disorders due to use of cannabinoids (F12), Mental and behavioural disorders due to use of sedatives and hypnotics (F13), Mental and behavioural disorders due to use of hallucinogens (F16), Mental and behavioural disorders due to use of tobacco (F17), Mental and behavioural disorders due to use of volatile solvents (F18), Mental and behavioural disorders due to use of substances other than synthetic narcotics classified to F19, Abuse of non-dependence-producing substances other than antidepressants and non-opioid analgesics classified to F55

7) Mental and behavioural disorders due to use of alcohol (F10).

If the death certificate reports more than one mental and behavioural disorder in the same priority group, code to first mentioned.

### 4.2.9 Rheumatic fever with heart involvement

If there is no statement that the rheumatic process was active at the time of death, assume activity if the heart condition (other than terminal conditions and bacterial endocarditis) that is specified as rheumatic, or stated to be due to rheumatic fever, is described as acute or subacute. In the absence of such description, the terms

"carditis", "endocarditis", "heart disease", "myocarditis", and "pancarditis" can be regarded as acute if either the interval between onset and death is less than one year or, if no interval is stated, the age at death is under l5 years. "Pericarditis" can be regarded as acute at any age.

### 4.2.10 Congenital malformations, deformations and chromosomal abnormalities

The following conditions may be regarded as congenital when causing death at the ages stated provided there is no indication that they were acquired after birth.

- Under l year: aneurysm, aortic stenosis, atresia, atrophy of brain, cyst of brain, deformity, displacement of organ, ectopia, hypoplasia of organ, malformation, pulmonary stenosis, valvular heart disease.
- Under 4 weeks: heart disease NOS, hydrocephalus NOS.

If the interval between onset and death and the age of the decedent indicate that the condition existed from birth, any disease should be regarded as congenital even when not specified as congenital on the medical certificate.

On neonatal or infant death certificates, where lung or pulmonary hypoplasia is given with any mention of immaturity, prematurity, short gestation, or low birth weight, code to pulmonary immaturity (P28.0) and not to Q33.6.

### 4.2.11 Nature of injury

The codes for external causes (V01–Y89) should be used as the primary codes for single-condition coding and tabulation of mortality involving injury, poisoning and certain other consequences of external causes.

It is recommended that a code from Chapter XIX (S00–T98) should be used in addition in order to identify the nature of the injury and permit relevant tabulations. The following notes refer to such coding.

Where more than one kind of injury to a single body region in S00–S99, T08–T35, T66–T79 is mentioned and there is no clear indication as to which caused death, the General Principle and the Selection Rules should be applied in the normal way.

*Example 1:*

I (a) Haemorrhagic shock
(b) Peritoneal haemorrhage
(c) Rupture of liver
(d) Road traffic accident

Select rupture of liver (S36.1), since this is the starting point of the sequence terminating in the condition first entered on the certificate.

*Example 2:*
I (a) Fat embolism
(b) Fracture of femur
(c) Laceration of thigh
(d) Road traffic accident

Select fracture of femur (S72.9), since this is the starting point of the sequence terminating in the condition first entered on the certificate. It is "highly improbable" that laceration of the thigh would give rise to all the conditions mentioned above it.

*Example 3:*
I (a) Peritonitis
(b) Rupture of stomach and transverse colon
(c) Road traffic accident

Select rupture of stomach (S36.3), since this is the starting point of the first-mentioned sequence (in accordance with Rule l).

*Example 4:*
I (a) Purulent meningitis
(b) Contusion of eyelid and penetrating wound of orbit

Select penetrating wound of orbit (S05.4), since contusion of eyelid selected by Rule 2 is obviously a direct consequence of the penetrating wound of the orbit (Rule 3 is applied).

When more than one body region is involved, coding should be made to the relevant category of Injuries involving multiple body regions (T00–T06). This applies both to the same type of injury and to more than one kind of injury to different body regions.

### 4.2.12 Poisoning by drugs, medicaments and biological substances

When combinations of medicinal agents classified differently are involved, proceed as follows:

A) Selection of the underlying cause of death

i) If one component of the combination is specified as the cause of death, code to that component.

*Example 5:*
I (a) Poisoning by amphetamine
II Toxic levels of heroin and flunitrazepam

Code to accidental poisoning by amphetamine (X41). By placing amphetamine poisoning alone in Part I and reporting the other substances as contributing causes of death in Part II, the certifier has identified amphetamine as the most important substance in bringing about the death.

*Example 6:* I (a) Poisoning by alcohol
II Toxic levels of heroin and flunitrazepam

Code to accidental poisoning by alcohol (X45). By placing alcohol poisoning alone in Part I and reporting the other substances as contributing causes of death in Part II, the certifier has identified alcohol as the most important substance in bringing about the death.

*Example 7:* I (a) Poisoning by heroin
II Toxic levels of alcohol and flunitrazepam

Code to accidental poisoning by heroin (X42). By placing heroin poisoning alone in Part I and reporting the other substances as contributing causes of death, the certifier has identified heroin as the most important substance in bringing about the death.

ii) When no component is specified as the main cause of death, clarification should be sought from the certifier.

iii) When no such clarification can be obtained, code combinations of alcohol with a drug to the drug. For other multi-drug deaths, code to the appropriate category for "Other".

iv) When F10–F19 is reported on the same record with a poisoning, proceed as follows:

F10–F19 Mental and behavioural disorders due to psychoactive substance

*with mention of:*

X40–X49 Accidental poisoning by and exposure to noxious substance, code **X40–X49**

X60–X69 Intentional self-poisoning by and exposure to noxious substances, code **X60–X69**

X85–X90 Assault by noxious substances, code **X85–X90**

Y10–Y19 Poisoning by and exposure to drugs, chemicals and noxious substances, code **Y10–Y19**

Fourth character .0 (Acute intoxication), code **X40–X49, X60–X69, X85–X90 or Y10–Y19.**

Refer to Section 4.1.11 when multiple conditions classified to F10–F19 are reported on the same record.

B) Identifying the most dangerous drug

To provide useful statistics on multiple drug deaths, it is of utmost importance that the most dangerous drug is identifiable in addition to the underlying cause (see also *Nature of injury*, Section 4.2.11). When selecting the code for the most dangerous drug, apply the following instructions.

If one component of the combination is specified as the cause of death, code to that component. If no single component is indicated as the cause of death, code combinations of alcohol with a drug to the drug. When the classification provides a specific category for a combination of drugs, e.g. mixed antiepileptics (T42.5), code to that category. If no appropriate combination category is available, select the main injury code in the following order of priority:

1. Opioids (T40.0–T40.2)
   Combinations including opioids classifiable to more than one fourth-character subcategory in T40.0–T40.2: Code to T40.2
2. Cocaine (T40.5)
3. Psychostimulants with abuse potential (T43.6)
   Includes: Amphetamine and derivatives
4. Synthetic narcotics and other and unspecified narcotics (T40.3–T40.4, T40.6)
   Combinations including synthetic narcotics classifiable to more than one fourth-character subcategory in T40.3–T40.4: Code to T40.4
   Combinations including synthetic narcotics classifiable to more than one fourth-character subcategory in T40.3–T40.4 with other and unspecified narcotics classifiable to T40.6: Code to T40.6
5. Antidepressants (T43.0–T43.2)
   Combinations including antidepressants classifiable to more than one fourth-character subcategory in T43.0–T43.2: Code to T43.2
6. Non-opioid analgesics (T39.-)
   Combinations including non-opioid analgesics classifiable to more than one fourth-character subcategory in T39.0–T39.4: Code to T39.8
7. Drugs and substances not listed above
   If the death certificate reports more than one such drug, code to the first mentioned.

If there is more than one drug in the same priority group, code to the first mentioned.

### 4.2.13 External causes

The codes for external causes (V01–Y89) should be used as the primary codes for single-condition coding and tabulation of the underlying cause when, and only when, the morbid condition is classifiable to Chapter XIX (Injury, poisoning and certain other consequences of external causes).

When the morbid condition is classified to Chapters I–XVIII, the morbid condition itself should be coded as the underlying cause and categories from the chapter for external causes may be used, if desired, as supplementary codes.

When a sequence of external events is reported, apply the General Principle and the selection rules in the normal way, and select the first external event that affected the decedent.

Example: I (a) Hypothermia
(b) Exposure to cold
(c) Driver of car, left road, rolled down embankment, trapped in car 3 days before discovery

Code to driver of car injured in noncollision transport accident (V48.5).

### 4.2.14 Expressions indicating doubtful diagnosis

Qualifying expressions indicating some doubt as to the accuracy of the diagnosis, such as "apparently", "presumably", "possibly", etc., should be ignored, since entries without such qualification differ only in the degree of certainty of the diagnosis.

### 4.2.15 Human immunodeficiency virus (HIV)

When a blood transfusion is given as treatment for any condition (e.g. a haematological disorder) and an infected blood supply results in a HIV infection, code the HIV as the underlying cause and not the treated condition.

| | | | |
|---|---|---|---|
| Example 1: | I (a) | Kaposi sarcoma | 1 year |
| | (b) | HIV | 3 years |
| | (c) | Blood transfusion | 5 years |
| | (d) | Haemophilia | since birth |

Code to HIV.

| | | | |
|---|---|---|---|
| Example 2: | I (a) | *Pneumocystis carinii [jirovecii]* | 6 months |
| | (b) | HIV | 5 years |
| | (c) | Ruptured spleen | 7 years |
| | (d) | Assault – fist fight | 7 years |

Code to HIV.

### 4.2.16 Death due to maternal (obstetric) causes

a) It is often difficult to identify a maternal death, particularly in cases of indirect obstetric causes. If there is any doubt that the cause of death is obstetrical, for example if the conditions entered in Part I are