ICD-10

International statistical classification of diseases and related health problems

10th revision

**Volume 2
Instruction manual**

Sixth Edition 2019

World Health Organization

Table of Contents

1. Introduction

This volume of the Tenth Revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) contains guidelines for recording and coding, together with much new material on practical aspects of the classification's use, as well as an outline of the historical background to the classification. This material is presented as a separate volume for ease of handling when reference needs to be made at the same time to the classification (Volume 1) and the instructions for its use. Detailed instructions on the use of the Alphabetical Index are contained in the introduction to Volume 3.

This manual provides a basic description of the ICD, together with practical instructions for mortality and morbidity coders, and guidelines for the presentation and interpretation of data. It is not intended to provide detailed training in the use of the ICD. The material included here needs to be augmented by formal courses of instruction allowing extensive practice on sample records and discussion of problems.

If problems arising from the use of the ICD cannot be resolved either locally or with the help of national statistical offices, advice is available from the WHO Collaborating Centres for the Family of International Classifications (see Volume 1).

2. Description of the International Statistical Classification of Diseases and Related Health Problems

2.1 Purpose and applicability

A classification of diseases can be defined as a system of categories to which morbid entities are assigned according to established criteria. The purpose of the ICD is to permit the systematic recording analysis, interpretation and comparison of mortality and morbidity data collected in different countries or areas and at different times. The ICD is used to translate diagnoses of diseases and other health problems from words into an alphanumeric code, which permits easy storage, retrieval and analysis of the data.

In practice, the ICD has become the international standard diagnostic classification for all general epidemiological and many health management purposes. These include the analysis of the general health situation of population groups and the monitoring of the incidence and prevalence of diseases and other health problems in relation to other variables, such as the characteristics and circumstances of the individuals affected. The ICD is neither intended nor suitable for indexing of distinct clinical entities. There are also some constraints on the use of the ICD for studies of financial aspects, such as billing or resource allocation.

The ICD can be used to classify diseases and other health problems recorded on many types of health and vital records. Its original use was to classify causes of mortality as recorded at the registration of death. Later, its scope was extended to include diagnoses in morbidity. It is important to note that, although the ICD is primarily designed for the classification of diseases and injuries with a formal diagnosis, not every problem or reason for coming into contact with health services can be categorized in this way. Consequently, the ICD provides for a wide variety of signs, symptoms, abnormal findings, complaints and social circumstances that may stand in place of a diagnosis on health-related records (see Volume 1, Chapters XVIII and XXI). It can therefore be used to classify data recorded under headings such as 'diagnosis', 'reason for admission', 'conditions treated' and 'reason for consultation', which appear on a wide variety of health records from which statistics and other health-situation information are derived.
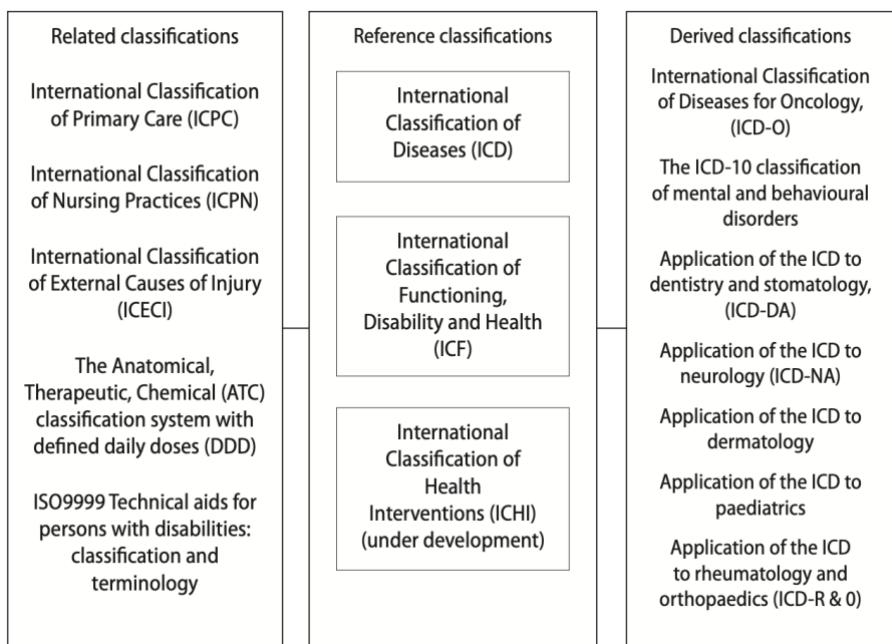
2.2 The concept of a 'family' of disease and health-related classifications

Although the ICD is suitable for many different applications, it does not serve all the needs of its various users. It does not provide sufficient detail for some specialties and sometimes information on different attributes of health conditions may be needed. The ICD also is not useful to describe functioning and disability as aspects of health, and does not include a full array of health interventions or reasons for encounter.

Foundations laid by the International Conference on ICD-10 in 1989 have provided the basis for the development of a 'family' of health classifications (see Volume 1, Report on the International Conference for the Tenth Revision, Section 6). In recent years, through the use of the ICD and development of related WHO health classifications, the concept of a 'family' was further developed. Currently, 'family' designates a suite of integrated classification products that share similar features and can be used singularly or jointly to provide information on different aspects of health and the health-care system. For example, the ICD as a reference classification is mainly used to capture information on mortality and morbidity. Additional aspects of health domains, functioning and disability have now been jointly classified in the International Classification of Functioning, Disability and Health (ICF). In general, the WHO Family of International Classifications aims to provide a conceptual framework of information dimensions which are related to health and health management. In this way, they establish a common language to improve communication and permit comparisons of data across countries' health-care disciplines, services and time. The World Health Organization and the WHO-FIC Network strive to build the family of classifications so that it is based on sound scientific and taxonomic principles; is culturally appropriate and internationally applicable; and focuses on the multi-dimensional aspects of health so that it meets the needs of its different users.

The WHO Family of International Classifications (WHO-FIC) attempts to serve as the framework of international standards to provide the building blocks of health information systems. Figure 1 represents the types of classifications in the WHO-FIC.

Fig. 1. Schematic representation of the WHO-FIC

Related classifications	Reference classifications	Derived classifications
International Classification of Primary Care (ICPC)	International Classification of Diseases (ICD)	International Classification of Diseases for Oncology, (ICD-O)
International Classification of Nursing Practices (ICPN)	International Classification of Functioning, Disability and Health (ICF)	The ICD-10 classification of mental and behavioural disorders
International Classification of External Causes of Injury (ICECI)		Application of the ICD to dentistry and stomatology, (ICD-DA)
The Anatomical, Therapeutic, Chemical (ATC) classification system with defined daily doses (DDD)	International Classification of Health Interventions (ICHI) (under development)	Application of the ICD to neurology (ICD-NA)
		Application of the ICD to dermatology
ISO9999 Technical aids for persons with disabilities: classification and terminology		Application of the ICD to paediatrics
		Application of the ICD to rheumatology and orthopaedics (ICD-R & 0)

Reference classifications

These are the classifications that cover the main parameters of the health system, such as death, disease, functioning, disability, health and health interventions. WHO reference classifications are a product of international agreements. They have achieved broad acceptance and official agreement for use and are approved and recommended as guidelines for international reporting on health. They may be used as models for the development or revision of other classifications with respect to both the structure and the character and definition of the classes.

Currently there are two reference classifications in the WHO-FIC: ICD as a reference classification to capture information on mortality and morbidity, and ICF to capture information on various domains of human functioning and disability. WHO has been exploring to the possibility of replacing the former International Classification of Procedures in Medicine (see 2.2.2 Non-diagnostic classifications) by a new International Classification of Health Interventions (ICHI). This process will take place over several stages of consultation, field testing and approval by the WHO governing bodies.

Derived classifications

Derived classifications are based upon reference classifications. Derived classifications may be prepared either by adopting the reference classification structure and classes, providing additional detail beyond that provided by the reference classification, or they may be prepared through rearrangement or aggregation of items from one or more reference classifications. Derived classifications are often tailored for use at the national or international level.

Within the WHO-FIC the derived classifications include specialty-based adaptations of ICF and ICD, such as the International Classification of Diseases for Oncology (ICD-O-3), the Application of the International Classification of Diseases to Dentistry and Stomatology, 3rd Edition (ICD-DA), the ICD-10 for Mental and Behavioural Disorders and the Application of the International Classification of Diseases to Neurology (ICD-10-NA) (see 2.2.2 Diagnosis-related classifications).

Related classifications

Related classifications are those that partially refer to reference classifications, or that are associated with the reference classification at specific levels of the structure only. Procedures for maintaining, updating and revising statistical classifications of the family encourage the resolution of problems of partial correspondence among related classifications, and offer opportunities for increased harmony over time. Within the WHO-FIC the related classifications include: the International Classification of Primary Care (ICPC-2), the International Classification of External Causes of Injury (ICECI), Technical aids for persons with disabilities: Classification and terminology (ISO9999) and the Anatomical Therapeutic Chemical Classification with Defined Daily Doses (ATC/DDD).

2.2.1   Diagnosis-related classifications

Special tabulation lists

The special tabulation lists are derived directly from the core classification, for use in data presentation and to facilitate analysis of health status and trends at the international, national and subnational levels. The special tabulation lists recommended for international comparisons and publications are included in Volume 1. There are five such lists, four for mortality and one for morbidity (for further details, see sections 5.4 and 5.5).

Specialty-based adaptations

Specialty-based adaptations usually bring together in a single, compact volume the sections or categories of the ICD that are relevant to a particular

specialty. The four-character subcategories of the ICD are retained, but more detail is often given by means of fifth-character or sometimes sixth-character subdivisions, and there is an alphabetical index of relevant terms. Other adaptations may give glossary definitions of categories and subcategories within the specialty.

The adaptations have often been developed by international groups of specialists, but national groups have sometimes published adaptations that have later been used in other countries. The following list includes some of the major specialty adaptations to date.

Oncology

The third edition of the *International Classification of Diseases for Oncology* (ICD-O), published by WHO in 2000, is intended for use in cancer registries, and in pathology and other departments specializing in cancer (*1*). ICD-O is a dual-axis classification with coding systems for both topography and morphology. The topography code uses, for most neoplasms, the same three-character and four-character categories used in ICD-10 for malignant neoplasms (categories C00–C80). ICD‑O thus allows greater specificity of site for non-malignant neoplasms than is possible in ICD-10.

The morphology code for neoplasms has been adopted by the *Systematized nomenclature of medicine* (SNOMED) (*2*), which was derived from the 1968 edition of the *Manual of tumor nomenclature and coding* (MOTNAC) (*3*) and the *Systematized nomenclature of pathology* (SNOP) (*4*). The morphology code has five digits; the first four digits identify the histological type and the fifth the behaviour of the neoplasm (malignant, *in situ*, benign, etc.). The ICD-O morphology codeS also appear in Volume 1 of ICD-10 and are added to the relevant entries in Volume 3, the Alphabetical Index. Tables are available for the conversion of the ICD-O third edition codes to ICD-10.

Dermatology

In 1978, the British Association of Dermatologists published the *International Coding Index for Dermatology* compatible with the Ninth Revision of the ICD. The Association has also published an adaptation of ICD-10 to dermatology, under the auspices of the International League of Dermatological Societies.

Dentistry and stomatology

The third edition of the *Application of the International Classification of Diseases to Dentistry and Stomatology* (ICD-DA), based on ICD-10, was published by WHO in 1995. It brings together ICD categories for diseases or conditions that occur in, have manifestations in, or have associations with the oral cavity and adjacent structures. It provides greater detail than ICD-10 by means of a fifth digit, but the numbering system is organized so that the

relationship between an ICD-DA code and the ICD code from which it is derived is immediately obvious, and so that data from ICD-DA categories can be readily incorporated into ICD categories.

Neurology

In 1997 WHO published an adaptation of ICD-10 to neurology (ICD-NA), which retains the classification and coding systems of ICD-10 but is further subdivided at the fifth-character level and beyond to allow neurological diseases to be classified with greater precision.

Rheumatology and orthopaedics

The International League of Associations of Rheumatology is working on a revision of the Application of the International Classification of Diseases to Rheumatology and Orthopaedics (ICD-R&O), including the International Classification of Musculoskeletal Disorders (ICMSD), to be compatible with ICD-10. The ICD-R&O provides detailed specification of conditions through the use of additional digits, which allow for extra detail while retaining compatibility with ICD-10. The ICMSD is designed to clarify and standardize the use of terms and is supported by a glossary of generic descriptors for groups of conditions, such as the inflammatory polyarthropathies.

Paediatrics

Under the auspices of the International Pediatric Association, the British Paediatric Association (BPA) has published an application of ICD-10 to paediatrics, which uses a fifth digit to provide greater specificity. This follows similar applications prepared by BPA for ICD-8 and ICD-9.

Mental disorders

The ICD-10 Classification of Mental and Behavioural Disorders: clinical descriptions and diagnostic guidelines. This volume, published in 1992, provides for each category in Chapter V of ICD-10 (Mental and behavioural disorders) a general description and guidelines concerning the diagnosis, as well as comments about differential diagnosis and a listing of synonyms and exclusion terms (*5*). Where more detail is required, the guidelines give further subdivisions at the fifth- and sixth-digit levels. A second publication relating to Chapter V, *Diagnostic criteria for research*, was published in 1993.

A version of the classification for use in primary health care, and another version that uses a rearrangement of categories of childhood mental disorders in a multiaxial system, to allow simultaneous assessment of the clinical state, relevant environmental factors, and the degree of disability linked to the disease have also been developed.

2.2.2   Non-diagnostic classifications

Procedures in medicine

The *International Classification of Procedures in Medicine* (ICPM) was published in two volumes by WHO in 1978 (*6*). It includes procedures for medical diagnosis, prevention, therapy, radiology, drugs, and surgical and laboratory procedures. The classification has been adopted by some countries, while others have used it as a basis for developing their own national classifications of surgical operations.

The Heads of WHO Collaborating Centres for Classification of Diseases recognized that the process of consultation that had to be followed before finalization and publication was inappropriate in such a wide and rapidly advancing field. They therefore recommended that there should be no revision of the ICPM in conjunction with the Tenth Revision of the ICD.

In 1987, the Expert Committee on the International Classification of Diseases asked WHO to consider updating at least the outline for surgical procedures (Chapter 5) of the ICPM for the Tenth Revision. In response to this request and the needs expressed by a number of countries, the Secretariat prepared a tabulation list for procedures.

At their meeting in 1989, the Heads of the Collaborating Centres agreed that the list could serve as a guide for the national publication of statistics on surgical procedures and could also facilitate intercountry comparisons. The list could also be used as a basis for the development of comparable national classifications of surgical procedures.

Work on the list will continue, but any publication will follow the issue of ICD-10. In the meantime, other approaches to this subject are being explored. Some of these have common characteristics, such as a fixed field for specific items (organ, technique, approach, etc.), the possibility of being automatically updated, and the flexibility of being used for more than one purpose.

The International Classification of Functioning,
Disability and Health

The *International Classification of Functioning, Disability and Health (ICF)* was published by WHO in all six WHO official languages in 2001, after its official endorsement by the Fifty-fourth World Health Assembly on 22 May 2001. It has subsequently been translated into over 25 languages.

The ICF classifies health and health-related states in two parts. Part 1 classifies functioning and disability. Part 2 comprises environmental and personal contextual factors. Functioning and disability in Part 1 are described

from the perspectives of the body, the individual, and society, formulated in two components: (1) body functions and structures, and (2) activities and participation. Since an individual's functioning and disability occur in a context, the ICF also includes a list of environmental factors.

The ICF has superseded the International Classification of Impairments, Disabilities and Handicaps (ICIDH). As a consequence the old ICIDH terms and definitions have been replaced by the following new ICF terms and definitions:

Functioning is a generic term for body functions, body structures, activities and participation. It denotes the positive aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal factors).

Disability is an umbrella term for impairments, activity limitations and participation restrictions. It denotes the negative aspects of the interaction between an individual (with a health condition) and that individual's contextual factors (environmental and personal factors).

Body functions are the physiological functions of body systems (including psychological functions).

Body structures are anatomical parts of the body such as organs, limbs and their components.

Impairments are problems in body function or structure such as a significant deviation or loss.

Activity is the execution of a task or action by an individual.

Activity limitations are difficulties an individual may have in executing activities.

Participation is involvement in a life situation.

Participation restrictions are problems an individual may experience in involvement in life situations.

Environmental factors make up the physical, social and attitudinal environment in which people live and conduct their lives.

The ICF uses an alphanumeric system in which the letters *b*, *s*, *d* and *e* are used to denote Body Functions, Body Structures, Activities and Participation, and Environmental Factors. These letters are followed by a numeric code that starts with the chapter number (one digit), followed by the second level (two digits), and the third and fourth levels (one digit each). ICF categories are "nested" so that broader categories are defined to include more detailed subcategories of the parent category. Any individual may have a range of codes at each level. These may be independent or interrelated.

9

The ICF codes are only complete with the presence of a qualifier, which denotes a magnitude of the level of health (e.g. severity of the problem). Qualifiers are coded as one, two or more numbers after a point (or separator). Use of any code should be accompanied by at least one qualifier. Without qualifiers, codes have no inherent meaning. The first qualifier for Body Functions and Structures, the performance and capacity qualifiers for Activities and Participation, and the first qualifier for Environmental Factors all describe the extent of problems in the respective component.

The ICF puts the notions of 'health' and 'disability' in a new light. It acknowledges that every human being can experience a decrement in health and thereby experience some disability. This is not something that happens to only a minority of people. The ICF thus 'mainstreams' the experience of disability and recognizes it as a universal human experience. By shifting the focus from cause to impact it places all health conditions on an equal footing allowing them to be compared using a common metric – the ruler of health and disability. Furthermore, ICF takes into account the social aspects of disability and does not see disability only as a 'medical' or 'biological' dysfunction. By including Contextual Factors, in which environmental factors are listed, ICF allows the recording of the impact of the environment on the person's functioning.

The ICF is WHO's framework for measuring health and disability at both individual and population levels. While the International Classification of Diseases classifies diseases and causes of death, the ICF classifies health domains. The ICD and ICF constitute the two major building blocks of WHO's Family of International Classifications. Together, they provide exceptionally broad yet accurate tools to capture the full picture of health.

2.2.3   Information support to primary health care

One of the challenges of the Global Strategy for Health for All by the Year 2000 is to provide information support to primary health care (PHC). In countries without complete information or with only poor-quality data, a variety of approaches need to be adopted to supplement or replace the conventional use of the ICD.

Since the late 1970's, various countries have experimented with the collection of information by lay personnel. Lay reporting has subsequently been extended to a broader concept called 'non-conventional methods'. These methods, covering a variety of approaches, have evolved in different countries as a means of obtaining information on health status where conventional methods (censuses, surveys, vital or institutional morbidity and mortality statistics) have been found to be inadequate.

One of these approaches, 'community-based information', involves community participation in the definition, collection and use of health-related data. The degree of community participation ranges from involvement only in data collection to the design, analysis and utilization of information. Experience in several countries has shown that this approach is more than a theoretical framework. The International Conference for the Tenth Revision of the International Classification of Diseases (see Volume 1) noted in its report:

> The Conference was informed about the experience of countries in developing and applying community-based health information that covered health problems and needs, related risk factors and resources. It supported the concept of developing non-conventional methods at the community level as a method of filling information gaps in individual countries and strengthening their information systems. It was stressed that, for both developed and developing countries, such methods or systems should be developed locally and that, because of factors such as morbidity patterns as well as language and cultural variations, transfer to other areas or countries should not be attempted.

Given the encouraging results of this approach in many countries, the Conference agreed that WHO should continue to give guidance on the development of local schemes and to support the progress of the methodology.

2.2.4 International Nomenclature of Diseases

In 1970, the Council for International Organizations of Medical Sciences (CIOMS) began the preparation of an International Nomenclature of Diseases (IND), with the assistance of its member organizations, and five volumes of provisional nomenclature were issued during 1972 and 1974. It was soon realized, however, that the compilation of such a nomenclature, were it to be truly international, would need much wider consultation than was possible through the members of CIOMS alone. In 1975, the IND became a joint project of CIOMS and WHO, guided by a Technical Steering Committee of representatives from both organizations.

The principal objective of the IND is to provide, for each morbid entity, a single recommended name. The main criteria for selection of this name are that it should be specific (applicable to one and only one disease), unambiguous, as self-descriptive as possible, as simple as possible, and (whenever feasible) based on cause. However, many widely used names that do not fully meet the above criteria are being retained as synonyms, provided they are not inappropriate, misleading, or contrary to the recommendations of

international specialist organizations. Eponymous terms are avoided since they are not self-descriptive; however, many of these names are in such widespread use (e.g. Hodgkin disease, Parkinson disease and Addison disease) that they must be retained.

Each disease or syndrome for which a name is recommended is defined as unambiguously and as briefly as possible. A list of synonyms appears after each definition. These comprehensive lists are supplemented, if necessary, by explanations about why certain synonyms have been rejected or why an alleged synonym is not a true synonym.

The IND is intended to be complementary to the ICD. The differences between a nomenclature and a classification are discussed at 2.3. As far as possible, IND terminology has been given preference in the ICD.

The volumes of the IND published up to 1992 (*8*) are: *Infectious diseases* (bacterial diseases (1985), mycoses (1982), viral diseases (1983), parasitic diseases (1987)); *Diseases of the lower respiratory tract* (1979); *Diseases of the digestive system* (1990); *Cardiac and vascular diseases* (1989); *Metabolic, nutritional and endocrine disorders* (1991); *Diseases of the kidney, the lower urinary tract, and the male genital system* (1992); and *Diseases of the female genital system* (1992).

2.2.5 The role of WHO

Most of the classifications described above are the product of very close collaboration between nongovernmental organizations, other agencies, and divisions and units of WHO, with the unit responsible for the ICD and the ICF assuming a coordinating role and providing guidance and advice.

WHO promotes the development of adaptations that extend both the usefulness of the ICD and the ICF and the comparability of health statistics. The role of WHO in the development of new classifications, adaptations, and glossaries is to provide cooperative leadership and to act as a clearing-house, giving technical advice, guidance and support when needed. Anyone interested in preparing an adaptation of ICD-10 or the ICF should consult with WHO as soon as a clear statement of the objectives of the adaptation has been developed. Unnecessary duplication will thus be avoided by a coordinated approach to the development of the various components of the family.

2.3   General principles of disease classification

As William Farr stated in 1856 (*9*):

> Classification is a method of generalization. Several classifications may, therefore, be used with advantage; and the physician, the pathologist, or

> the jurist, each from his own point of view, may legitimately classify the diseases and the causes of death in the way that he thinks best adapted to facilitate his inquiries, and to yield general results.

A statistical classification of diseases must be confined to a limited number of mutually exclusive categories able to encompass the whole range of morbid conditions. The categories have to be chosen to facilitate the statistical study of disease phenomena. A specific disease entity that is of particular public health importance or that occurs frequently should have its own category. Otherwise, categories will be assigned to groups of separate but related conditions. Every disease or morbid condition must have a well defined place in the list of categories. Consequently, throughout the classification, there will be residual categories for other and miscellaneous conditions that cannot be allocated to the more specific categories. As few conditions as possible should be classified to residual categories.

It is the element of grouping that distinguishes a statistical classification from a nomenclature, which must have a separate title for each known morbid condition. The concepts of classification and nomenclature are nevertheless closely related because a nomenclature is often arranged systematically.

A statistical classification can allow for different levels of detail if it has a hierarchical structure with subdivisions. A statistical classification of diseases should retain the ability both to identify specific disease entities and to allow statistical presentation of data for broader groups, to enable useful and understandable information to be obtained.

The same general principles can be applied to the classification of other health problems and reasons for contact with health-care services, which are also incorporated in the ICD.

The ICD has developed as a practical, rather than a purely theoretical classification, in which there are a number of compromises between classification based on etiology, anatomical site, circumstances of onset, etc. There have also been adjustments to meet the variety of statistical applications for which the ICD is designed, such as mortality, morbidity, social security and other types of health statistics and surveys.

2.4 The basic structure and principles of classification of the ICD

The ICD is a variable-axis classification. The structure has developed out of that proposed by William Farr in the early days of international discussions on classification structure. His scheme was that, for all practical,

epidemiological purposes, statistical data on diseases should be grouped in the following way:

- epidemic diseases
- constitutional or general diseases
- local diseases arranged by site
- developmental diseases
- injuries.

This pattern can be identified in the chapters of ICD-10. It has stood the test of time and, though in some ways arbitrary, is still regarded as a more useful structure for general epidemiological purposes than any of the alternatives tested.

The first two, and the last two, of the groups listed above comprise 'special groups', which bring together conditions that would be inconveniently arranged for epidemiological study were they to be scattered, for instance in a classification arranged primarily by anatomical site. The remaining group, 'local diseases arranged by site', includes the ICD chapters for each of the main body systems.

The distinction between the 'special groups' chapters and the 'body systems' chapters has practical implications for understanding the structure of the classification, for coding to it, and for interpreting statistics based on it. It has to be remembered that, *in general*, conditions are primarily classified to one of the 'special groups' chapters. Where there is any doubt as to where a condition should be positioned, the 'special groups' chapters should take priority.

The basic ICD is a single coded list of three-character categories, each of which can be further divided into up to 10 four-character subcategories. In place of the purely numeric coding system of previous revisions, the Tenth Revision uses an alphanumeric code with a letter in the first position and a number in the second, third and fourth positions. The fourth character follows a decimal point. Possible code numbers therefore range from A00.0 to Z99.9. The letter U is not used (see 2.4.7).

2.4.1   Volumes

ICD‑10 comprises three volumes: Volume 1 contains the main classifications; Volume 2 provides guidance to users of the ICD; and Volume 3 is the Alphabetical Index to the classification.

Most of Volume 1 is taken up with the main classification, composed of the list of three‑character categories and the tabular list of inclusions and four‑

character subcategories. The 'core' classification – the list of three‑character categories (Volume 1) – is the mandatory level for reporting to the WHO mortality database and for general international comparisons. This core classification also lists chapter and block titles. The tabular list, giving the full detail of the four‑character level, is divided into 21 chapters.

Volume 1 also contains the following:

- *Morphology of neoplasms*. The classification of morphology of neoplasms may be used, if desired, as an additional code to classify the morphological type for neoplasms which, with a few exceptions, are classified in Chapter II only according to behaviour and site (topography). The morphology codes are the same as those used in the special adaptation of the ICD for oncology (ICD-O) (*1*).

- *Special tabulation lists*. Because the full four‑character list of the ICD, and even the three‑character list, are too long to be presented in every statistical table, most routine statistics use a tabulation list that emphasizes certain single conditions and groups others. The four special lists for the tabulation of mortality are an integral part of the ICD. Lists 1 and 2 are for general mortality and lists 3 and 4 are for infant and child mortality (ages 0–4 years). There is also a special tabulation list for morbidity. These are set out in Volume 1. Guidance on the appropriate use of the various levels of the classification and the tabulation lists is given in Section 5 of this volume.

- *Definitions*. The definitions in Volume 1 have been adopted by the World Health Assembly and are included to facilitate the international comparability of data.

- *Nomenclature regulations*. The regulations adopted by the World Health Assembly set out the formal responsibilities of WHO Member States regarding the classification of diseases and causes of death, and the compilation and publication of statistics. They are found in Volume 1.

2.4.2   Chapters

The classification is divided into 21 chapters. The first character of the ICD code is a letter, and each letter is associated with a particular chapter, except for the letter D, which is used in both Chapter II, Neoplasms, and Chapter III, Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism, and the letter H, which is used in both Chapter VII, Diseases of the eye and adnexa and Chapter VIII, Diseases of the ear and mastoid process. Four chapters (Chapters I, II, XIX and XX) use more than one letter in the first position of their codes.

Each chapter contains sufficient three-character categories to cover its content; not all available codes are used, allowing space for future revision and expansion.

Chapters I–XVII relate to diseases and other morbid conditions, and Chapter XIX to injuries, poisoning and certain other consequences of external causes. The remaining chapters complete the range of subject matter nowadays included in diagnostic data. Chapter XVIII covers Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified. Chapter XX, External causes of morbidity and mortality, was traditionally used to classify causes of injury and poisoning, but, since the Ninth Revision, has also provided for any recorded external cause of diseases and other morbid conditions. Finally, Chapter XXI, Factors influencing health status and contact with health services, is intended for the classification of data explaining the reason for contact with health-care services of a person not currently sick, or the circumstances in which the patient is receiving care at that particular time or otherwise having some bearing on that person's care.

2.4.3   Blocks of categories

The chapters are subdivided into homogeneous 'blocks' of three-character categories. In Chapter I, the block titles reflect two axes of classification – mode of transmission and broad group of infecting organisms. In Chapter II, the first axis is the behaviour of the neoplasm; within behaviour, the axis is mainly by site, although a few three-character categories are provided for important morphological types (e.g. leukaemias, lymphomas, melanomas, mesotheliomas, Kaposi sarcoma). The range of categories is given in parentheses after each block title.

2.4.4   Three-character categories

Within each block, some of the three-character categories are for single conditions, selected because of their frequency, severity or susceptibility to public health intervention, while others are for groups of diseases with some common characteristic. There is usually provision for 'other' conditions to be classified, allowing many different but rarer conditions, as well as 'unspecified' conditions, to be included.

2.4.5   Four-character subcategories

Although not mandatory for reporting at the international level, most of the three-character categories are subdivided by means of a fourth, numeric character after a decimal point, allowing up to 10 subcategories. Where a three-character category is not subdivided, it is recommended that the letter 'X' be used to fill the fourth position so that the codes are of a standard length for data-processing.

The four-character subcategories are used in whatever way is most appropriate, identifying, for example, different sites or varieties if the three-

character category is for a single disease, or individual diseases if the three-character category is for a group of conditions.

The fourth character .8 is generally used for 'other' conditions belonging to the three-character category, and .9 is mostly used to convey the same meaning as the three-character category title, without adding any additional information.

When the same fourth‑character subdivisions apply to a range of three‑character categories, they are listed once only, at the start of the range. A note at each of the relevant categories indicates where the details are to be found. For example, categories O03–O06, for different types of abortion, have common fourth characters relating to associated complications (see Volume 1).

2.4.6 Supplementary subdivisions for use at the fifth or subsequent character level

The fifth and subsequent character levels are usually subclassifications along a different axis from the fourth character. They are found in:

Chapter XIII –   subdivisions by anatomical site
Chapter XIX –   subdivisions to indicate open and closed fractures as well as intracranial, intrathoracic and intra-abdominal injuries with and without open wound
Chapter XX –   former subdivisions to indicate the type of activity being undertaken at the time of the event have become now an optional additional information that is recorded in a separate field

2.4.7 The unused 'U' codes

Codes U00–U49 are to be used by WHO for the provisional assignment of new diseases of uncertain etiology. Codes U50–U99 may be used in research, e.g. when testing an alternative subclassification for a special project.

3. How to use the ICD

This section contains practical information which all users need to know in order to exploit the classification to its full advantage. Knowledge and understanding of the purpose and structure of the ICD are vital for statisticians and analysts of health information as well as for coders. Accurate and consistent use of the ICD depends on the correct application of all three volumes.

3.1 How to use Volume 1

3.1.1 Introduction

Volume 1 of the ICD contains the classification itself. It indicates the categories into which diagnoses are to be allocated, facilitating their sorting and counting for statistical purposes. It also provides those using statistics with a definition of the content of the categories, subcategories and tabulation list items they may find included in statistical tables.

Although it is theoretically possible for a coder to arrive at the correct code by the use of Volume 1 alone, this would be time‑consuming and could lead to errors in assignment. An Alphabetical Index as a guide to the classification is contained in Volume 3. The Introduction to the Index provides important information about its relationship with Volume 1.

Most routine statistical uses of the ICD involve the selection of a single condition from a certificate or record where more than one is entered. The rules for this selection in relation to mortality and morbidity are contained in Section 4 of this Volume.

A detailed description of the tabular list is given in Section 2.4.

3.1.2 Use of the tabular list of inclusions and four‑character subcategories

Inclusion terms

Within the three- and four-character rubrics[1], there are usually listed a number of other diagnostic terms. These are known as 'inclusion terms' and are given,

---

[1] In the context of the ICD, 'rubric' denotes either a three-character category or a four-character subcategory.

in addition to the title, as examples of the diagnostic statements to be classified to that rubric. They may refer to different conditions or be synonyms. They are not a subclassification of the rubric.

Inclusion terms are listed primarily as a guide to the content of the rubrics. Many of the items listed relate to important or common terms belonging to the rubric. Others are borderline conditions or sites listed to distinguish the boundary between one subcategory and another. The lists of inclusion terms are by no means exhaustive and alternative names of diagnostic entities are included in the Alphabetical Index, which should be referred to first when coding a given diagnostic statement.

It is sometimes necessary to read inclusion terms in conjunction with titles. This usually occurs when the inclusion terms are elaborating lists of sites or pharmaceutical products, where appropriate words from the title (e.g. "malignant neoplasm of ...", "injury to ...", "poisoning by ...") need to be understood.

General diagnostic descriptions common to a range of categories, or to all the subcategories in a three‑character category, are to be found in notes headed "Includes", immediately following a chapter, block or category title.

Exclusion terms

Certain rubrics contain lists of conditions preceded by the word "Excludes". These are terms which, although the rubric title might suggest that they were to be classified there, are in fact classified elsewhere. An example of this is in category A46, "Erysipelas", where postpartum or puerperal erysipelas is excluded. Following each excluded term, in parentheses, is the category or subcategory code elsewhere in the classification to which the excluded term should be allocated.

General exclusions for a range of categories or for all subcategories in a three-character category are to be found in notes headed "Excludes", immediately following a chapter, block or category title.

Glossary descriptions

In addition to inclusion and exclusion terms, Chapter V, Mental and behavioural disorders, uses glossary descriptions to indicate the content of rubrics. This device is used because the terminology of mental disorders varies greatly, particularly between different countries, and the same name may be used to describe quite different conditions. The glossary is not intended for use by coding staff.

Similar types of definition are given elsewhere in the ICD, for example, Chapter XXI, to clarify the intended content of a rubric.

3.1.3   Two codes for certain conditions

The "dagger and asterisk" system

ICD‑9 introduced a system, continued in ICD‑10, whereby there are two codes for diagnostic statements containing information about both an underlying generalized disease and a manifestation in a particular organ or site which is a clinical problem in its own right.

The primary code is for the underlying disease and is marked with a dagger (†); an optional additional code for the manifestation is marked with an asterisk (*). This convention was provided because coding to underlying disease alone was often unsatisfactory for compiling statistics relating to particular specialties, where there was a desire to see the condition classified to the relevant chapter for the manifestation when it was the reason for medical care.

While the dagger and asterisk system provides alternative classifications for the presentation of statistics, it is a principle of the ICD that the dagger code is the primary code and must always be used. For coding, the asterisk code must never be used alone. However for morbidity coding, the dagger and asterisk sequence may be reversed when the manifestations of a disease is the primary focus of care. Statistics incorporating the dagger codes conform with the traditional classification for presenting data on mortality and other aspects of medical care.

Asterisk codes appear as three‑character categories. There are separate categories for the same conditions occurring when a particular disease is not specified as the underlying cause. For example, categories G20 and G21 are for forms of Parkinsonism that are not manifestations of other diseases assigned elsewhere, while category G22* is for "Parkinsonism in diseases classified elsewhere". Corresponding dagger codes are given for conditions mentioned in asterisk categories; for example, for syphilitic Parkinsonism in G22*, the dagger code is A52.1†.

Some dagger codes appear in special dagger categories. More often, however, the dagger code for dual‑element diagnoses and unmarked codes for single‑element conditions may be derived from the same category or subcategory.

The areas of the classification where the dagger and asterisk system operates are limited; there are 83 special asterisk categories throughout the classification, which are listed at the start of the relevant chapters.

Rubrics in which dagger‑marked terms appear may take one of three different forms.

(i)   If the symbol (†) and the alternative asterisk code both appear in the rubric heading, all terms classifiable to that rubric are subject to dual classification and all have the same alternative code, e.g.:

A17.0†   Tuberculous meningitis (G01*)

Tuberculosis of meninges (cerebral) (spinal)

Tuberculous leptomeningitis.

(ii)   If the symbol appears in the rubric heading but the alternative asterisk code does not, all terms classifiable to that rubric are subject to dual classification but they have different alternative codes (which are listed for each term), e.g:

A18.1†   Tuberculosis of genitourinary system

Tuberculosis of:

- bladder (N33.0*)
- cervix (N74.0*)
- kidney (N29.1*)
- male genital organs (N51.-*)
- ureter (N29.1*)

Tuberculous female pelvic inflammatory disease (N74.1*).

(iii)   If neither the symbol nor the alternative code appears in the title, the rubric as a whole is not subject to dual classification but individual inclusion terms may be; if so, these terms will be marked with the symbol and their alternative codes given, e.g.:

A54.8   Other gonococcal infections

Gonococcal:

...

- peritonitis† (K67.1*)
- pneumonia† (J17.0*)
- sepsis
- skin lesions.

Other optional dual coding

There are certain situations, other than in the dagger and asterisk system, that permit two ICD codes to be used to describe fully a person's condition. The note in the tabular list, "Use additional code, if desired ...", identifies many of these situations. The additional codes would be used only in special tabulations.

These are:

(i) for local infections, classifiable to the "body systems" chapters, codes from Chapter I may be added to identify the infecting organism, where this information does not appear in the title of the rubric. A block of categories, B95–B98, is provided for this purpose in Chapter I;

(ii) for neoplasms with functional activity. To the code from Chapter II may be added the appropriate code from Chapter IV to indicate the type of functional activity;

(iii) for neoplasms, the morphology code from Volume 1, although not part of the main ICD, may be added to the Chapter II code to identify the morphological type of the tumour;

(iv) for conditions classifiable to F00–F09 (Organic, including symptomatic, mental disorders) in Chapter V, where a code from another chapter may be added to indicate the cause, i.e. the underlying disease, injury or other insult to the brain;

(v) where a condition is caused by a toxic agent, a code from Chapter XX may be added to identify that agent;

(vi) where two codes can be used to describe an injury, poisoning or other adverse effect: a code from Chapter XIX, which describes the nature of the injury, and a code from Chapter XX, which describes the cause. The choice as to which code should be the additional code depends upon the purpose for which the data are being collected. (See introduction to Chapter XX, of Volume 1.)

3.1.4   Conventions used in the tabular list

In listing inclusion and exclusion terms in the tabular list, the ICD employs some special conventions relating to the use of parentheses, square brackets, colons, braces, the abbreviation "NOS", the phrase "not elsewhere classified" (NEC), and the word "and" in titles. These need to be clearly understood both by coders and by anyone wishing to interpret statistics based on the ICD.

Parentheses (   )

Parentheses are used in Volume 1 in four important situations.

(a) Parentheses are used to enclose supplementary words, which may follow a diagnostic term without affecting the code number to which the words outside the parentheses would be assigned. For example, in I10 the inclusion term, "Hypertension (arterial) (benign) (essential) (malignant) (primary) (systemic)", implies that I10 is the code number for the word "Hypertension" alone or when qualified by any, or any combination, of the words in parentheses.

(b) Parentheses are also used to enclose the code to which an exclusion term refers. For example:

H01.0   Blepharitis

            Excludes: blepharoconjunctivitis (H10.5).

(c) Another use of parentheses is in the block titles, to enclose the three-character codes of categories included in that block.

(d) The last use of parentheses was incorporated in the Ninth Revision and is related to the dagger and asterisk system. Parentheses are used to enclose the dagger code in an asterisk category or the asterisk code following a dagger term.

Square brackets [   ]

Square brackets are used:

(a) for enclosing synonyms, alternative words or explanatory phrases; for example:

A30   Leprosy [Hansen's disease];

(b) for referring to previous notes; for example:

C00.8   Overlapping lesion of lip [See note 5 at the beginning of this chapter];

(c) for referring to a previously stated set of fourth character subdivisions common to a number of categories; for example:

K27   Peptic   ulcer,   site   unspecified   [See   before   K25   for subdivisions].

Colon :

A colon is used in listings of inclusion and exclusion terms when the words that precede it are not complete terms for assignment to that rubric. They require one or more of the modifying or qualifying words indented under them before they can be assigned to the rubric. For example, in K36, "Other appendicitis", the diagnosis "appendicitis" is to be classified there only if qualified by the words "chronic" or "recurrent".

Brace }

A brace (indicated by a vertical line) is used in listings of inclusion and exclusion terms to indicate that neither the words that precede it nor the words

after it are complete terms. Any of the terms before the brace should be qualified by one or more of the terms that follow it. For example:

O71.6	Obstetric damage to pelvic joints and ligaments	
	Avulsion of inner symphyseal cartilage	
	Damage to coccyx	obstetric
	Traumatic separation of symphysis (pubis).	

'NOS'

The letters NOS are an abbreviation for "not otherwise specified", implying "unspecified" or "unqualified".

Sometimes an unqualified term is nevertheless classified to a rubric for a more specific type of the condition. This is because, in medical terminology, the most common form of a condition is often known by the name of the condition itself and only the less common types are qualified. For example, "mitral stenosis" is commonly used to mean "rheumatic mitral stenosis". These inbuilt assumptions have to be taken into account in order to avoid incorrect classification. Careful inspection of inclusion terms will reveal where an assumption of cause has been made; coders should be careful not to code a term as unqualified unless it is quite clear that no information is available that would permit a more specific assignment elsewhere. Similarly, in interpreting statistics based on the ICD, some conditions assigned to an apparently specified category will not have been so specified on the record that was coded. When comparing trends over time and interpreting statistics, it is important to be aware that assumptions may change from one revision of the ICD to another. For example, before the Eighth Revision, an unqualified aortic aneurysm was assumed to be due to syphilis.

"Not elsewhere classified"

The words "not elsewhere classified", when used in a three‑character category title, serve as a warning that certain specified variants of the listed conditions may appear in other parts of the classification. For example:

J16 Pneumonia due to other infectious organisms, not elsewhere classified.

This category includes J16.0 Chlamydial pneumonia and J16.8 Pneumonia due to other specified infectious organisms. Many other categories are provided in Chapter X (for example, J09–J15) and other chapters (for example, P23.‑ Congenital pneumonia) for pneumonias due to specified infectious organisms. J18 Pneumonia, organism unspecified, accommodates pneumonias for which the infectious agent is not stated.

"And" in titles

"And" stands for "and/or". For example, in the rubric A18.0, Tuberculosis of bones and joints, are to be classified cases of "tuberculosis of bones", "tuberculosis of joints" and "tuberculosis of bones and joints".

Point dash.-

In some cases, the fourth character of a subcategory code is replaced by a dash, e.g.:

G03   Meningitis due to other and unspecified causes

            Excludes: meningoencephalitis (G04.-)

This indicates to the coder that a fourth character exists and should be sought in the appropriate category. This convention is used in both the tabular list and the alphabetical index.

3.1.5   Categories with common characteristics

For quality control it is useful to introduce programmed checks into the computer system. The following groups of categories are provided as a basis for such checks on internal consistency, grouped according to the special characteristic that unites them.

Asterisk categories

Asterisk categories are not to be used alone; they must always be used in addition to a dagger code.

Categories limited to one sex

Some diseases, injuries and factors influencing health status and contact with health services are limited to, or more likely to occur in, only one sex. A list of such conditions is given in Annex 7.8. It is recommended that the list be used to check the consistency of data at the time of coding. If the reported diagnosis and the reported sex are inconsistent, clarification of the information provided should be sought.

Guidance for handling inconsistencies between causes of death and sex of decedents is given at 4.3.7.

Sequelae categories

The following categories are provided for sequelae of conditions that are no longer in an active phase:

B90–B94, E64.-, E68, G09, I69.-, O97, T90–T98, Y85–Y89.

Guidance for coding sequelae for both mortality and morbidity purposes can be found at 4.3.6 and 4.5.2.

Postprocedural disorders

The following categories are not to be used for underlying-cause mortality coding. Guidance for their use in morbidity coding is found at 4.5.2:

E89.-, G97.-, H59.-, H95.-, I97.-, J95.-, K91.-, M96.-, N99.-.

3.2   How to use Volume 3

The Introduction to Volume 3, the Alphabetical Index to ICD‑10, gives instructions on how to use it. These instructions should be studied carefully before starting to code. A brief description of the structure and use of the Index is given below.

3.2.1   Arrangement of the Alphabetical Index

Volume 3 is divided into three sections as follows:

- Section I lists all the terms classifiable to Chapters I–XIX and Chapter XXI, except drugs and other chemicals;

- Section II is the index of external causes of morbidity and mortality and contains all the terms classifiable to Chapter XX, except drugs and other chemicals;

- Section III, the Table of Drugs and Chemicals, lists for each substance the codes for poisonings and adverse effects of drugs classifiable to Chapter XIX, and the Chapter XX codes that indicate whether the poisoning was accidental, deliberate (self-harm), undetermined, or an adverse effect of a correct substance properly administered.

3.2.2   Structure

The Index contains 'lead terms', positioned to the far left of the column, with other words ('modifiers' or 'qualifiers') at different levels of indentation under them. In Section I, these indented modifiers or qualifiers are usually varieties, sites or circumstances that affect coding; in Section II they indicate different types of accident or occurrence, vehicles involved, etc. Modifiers that do not affect coding appear in parentheses after the condition.

3.2.3   Code numbers

The code numbers that follow the terms refer to the categories and subcategories to which the terms should be classified. If the code has only three characters, it can be assumed that the category has not been subdivided. In most instances where the category has been subdivided, the code number in the Index will give the fourth character. A dash in the fourth position (e.g. O03.‑) means that the category has been subdivided and that the fourth character can be found by referring to the tabular list. If the dagger and asterisk system applies to the term, both codes are given.

3.2.4   Conventions

Parentheses

Parentheses are used in the Index in the same way as in Volume 1, i.e. to enclose modifiers.

'NEC'

NEC (not elsewhere classified) indicates that specified variants of the listed condition are classified elsewhere, and that, where appropriate, a more precise term should be looked for in the Index.

Cross references

Cross references are used to avoid unnecessary duplication of terms in the Index. The word "see" requires the coder to refer to the other term; "see also" directs the coder to refer elsewhere in the Index if the statement being coded contains other information that is not found indented under the term to which "see also" is attached.

3.3   Basic coding guidelines

The Alphabetical Index contains many terms not included in Volume 1, and coding requires that both the Index and the Tabular List should be consulted before a code is assigned.

Before attempting to code, the coder needs to know the principles of classification and coding, and to have carried out practical exercises.

The following is a simple guide intended to assist the occasional user of the ICD.

1. Identify the type of statement to be coded and refer to the appropriate section of the Alphabetical Index. (If the statement is a disease or injury or other condition classifiable to Chapters I–XIX or XXI-XXII, consult

Section I of the Index. If the statement is the external cause of an injury or other event classifiable to Chapter XX, consult Section II.)

2. Locate the lead term. For diseases and injuries this is usually a noun for the pathological condition. However, some conditions expressed as adjectives or eponyms are included in the Index as lead terms.

3. Read and be guided by any note that appears under the lead term.

4. Read any terms enclosed in parentheses after the lead term (these modifiers do not affect the code number), as well as any terms indented under the lead term (these modifiers may affect the code number), until all the words in the diagnostic expression have been accounted for.

5. Follow carefully any cross‑references ("see" and "see also") found in the Index.

6. Refer to the tabular list to verify the suitability of the code number selected. Note that a three‑character code in the Index with a dash in the fourth position means that there is a fourth character to be found in Volume 1. Further subdivisions to be used in a supplementary character position are not indexed and, if used, must be located in Volume 1.

7. Be guided by any inclusion or exclusion terms under the selected code or under the chapter, block or category heading.

8. Assign the code.

Specific guidelines for the selection of the cause or condition to be coded, and for coding the condition selected, are given in Section 4.

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 Coding instructions for mortality: 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". However, for some diseases or injuries special rules apply.

Sections 4.1–4.3 contain instructions on coding causes of death for mortality statistics. The first section, 4.1, explains the basic concepts, section 4.2 explains how to identify the underlying cause of death, and section 4.3 gives further details on how to code multiple causes of death. Furthermore, Annex 7.10 includes a workflow diagram to illustrate the coding instructions for the selection of underlying cause of death. This is intended as a supplement to help coders follow the coding instructions.

4.1.1 Aim of the instructions: International comparability

Mortality statistics are widely used for medical research, monitoring of public health, evaluating health interventions and planning and follow-up of health care. Analysis of mortality data typically involves comparisons of data sets, for example those representing different regions or different points in time. Unless the data have been produced by the same methods and according to the same standards, such comparisons will yield misleading results. To standardize production of mortality data, therefore, the WHO issues international instructions on data collection, coding and classification, and statistical presentation of causes of death. It is of utmost importance that

production of mortality data follow the procedures detailed below, since any deviation from the international instructions will impair international comparability.

The aim of these instructions is to optimize the mortality statistics from a public health point of view. Some of the instructions might appear wrong or questionable from a purely medical perspective. They should still not be set aside, since they may be motivated by well-founded epidemiological and public health principles. If an apparent error is found it should be reported to the WHO, which will either explain the rationale or take steps to correct the error at the international level. Individual countries should not correct what is assumed to be an error, since changes at the national level will lead to data that are less comparable to data from other countries, and thus less useful for analysis.

4.1.2 The international death certificate

The international mortality coding instructions presuppose that data have been collected with a death certificate conforming to the International Form of Medical Certificate of Cause of Death (see Section XXX). Otherwise the causes of death cannot be coded according to the international standard and the data will not be internationally comparable. For example, some coding instructions apply to conditions reported as caused by certain other conditions, and in such cases it is important to have a clear distinction between causes reported in Part 1 and in Part 2. Further, information reported elsewhere on the certificate, such as manner of death or whether the pregnancy contributed to the death, is essential when assigning multiple cause codes to the conditions stated on the certificate.

It is the responsibility of the medical practitioner or other qualified certifier 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 certifier should use his or her clinical judgment 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.

The Medical part of the form is split into two parts: Part 1 of the form is for diseases related to the train of events leading directly to death, and Part 2 is for unrelated but contributory conditions. On the certificate all additional data that is necessary to code the correct underlying cause should be recorded, and the form in Annex 7.1 indicates which other information should be collected. In order to align the way this information is collected internationally the form should be followed as close as possible. The information then can be used for manual or electronic coding of the underlying and multiple causes of death.

4.1.3   Basic concepts

Mortality coders must be familiar with the basic concepts introduced in this section.

Sequence

The term "sequence" refers to a chain or series of medical events in which each step is a complication of or is caused by the previous step.

Example 1:	1(a)	Myocardial infarction
		due to
	(b)	Coronary thrombosis
		due to
	(c)	Coronary atherosclerosis.

The myocardial infarction is caused by the coronary thrombosis, which in its turn is a complication of coronary atherosclerosis. Consequently, the sequence is myocardial infarction caused by coronary thrombosis caused by coronary atherosclerosis.

Example 2:	1(a)	Extensive haemorrhage
		due to
	(b)	Traumatic amputation of right leg
		due to
	(c)	Run over by street car

The haemorrhage is a complication of the traumatic amputation, which in its turn is caused by the street car accident. Consequently, the sequence is extensive haemorrhage caused by traumatic amputation of right leg caused by being run over by street car.

Causal relationship

A causal relationship exists if a condition mentioned on the certificate can be caused by another condition also mentioned on the certificate. However, whether a causal relationship is considered acceptable or not for mortality coding is founded not only on a medical assessment but also on epidemiological and public health considerations. Therefore, a medically acceptable relationship might be listed as unacceptable in the coding instructions, because a later step in the sequence is more important from a public health point of view.

Therefore, to decide if a stated causal relationship is acceptable or not, first check the instructions in 4.2.3 (Accepted and rejected sequences). Stated

relationships that are not listed in Section 4.2.3 should be accepted as far as possible, because the certifier's opinion about the causes leading to death should not be disregarded lightly. If a stated relationship seems highly improbable, refer to internationally recognized decision tables for mortality coding.

A reported sequence that appears improbable should be accepted, if one or more intervening steps would explain the causal relationship. For example, if haematemesis is stated as due to cirrhosis of the liver, assume that the haematemesis was caused by ruptured oesophageal varices, the varices were caused by portal hypertension, and the portal hypertension by liver cirrhosis. Such assumed intervening causes must not be used to modify the coding.

Note that a condition A can never be caused by a condition B if condition A has a longer duration or earlier onset than condition B.

Duration

On death certificates, each reported condition should also include information about duration. The duration refers to the time period between the onset of the disease or condition and the time of death. Note that it is not always the same as the time of diagnosis of the condition, which may be at the same time as or after the onset of symptoms.

Terminal cause of death

The terminal cause of death is the condition entered first on the first line of Part 1 of the death certificate.

Example 3:   1(a)   Myocardial infarction and pulmonary oedema
                              due to
                     (b)   Coronary atherosclerosis

                     Myocardial infarction is the terminal cause of death since it is entered first on the first line of the certificate.

Starting point

The starting point is the condition or event that started the sequence of acceptable causal relationships ending with the terminal cause of death. In a correctly completed certificate the condition reported on the lowest used line in Part 1 is the starting point of the sequence.

Example 4:   1(a)   Myocardial infarction and pulmonary oedema
                              due to
                     (b)   Coronary atherosclerosis

                     Coronary atherosclerosis is the starting point since it started the sequence of events leading to death.

Example 5:   1(a)   Pneumonia

due to

   (b)   Hip fracture

due to

   (c)   Tripped on carpet

Tripped on carpet is the starting point since it started the sequence of events leading to death.

Tentative starting point

In a correctly completed certificate the condition reported on the lowest line in Part 1 is the starting point, but if the certificate is not correctly filled out the starting point may be reported somewhere else. The instructions on how to identify the starting point in such cases are complex. Sometimes several instructions apply to the same death certificate, and it is important to apply the instructions step by step as described in Section 4.2.1 (Find the starting point) below. In each step a tentative starting point is identified, a condition that provisionally is considered as the starting point but that, in later steps, might turn out to be caused by something else. The tentative starting point may change several times as the instructions are applied to the certificate.

Also take additional information on causal relationships that the certifier has provided into account. This applies also if the information appears in the "wrong" place of the certificate. For example, if the sequence in Part 1 starts with a disease A and information elsewhere on the certificate states that this disease A was due to a disease B, then consider B as the tentative starting point.

Obvious cause

Several coding instructions will instruct you to check if the tentative starting point is itself obviously caused by another condition mentioned on the same line or below on the certificate. The word "obviously" is important, and there must be no doubt about the relationship between the conditions. Further instructions are given in Section 4.2.1, Step SP6 – Obvious cause, and in Section 4.2.4 (Special instructions on Step SP6: Obvious cause).

Example 6:   1(a)   Sepsis

due to

   (b)   Peritonitis

2   Appendicitis with rupture

Peritonitis started the sequence of events reported in Part 1 so it is the tentative starting point. However, appendicitis with rupture is an obvious cause of peritonitis. Therefore, the sequence of events starts with appendicitis, which

consequently is the starting point of the sequence of events ending with sepsis, the terminal cause of death.

First mentioned sequence

A death certificate may contain several sequences, and the coding instructions will tell you to find the starting point of the first mentioned sequence.

To identify the starting point of the first mentioned sequence, begin with the terminal cause of death (the first mentioned condition on the uppermost line in Part 1). Establish whether the first condition listed on the next line in Part 1 can cause the terminal cause of death. If it cannot, and if there are more conditions on the line, establish if the second condition listed on this line can cause the terminal cause of death. Continue until you have found a condition that could cause the terminal cause of death. This is the tentative starting point of the sequence.
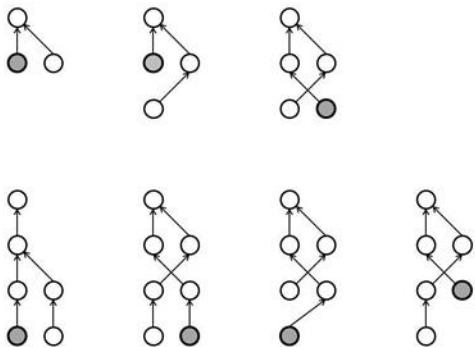
If no condition on the next line can cause the terminal cause of death, there is no sequence ending with the terminal cause of death.

If you found a tentative starting point but there are conditions reported on lower lines in Part 1, repeat the procedure for the next line. Start with the tentative starting point you identified in the previous step. Establish whether the first condition listed on the next lower line in Part 1 can cause the tentative starting point. If it cannot, and if there are more conditions on the line, check if the second condition listed on that line can cause the tentative starting point. Continue until you have found a condition that could cause the tentative starting point. This is the new tentative starting point.

If there are still conditions reported on lower lines in Part 1, repeat the procedure for as long as a new tentative starting point can be identified. When no condition can be found that could cause the tentative starting point, the last identified tentative starting point is also the starting point of the first mentioned sequence.

The following illustrates examples of certificates with several sequences. The starting point of the first mentioned sequence is in grey with a bold black circle.

Example 7:   1(a)   Pneumonia

            due to

         (b)   Hip fracture and heart failure

            due to

         (c)   Tripped on carpet, coronary atherosclerosis

Pneumonia can be due to hip fracture, and therefore hip fracture is the tentative starting point. Hip fracture can be due to tripping, which is the new tentative starting point. Since there are no causes reported below line 1(c), tripping on carpet is the starting point of the first mentioned sequence.

Example 8:   1(a)   Pneumonia

            due to

         (b)   Heart failure and hip fracture

            due to

         (c)   Coronary atherosclerosis and tripped on carpet

Pneumonia can be due to heart failure, and therefore heart failure is the tentative starting point. Heart failure can be due to coronary atherosclerosis, which is the new tentative starting point. Since there are no causes reported below line 1(c), coronary atherosclerosis is the starting point of the first mentioned sequence.

Example 9:   1(a)   Pneumonia
                         due to
                  (b)   Hip fracture and heart failure
                         due to
                  (c)   Coronary atherosclerosis and tripped on carpet

Pneumonia can be due to hip fracture, and therefore hip fracture is the tentative starting point. However, hip fracture cannot be due to coronary atherosclerosis but hip fracture can be due to tripping, which is the new tentative starting point. Since there are no causes reported below line 1(c), tripped on carpet is the starting point of the first mentioned sequence.

First mentioned condition

Some coding instructions refer to the "first mentioned" condition. When identifying the first mentioned condition, start from the top line of Part 1 downwards, and from left to right.

[*Note for translators:* If the local language is not written from left to right and from top to bottom, adapt the instruction so that it agrees with the direction of writing.]

Underlying cause of death

Most, but not all, mortality statistics show a single cause of death for each individual, regardless of how many conditions are reported on the certificate. The underlying cause of death is the condition selected for such single-cause tabulation. In most cases the underlying cause of death is the same as the starting point. However, sometimes a condition other than the starting point is selected as underlying cause of death for use in the statistics. See also "Modification" next.

Example 10:   1(a)   Bronchopneumonia
                         due to
                  (b)   Hemiplegia
                         due to
                  (c)   Cerebral infarction

Cerebral infarction started the sequence of events leading to death so it is the starting point. In this case it is also the underlying cause of death.

Modification

Special coding instructions on specific sequences and ICD categories may have the effect that a condition other than the starting point is selected as the underlying cause of death for use in the statistics. In such cases the underlying cause code often expresses a combination of the starting point with another reported condition or a complication or consequence of the starting point that is of particular importance to public health. The procedure by which the ICD code for the starting point is replaced by another code is called modification.

Example 10: 1(a) Heart disease
     due to
    (b) Generalized atherosclerosis.

    Generalized atherosclerosis started the sequence of events leading to death so it is the starting point. However, according to a special instruction on generalized atherosclerosis, generalized or unspecified atherosclerosis leading to heart disease is assigned to atherosclerotic heart disease in mortality statistics. Because of this modification atherosclerotic heart disease is the underlying cause of death.

Tentative underlying cause of death

Several special instructions on modification may apply to the same death certificate. If so, apply the instructions step by step. The code selected as the outcome of each step in the process is called the tentative underlying cause of death.

Example 11: 1(a) Myocardial infarction
     due to
    (b) Coronary atherosclerosis
     due to
    (c) Generalized atherosclerosis.

    Generalized atherosclerosis started the sequence of events leading to death so it is the starting point. There are special modification instructions relating to atherosclerosis and coronary heart disease in the ICD, and in the next step coronary atherosclerosis is selected as tentative underlying cause of death. But there are further instructions on coronary atherosclerosis and myocardial infarction, and in the final step myocardial infarction is selected as underlying cause.

4.2 Coding instructions for mortality: Selecting the underlying cause of death

When coding and classifying causes of death, you must first assign ICD codes to all the conditions mentioned on the death certificate. Many coding instructions are based on specific ICD codes and to determine if any of the instructions apply, you need to know the ICD codes for all conditions on the certificate. This is called multiple cause coding (see Section 4.3, Coding instructions for mortality: Multiple causes). Next, you select an underlying cause of death to be used in the mortality statistics. This is called classification of the underlying cause of death.

For most death certificates, selecting the underlying cause of death is a fairly uncomplicated procedure. There are, however, many cases where the underlying cause is not immediately obvious. To ensure that both straightforward and complex cases are coded according to international regulations, it is important to follow the coding instructions carefully, step by step. Otherwise the resulting mortality statistics will not be internationally comparable, which seriously reduces the value of the data for public health purposes.

Selecting the underlying cause of death involves two separate steps. First, you identify the starting point – the disease or event that started the chain of events leading to death. Next, you check if any special instructions apply to the starting point you identified. If so, the next step is to modify the starting point you identified in the first step. Annex 7.10 includes a workflow diagram to illustrate the coding instructions for the selection of the underlying cause of death. This is intended as a supplement to help coders follow the coding instructions.

Note that the purpose of the selection procedure is to produce the most useful mortality statistics possible. Thus, the following instructions may reflect importance for public health rather than what is correct from a purely medical point of view. The following instructions always apply, whether they might be considered medically correct or not.

In the coding examples below, the "due to" statement between the lines in Part 1 is no longer included. Still, it is important to bear in mind that anything reported on an upper line in Part 1 is supposed to be due to what is reported on the line below.

4.2.1   Find the starting point (Steps SP1 – SP8)

To identify the starting point, follow the eight steps specified in this section. The steps are named SP1 - SP8 (Starting Point rule 1 - Starting Point rule 8). Each step contains one selection rule. At each step there is a description of the selection rule itself and an instruction on what to do next. For some of the rules there are also bullet points with more detailed instructions.

Step SP1 – Single cause on certificate

If there is only one condition reported on the certificate, either in Part 1 or Part 2, this is the starting point and it is also the underlying cause. Next, go to Step M1.

If there are two or more conditions on the certificate: Go to Step SP2.

Step SP2 – Only one line used in Part 1

If the certifier has used only one line in Part 1 but entered two or more conditions on this line, then the first-mentioned condition is the tentative starting point. Next, go to Step SP6.

Also, if there is only one condition reported in Part 1 but one or more conditions in Part 2, then the single condition in Part 1 is the tentative starting point. Next, go to Step SP6.

If the certifier has used more than one line in Part 1, go to Step SP3.

Example 1:	1(a)	Myocardial infarction and diabetes mellitus
	(b)	
	(c)	
	(d)	
	2	

Myocardial infarction is mentioned first on the certificate and is the tentative starting point. Next, go to Step SP6 to check if further selection and modification rules apply.

Example 2:	1(a)	Myocardial infarction
	(b)	
	(c)	
	(d)	
	2	Diabetes mellitus

Myocardial infarction is mentioned first on the certificate and is the tentative starting point. Next, go to Step SP6 to check if further selection and modification rules apply.

Step SP3 – More than one line used in Part 1, first cause on lowest line explains all entries above

If there are conditions reported on more than one line in Part 1, check if all of the conditions reported on the line(s) above the lowest used line in Part 1 can be caused by the first condition on the lowest used line.

If all conditions on the line(s) above the lowest used line in Part 1 can be caused by the first condition on the lowest used line, then this condition is – tentatively – the starting point. Next, go to Step SP6.

If all conditions on the line(s) above the lowest used line in Part 1 cannot be caused by the first condition on the lowest used line, try to get clarification from the certifier. If no further information is available, go to Step SP4.

At Step SP3, it is not necessary to assess the causal relationships between conditions reported on the lines above the lowest used line. It is sufficient that each one of the conditions on the lines above the lowest used line can be due to the condition reported first on the lowest used line.

At Step SP3, there is no requirement that the conditions entered above the lowest used line have successively longer durations from the top line downwards. The condition mentioned first on the lowest used line may still have caused all conditions reported on the lines above, as long as none of them has a duration that is longer than the duration of the condition mentioned first on the lowest used line.

- Note that whether a causal relationship is listed as correct or not may reflect importance for public health rather than what is acceptable from a purely medical point of view. Therefore, check the instructions in Section 4.2.3 (Accepted and rejected sequences) first. Always follow the instructions in Section 4.2.3, whether they appear to be medically correct or not.

- Stated relationships that are not listed as rejected in Section 4.2.3 should be accepted as far as possible. They reflect the certifier's opinion about the causes leading to death and should not be disregarded lightly.

- If a stated relationship appears highly improbable, refer to internationally recognized decision tables for mortality coding.

Example 3:   1(a)   Bronchopneumonia
           (b)   Hemiplegia
           (c)   Cerebral infarction
           (d)
        2

Both bronchopneumonia and hemiplegia can be caused by cerebral infarction. This means that cerebral infarction is the tentative starting point.

Example 4:   1(a)   Kaposi sarcoma   1 year
           (b)   HIV   3 years
           (c)   Blood transfusion   5 years
           (d)   Haemophilia   since birth
        2

Kaposi sarcoma, HIV and blood transfusion can all be caused by haemophilia, which is the first (and also only) condition mentioned on the lowest used line in Part 1. This means that haemophilia is the tentative starting point.

Example 5:   1(a)   Pneumocystosis   6 months
           (b)   HIV   5 years
           (c)   Ruptured spleen   7 years
           (d)   Assault - fist fight   7 years
        2

Assault by fist fight is the only condition mentioned on the lowest used line in Part 1. It can cause everything on the lines above, assuming a blood transfusion as treatment for the ruptured spleen. See also Section 4.1.3 (Basic concepts), where assumption of intervening cause is described in the section on causal relationship.

Example 6:   1(a)   Liver metastases   2 months
           (b)   Bronchopneumonia   4 days
           (c)   Stomach cancer   6 months
           (d)
        2

Both liver metastases and bronchopneumonia can be caused by stomach cancer. This means that stomach cancer is the tentative starting point, even though bronchopneumonia cannot cause liver metastases and the bronchopneumonia has a shorter duration than the liver metastases.

Example 7:   1(a)   Liver metastases and pulmonary oedema
    (b)   Bronchopneumonia
    (c)   Stomach cancer
    (d)
    2

Liver metastases, pulmonary oedema and bronchopneumonia can all be caused by stomach cancer. This means that stomach cancer is the tentative starting point, even though bronchopneumonia cannot cause liver metastases.

Example 8:   1(a)   Liver metastases   2 months
    (b)   Bronchopneumonia   4 days
    (c)   Stomach cancer and cerebral infarction   6 months
    (d)
    2

Both liver metastases and bronchopneumonia can be caused by stomach cancer, which is the first condition mentioned on the lowest used line in Part 1. This means that stomach cancer is the tentative starting point, even though bronchopneumonia cannot cause liver metastases and bronchopneumonia has a shorter duration than the liver metastases.

Example 9:   1(a)   Liver metastases
    (b)   Bronchopneumonia and stomach cancer
    (c)
    (d)
    2

Liver metastases cannot be due to bronchopneumonia. This means that no tentative starting point can be identified at Step SP3. Therefore, go to Step SP4.

Step SP4 – First cause on lowest used line does not explain all entries above, but a sequence ends with the terminal condition

If there is only one sequence ending with the terminal condition, find the starting point of this sequence. This is the new tentative starting point. Next, go to Step SP6.

If there are two or more sequences of conditions or events ending with the terminal condition, identify the first mentioned sequence as described in Section 2 and find the starting point of this first mentioned sequence. Next, go to Step SP6.

If there is no sequence ending with the terminal condition: Go to Step SP5.

- As mentioned under Step SP3, always follow the instructions in Section 4.2.3 whether they appear to be medically correct or not.

- Stated relationships that are not listed as rejected in Section 4.2.3 should be accepted as far as possible. They reflect the certifier's opinion about the causes leading to death and should not be disregarded lightly.

- If a stated relationship appears highly improbable, refer to internationally recognized decision tables for mortality coding.

- When evaluating a sequence, also remember that according to Section 4.2.3 (Accepted and rejected sequences) a condition A cannot be caused by a condition B if condition A has a longer duration than condition B.

Example 10:   1(a)   Liver metastases   2 months
                 (b)   Cerebral infarction and stomach cancer 6 months
                 (c)
                 (d)
                 2

Cerebral infarction cannot cause liver metastases, but liver metastases can be due to stomach cancer. Stomach cancer is the tentative starting point.

Example 11:   1(a)   Bronchopneumonia   2 months
                 (b)   Cerebral infarction and liver metastases 6 months
                 (c)   Atherosclerosis and stomach cancer
                 (d)
                 2

Atherosclerosis cannot cause liver metastases. However, there are three acceptable sequences on the certificate: 1) bronchopneumonia caused by cerebral infarction, in its turn caused by atherosclerosis; 2) bronchopneumonia caused by cerebral infarction, in its turn caused by stomach cancer; and 3) bronchopneumonia caused by liver metastases, in its turn caused by stomach cancer. But the first-mentioned sequence is bronchopneumonia caused by cerebral infarction, in its turn caused by atherosclerosis. Consequently, atherosclerosis is the tentative starting point.

Step SP5 – No sequence in Part 1

If there is no sequence ending with the terminal condition, then the terminal condition is also the tentative starting point. Next, go to *Step SP6.*

Example 12:   1(a)   Liver metastases
                 (b)   Cerebral infarction

(c) Atherosclerosis

(d)

2   Stomach cancer

Atherosclerosis cannot cause liver metastases. Also, there is no sequence in Part 1 that ends with the terminal condition, because cerebral infarction cannot cause liver metastases. Because there is no sequence ending with the terminal condition, the terminal condition itself – liver metastases – is the tentative starting point.

Step SP6 – Obvious cause

Now check if the tentative starting point you selected in Step SP1 – Step SP5 obviously was caused by another condition on the certificate. If the tentative starting point is in Part 1, then this other condition must be either on the same line, further down in Part 1 or in Part 2. If the tentative starting point is in Part 2, this other condition must also be in Part 2.

Next, check if another condition mentioned on the same line or further down on the certificate as the new tentative starting point you just identified that obviously caused this new tentative starting point. Continue looking for a new tentative starting point until you find a starting point that is not obviously caused by a condition reported on the same line or further down on the certificate. Then go to *Step SP7*.

If there is no condition mentioned on the certificate that obviously caused the tentative starting point you selected in Step SP1 – Step SP5, go to *Step SP7*.

- If the tentative starting point is in Part 1, look for an obvious cause of the tentative starting point first on the same line in Part 1, next on lower lines in Part 1 and finally in Part 2. Do not look for obvious causes on lines above the tentative starting point.

- If the tentative starting point is in Part 2, look for an obvious cause in Part 2. Do not look for obvious causes in Part 1.

- If a condition A has a longer duration than a condition B, then condition B cannot be the obvious cause of condition A.

- If there are several conditions that could be obvious causes of the tentative starting point, select the first mentioned.

- "Obvious cause" means that there must be no doubt that the tentative starting point was caused by the other condition mentioned on the certificate. It is not sufficient that the sequence would have been accepted if the tentative starting point had been reported as due to the other condition.

- Refer to Section 4.2.4 (Special instructions on Step SP6: Obvious cause) for further instructions. Note that whether a condition B is considered an obvious cause of a condition A may reflect importance for public health rather than what is motivated from a purely medical point of view. Therefore, always follow the instructions in Section 4.2.4, whether they appear to be medically correct or not.

Example 13: 1(a) Liver metastases
    (b) Cerebral infarction
    (c)
    (d)
  2 Stomach cancer

Cerebral infarction cannot cause liver metastases, and liver metastases is the tentative starting point. But stomach cancer is an obvious cause of liver metastases, and stomach cancer is the new tentative starting point.

Example 14: 1(a) Sepsis
    (b) Peritonitis
    (c)
    (d)
  2 Necrosis of intestine, mesenteric infarction

Sepsis can be caused by peritonitis, and peritonitis is the tentative starting point. But necrosis of intestine is an obvious cause of peritonitis, so necrosis of intestine is the new tentative starting point. Next, mesenteric infarction is an obvious cause of necrosis of intestine, and mesenteric infarction is the final starting point.

Example 15: 1(a) Sepsis
    (b) Peritonitis
    (c)
    (d)
  2 Mesenteric embolism, ruptured appendicitis

Sepsis can be caused by peritonitis, and peritonitis is the tentative starting point. Next, both mesenteric embolism and ruptured appendicitis are obvious causes of peritonitis. Because mesenteric embolism is mentioned first, it is the new tentative starting point.

Step SP7 – Ill-defined conditions

Now check if the tentative starting point is listed in the table of ill-defined conditions (Annex 7.3, List of ill-defined conditions). If it is, the tentative starting point is considered ill-defined. Then do as follows:

If there are other conditions reported on the certificate, check if they are all ill-defined. If all other conditions are ill-defined, go to Step M1.

If there is at least one condition that is not ill-defined, then disregard the ill-defined condition. Go to Step SP1 and select another starting point as if the ill-defined condition had not been mentioned on the certificate.

If the tentative starting point is not ill-defined, go to Step SP8.

- Note that 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) and R95 (Sudden infant death) are not considered ill-defined.

- In some cases the ill-defined condition might have an impact on how other conditions on the certificate are coded. If so, disregard the ill-defined condition when selecting the starting point, but take it into consideration when coding the other conditions on the certificate.

Example 16:　　1(a)　Respiratory failure
　　　　　　　　　 (b)
　　　　　　　　　 (c)
　　　　　　　　　 (d)
　　　　　　　　 2　　Mesenteric embolism

Respiratory failure is the only condition mentioned in Part 1 and it is the tentative starting point according to *Step SP2* and *SP6*. But respiratory failure is in the table of ill-defined conditions, so disregard respiratory failure and re-start the selection procedure from *Step SP1*. Mesenteric embolism is the new starting point according to *Step SP1*.

Example 17:　　1(a)　Anaemia
　　　　　　　　　 (b)　Splenomegaly
　　　　　　　　　 (c)
　　　　　　　　　 (d)
　　　　　　　　 2

Splenomegaly, the tentative starting point according to *Step SP3,* is in the table of ill-defined conditions. Disregard splenomegaly and re-start the selection procedure from *Step SP1*. Now, anaemia is the new starting point according to *Step SP2*. However, splenomegaly modifies the coding of

anaemia (see the Alphabetical index). Code to splenomegalic anaemia.

Step SP8 – Conditions unlikely to cause death

Next check if the tentative starting point is listed in the table of conditions unlikely to cause death (Annex 7.4, List of conditions unlikely to cause death). If it is, do as follows:

If there are other conditions reported on the certificate, check if they are all ill-defined or unlikely to cause death. If they are all ill-defined or unlikely to cause death, go to Step M1.

If there are other conditions reported that are not ill-defined or unlikely to cause death, first check if the death was caused by a reaction to treatment of the condition unlikely to cause death that you selected as the tentative starting point. If it was, then select the reaction to treatment as the starting point. Next, go to Step M1.

If the death was not caused by a reaction to treatment of the condition unlikely to cause death, check if the condition was the cause of another condition that is not on the list of conditions unlikely to cause death and that is not ill-defined. If it was, then the condition unlikely to cause death is still the starting point. Next, go to Step M1.

If there was no reaction to treatment and no complication of the condition unlikely to cause death, then disregard the condition unlikely to cause death. Go to Step SP1 and select another starting point as if the condition unlikely to cause death had not been mentioned on the certificate.

- If the certificate mentions several treatments for the condition unlikely to cause death, select the initial treatment.

- "Complication" means a condition that can be due to the condition unlikely to cause death, or due to the treatment of the condition unlikely to cause death.

If the starting point is not a condition unlikely to cause death, then go to Step M1.

Example 18:   1(a)   Hearing loss
      (b)
      (c)
      (d)
     2 Ischemic heart disease

Hearing loss is the tentative starting point according to *Step*

SP2, but hearing loss is in the table of conditions considered unlikely to cause death. There is another condition on the certificate, ischemic heart disease, which is not in the table of conditions considered unlikely to cause death. Disregard hearing loss and re-start the selection procedure from *Step SP1.* Ischemic heart disease is the new starting point according to *Step SP1*.

Example 19:   1(a)   Liver failure
    (b)   Excessive use of paracetamol
    (c)   Migraine type headache
    (d)
    2

Migraine type headache is the tentative starting point according to *Step SP3.* It is in the table of conditions considered unlikely to cause death. The condition was treated with paracetamol and there was a reaction to the treatment, liver failure. Disregard the condition unlikely to cause death and select the reaction to the treatment, liver failure, as the starting point.

Example 20:   1(a)   Sepsis
    (b)   Submandibular abscess
    (c)   Caries
    (d)
    2

Caries is the tentative starting point according to *Step SP3.* It is the table of conditions considered unlikely to cause death, but in this case it caused complications that are not considered unlikely to cause death. Because of that, select caries as the starting point.

Example 21:   1(a)   Headache
    (b)   Caries
    (c)
    (d)
    2   Ischemic heart disease

Caries is the tentative starting point according to *Step SP3.* It is the table of conditions considered unlikely to cause death A complication is reported, headache, but it is in the table of ill-defined conditions. Disregard both caries and headache and re-start the selection procedure from *Step SP1.* Ischemic heart disease is the new starting point according to *Step SP1*.

4.2.2   Check for modifications of the starting point (Steps M1 – M4)

The starting point you identified using Steps SP1 – SP8 is now considered the tentative underlying cause. There might be special coding instructions on this tentative underlying cause, or other reasons to modify the tentative underlying cause. Check if the tentative underlying cause should be modified by applying the modification rules described in step M1 – M3 (Modification rule 1– Modification rule 3). Each step contains one modification rule. At each step there is a description of the modification rule itself and what to do next. There are also bullet points with more detailed instructions and explanations.

Step M1 – Special instructions

Check if special coding instructions apply to the tentative underlying cause. If a special coding instruction applies, assign a new tentative underlying cause according to the instruction.

Next, check if any special instructions apply to this new tentative underlying cause. That is, reapply Step M1. Repeat until you have found a tentative underlying cause that is not affected by any further special coding instruction. Next, go to Step M2.

- Refer to Section 4.2.5 (Special instructions on Step M1: Linkages and other provisions) for detailed instructions on specific tentative underlying causes.

- Sometimes several special instructions apply the tentative underlying cause. If so, apply instructions relating the tentative underlying cause to a condition in Part 1 before instructions relating the tentative underlying cause to a condition in Part 2.

- If there are several instructions relating the tentative underlying cause to conditions in Part 1, then apply the instruction relating to the first mentioned condition reported on the lowest used line in Part 1.

- If there are several instructions relating the tentative underlying cause only to conditions reported in Part 2, apply the instruction relating to the first-mentioned of these conditions.

- Note that some special instructions only apply under specific circumstances, for example where a condition A is reported as the cause of a condition B; or to deaths at a specific age.

- Sometimes Volume 1 or the Alphabetical index indicates a code for a combination of the tentative underlying cause with another cause mentioned on the certificate. Use the combination code unless an instruction on mortality coding in Volume 2 provides different instructions.

If no special coding instruction applies, then the starting point you found using Step SP1–SP8 is the tentative underlying cause. Next, go to *Step M2*.

Example 1:   1(a)   Myocardial infarction
             (b)   Ischemic heart disease
             (c)
             (d)
             2

Ischemic heart disease is the tentative starting point according to *Step SP3*. There is a special instruction on ischemic heart disease reported with myocardial infarction, and according to this instruction myocardial infarction is the new tentative underlying cause.

Example 2:   1(a)   Ischemic heart disease
             (b)   Atherosclerosis
             (c)
             (d)
             2   Myocardial infarction

Atherosclerosis is the tentative starting point according to *Step SP3*. There is a special instruction on atherosclerosis reported with ischemic heart disease, and another one on atherosclerosis reported with myocardial infarction. Ischemic heart disease is reported in Part 1 and myocardial infarction in Part 2, so apply the instruction on atherosclerosis reported with ischemic heart disease and select ischemic heart disease as the new starting point. Next, there is a special instruction on ischemic heart disease reported with myocardial infarction. Apply this instruction and select myocardial infarction as the new tentative underlying cause.

Example 3:   1(a)   Ischemic heart disease
             (b)   Atherosclerosis
             (c)
             (d)
             2   Cerebral infarction

Atherosclerosis is the tentative starting point according to *Step SP3*. There is a special instruction on atherosclerosis reported with ischemic heart disease, and another one on

atherosclerosis reported with cerebral infarction. Ischemic heart disease is reported in Part 1, so apply the instruction on atherosclerosis reported with ischemic heart disease and select ischemic heart disease as the new tentative underlying cause.

Example 4: 1(a) Cerebrovascular infarction
 (b) Atherosclerosis
 (c) Hypertension
 (d)
2 Myocardial infarction

Hypertension is the tentative starting point according to *Step SP3*. There are special instructions on hypertension reported with cerebrovascular infarction and with myocardial infarction. Cerebrovascular infarction is reported in Part 1, so apply the instruction on hypertension reported with cerebrovascular infarction and select cerebrovascular infarction as the new tentative underlying cause.

Example 5: 1(a) Dementia
 (b) Atherosclerosis
 (c)
 (d)
2

Atherosclerosis is the tentative starting point according to *Step SP3*. There is a special instruction on atherosclerosis reported as caused the cause of dementia. Apply this instruction and select atherosclerotic dementia as the new tentative underlying cause.

Example 6: 1(a) Atherosclerosis
 (b)
 (c)
 (d)
2 Dementia

Atherosclerosis is the tentative starting point according to *Step SP2*. Although there is a special instruction on dementia reported as caused by atherosclerosis, this instruction does not apply here because dementia is reported in Part 2 and not as caused by atherosclerosis. In this case atherosclerosis remains the tentative starting point.

Example 7:   1(a)   Epilepsy
                (b)   Alcoholism
                (c)
                (d)
               2

           Alcoholism is the tentative starting point according to *Step SP3*. In Volume 1, a list of inclusion terms at G40.5 (Special epileptic syndromes) mentions "epileptic seizures related to alcohol". However, there is a special instruction for G40.5, Special epileptic syndromes, not to be used if the underlying cause of the epileptic seizure is known. Therefore, keep alcoholism as the tentative starting point.

Step M2 – Specificity

If the tentative underlying 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, this more informative term is the new tentative underlying cause.

Next, check if this new tentative underlying cause can be specified even further by other terms on the death certificate. That is, reapply *Step M2*. Repeat until you have found a tentative underlying cause that cannot be specified further.

- The more specific description must refer to the same condition as the tentative underlying cause. Do not disregard a generalized condition, such as atherosclerosis, because a more specific but unrelated condition is reported on the certificate (see also Example 9).

- Note that the new tentative underlying cause itself is sometimes specified further by the general term (see Example 10).

- Sometimes several other expressions provide more precise information on the tentative underlying cause. If so, start with expressions in Part 1 before expressions in Part 2.

- If there are several more precise expressions in Part 1, then start with the first mentioned expression reported on the lowest used line in Part 1.

- If there are several more precise expressions only in Part 2 start with the first mentioned expression of these conditions

- Note that some instructions on specificity only apply under specific circumstances, for example where a condition A is reported as the cause of a condition B.

Example 8:   1(a)   Cerebrovascular accident
          (b)   Atherosclerosis
          (c)
          (d)
        2   Arterial embolism to brain stem

Atherosclerosis is the tentative starting point according to *Step SP3*. There is a special instruction on atherosclerosis reported with cerebrovascular accident, apply this instruction and select cerebrovascular accident as the new starting point according to *Step M1*. The type of cerebrovascular accident is described more precisely in Part 2 as an arterial embolism to brain stem. This is the new tentative underlying cause.

Example 9:   1(a)   Cerebrovascular accident
          (b)   Atherosclerosis
          (c)
          (d)
        2   Oat cell cancer originating in upper right lobe

Atherosclerosis is the tentative starting point according to *Step SP3*. There is a special instruction on atherosclerosis reported with cerebrovascular accident, apply this instruction and select cerebrovascular accident as the new tentative underlying cause. There is no more specific description of the type of cerebrovascular accident on the certificate, and cerebrovascular accident remains the tentative underlying cause.

Example 10:   1(a)   Meningitis
          (b)   Tuberculosis
          (c)
          (d)
        2

Tuberculosis is the tentative starting point according to *Step SP3*. The manifestation is described as meningitis, and the two terms combine into tuberculous meningitis, which is the tentative underlying cause.

Step M3 – Re-check Step SP6, M1 and M2

If, at this point, the tentative underlying cause is not the same as the starting point you selected using Steps SP1–SP8, then go back to *Step SP6*. Repeat the procedures described in Step SP6 and M1–M2.

- Do not go back to Step SP6 if the cause selected in Step M1 or M2 is correctly reported as due to another condition, except when this condition is ill-defined.

- Also, do not go back to Step SP6 if the tentative underlying cause is a reaction to treatment of a condition unlikely to cause death, as selected in Step SP8.

Example 11: 1(a) Sepsis
　　　　　　　　(b) Arterial disease, arterial embolism of left leg
　　　　　　　　(c)
　　　　　　　　(d)
　　　　　　　2 Colon cancer

Arterial disease is the tentative starting point according to *Step SP3*. Arterial embolism of left leg, reported as the second condition on line 1(b), is a specific type of arterial disease. Therefore, select arterial embolism of left leg as the tentative underlying cause in *Step M2*. Reapply *Step SP6*, because the tentative starting point is not the same as the one selected in *Steps SP1–SP8*. But colon cancer is an obvious cause of arterial embolism, and colon cancer is the new starting point. No further modifications apply. Code colon cancer (C18.9 Malignant neoplasm of colon, unspecified) as the underlying cause of death.

Example 12: 1(a) Sepsis
　　　　　　　　(b) Arterial disease, arterial embolism of left leg
　　　　　　　　(c) Atherosclerosis
　　　　　　　　(d)
　　　　　　　2 Colon cancer

Atherosclerosis is the tentative starting point according to *Step SP3*. There is a special instruction on atherosclerosis reported as the cause of arterial disease, and according to this instruction arterial disease is the new starting point according to *Step M1*. Arterial embolism of left leg, reported as the second condition on line 1(b), is a more specific description of the type of arterial disease and is selected as the tentative starting point in *Step M2*. Do not reapply Step SP6, because arterial embolism of left leg is reported as due to atherosclerosis, and this is a correct causal relationship. No further modifications apply. Code arterial embolism of

left leg (I74.3 Embolism and thrombosis of arteries of lower extremities) as the underlying cause of death.

Step M4 – Instructions on medical procedures, poisoning, main injury and maternal deaths

Finally, apply the following instructions to the underlying cause you have arrived at:

- If the underlying cause you arrived at by applying Step SP1–SP8 and Step M1–M3 is surgery or another type of medical procedure, apply the instructions in Section 4.2.9 (Special instructions on Step M4: Surgery and other medical procedures).

- If the underlying cause you arrived at by applying the selection and modification rules in Step SP1–SP8 and M1–M3 is an injury or poisoning (a code in S00–T98), code the external cause of the injury or poisoning as the underlying cause of death.

- If the underlying cause is in Chapter XX (External causes of morbidity and mortality) also select a main injury. See the instructions in Section 4.2.6 (Special instructions on Step M4: Main injury in deaths from external causes).

- If the underlying cause you selected by applying Step SP1–SP8 and Step M1–M3 is poisoning and more than one toxic substance is reported on the certificate, apply the instructions in Section 4.2.7 (Special instructions on Step M4: Poisoning by drugs, medicaments and biological substances) to identify the most important drug involved.

- If the decedent is a woman and pregnancy, childbirth or puerperium is reported on the certificate, determine whether to code the underlying cause to Chapter XV (Pregnancy, childbirth and the puerperium) according to the instructions in Section 4.2.8 (Special instructions on Step M4: Maternal mortality).

When you have found a cause of death that is not further changed in either Step SP6 or M1–M4 you have arrived at the underlying cause of death.

Although the cause of death you identified is not further changed in Step SP6 or M1–M4 other restrictions may apply, for example that the cause is limited to one of the sexes or to a specific age range, or that the cause of death is improbable considering the geographical setting. Therefore, always check if any such restrictions apply to the underlying cause you selected.

4.2.3   Special instructions on accepted and rejected sequences (Steps SP3 – SP4)

This section lists sequences of causes of death that should be accepted or rejected when selecting the underlying cause of death. The purpose is to produce the most useful mortality statistics possible. 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. Therefore, always apply these instructions, whether they can be considered medically correct or not. Individual countries should not correct what is assumed to be an error, since changes at the national level will lead to data that are less comparable to data from other countries, and thus less useful for analysis.

A.   Accepted sequences

When applying Step SP3-SP4, accept the relationships listed below.

a)   Infectious diseases due to other conditions

Accept infectious diseases caused by other conditions, *except* for the infectious diseases listed in Section 4.2.3 B (Rejected sequences), subsection a) (Infectious diseases due to other conditions).

b)   HIV reported as due to other conditions

Accept HIV as due to:

- Conditions necessitating blood transfusion, such as haemophilia, anaemia and major injuries

- Invasive procedures, such as surgery

- Drug abuse

Examples of such conditions are given in Annex 7.5, Causes of HIV. Note that the list in Annex 7.5 is not complete.

c)   Infectious diseases due to HIV

Accept the following infectious diseases 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)

- Sequelae of tuberculosis (B90)

d)   Malignancies and HIV

Accept the following malignant neoplasms as due to human immunodeficiency virus [HIV] disease:

- Malignant neoplasm of oropharynx (C10)

- Malignant neoplasm of anus (C21)

- Kaposi sarcoma (C46)

- Malignant neoplasm of vulva (C51)

- Malignant neoplasm of vagina (C52)

- Malignant neoplasm of cervix uteri (C53), *if specified as* invasive

- Malignant neoplasm of penis (C60)

- Hodgkin lymphoma (C81), *if specified as* primary in brain

- Follicular lymphoma (C82), *if specified as* primary in brain

- Non-follicular lymphoma (C83), *if specified as* primary in brain

- Diffuse large B-cell lymphoma (C83.3), *if specified as* immunoblastic

- Burkitt lymphoma (C83.7)

- Mature T/NK-cell lymphoma (C84), *if specified as* primary in brain

- Other and unspecified types of non-Hodgkin lymphoma(C85), *if specified as* primary in brain

- Other specified types of T/NK-cell lymphoma (C86), *if specified as* primary in brain

e)   Diabetes due to other conditions

Accept diabetes type 1 (E10.-) as due to conditions that cause autoimmune destruction of β-cells.

Accept diabetes type 2 (E11) as due to conditions that cause insulin resistance.

Accept other and unspecified diabetes mellitus (E13-E14) as due to conditions that cause damage to the pancreas.

See Annex 7.6 for a list of conditions that can cause diabetes.

f)   Rheumatic fever due to other conditions

Accept rheumatic fever (I00-I02) and rheumatic heart disease (I05-I09) as due to:

- Scarlet fever (A38)
- Streptococcal sepsis, due to Streptococcus group A or unspecified (A40.0, A40.9)
- Streptococcal sore throat (J02.0)
- Streptococcal tonsillitis (J03.0).

g)   Hypertension due to other conditions

Accept a hypertensive condition as due to:

- Endocrine neoplasms
- Renal neoplasms
- Carcinoid tumours

h)   Cerebrovascular diseases due to other conditions

Accept cerebral haemorrhage (I61.-) as due to diseases of liver (K70-K76)

Accept cerebrovascular embolism, thrombosis and unspecified stroke (I63-I66, I69.3 and I69.4) as due to endocarditis (I05-I08, I09.1, I33-I38).

i)   Congenital anomalies due to other conditions

- Accept a congenital anomaly as due to a chromosome abnormality or a congenital malformation syndrome
- Accept pulmonary hypoplasia as due to a congenital anomaly

j)   Accidents due to other conditions

Accept a fall (W00-W19) or Exposure to unspecified factor causing fracture (X59) as due to a disorder of bone density (M80-M85) or as due to a (pathological) fracture caused by a disorder of bone density
- Accept asphyxia and aspiration (W78-W80) caused by other causes

k)   Acute or terminal circulatory diseases due to other conditions

Accept the following acute or terminal circulatory diseases as due to malignant neoplasm, diabetes or asthma:

- 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

B.   Rejected sequences

When applying Step SP3-SP4, reject the relationships listed below.

a)   Infectious diseases due to other conditions

Do not accept the following infectious and parasitic diseases as due to any other causes, not even HIV/AIDS, malignant neoplasms or conditions impairing the immune system:

- Cholera (A00)

- Botulism (A05.1)

- Plague, tularaemia, anthrax, brucellosis (A20-A23)

- Leptospirosis (A27)

- Leprosy [Hansen disease] (A30)

- Tetanus, diphtheria, whooping cough, scarlet fever, meningococcal disease (A33-A39)

- Diseases due to Chlamydia psittaci (A70)

- Trochoma (A71)

- 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)

- Chronic hepatitis B and C (B18.0-B18.2)

- Mumps (B26)

- Malaria, leishmaniasis, Chagas disease (B50-B57)

- 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)

- Influenza due to identified zoonotic or pandemic influenza virus (J09)

- Influenza due to identified seasonal influenza virus (J10).

Do not accept the following infectious diseases as due to other causes, *except* 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)

- Sequelae of tuberculosis (B90)

b)   Malignant neoplasms due to other conditions

Do not accept a malignant neoplasm as due to any other cause, *except* the following malignant neoplasms as due to HIV:

- Malignant neoplasm of oropharynx (C10)

- Malignant neoplasm of anus (C21)

- Kaposi sarcoma (C46)

- Malignant neoplasm of vulva (C51)

- Malignant neoplasm of vagina (C52)

- Malignant neoplasm of cervix uteri (C53), *if specified as* invasive

- Malignant neoplasm of penis (C60)

- Hodgkin lymphoma (C81), *if specified as* primary in brain

- Follicular lymphoma (C82), *if specified as* primary in brain

- Non-follicular lymphoma (C83), *if specified as* primary in brain

- Diffuse large B-cell lymphoma (C83.3), *if specified as* immunoblastic

- Burkitt lymphoma (C83.7)

- Mature T/NK-cell lymphoma (C84), *if specified as* primary in brain

- Other and unspecified types of non-Hodgkin lymphoma(C85), *if specified as* primary in brain

- Other specified types of T/NK-cell lymphoma (C86), *if specified as* primary in brain

c)   Haemophilia due to other conditions

Do not accept haemophilia (D66, D67, D68.0-D68.2) as due to any other cause.

d)   Diabetes due to other conditions

Do not accept diabetes type 1 (E10.-) as due to any other cause except conditions causing autoimmune destruction of β-cells.

Do not accept diabetes type 2 (E11) as due to any other cause except conditions causing insulin resistance.

Do not accept other and unspecified diabetes mellitus (E13-E14) as due to any other cause except for conditions causing damage to the pancreas.

See Annex 7.6 for a list of the conditions that can cause diabetes.

e)   Rheumatic fever due to other conditions

Do not accept Acute rheumatic fever (I00-I02) and rheumatic heart disease (I05-I09) as due to other causes *except:*

- Scarlet fever (A38)
- Streptococcal sepsis, due to Streptococcus group A or unspecified (A40.0, A40.9)
- Streptococcal sore throat (J02.0)
- Streptococcal tonsillitis (J03.0)

f)   Hypertension due to other conditions

Do not accept hypertensive conditions as due to a neoplasm *except*:

- Endocrine neoplasms
- Renal neoplasms
- Carcinoid tumours

g)   Chronic ischaemic heart disease due to other conditions

Do not accept chronic ischaemic heart disease (I20, I25) as due to a neoplasm.

h)   Atherosclerosis due to other conditions

Do not accept an atherosclerotic condition as due to a neoplasm.

i)   Influenza due to other conditions

Do not accept influenza (J09-J11) as due to any other cause.

j)   Congenital anomalies due to other conditions

Do not accept a congenital anomaly (Q00-Q99) as due to any other cause, including immaturity *except*:

- A congenital anomaly due to a chromosome abnormality or a congenital malformation syndrome

- Pulmonary hypoplasia (Q33.6) due to a congenital anomaly.

k)   Conflicting durations

Do not accept a condition with a stated duration as due to a condition with a shorter duration (see Examples 6 and 8 in Section 4.2.1, Step SP3, for exceptions).

l)   Accidents due to other conditions

Do not accept accidents (V01-X59) as due to causes coded in other chapters *except*:

- A fall (W00-W19) as due to a disorder of bone density (M80-M85)

- A fall (W00-W19) as due to a (pathological) fracture caused by a disorder of bone density

- Asphyxia and aspiration (W78-W80) as due to other causes

m)   Suicide due to other conditions

Do not accept suicide (X60-X84) as due to any other cause.

4.2.4   Special instructions on obvious cause (Step SP6)

This section lists conditions that should be considered an obvious cause of conditions selected as tentative starting point in Step SP 1-5.

A.   Complications of HIV

a) Infectious diseases and HIV

Consider HIV disease (B20-B24), but not HIV-positive status (R75), as an obvious cause of infectious diseases, *except* those listed at 4.2.3 (Accepted and rejected sequences), section B (Rejected sequences), subsection a) (Infectious diseases due to other conditions).

Also consider HIV disease but not HIV-positive status as an obvious cause of typhoid and paratyphoid fevers, other salmonella infections, shigellosis (A01-A03), which is listed in the second section at 4.2.3 B, subsection a).

Consider both HIV disease and HIV-positive status as an obvious cause of the following infectious diseases:

- Salmonella sepsis (A02.1)

- Cryptosporidiosis (A07.2)

- Isosporiasis (A07.3)

- Tuberculosis (A15-A19)

- Infection due to other mycobacteria (A31.-)

- Progressive multifocal leukencephalopathy (A81.2)

- Herpes simplex infections (B00.0-B00.2, B00.7-B00.8) specified as chronic ulcers, bronchitis, pneumonia, or oesophagitis

- Cytomegalovirus infections in B25.0, B25.2, B25.8 and B25.9, *except* for liver, spleen, lymph nodes

- Candidiasis of other sites (B37.8), specified as of lung or oesophagus

- Coccidioidmycosis (B38.-)

- Histoplasmosis (B39.-)

- Cryptococcosis (B45.-)

- Pneumocystosis (B48.5 †)

- Sequelae of tuberculosis (B90)

b) Malignant neoplasms and HIV

Consider both HIV disease (B20-B24) and HIV-positive status (R75) as the obvious cause of the following malignant neoplasms:

- Kaposi sarcoma (C46)

- Cervix carcinoma, specified as invasive in malignant neoplasm of cervix uteri (C53)

- Lymphoma, specified as primary cerebral (C81-C85)

- Diffuse large B-cell lymphoma, specified as immunoblastic (C833)

- Burkitt lymphoma (C837)

c) Immune deficiency and HIV

Consider HIV disease (B20-B24) as the obvious cause of immune deficiency.

d) Pneumonia and HIV

Consider HIV disease (B20-B24), but not HIV-positive status (R75), as an obvious cause of pneumonia (J12-J18).

e) Wasting syndrome and HIV

Consider both HIV disease (B20-B24) and HIV-positive status (R75), as an obvious cause of wasting syndrome (R64).

B. Enterocolitis due to Clostridium difficile

Consider enterocolitis due to Clostridium difficile as an obvious consequence of antibiotic therapy.

C. Sepsis and Systemic Inflammatory Response Syndrome

Consider conditions that impair the immune system, wasting diseases (such as malignant neoplasms and malnutrition), diseases causing paralysis (such as cerebral haemorrhage and thrombosis), serious respiratory conditions and serious injuries (grade 1-4 according to the injury priority list in Annex 7.7) as obvious causes of sepsis in A40-A41, B37.7 and B49, and of Systemic Inflammatory Response Syndrome in R65.0, R651 and R65.-.

D. Complications of diabetes

Consider diabetes (E10-E14) as the obvious cause of the following conditions:

- Acidosis (E87.2)
- Other specified metabolic disorders (E88.8)
- Other mononeuropathies (G58.-)
- Polyneuropathy, unspecified (G62.9)
- Other disorders of peripheral nervous system (G64)
- Other primary disorders of muscles (G71.8), specified as amyotrophy but without specification of etiology
- Disorder of autonomic nervous system, unspecified (G90.9)
- 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)

- Atherosclerosis of arteries of extremities (I70.2)
- Peripheral vascular disease, unspecified (I73.9)
- Necrobiosis lipoidica, not elsewhere classified (L92.1)
- Ulcer of lower limb, not elsewhere classified (L97)
- Arthritis, unspecified (M13.9)
- Neuralgia and neuritis, unspecified (M79.2)
- Nephrotic syndrome (N03- N05)
- Chronic kidney disease, (N18.-)
- Unspecified kidney failure (N19)
- Unspecified contracted kidney (N26)
- Disorder of kidney and ureter, unspecified (N28.9), specified as renal conditions
- Persistent proteinuria, unspecified (N39.1)
- Gangrene, not elsewhere classified (R02)
- Coma, unspecified (R40.2)
- Other specified abnormal findings of blood chemistry (R79.8) specified as acetonemia, azotemia, and related conditions

E. Dehydration

Consider any intestinal infectious disease as an obvious cause of dehydration (E86).

F. Dementia

Consider conditions that typically involve irreversible brain damage as obvious causes of dementia, if no other cause of the dementia is stated.

Consider Down's syndrome (Q90.-) as an obvious cause of unspecified dementia (F03) and Alzheimer's disease (G30.-).

G. Mental retardation (F70–F79)

Consider the following conditions as obvious causes of mental retardation:

- 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)
- P91 (Other disturbances of cerebral status of newborn)

H. Heart failure and unspecified heart disease

Consider other heart conditions as the obvious cause of heart failure (I50.-) and unspecified heart disease (I51.9).

I. Embolism

Consider venous thrombosis, phlebitis or thrombophlebitis, valvular heart disease, childbirth or any operation as the obvious cause of diseases described as "embolic". However, there must be a clear route from the place where the thrombus formed and the place of the embolism.

J. Oesophageal varices

Consider liver diseases classifiable to B18.-, K70.-, K73.-, K74.-, and K76.- as the obvious cause of oesophageal varices (I85.-).

K. Pneumonia

Consider dependence syndrome due to use of alcohol (F10.2) as the obvious cause of lobar pneumonia, unspecified (J18.1).

Consider conditions that impair the immune system, wasting diseases (such as malignant neoplasms and malnutrition), diseases causing paralysis (such as cerebral haemorrhage and thrombosis), serious respiratory conditions,

conditions that affect the process of swallowing, other diseases which limit the ability to care for oneself, including dementia and degenerative diseases of the nervous system, poisoning and serious injuries (grade 1-4 according to the injury priority list in Annex 7.7) as obvious causes of any pneumonia (J12-J18, J69.0 and J69.8).

L. Pulmonary edema

Consider the following conditions as obvious causes of pulmonary edema (J81):

- heart disease (including pulmonary heart disease)
- conditions affecting the lung parenchyma, such as
  - lung infections
  - aspiration and inhalation
  - respiratory distress syndrome
  - high altitude
  - circulating toxins
- conditions causing fluid overload, such as
  - renal failure
  - hypoalbuminemia
- congenital anomalies affecting the pulmonary circulation, such as
  - congenital stenosis of pulmonary veins.

M. Nephritic syndrome

Consider any streptococcal infection (scarlet fever, streptococcal sore throat, etc.) as the obvious cause of nephritic syndrome (N00-N05).

N. Pyelonephritis

Consider any urinary obstruction from conditions such as hyperplasia of prostate or ureteral stenosis as the obvious cause of pyelonephritis (N10-N12).

O. Acute renal failure

Consider a urinary tract infection as the obvious cause of acute renal failure (N17), provided that there is no indication that the renal failure was present before the urinary tract infection developed.

P. Primary atelectasis of newborn

Consider 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) as obvious causes of primary atelectasis of newborn (P28.0).

Q. Premature rupture of membranes and oligohydramnios

Consider congenital kidney conditions (Q60, Q61.0-Q61.1, Q61.3-Q61.9, Q62.1, Q62.3, Q62.4) as obvious causes of fetus and newborn affected by premature rupture of membranes or oligohydramnios (P01.1-P01.2).

R. Haemorrhage

Consider anticoagulant poisoning or overdose as the obvious cause of haemorrhage. However, do not consider anticoagulant therapy, without mention of poisoning or overdose, as the obvious cause of haemorrhage. Further, consider treatment with steroid, aspirin, and nonsteroidal anti-inflammatory drugs (NSAIDs) as obvious causes of gastric haemorrhage.

Consider gastrointestinal haemorrhage as the obvious cause of secondary or unspecified anaemia.

S. Aspiration and inhalation

Consider conditions listed under 4.2.4 k), pneumonia, as obvious causes of aspiration and inhalation.

T. Surgery and other invasive medical procedures

Consider surgery or other invasive medical procedures, carried our within four weeks before death as the obvious cause of conditions that are considered common post-procedural complications. This applies also if the surgery or procedure is reported in a separate space on the certificate and not in Part 1 or Part 2.

A list of such conditions, with specific instructions, is given in Annex 7.2, List of conditions to be considered direct consequences of surgery and other invasive medical procedures.

U. Common secondary conditions

Consider wasting diseases (such as malignant neoplasms and malnutrition), diseases causing paralysis (such as cerebral haemorrhage or thrombosis), other disease which limits the ability to care for oneself, including dementia and degenerative diseases of the nervous system, and serious injuries as the obvious cause of the common secondary conditions listed in the table below. However, such secondary conditions should not be considered an obvious consequence of respiratory 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
D50.0	Iron deficiency anaemia secondary to blood loss (chronic)		
D62	Acute posthaemorrhagic anaemia		
D64.9	Anaemia, unspecified		
E40-E46	Malnutrition		
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

Code(s)	Description	Conditional Response	Qualifier
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
N30.9	Cystitis, unspecified	M	Diseases causing paralysis or inability to control bladder
N31	Neuromuscular dysfunction		

Code(s)	Description	Conditional Response	Qualifier
	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
R64	Cachexia		

4.2.5 Special instructions on linkages and other provisions (Step M1)

Use this table in Step M1.

The tentative underlying cause is listed in the left-hand column. If the conditions specified in the right-hand column apply, then use the code in bold as the new tentative underlying cause.

There are two types of combination:

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

> "*when reported as the cause of*" means that the other condition must appear in a correct causal relationship or be

otherwise indicated as being due to the tentative underlying cause.

For some conditions there are further requirements, for example that a specific term has been used either for the tentative underlying cause or for the condition that may change the underlying cause code.

A00-B99   Certain infectious and parasitic diseases
          when reported as the cause of:
          C00-C97 (Malignant neoplasm), code **C00-C97**;
          Exception: for malignant neoplasms listed at 4.2.3, A (Accepted and rejected sequences, Accepted sequences), section d) (malignancies and HIV) reported as due to HIV disease: Code to **B21.-** or **B22.7** as appropriate.

A02.0   *Salmonella* sepsis
          with mention of:
          B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.1, B20.7** or **B22.7** as appropriate
          R75   (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.1, B20.7** or **B22.7** as appropriate

A07.3   Isosporiasis
          with mention of:
          B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.7, B20.8** or **B22.7** as appropriate
          R75   (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.7, B20.8** or **B22.7** as appropriate

A15-A19   Tuberculosis
          with mention of:
          B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.0, B20.7** or **B22.7** as appropriate
          R75   (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.0, B20.7** or **B22.7** as appropriate

A15.-   Respiratory tuberculosis, bacteriologically and histologically confirmed, *or*

A16.-   Respiratory tuberculosis, not confirmed bacteriologically or histologically
          with mention of:
          J60-J64   (Pneumoconiosis), code **J65**

A17.-	Tuberculosis of nervous system, *or*

A18.- Tuberculosis of other organs

with mention of:

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

A31.- Infection due to other mycobacteria

with mention of:

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.0, B20.7** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.0, B20.7** or **B22.7** as appropriate

A39.2 Acute meningococcaemia, *or*

A39.3 Chronic meningococcaemia, *or*

A39.4 Meningococcaemia, unspecified

with mention of:

A39.0 (Meningococcal meningitis), code **A39.0**

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

A51.- Early syphilis

with mention of:

A52.- (Late syphilis), code **A52.-**

A81.2 Progressive multifocal leukencephalopathy

with mention of:

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.3, B20.7** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.3, B20.7** or **B22.7** as appropriate

B00.0 Eczema herpeticum, *or*

B00.1 Herpesviral vesicular dermatitis, *or*

B00.2 Herpesviral gingivostomatitis and pharyngotonsillitis, *or*

B00.7 Disseminated herpesviral disease, *or*

B00.8 Other forms of herpesviral infections, specified as chronic ulcers, bronchitis, pneumonia, or oesophagitis

with mention of:

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.3, B20.7** or **B24** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus

[HIV]), code **B20.3, B20.7** or **B24** as appropriate

B16.-   Acute hepatitis B, *or*

B17.-   Other acute viral hepatitis

when reported as the 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 conditions unlikely to cause death 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.

B20.-   Human immunodeficiency virus [HIV] disease resulting in infectious and parasitic diseases

with mention of:

B23.8 (HIV disease resulting in other specified conditions, if used to code modes of dying, ill-defined and conditions unlikely to cause death), code **B20.-** unless there is a entry in Volume 3 specifying otherwise.

B21.-   Human immunodeficiency virus [HIV] disease resulting in malignant neoplasms

with mention of:

B23.8 (HIV disease resulting in other specified conditions, if used to code modes of dying, ill-defined and conditions unlikely to cause death), code **B21.-** unless there is a entry in Volume 3 specifying otherwise.

B22.-   Human immunodeficiency virus [HIV] disease resulting in other specified diseases

with mention of:

B23.8 ((HIV disease resulting in other specified conditions, if used to code modes of dying, ill-defined and conditions unlikely to cause death), code **B22.-** unless there is a entry in Volume 3 specifying otherwise.

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.

B24	Unspecified human immunodeficiency virus [HIV] disease

when reported as the cause of:

I42.0 (Dilated cardiomyopathy), code **B23.8**

I42.9 (Cardiomyopathy, unspecified), code **B23.8**

B25.0	Cytomegaloviral pneumonitis, *or*
B25.2	Cytomegaloviral pancreatitis, *or*
B25.8	Other cytomegaloviral disease, specified as retinitis, *or*
B25.9	Cytomegaloviral disease, unspecified, except for liver, spleen and lymph nodes

with mention of:

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.2, B20.7** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.2, B20.7** or **B22.7** as appropriate

B37.1	Pulmonary candidiasis, *or*
B37.8	Candidiasis of other sites, specified as of oesophagus

with mention of:

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.4, B20.7** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.4, B20.7** or **B22.7** as appropriate

B38.-	Coccidioidmycosis

with mention of:

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.5, B20.7** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.5, B20.7** or **B22.7** as appropriate

B39.-	Histoplasmosis

with mention of:

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.5, B20.7** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.5, B20.7** or **B22.7** as appropriate

B45.-	Cryptococcosis

with mention of:

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.5, B20.7** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.5, B20.7** or **B22.7** as appropriate

B48.5 † Pneumocystosis

with mention of:

B20-B24 (Human immunodeficiency virus [HIV] disease, code **B20.6**, **B20.7** or **B22.7** as appropriate

B58.- Toxoplasmosis

with mention of

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.7, B20.8** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.7, B20.8** or **B22.7** as appropriate

B90.- Sequelae of tuberculosis

with mention of

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B20.0, B20.7** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B20.0, B20.7** or **B22.7** as appropriate

B95.0-B95.5 Streptococcus as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to **A49.1**

B95.6-B95.8 Staphylococcus as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to **A49.0**

B96.0 Mycoplasma pneumoniae as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to **A49.3**

B96.1 Klebsiella pneumoniae as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to **A49.8**

B96.2   Escherichia coli as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to **A49.8**

B96.3   Haemophilus influenzae as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to **A49.2**

B96.4-B96.8 Other specified bacterial agents as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to **A49.8**

B97.0   Adenovirus as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to B34.0

B97.1   Enterovirus as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to B34.1

B97.2   Coronavirus as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to B34.2

B97.3   Retrovirus as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to B33.3

B97.4   Respiratory syncytial virus as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to B34.8

B97.5   Reovirus as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to B34.8

B97.6   Parvovirus as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to B34.3

B97.7   Papillomavirus as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to B34.4

B97.8   Other viral agents as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to B34.8

B98.0   Helicobacter pylori as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to A49.8

B98.1   Vibrio vulnificus as the cause of diseases classified to other chapters

Not to be used for underlying cause mortality coding. If the disease is not stated, code to A49.8

C46.-   Kaposi sarcoma

with mention of

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B21.0, B21.7** or **B22.7** as appropriate

R75   (Laboratory evidence of human immunodeficiency virus [HIV]), code **B21.0, B21.7** or **B22.7** as appropriate

C53.-   Malignant neoplasm of cervix uteri, specified as invasive cervix carcinoma

with mention of

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B21.7, B21.8** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B21.7, B21.8** or **B22.7** as appropriate

C77-C79   Secondary malignant neoplasms

Not to be used for underlying cause mortality coding. If primary site of malignant neoplasm is not known or indicated, code to malignant neoplasm without specification of site (C80.-)

C81-C86.5 Lymphoma, specified as primary cerebral

with mention of

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B21.2, B21.7** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B21.2, B21.7** or **B22.7** as appropriate

C83.3   Diffuse large B-cell lymphoma, specified as immunoblastic

with mention of

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B21.2, B21.7** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B21.2, B21.7** or **B22.7** as appropriate

C83.7   Burkitt lymphoma

with mention of

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B21.1, B21.7** or **B22.7** as appropriate

R75 (Laboratory evidence of human immunodeficiency virus [HIV]), code **B21.1, B21.7** or **B22.7** as appropriate

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 4.3.5, Malignant Neoplasms.

D00-D09   In situ neoplasms

If a neoplasm classifiable to D00-D09 is reported as the cause of metastatic spread, or if it is clear from other information on the certificate that it caused metastatic spread, then code to the corresponding primary malignant neoplasm (**C00-C80**).

If there is no indication that the in situ neoplasm caused metastatic spread, then consider the in situ neoplasm unlikely to cause death, and follow the instructions in Step SP8 – Conditions unlikely to cause death.

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

with mention 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**

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**

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**

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

L97 (Ulcer of lower limb), code **E10-E14** with fourth character **.5**

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

M79.2 (Neuralgia and neuritis, 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**

N39.1 (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**

If diabetes is reported with mention of two or more of the conditions listed above and the reported conditions combine with E10-E14 to the same fourth character, then code **E10-E14** with that common fourth character.   If diabetes is reported with mention of two or more of the conditions listed above and the reported conditions combine with **E10-E14** to different fourth characters code **E10-E14** with fourth character .7

when reported as the cause of:

A09.- (Other gastroenteritis and colitis of infectious and unspecified origin), code **E10-E14** with fourth character **.6**

A40.- (Streptococcal sepsis), code **E10-E14** with fourth character **.6**

A41.- (Other sepsis), code **E10-E14** with fourth character **.6**

A49.- (Bacterial infection of unspecified site), code **E10-E14** with fourth character **.6**

B35.- (Dermatophytosis), code **E10-E14** with fourth character **.6**

B36.- (Other superficial mycoses), code **E10-E14** with fourth character **.6**

B37.- (Candidiasis), code **E10-E14** with fourth character **.6**

D65   (Disseminated intravascular coagulation [defibrination syndrome]), code **E10-E14** with fourth character **.6**

E15   (Non-diabetic hypoglycaemic coma; for unspecified hypoglycemic coma only), code **E10-E14** with fourth character **.0**

E16.2 (Hypoglycaemia, unspecified), code **E10-E14** with

fourth character **.6**

E78.0 (Pure Hypercholesterolaemia), code **E10-E14** with fourth character **.6**

E78.1 (Pure Hyperglyceridaemia), code **E10-E14** with fourth character **.6**

E78.2 (Mixed Hyperlipidaemia), code **E10-E14** with fourth character **.6**

E78.5 (Hyperlipidaemia, unspecified), code **E10-E14** with fourth character **.6**

E87.5 (Hyperkalaemia), code **E10-E14** with fourth character **.6**

E88.9 (Metabolic disorder, unspecified), code **E10-E14** with fourth character **.6**

G04.8 (Other encephalitis, myelitis and encephalomyelitis), code **E10-E14** with fourth character **.6**

G04.9 (Encephalitis, myelitis and encephalomyelitis, unspecified), code **E10-E14** with fourth character **.6**

G70.9 (Myoneural disorders of muscle), code **E10-E14** with fourth character **.4**

G98 (Other disorders of the nervous system, not elsewhere classified; except Charcot's arthropathy, non-syphilitic), code **E10-E14** with fourth character **.4**

G98 (Other disorders of the nervous system, not elsewhere classified; if Charcot's arthropathy, non-syphilitic), code **E10-E14** with fourth character **.6**

H49.9 (Paralytic strabismus, unspecified), code **E10-E14** with fourth character **.3**

H54 (Blindness and low vision), code **E10-E14** with fourth character **.3**

I10 (Essential (primary) hypertension, code **E10-E14** with fourth character **.6**

I11.- (Hypertensive heart disease), code **E10-E14** with fourth character **.6**

I20-I25 (Ischaemic heart diseases), code **E10-E14** with fourth character **.6**

I33.0 (Acute and subacute infective endocarditis), code **E10-E14** with fourth character **.6**

I38 (Endocarditis, valve unspecified), code **E10-E14** with fourth character **.6**

I42.0 (Dilated cardiomyopathy), code **E10-E14** with fourth character **.6**

I42.9 (Cardiomyopathy, unspecified), code **E10-E14** with fourth character **.6**

I48.- (Atrial fibrillation and flutter), code **E10-E14** with fourth character **.6**

I49.- (Other cardiac arrhythmias), code **E10-E14** with fourth character **.6**

I50.- (Heart failure), code **E10-E14** with fourth character **.6**

I51.6 (Cardiovascular disease, unspecified), code **E10-E14** with fourth character **.6**

I61.- (Intracerebral haemorrhage), code **E10-E14** with fourth character **.6**

I62.- (Other nontraumatic intracranial haemorrhage), code **E10-E14** with fourth character **.6**

I63.- (Cerebral infarction), code **E10-E14** with fourth character **.6**

I64 (Stroke, not specified as haemorrhage or infarction), code **E10-E14** with fourth character .**6**

I67.2 (Cerebral atherosclerosis), code **E10-E14** with fourth character **.6**

I67.8 (Other specified cerebrovascular diseases), code **E10-E14** with fourth character **.6**

I67.9 (Cerebrovascular disease, unspecified), code **E10-E14** with fourth character **.6**

I69.1 (Sequelae of intracerebral haemorrhage), code **E10-E14** with fourth character **.6**

I69.2 (Sequelae of other nontraumatic intracranial haemorrhage), code **E10-E14** with fourth character **.6**

I69.3 (Sequelae of cerebral infarction), code **E10-E14** with fourth character **.6**

I69.4 (Sequelae of stroke, not specified as haemorrhage or infarction), code **E10-E14** with fourth character **.6**

I69.8 (Sequelae of other and unspecified cerebrovascular diseases), code **E10-E14** with fourth character **.6**

I70.0 (Atherosclerosis of aorta), code **E10-E14** with fourth character **.6**

I70.1 (Atherosclerosis of renal artery), code **E10-E14** with fourth character**.6**

I70.8 (Atherosclerosis of other arteries), code **E10-E14** with fourth character **.6**

I70.9 (Generalized and unspecified atherosclerosis), code **E10-E14** with fourth character **.6**

I74.2 (Embolism and thrombosis of arteries of upper

extremities), code **E10-E14** with fourth character **.6**

I74.3 (Embolism and thrombosis of arteries of lower extremities), code **E10-E14** with fourth character **.6**

I74.4 (Embolism and thrombosis of arteries of extremities, unspecified), code **E10-E14** with fourth character **.6**

I80.- (Phlebitis and thrombophlebitis), code **E10-E14** with fourth character **.6**

I82.9 (Embolism and thrombosis of unspecified vein), code **E10-E14** with fourth character **.6**

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

J12-J18 (Pneumonia), code **E10-E14** with fourth character **.6**

K25-K28 (Gastric, duodenal, peptic and gastrojejunal ulcer), code **E10-E14** with fourth character **.6**

K31.8 (Other specified diseases of stomach and duodenum; for gastroparesis only), code code **E10-E14** with fourth character **.4**

K92.2 (Gastrointestinal haemorrhage, unspecified), code **E10-E14** with fourth character **.6**

L03.- (Cellulitis), code **E10-E14** with fourth character .6

L08.- (Other local infections of skin and subcutaneous tissue), code **E10-E14** with fourth character .6

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

L89.- (Decubitus ulcer and pressure area), code **E10-E14** with fourth character **.6**

L98.4 (Chronic ulcer of skin, not elsewhere classified), code **E10-E14** with fourth character **.5**

M11.2 (Other chondrocalcinosis), code **E10-E14** with fourth character **.6**

M72.6 (Necrotizing fasciitis), code **E10-E14** with fourth character **.6**

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

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

If diabetes is reported with mention of two or more of the conditions listed above and the reported conditions combine with E10-E14 to the same fourth character, then

code **E10-E14** with that common fourth character. If diabetes is reported with mention of two or more of the conditions listed above and the reported conditions combine with E10-E14 to different fourth characters code **E10-E14** with fourth character .7

E40-E46   Malnutrition

when reported as the cause of:

E14.- (Diabetes), code E12.-

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 Surgery and other medical procedures, 4.2.9.

F03-F09   Organic, including symptomatic, mental disorders

Not to be used if the underlying physical cause of the organic mental disorder is known.

F05.1   Delirium superimposed on dementia
Not to be used for underlying cause mortality coding.
Code to the type of dementia.

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**

F10-F19   Fourth character .0 (Acute intoxication), code **X40-X49, X60-X69, X85-X90** or **Y10-Y19**

Fourth character .1 (Harmful use)

with mention of

Dependence syndrome (.2), code **F10-F19** with fourth character

                             .2

Withdrawal state with delirium (.4), code **F10-F19** with fourth character **.4**

Amnesic syndrome (.6), code **F10-F19** with fourth character **.6**

Residual and late-onset psychotic disorder (.7), code **F10-F19** with fourth character **.7**

Fourth character .2 (Dependence syndrome)

with mention of

Withdrawal state with delirium (.4), code **F10-F19** with fourth character **.4**

Amnesic syndrome (.6), code **F10-F19** with fourth character **.6**

Residual and late-onset psychotic disorder (.7), code **F10-F19** with fourth character **.7**

Fourth character .5 (Psychotic disorder)

with mention of

Dependence syndrome (.2), code **F10-F19** with fourth character **.2**

Withdrawal state with delirium (.4), code **F10-F19** with fourth character **.4**

Amnesic syndrome (.6), code **F10-F19** with fourth character **.6**

Residual and late-onset psychotic disorder (.7), code **F10-F19** with fourth character **.7**

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**

K75.8 (Other inflammatory liver disease), if specified as steatohepatitis but not as nonalcoholic steatohepatitis, code **K70.1**

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**

K85.9 (Acute pancreatitis, unspecified), code **K85.2**

K86.0 (Alcohol-induced chronic pancreatitis), code **K86.0**

K86.1 (Other chronic pancreatitis), except when specified as due to other causes than alcohol, code **K86.0**

O35.4 (Maternal care for (suspected) damage to foetus from alcohol), code **O35.4**

when reported as the cause of:

I42.7 (Cardiomyopathy due to drugs and other external agents), code **I42.6**

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
F80.-	Specific developmental disorders of speech and language
F81.-	Specific developmental disorders of scholastic skills
	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.-**

G40.5	Special epileptic syndromes

Not to be used if the underlying cause of the epileptic seizure is known

G40.6	Grand mal seizures, unspecified (with and without petit mal)
G40.7	Petit mal, unspecified without grand mal seizures

with mention of:

G41.0 (Grand mal status epilepticus), code **G41.0**

G41.1 (Petit mal status epilepticus), code **G41.1**

G40.8	Other epilepsy
G40.9	Epilepsy, unspecified

with mention of:

G41.-   (Status epilepticus), code **G41.-**

G41.-   Status epilepticus

with mention of:

G40.0   (Localization-related (focal) (partial) idiopathic epilepsy and epileptic syndromes with seizures of localized onset), code **G40.0**

G40.1   (Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with simple partial seizures), code **G40.1**

G40.2   (Localization-related (focal) (partial) symptomatic epilepsy and epileptic syndromes with complex partial seizures), code **G40.2**

G40.3   (Generalized idiopathic epilepsy and epileptic syndromes), code **G40.3**

G40.4   (Other generalized epilepsy and epileptic syndromes), code **G40.4**

G45.-   Transient cerebral ischaemic attacks and related syndromes

when reported as the cause of:

F01.1   (Multi-infarct dementia), code **F01.1**

F01.9   (Vascular dementia, unspecified), code **F01.1**

F03   (Unspecified dementia), code **F01.1**

G81.-   Hemiplegia, *or*

G82.-   Paraplegia and tetraplegia, *or*

G83.-   Other paralytic syndromes

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

G93.4   Encephalopathy, unspecified

with mention of

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B22.0** or **B22.7** as appropriate

R75   (Laboratory evidence of human immunodeficiency virus [HIV]), code **B22.0** or **B22.7** as appropriate

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

Not to be used for underlying cause mortality coding. See *Surgery and other medical procedures, 4.2.9.*

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 *Surgery and other medical procedures, 4.2.9.*

H90.-	Conductive and sensorineural hearing loss

H91.-	Other hearing loss

Not to be used if the cause of the hearing loss is known.

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

Not to be used for underlying cause mortality coding. See *Surgery and other medical procedures, 4.2.9.*

I05.8	Other mitral valve diseases, *or*

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 selection and modification rules in the normal way.

I09.1	Rheumatic diseases of endocardium, valve unspecified, *or*

I09.9	Rheumatic heart disease, unspecified

with mention of:

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

I10-I15	Hypertensive diseases

when reported as the cause of:
I71.- (Aortic aneurysm and dissection), code **I71.-**

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**

I50.-   (Heart failure), except when specified as terminal or

> acute, sudden, or similar expressions of short duration (less than 24 hours), code **I11.0**

I51.4-I51.9 (Complications and ill-defined descriptions of heart disease), except when specified as terminal or acute, sudden, or similar expressions of short duration (less than 24 hours), code **I11.-**

I60-I69 (Cerebrovascular disease), code **I60-I69**

when reported as the 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**

N00-N07 (Glomerular diseases), code **I12.-**

N18.- (Chronic kidney disease), code **I12.-**

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

I11.- **Hypertensive heart disease**

with mention of:

I12.- (Hypertensive renal disease), code **I13.-**

I13.- (Hypertensive heart and kidney disease), code **I13.-**

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

when reported as the cause of:

N00-N07 (Glomerular diseases), code **I13.-**

N18.- (Chronic kidney disease), code **I13.-**

N19   (Unspecified kidney 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 kidney disease), code **I13.-**

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

I50.- (Heart failure), except when specified as terminal or acute, sudden, or similar expressions of short duration (less than 24 hours), code **I13.0**

I51.4-I51.9 (Complications and ill-defined descriptions of heart disease), except when specified as terminal or acute,

<div align="right">

sudden, or similar expressions of short duration (less than 24 hours), code **I13.-**

</div>

I13.-	Hypertensive heart and kidney disease
	with mention of:
	I20-I25 (Ischaemic heart disease), code **I20-I25**

I15.0   Renovascular hypertension

Not to be used if the cause of the renovascular hypertension is known or can be inferred by an application of the selection rules. If the cause 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 renal disorder is known or can be inferred by an application of the selection rules. If the cause is not known or cannot be inferred, code to **N28.9**.

I15.2   Hypertension secondary to endocrine disorders

Not to be used if the endocrine disorder is known or can be inferred by an application of SP6. If the cause is not known or cannot be inferred, code to **E34.9**.

I15.8   Other secondary hypertension

Not to be used if the cause of the secondary hypertension is known or can be inferred by an application of SP6. If the cause is not known or cannot be inferred, code to **I15.8**.

I15.9   Secondary hypertension, unspecified

Not to be used if the cause of the secondary hypertension is known or can be inferred by an application of SP6. If the cause is not known or cannot be inferred, code to **I15.9**.

I20.-   Angina pectoris, *or*

I24.-   Other acute ischaemic heart diseases, *or*

I25.-   Chronic ischaemic heart disease

with mention of:

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

I22.-   (Subsepuent myocardial infarction), code **I21.-**

I22.-   Subsequent myocardial infarction

Not to be used for underlying cause mortality coding. Code to **I21.-**

I23.-   Certain current complications following acute myocardial infarction

Not to be used for underlying cause mortality coding. Code to **I21.-**

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.-**

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, *or*

I45.-   Other conduction disorders, *or*

I46.-   Cardiac arrest, *or*

I47.-   Paroxysmal tachycardia, *or*

I48.-   Atrial fibrillation and flutter, *or*

I49.-   Other cardiac arrhythmias, *or*

I50.-   Heart failure, *or*

I51.4-I51.9 Complications and ill-defined descriptions of heart disease

with mention of:

B57.- (Chagas disease), code **B57.-**

I20-I25 (Ischaemic heart diseases), code **I20-I25**

I46.0   Cardiac arrest with successful resuscitation, *or*

I46.9   Cardiac arrest, unspecified

Not to be used for underlying-cause mortality coding. If no other cause of death is reported code **R99**.

I50.-   Heart failure, except when specified as terminal or acute, sudden, or similar expressions of short duration (less than 24 hours), *or*

I51.9   Heart disease, unspecified, except when specified as terminal or acute, sudden, or similar expressions of short duration (less than 24 hours),

with mention of:

I10   (Essential (primary) hypertension), code **I11.0**

I11.-   (Hypertensive heart disease), code **I11.0**

I12.0	(Hypertensive renal disease with kidney failure), code **I13.2**
I12.9	(Hypertensive renal disease without kidney failure), code **I13.0**
I13.0	(Hypertensive heart and kidney disease with (congestive) heart failure), code **I13.0**
I13.1	(Hypertensive heart and renal disease with kidney failure), code **I13.2**
I13.2	(Hypertensive heart and renal disease with both (congestive) heart failure and kidney failure), code **I13.2**
I13.9	(Hypertensive heart and kidney disease with kidney failure, unspecified), code **I13.0**
M41.-	(Scoliosis), code **I27.1**

I50.9   Heart failure, unspecified, *or*

I51.9   Heart disease, unspecified

with mention of:

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

I60-I69   Cerebrovascular diseases

when reported as the cause of conditions in:

F01-F03 (Dementia), code **F01.-**

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

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 cause of conditions in:

F03   (Unspecified dementia), code **F01.-**

G20   (Parkinson's disease), code **G21.4**

G21.9 (Secondary parkinsonism, unspecified), code **G21.4**

I69.-   Sequelae of cerebrovascular disease

with mention of:

I60-I66 (Cerebrovascular disease, not classifiable to I69.-_code **I60-I64**

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 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**

I42.0 (Dilated cardiomyopathy), *or*

I42.1 (Obstructive hypertrophic cardiomyopathy), *or*

I42.2 (Other hypertrophic cardiomyopathy), *or*

I42.8 (Other cardiomyopathies), *or*

I42.9 (Cardiomyopathy, unspecified), code **I25.5**

Exception: if the cardiomyopathy is described as congenital, familial, hereditary, idiopathic, primary or similar, code to **I42.0-I42.2** or **I42.8-I42.9** as

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.-**

I70.1   Atherosclerosis of renal artery

when reported as the cause of:

N00-N07 (Glomerular diseases), code **I12.-**

N18.-   (Chronic kidney disease), code **I12.-**

N19   (Unspecified kidney disease), 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 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**

N00-N07 (Glomerular diseases), code **I12.-**

N18.- (Chronic kidney disease), code **I12.-**

N19 (Unspecified kidney disease), code **I12.-**

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

I71.1 Thoracic aortic aneurysm, ruptured

with mention of:

I71.3 (Abdominal aortic aneurysm, ruptured), code **I71.5**

I71.2 Thoracic aortic aneurysm, without mention of rupture

with mention of:

I71.4 (Abdominal aortic aneurysm, without mention of rupture), code **I71.6**

I71.3 Abdominal aortic aneurysm, ruptured

with mention of:

I71.1 (Thoracic aortic aneurysm, ruptured), code **I71.5**

I71.4 Abdominal aortic aneurysm, without mention of rupture

with mention of:

I71.2 (Thoracic aortic aneurysm, without mention of rupture), code **I71.6**

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

Not to be used for underlying cause mortality coding. See *Surgery and other medical procedures*, 4.2.9.

J00 Acute nasopharyngitis [common cold], *or*

J06.- Acute upper respiratory infections of multiple and unspecified sites

with mention of:

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

when reported as the 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, *or*

J41.-   Simple and mucopurulent chronic bronchitis, *or*

J42   Unspecified chronic bronchitis
            with mention of:
            J43.-   (Emphysema) code **J44.-**
            J44.-   (Other chronic obstructive pulmonary disease) code **J44.-**
            when reported as the 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**

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 *Surgery and other medical procedures*, 4.2.9.

K71	Toxic liver disease

with mention of:

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

K70.-   (Alcoholic liver disease), code **K70.-**

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**

K70.0-K70.4 (Alcoholic liver disease), code **K70.0-K70.4**

K70.9   (Alcoholic liver disease, unspecified), 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**

K70.-   (Alcoholic liver disease), 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**

K70.-   (Alcoholic liver disease), 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**

K70.- (Alcoholic liver disease), 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**

K70.- (Alcoholic liver disease), 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**

K70.- (Alcoholic liver disease), code **K70.3**

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

K75.8   Other specified inflammatory liver diseases, *if* specified as steatohepatitis

with mention of:

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

K70.- (Alcoholic liver disease), code **K70.1**

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

K75.9   Inflammatory liver disease, unspecified

with mention of:

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

K70.- (Alcoholic liver disease), 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**

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

K76.9   Liver disease, unspecified

with mention of:

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

K70.-   (Alcoholic liver disease), 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**

K86.1   Other chronic pancreatitis, except when specified as due to other causes than alcohol

with mention of:

F10.- (Mental and behavioural disorders due to use of alcohol), code **K86.0**

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

Not to be used for underlying cause mortality coding. See *Surgery and other medical procedures*, 4.2.9.

L89.-   Decubitus ulcer and pressure area

when reported as the originating antecedent cause of:

L89.-   (Decubitus ulcer and pressure area) of a more advanced stage, code **L89.-** with the fourth character for the more advanced stage.

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 *Surgery and other medical procedures*, 4.2.9.

N00.-   Acute nephritic syndrome

when reported as the cause of:

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

N18.-   Chronic kidney disease

when reported as the originating antecedent cause of:

N18.-   (Chronic kidney disease) of a more advanced stage, code

	N18.- with the fourth character for the more advanced stage
N18.-	Chronic kidney disease, *or*
N19	Unspecified kidney failure, *or*
N26	Unspecified contracted kidney

with mention of:

I10   (Essential (primary) hypertension), code **I12.-**

I11.-   (Hypertensive heart disease), code **I13.-**

I12.-   (Hypertensive kidney disease), code **I12.-**

N46	Male infertility, *or*
N97.-	Female infertility

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

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

Not to be used for underlying cause mortality coding. See *Surgery and other medical procedures*, 4.2.9.

O08.-	Complications following abortion and ectopic and molar pregnancy

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

O14.-	Pre-eclampsia

with mention of:

O15.-   (Eclampsia), code **O15.-**

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

foetus

with mention of:

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

O94   Sequelae of complication of pregnancy, childbirth and the
        puerperium

        Not to be used for mortality coding. If death resulted from
        sequelae of complication of pregnancy childbirth and the
        puerperium, code to death from sequelae of obstetric causes
        (**O97**.-)

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

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 foetus
        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 foetus
        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**)

P95   Fetal death of unspecified cause
        Not to be used for mortality coding in live births.
        For fetal deaths, not to be used for underlying-cause mortality
        coding if any other cause of fetal mortality is reported.

Q44.6   Cystic disease of liver
        with mention of:
        Q61.1-Q61.3 (Polycystic kidney disease), code **Q61.1-Q61.3**

R57.2   Septic shock, *or*

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

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

R65.9   Systemic inflammatory response syndrome, unspecified

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**).

R64   Cachexia

with mention of:

B20-B24 (Human immunodeficiency virus [HIV] disease), code **B22.2** or **B22.7** as appropriate

R75   (Laboratory evidence of human immunodeficiency virus [HIV]), code **B22.2** or **B22.7** as appropriate

R69.-   Unknown and unspecified causes of morbidity

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

R75   Laboratory evidence of human immunodeficiency virus [HIV]

when reported as the cause of:

A00-B99 (Certain infectious and parasitic diseases), code **B20.-** or **B22.7** 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 next to or as the cause of a fracture, the fracture should be considered pathological, and code to **M80.-** Also consider a fracture pathological if it is reported on the same line as a disease of bone density, but only if the fracture and the disease of bone density are reported next to each other.

T00-T07   Injuries involving multiple body regions

Not to be used for main injury coding, if more specific information on the injuries is available. Code each injury separately, and select a main injury according to the instructions in section 4.2.6 (Special instructions on main injury in deaths from external causes).

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

Not to be used if the initial injury is known.

V01-X59   Accidents

with mention of:

A35 (Tetanus), code **A35**

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.

U82.0-U82.9 Resistance to betalactam antibiotics

> Not to be used for underlying-cause mortality coding. Code to the originating infectious disease. If no originating infectious disease is mentioned, code to **B99**.

U83.0-U83.9 Resistance to other antibiotics

> Not to be used for underlying-cause mortality coding. Code to the originating infectious disease. If no originating infectious disease is mentioned, code to **B99**.

U84.0   Resistance to antiparasitic drug

> Not to be used for underlying-cause mortality coding. Code to the originating infectious disease. If no originating infectious disease is mentioned, code to **B89**.

U84.1   Resistance to antifungal drug

> Not to be used for underlying-cause mortality coding. Code to the originating infectious disease. If no originating infectious disease is mentioned, code to **B49**.

U84.2   Resistance to antiviral drug

> Not to be used for underlying-cause mortality coding. Code to the originating infectious disease. If no originating infectious disease is mentioned, code to **B34.9**

U84.3   Resistance to tuberculostatic drug

> Not to be used for underlying-cause mortality coding. Code to the originating infectious disease. If no originating infectious disease is mentioned, code to **A16.9**

U84.7   Resistance to multiple antimicrobial drugs

> Not to be used for underlying-cause mortality coding. Code to the originating infectious disease. If no originating infectious disease is mentioned, code to **B99**.

U84.8   Resistance to other specified antimicrobial drug

> Not to be used for underlying-cause mortality coding. Code to the originating infectious disease. If no originating infectious disease is mentioned, code to **B99.**

U84.9   Resistance to unspecified antimicrobial drugs

> Not to be used for underlying-cause mortality coding. Code to the originating infectious disease. If no originating infectious disease is mentioned, code to **B99**.

U85   Resistance to antineoplastic drugs

Not to be used for underlying-cause mortality coding. Code to the originating infectious disease. If no originating infectious disease is mentioned, code to **C80.9**

Summary of codes not to be used in underlying cause mortality coding

In addition to asterisk codes (see Section 3.1.3)

Codes not to be used for underlying-cause mortality coding (code to item in parentheses; if no code is indicated, code to R99)	
B95.0–B95.5	(code to A49.1)
B95.6-B95.8	(code to A49.0)
B96.0	(code to A49.3)
B96.1-B96.2	(code to A49.8)
B96.3	(code to A49.2)
B96.4-B96.8	(code to A49.8)
B97.0	(code to B34.0)
B97.1	(code to B34.1)
B97.2	(code to B34.2)
B97.3	(code to B33.3)
B97.4-B97.5	(code to B34.8)
B97.6	(code to B34.3)
B97.7	(code to B34.4)
B97.8	(code to B34.8)
B98.0-B98.1	(code to A49.8)
C77-C79	(code to C80.-)
C97	(code to C00-C76, C81-C96)
E89.-	
F10.0	(code to X45, X65, X85, or Y15)
F11.0	(code to X42, X62, X85, or Y12)
F12.0	(code to X42, X62, X85, or Y12)
F13.0	(code to X41, X61, X85, or Y11)
F14.0	(code to X42, X62, X85, or Y12)
F15.0	(code to X41, X61, X85, or Y11)
F16.0	(code to X42, X62, X85, or Y12)

Codes not to be used for underlying-cause mortality coding (code to item in parentheses; if no code is indicated, code to R99)

F17.0	(code to X49, X69, X89, or Y19)
F18.0	(code to X46, X66, X89, or Y16)
F19.0	(code to X40–X49, X60–X69,X85–X90, or Y10–Y19)
G97.-	
H59.-	
H95.-	
I15.1	(code to N28.9 if not known)
I15.2	(code to E34.9 if not known)
I22.-	(code to I21.-)
I23.-	(code to I21.-)
I24.0	(code to I21.-)
I25.2	(code to I25.8)
I46.0	
I46.9	
I65.-	(code to I63)
I66.-	(code to I63)
I97.-	
J95.-	
K91.-	
M96.-	
N99.-	
O08.-	(code to O00-O07)
O80–O84	(code to O75.9)
O94	(code to O97.-)
P70.3–P72.0	(code to P96.9)
P72.2–P74	(code to P96.9)
P95	(Not to be used for live births, code **P96.9**

Codes not to be used for underlying-cause mortality coding (code to item in parentheses; if no code is indicated, code to R99)

R57.2	(code to A41.9)
R65.0–1	(code to A41.9)
R65.9	(code to A41.9)
R69.-	(code to R95–R99)
S00–T98	(code to V01–Y89)
Y90–Y98	
Z00–Z99	

Codes not to be used for underlying-cause mortality coding (code to the originating infectious disease, if no originating infectious disease is mentioned, code to the item in parentheses)

U82.0-U82.9	(code to B99)
U83.0-U83.9	(code to B99)
U84.0	(code to B89)
U84.1	(code to B49)
U84.2	(code to B34.9)
U84.3	(code to A16.9)
U84.7	(code to B99)
U84.8	(code to B99)
U84.9	(code to B99)
U85	(code to C80.9)

Codes not to be used if the underlying cause is known

F03–F09

F17.-   Not to be used if the resulting cause is known

F70–F79

F80.-

F81

G40.5

G81.-

Codes not to be used if the underlying cause is known
G82.-
G83.-
H54.-
H90–H91
I15.0
I15.1
I15.2-I15.8
I15.9
N46
N97.-
O30.-
P07.-
P08.-
T79.-

4.2.6   Special instructions on main injury in deaths from external causes (Step M4)

If the underlying cause you arrived at by applying the selection and modification rules in Step SP1–SP8 and M1–M3 is an external cause, code the external cause of the injury as underlying cause of death. In addition to the underlying cause from the external cause chapter, also code a main injury. This applies to both body injuries and poisoning. For special instructions on how to identify the main injury in poisoning deaths, see Section 4.2.7.

If more than one injury is reported on the death certificate, apply the following instructions:

a) When the injuries reported include superficial and trivial injuries (as listed in Annex 7.4, List of conditions unlikely to cause death), whether in Part 1 or Part 2, select the main injury as if the superficial or trivial injury had not been reported.

Example 1:   1(a)   Contusion of arm and fracture of skull
              (b)   Fall from scaffolding
              (c)
              (d)
              2

Fall from scaffolding is the underlying cause of death. Code the underlying cause to W12 (Fall on and from scaffolding). As main injury, code fracture of skull (S02.9, Fracture of skull and facial bones, part unspecified). Disregard contusion of arm (T11.0, Superficial injury of upper limb, level unspecified). It is in Annex 7.4, List of conditions unlikely to cause death.

b) When serious (non-superficial and non-trivial) injuries are reported in both Part 1 and Part 2, select the main injury from Part 1. This applies even when the injuries mentioned in Part 2 have a higher rank in Annex 7.7 (Priority ranking of injuries) than the injuries mentioned in Part 1.

Example 2:   1(a)   Multiple intrathoracic injuries
              (b)   Car driver, collision with bus
              (c)
              (d)
              2   Brain injuries

Code to car driver injured in collision with bus as underlying cause of death (V44.5, Car occupant injured in collision with heavy transport vehicle or bus, driver injured in traffic accident). As main injury, code multiple injuries of thorax (S29.7, Multiple injuries of thorax). Unspecified brain injury (S06.9) has a higher rank in Annex 7.7 than multiple injuries of thorax, but multiple injuries of thorax are mentioned in Part 1 and take precedence over the injuries mentioned in Part 2.

When serious injuries are reported only in Part 2, select a main injury from Part 2.

c) When more than one serious injury is reported in the relevant part of the certificate, select the main injury according to Annex 7.7 (Priority ranking of injuries). Note that 1 is the highest priority rank and that 6 is the lowest.

Example 3:   1(a)   Multiple intrathoracic injuries and brain injuries
              (b)   Car driver, collision with bus
              (c)
              (d)
              2

Code to car driver injured in collision with bus as underlying cause of death (V44.5, Car occupant injured in collision with heavy transport vehicle or bus, driver injured in traffic accident). As main injury, code brain injury (S06.9, Intracranial injury, unspecified),

110

which has a higher rank on the priority list than multiple injuries of thorax (S29.7).

d) When more than one of the serious injuries reported in the relevant part of the certificate have the same and highest rank, select the first mentioned of these injuries. However, prefer a specific injury over an injury from the block *Injuries involving multiple body regions* with the same priority rank.

Example 4:   1(a)   Multiple injuries with rupture of aorta
              (b)   Car driver, collision with bus
              (c)
              (d)
              2

Code to car driver injured in collision with bus as underlying cause of death (V44.5, Car occupant injured in collision with heavy transport vehicle or bus, driver injured in traffic accident).As main injury, code rupture of aorta (S25.0, Injury of thoracic aorta). Multiple injuries (T07) and rupture of aorta have the same rank on the priority list, but a specific injury takes precedence over an injury from the block *Injuries involving multiple body regions* (T00–T07).

4.2.7 Special instructions on poisoning by drugs, medicaments and biological substances (Step M4)

A. Selection of underlying cause

If the underlying cause you selected by applying Step SP1–SP8 and M1–M3 is poisoning, there is more than one drug reported on the certificate and the drugs do not have the same external cause code, select a code for the underlying cause as follows:

a) If one of the drugs is specified as the most important substance in bringing about the death, code the external cause code for that drug as underlying cause of death.

Example 5:   1(a)   Accidental heroin overdose
              (b)
              (c)
              (d)
              2   Diazepam and amitriptyline present

By placing heroin overdose in Part 1 and reporting the other substances as contributing causes of death in Part 2, the certifier has identified heroin as the most important substance in bringing about the death. Select accidental poisoning by heroin as

underlying cause (X42, Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified).

Example 6:   1(a)   Poisoning by amphetamine
               (b)
               (c)
               (d)
               2   Toxic levels of heroin and flunitrazepam

By placing amphetamine poisoning alone in Part 1 and reporting the other substances as contributing causes of death in Part 2, the certifier has identified amphetamine as the most important substance in bringing about the death. Select accidental poisoning by amphetamine as underlying cause (X41, Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified).

Example 7:   1(a)   Poisoning by alcohol
               (b)
               (c)
               (d)
               2   Toxic levels of heroin and flunitrazepam

By placing alcohol poisoning alone in Part 1 and reporting the other substances as contributing causes of death in Part 2, the certifier has identified alcohol as the most important substance in bringing about the death. Select accidental poisoning by alcohol as underlying cause (X45, Accidental poisoning by and exposure to alcohol).

b) If none of the drugs is specified as the most important substance in bringing about the death, first try to get further information from the certifier. If no clarification can be obtained, code

- combinations of alcohol with a drug to the drug;

- other multi-drug deaths to the appropriate category for "Other"

Example 8:   1(a)   Toxic levels of heroin and amphetamine
               (b)
               (c)
               (d)
               2

Neither heroin nor amphetamine is identified as the most important

substance in bringing about the death. Code to X44, Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances.

Example 9:   1(a)   Accidental poisoning by alcohol, heroin and diazepam
              (b)
              (c)
              (d)
              2

Neither of the substances is identified as the most important substance in bringing about the death. Poisoning by combinations of alcohol and drugs are coded to the drugs. Code to X44, Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances.

Proceed by identifying the most dangerous drug and code it as the main injury.

B. Selection of main injury

If the underlying cause is poisoning, use the code for poisoning in the *Injuries, poisoning and certain other consequences of external causes* chapter as main injury. If only one toxic substance is reported, code that substance as main injury. If several toxic substances are reported, identify the most dangerous substance and code it as main injury. To identify the most dangerous substance, apply the following instructions.

a) If one toxic substance is specified as the cause of death, code to that component substance.

Example 10:   1(a)   Accidental overdose by heroin
              (b)
              (c)
              (d)
              2   Diazepam and amitriptyline present

By placing heroin overdose alone in Part 1 and reporting the other substances as contributing causes of death in Part 2, the certifier has identified heroin as the most important substance in bringing about the death. Select accidental poisoning by heroin as underlying cause (X42, Accidental poisoning by and exposure to narcotics and psychodysleptics [hallucinogens], not elsewhere classified). As main injury, code poisoning by heroin (T40.1, Poisoning by narcotics and psychodysleptics [hallucinogens], heroin).

113

Example 11:   1(a)   Alcohol poisoning
                (b)
                (c)
                (d)
               2   Diazepam and amitriptyline present

By placing alcohol poisoning alone in Part 1 and reporting the other substances as contributing causes of death in Part 2, the certifier has identified alcohol as the most important substance in bringing about the death. Select accidental poisoning by alcohol as underlying cause (X45, Accidental poisoning by and exposure to alcohol). Code poisoning by alcohol as main injury (T51.9, Toxic effect of alcohol, unspecified).

b) If no single toxic substance is indicated as the cause of death, code combinations of alcohol with a drug to the drug.

Example 12:   1(a)   Toxic levels of alcohol and flunitrazepam
                (b)
                (c)
                (d)
               2   Diazepam and amitriptyline present

By placing toxic levels of alcohol and flunitrazepam in Part 1 and reporting the other substances as contributing causes of death in Part 2, the certifier has identified alcohol and flunitrazepam as the most important substances in bringing about the death. Of these two, select poisoning by flunitrazepam because combinations of alcohol with a drug are coded to the drug. Select accidental poisoning by flunitrazepam as underlying cause (X41, Accidental poisoning by and exposure to antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified). Code poisoning by flunitrazepam as main injury (T42.4, Poisoning by antiepileptic, sedative-hypnotic and antiparkinsonism drugs, benzodiazepines).

c) If no appropriate combination category is available, select the main nature of injury code in the following order of priority:

1. Opioid agonists and partial agonists and other and unspecified narcotics (T40.0-T40.4, T40.6)

Deaths that include multiple opioids classifiable to more than one fourth character subcategory in T40.0-T40.4, T40.6, should be prioritized as:

1a. Heroin (T40.1)

1b. Methadone (T40.3)

1c. Opium (T40.0)

1d. Other opioids (T40.2)

1e. Other synthetic narcotics (T40.4)

1f. Other and unspecified narcotics (T40.6)

2. Inhaled and intravenous anaesthetic agents (T41.0-T41.2, T41.4)

Includes: Propofol

3. Tricyclic and tetracyclic antidepressants (T43.0)

4. Barbiturates(T42.3)

5. 4-aminophenolderivatives (T39.1)

Includes: APAP, acetaminophen, paracetamol

6. Antipsychotics and neuroleptics (T43.3-T43.5)

Includes: Phenothiazine antipsychotics and neuroleptics

Butyrophenone and thioxanthe neneuroleptics

Other and unspecified antipsychotics and neuroleptics

7. Antiepileptic drugs, antiparkinsonism drugs, and unspecified sedatives (T42.0-T42.2, T42.5-T42.8)

8. Cocaine (T40.5)

9. Psychostimulants with abuse potential (T43.6)

Includes: Amphetamines and derivatives

10. MAOI antidepressants and other and unspecified antidepressants (T43.1, T43.2)

Includes: SSRI, Venlafaxine

11. Benzodiazepines (T42.4)

12. Drugs and substances not listed above

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

Note that for poisonings the selected underlying cause does not always match the code for main injury. For example, the underlying cause may express a combination of toxic substances, but the main injury code identifies the most dangerous component.

Example 13:   1(a)   Toxic levels of cocaine, heroin, diazepam and amitriptyline
                (b)
                (c)
                (d)
                2

Neither of the substances is identified as the most important substance in bringing about the death, and there is no specific code category for the combination of these substances. Code to X44, Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances as the underlying cause of death.

As main injury, code to poisoning of heroin. On the priority list above, cocaine (T40.5) is in group 8, heroin (T40.1) is in group 1a, diazepam (T42.4) is in group 11 and amitriptyline T43.0) is in group 10. Select heroin, the substance with the highest priority (T40.1, Poisoning by narcotics and psychodysleptics [hallucinogens], heroin).

Example 14:   1(a)   Heroin, cocaine, diazepam and amitriptyline overdose
     (b)
     (c)
     (d)
   2

Neither of the substances is identified as the most important substance in bringing about the death, and there is no specific code category for the combination of these substances. Code to X44, Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances as the underlying cause of death (X44).

Next, code poisoning by heroin as main injury. On the priority list above, heroin (T40.1) is in group 1a, cocaine (T40.5) is in group 8, diazepam (T42.4) is in group 11 and amitriptyline (T43.0) is in group 10. Select heroin, the substance with the highest priority (T40.1, Poisoning by narcotics and psychodysleptics [hallucinogens], heroin).

Example 15:   1(a)   Accidental poisoning by alcohol, heroin and diazepam
     (b)
     (c)
     (d)
   2

Poisoning by combinations of alcohol and drug(s) are coded to the drug(s), see instruction 4.2.7 B. b) above. Neither of the drugs reported in Part 1 is identified as the most important substance in bringing about the death and there is no specific code category for the combination of these substances. Code to X44, Accidental poisoning by and exposure to other and unspecified drugs, medicaments and biological substances as the underlying cause of death.

116

Next, code poisoning by heroin as main injury. On the priority list above, heroin (T40.1) is in group 1a and diazepam (T42.4) is in group 11. Select heroin, the substance with the highest priority (T40.1, Poisoning by narcotics and psychodysleptics [hallucinogens], heroin).

4.2.8   Special instructions on maternal mortality (Step M4)

If pregnancy, childbirth, or puerperium is mentioned anywhere on the certificate, in most cases the underlying cause is coded to Chapter XV (Pregnancy, childbirth and the puerperium). This is either because the underlying cause you selected by applying *Step SP1–M4* is classified to Chapter XV according to the Alphabetical index, or because there is a special code in Chapter XV for the condition if it appears during pregnancy, childbirth and the puerperium.

Apply the following instructions to determine if an underlying cause which is indexed to other parts of the ICD should be classified to Chapter XV. Note that these instructions do not apply to conditions that are indexed to Chapter XV in the Alphabetical index.

- If pregnancy, childbirth or puerperium is reported anywhere on the certificate but it is not clearly stated that pregnancy, childbirth or puerperium contributed to the death, first contact the certifier and ask for additional information.

    - If the certifier states that the death was a complication of pregnancy, childbirth or puerperium, code the underlying cause to Chapter XV (Pregnancy, childbirth and the puerperium).

    - If the certifier states that the death was not a complication of pregnancy, childbirth or puerperium, do not code the underlying cause to Chapter XV.

    - If you cannot obtain any additional information, but pregnancy, childbirth or puerperium is mentioned in Part 1 or Part 2 of the certificate, code the underlying cause to Chapter XV.

- If the underlying cause you selected is classifiable to O98-O99 (Maternal infectious and parasitic diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium and Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium), then add the corresponding code from Chapter I-XVI as a multiple cause of death. This is important because otherwise crucial information on the death will not be retrievable.

- Note that some conditions are not coded to Chapter XV, even if they occurred during pregnancy, childbirth or puerperium, see the *Excludes* note at the beginning of Chapter XV.

Example 1:   1(a)   Amniotic fluid embolism
              (b)
              (c)
              (d)
              2

The underlying cause, amniotic fluid embolism, is indexed to Chapter XV (O88.1).

Example 2:   1(a)   Pulmonary oedema
              (b)   Mitral regurgitation, pregnancy
              (c)
              (d)
              2

The underlying cause, mitral regurgitation, is coded to Chapter XV because pregnancy is mentioned in Part 1. Code the underlying cause to diseases of the circulatory system complicating pregnancy, childbirth and the puerperium (O99.4). For greater specificity, also add the code for mitral regurgitation (I34.0) to the record.

Example 3:   1(a)   Haemorrhage
              (b)   Cervical cancer
              (c)
              (d)
              2   Treatment delayed because of pregnancy

The underlying cause, cervical cancer, is coded to Chapter XV because pregnancy is mentioned in Part 2. Code the underlying cause to other specified diseases and conditions complicating pregnancy, childbirth and the puerperium (O99.8). For greater specificity, also add the code for cervical cancer (C53.9) to the record.

Example 4:   1(a)   Hepatic failure
              (b)   Dengue hemorrhagic fever   5 days
              (c)
              (d)
              2

Additional information: 40 days postpartum

Code the underlying cause to other viral diseases complicating pregnancy, childbirth and the puerperium (O98.5). For greater specificity, also add the code for Dengue (A97) to the record.

4.2.9   Special instructions on surgery and other medical procedures (Step M4)

A. Reason for the surgery or procedure stated

If the tentative starting point you arrived at by applying Step SP1-SP7 and M1-M4 is surgery or other medical procedure and the certificate states the reason for which the operation or procedure was performed, then select the reason for the operation or other procedure as the new starting point. Next, apply the instructions in Step SP7 and M1–M4 as described above.

B. Reason for the surgery or procedure not stated, complication reported

If the reason for the surgery or procedure is not stated and a complication is reported, proceed as follows:

- First check if the Alphabetical index gives a default code for the reason of the surgery or procedure. If it does, this is the new starting point. Next, apply the instructions in Step SP7 and M1–M4 as described above.

- If the Alphabetical index does not give a default code for the reason of the surgery or procedure, determine if the type of surgery or procedure indicates a specific organ or site. If it does, then use the code for the residual category for the organ or site operated on as the new starting point. Next, apply the instructions in Step SP7 and M1–M4 as described above.

- If the Alphabetical index does not give a default code for the reason of the surgery or procedure and the type of surgery or procedure does not indicate an organ or site, check if the certificate mentions a misadventure at the time of the procedure. If it does, use the appropriate code from O74, O75.4 or Y60-Y69 as underlying code of death.

- If the Alphabetical index does not give a default code, the type of surgery or procedure does not indicate an organ or site and there is no mention of a misadventure at the time of the procedure, use the appropriate code from O74, O75.4 or Y83-Y84 as underlying cause of death.

C. Reason for the surgery or procedure not stated, no complication reported

If the reason for the surgery or procedure is not stated and no complication is reported, proceed as follows:

- First check if the Alphabetical index gives a default code for the reason of the surgery or procedure. If it does, this is the new starting point. Next, apply the instructions in Step SP7 and M1–M4 as described above.

- If the Alphabetical index does not give a default code for the reason of the surgery or procedure, determine if the type of surgery or procedure indicates a

specific organ or site. If it does, then use the code for the residual category for the organ or site operated on as the new starting point. Next, apply the instructions in Step SP7 and M1–M4 as described above.

- If the Alphabetical index does not give a default code and the type of surgery or procedure does not indicate an organ or site, code to R99 (Other ill-defined and unspecified causes of mortality)

Example 1:   1(a)   Pulmonary embolism
      (b)   Appendectomy
      (c)
      (d)
     2

The certificate does not specify the reason for the surgery; but the term appendectomy indicates appendix as the organ operated on. Code unspecified disease of appendix (K38.9) as the underlying cause of death.

Example 2:   1(a)   Accidental puncture of aorta
      (b)   Laparotomy
      (c)
      (d)
     2

The certificate does not specify the reason for the surgery and the term laparotomy does not indicate a specific organ. However, there is a mention of a misadventure at the time of the surgery. Code the misadventure, accidental puncture during laparotomy), as the underlying cause of death (Y60.0, Unintentional cut, puncture, perforation or haemorrhage during surgical and medical care, during surgical operation).

Example 3:   1(a)   Postoperative haemorrhage
      (b)   Caesarean section
      (c)   Prolonged labour
      (d)
     2

The certificate states the reason why the surgery was performed. Code the reason for the surgery, prolonged labour, as the underlying cause of death (O63.9, Long labour, unspecified).

Example 4:   1(a)   Laparotomy
      (b)
      (c)
      (d)
     2

The certificate does not specify why the surgery was performed and

the term laparotomy does not indicate a specific organ. There is no mention of a complication. Code R99, Other ill-defined and unspecified causes of mortality, as the underlying cause of death.

D. Medical devices associated with adverse incidents due to external causes

If a death is caused by an incident involving a medical device, but the incident is due to an external cause and not to any breakdown or malfunctioning of the device itself, code the external cause as the underlying cause of death.

Example 5:   1(a)   Inhalation pneumonia
    (b) Haemorrhage of trachea
    (c) Fell from bed while attached to respirator
    (d)
    2 Respirator treatment following liver transplant

There is no mention of breakdown or malfunctioning of the respirator or the tracheal tube. Code fall involving bed (W06), the accident that caused the haemorrhage, as the underlying cause of death.

Example 6:   1(a)   Pulmonary edema
    (b) Intra-aortic balloon pump stopped
    (c) Power cut due to hurricane
    (d) Recent myocardial infarction with mitral insufficiency
    2

The balloon pump stopped working not because of any malfunctioning or breakdown, but because of a power cut. Code the reason of the power cut, cataclysmic storm, as the underlying cause of death (X37, Victim of cataclysmic storm).

If the external cause of the incident is not specifically classified, code to exposure to unspecified factor causing other and unspecified injury (X59.9).

Example 7:   1(a)   Cardiac and respiratory failure
    (b) Stopped administration of inotrop drugs
    (c) Accidental removal of subclavian line
    (d)
    2 Surgery for acute rupture of gallbladder

There is no mention of malfunctioning or breakdown of equipment. Since the accident that caused the removal of the subclavian line is not described, code to X59.9, Exposure to unspecified factor causing other and unspecified injury.

4.3 Coding instructions for mortality: Multiple causes

4.3.1 Introduction

Multiple cause coding permits in-depth analysis of causes of death, for example of serious but avoidable complications of certain underlying causes, and the impact of co-existing conditions on the outcome of a disease process. Therefore, in mortality coding both underlying cause and multiple causes should be recorded. Also, complete multiple cause coding is essential for a correct application of the ICD instructions for selection and modification of the underlying cause of death (Section 4.2).

All possible detail should be retained in the multiple cause coding, since records containing all multiple cause conditions permit more thorough analysis than records with only a selection of the conditions reported on the certificate. Especially,

- the position of the individual codes in the data record should reflect where on the certificate the corresponding diagnostic expressions were entered by the certifier, because some analyses might focus on the terminal cause of death, or on conditions reported in Part 2;

- codes for common conditions or for conditions regarded as symptomatic or less informative should not be deleted or left out, since they may be of special interest in analysis of avoidable complications and may serve as markers of the seriousness of other conditions reported on the certificate;

- multiple cause data should be stored in two formats, one format that shows as clearly as possible which term the certifier used on the certificate and where on the certificate each term was reported; and one format that takes the stated or implied relationships between the reported conditions into consideration, and where the codes have been harmonized according to the instructions in the ICD volumes.

4.3.2 Uncertain diagnosis

Ignore expressions indicating doubt as to the certainty of the diagnosis, for example "apparently", "presumably", "probably" or "possibly". A tentative diagnosis, although uncertain, is of better use to mortality statistics than no diagnosis at all.

4.3.3 Either – or

The certifier might report alternative diagnoses, "either diagnosis A or diagnosis B". In such cases proceed as follows.

A. One condition, either one site or another

a. If the sites are in the same anatomical system, code to the residual category for

the group or anatomical system in which the reported sites are classified.

Example 1: 1(a) Cancer of kidney or bladder
            (b)
            (c)
            (d)
            2

            Code as malignant neoplasm, urinary organ, unspecified (C68.9).

b. If the reported sites are in different anatomical systems or if there is no residual category for the group or anatomical system, code to the residual category for the disease or condition specified.

Example 2: 1(a) Cancer of adrenal gland or kidney
            (b)
            (c)
            (d)
            2

            Code as primary malignant neoplasm, primary site unspecified (C80.9), since adrenal gland and kidney are in different anatomical systems.

B. One site or system, either one condition or another condition

a. If the reported conditions are classifiable to different four character subcategories of the same three character category, code to the four-character subcategory for "unspecified".

Example 3: 1(a) Arteriosclerotic heart disease or coronary aneurysm
            (b)
            (c)
            (d)
            2

            Code as chronic ischemic heart disease, unspecified (I25.9).

b. If the reported conditions are classifiable to different three character categories but ICD-10 provides a residual category for the disease in general, code to the residual category.

Example 4: 1(a) Myocardial infarction or coronary aneurysm
            (b)
            (c)
            (d)
            2

            Code as the residual category for ischemic heart disease (I25.9).

123

c. If the reported conditions are classifiable to different three character categories and there is no residual category for the disease in general, code to the residual category relating to the disease of the anatomical site/system.

Example 5:   1(a) Tuberculosis or cancer of lung
                (b)
                (c)
                (d)
              2

Code as other disorders of lung (J98.4). Both conditions involve the lung.

Example 6:   1(a) Stroke or heart attack
                (b)
                (c)
                (d)
              2

Code as other and unspecified disorders of circulatory system (I99). Both conditions are in the circulatory system.

C. Either one condition or another, different anatomical systems

When different diseases of different anatomical systems are reported as "*either ... or*", code to other specified general symptoms and signs (R68.8).

Example 7:   1(a) Gallbladder colic or coronary thrombosis
                (b)
                (c)
                (d)
              2

Code as other specified general symptoms and signs (R68.8).

D. Either disease or injury

When death is reported as due to either a disease or an injury, code to other ill-defined and unspecified causes of mortality (R99).

Example 8:   1(a) Coronary occlusion or war injuries
                (b)
                (c)
                (d)
              2

Code as other ill-defined and unspecified causes of mortality (R99).

4.3.4 Effect of connecting terms

When the certifier uses a connecting term, the codes assigned must be arranged to reflect the certifier's intention.

There are two types of connecting terms: those implying a causal relationship and those not implying a causal relationship between reported causes of death.

A. Connecting terms implying a causal relationship

A causal relationship can be expressed in two ways, a) "due to" written or implied by a similar term; or b) "resulting in" written or implied by a similar term.

a) "due to" written or implied by a similar term

When one cause is certified with a connecting term implying it is due to another cause, enter the code for the first cause on the line where reported and the code for the other cause on the next lower line. Code any causes reported on the remaining lines in Part 1 on the next lower lines.

Example 1:   1(a) heart failure due to ischemic heart disease   I50.9
               (b) diabetes   I25.9
               (c)   E14.9
               (d)
               2

Heart failure is the first cause on line (a), and code it to line (a). It is reported as due to ischaemic heart disease, so code ischaemic heart disease to line (b). Move diabetes, which is written on line (b), to line (c).

Example 2:   1(a) Heart failure because of hepatocellular carcinoma I50.9
               (b) Ischemic heart disease   C22.0
               (c) Diabetes   I25.9
               (d)   E14.9
               2

Heart failure is the first cause on line (a), and code it to line (a). It is reported as due to hepatocellular carcinoma, so code hepatocellular carcinoma to line (b). Move ischaemic heart disease, which is reported on line (b), to line (c). Also move diabetes, which is reported on line (c), to line (d).

This applies to other connecting terms or signs that indicate a "due to" relationship, such as "caused by", "because of", or similar.

b) "resulting in" written or implied by a similar term

When one cause is certified with a connecting term implying it resulted in another cause, enter the code for the cause following the connecting term on the line where reported and the code for the cause preceding the connecting term on the next lower line. Code any causes reported on the remaining lines in Part 1 on the next lower lines.

Example 3:　1(a) Ischaemic heart disease resulting in heart failure　I50.9
　　　　　　　　(b) Diabetes　　　　　　　　　　　　　　　　　　　　I25.9
　　　　　　　　(c)　　　　　　　　　　　　　　　　　　　　　　　　E14.9
　　　　　　　　(d)
　　　　　　　2

Code heart failure, which follows the connecting term "resulting in", on line (a). Code ischaemic heart disease, which is reported before the connecting term, on line (b). Move diabetes, reported on line (b), one line down and code it on line (c).

Example 4:　1(a) Hepatocellular carcinoma causing heart failure　I50.9
　　　　　　　　(b) ischemic heart disease　　　　　　　　　　　　　C22.0
　　　　　　　　(c) diabetes　　　　　　　　　　　　　　　　　　　I25.9
　　　　　　　　(d)
　　　　　　　2

Code heart failure, reported after the connecting term "causing", on line (a). Code hepatocellular carcinoma, which is reported before the connecting term, on line (b). Move ischemic heart disease, reported on line (b), to line (c), and move diabetes, which is reported on line (c), to line (d).

This applies to other connecting terms or signs that indicate a "resulting in" relationship, such as "causing", "leading to", "developing into", and similar.

B. Connecting terms not implying a causal relationship

a) "And" written or implied by a similar term first or last on a line

The connecting term "and" does not imply a causal relationship, but it indicates that the terms before and after it both belong to an enumeration. Therefore, when a line ends with "and", code the cause or causes on the next lower line last on the upper line, so that the coding reflects the enumeration implied by the connecting term.

Similarly, when a line starts with "and", consider this as a continuation of an enumeration starting on the line above, and code the cause or causes on that line last on the line above. Code any causes reported on the remaining lines in Part 1 where reported.

This applies to other connecting terms or signs that indicate an enumeration but do not imply a causal relationship, such as "also", "plus", "besides", "in addition", "+" or comma.

Example 5:	1(a) Heart failure and	I50.9 I25.9
	(b) ischaemic heart disease	
	(c) diabetes	E14.9
	(d)	
	2	

Line 1(a) ends with "and", so consider "ischemic heart disease", reported on line (b) as a part of the enumeration "heart failure and ischaemic heart disease". Code accordingly, and place the codes for both heart failure and ischaemic heart disease on line 1(a). Code diabetes where it is reported, on line (c).

Example 6:	1(a) Heart failure	I50.9
	(b) Ischaemic heart disease	I25.9 E14.9
	(c) and diabetes	
	(d)	
	2	

Line 1(c) starts with "and". Consider diabetes, reported on line (c), as a part of the enumeration "ischaemic heart disease and diabetes". Code accordingly, and place the codes for both ischaemic heart disease and diabetes on line 1(b).

b) "And" written or implied by a similar term but not first or last on a line

If a connecting term that does not imply a causal relationship is written in a line but not first or last, then treat is as a comma. Do not reformat the text and do not move any part of the causes to another line.

C. Diagnostic terms that do not stop at the end of the line

If a diagnostic term starts on one line in Part 1 and continues on the next line code as if the entire diagnostic term had been written on the line where the diagnostic term starts. Code any causes reported on the remaining lines in Part 1 where reported.

Example 7:	1(a) Ischemic	I25.9
	(b) Heart disease	
	(c) Diabetes type 2	E11.9
	(d)	
	2	

"Ischemic heart disease" is a diagnostic term reported on two lines. Code as if the complete term had been written on line (a). Code diabetes where it is reported, on line (c).

Example 8:	1(a) Pneumonia	J18.9
	(b) Chronic kidney	N18.9 E11.9
	(c) disease, diabetes type 2	
	(d)	
	2	

"Chronic kidney disease" is a diagnostic term reported on two lines. Reformat the certificate and code the complete term "chronic kidney disease" on line (b). Also code diabetes on line (b), since it continues the line where chronic kidney

4.3.5   Malignant neoplasms

To assign the correct multiple cause code for a neoplasm, you must first determine behaviour (malignant, in situ, benign, uncertain or unknown) for each of the neoplasms reported on the death certificate. For malignant neoplasms, you must also determine whether to code them as primary or secondary. To that end, apply the instructions outlined in Sections 4.3.5 A and 4.3.5 B below.

In the examples of this section, ICD codes are provided to the right of the death certificate. These codes represent the multiple cause codes assigned to each entry. These multiple cause codes could be different from a code assigned when the given diagnostic entry was reported alone on the certificate (direct coding). In such case, the code for direct coding is given in the square brackets "[ ]" next to the diagnostic expression. The explanation for each example describes that the codes in brackets will be modified by other information on the certificate (application of multiple cause coding) and to code to the multiple cause code indicated to the right.

A. Behaviour – malignant, in situ, benign or unknown/uncertain behaviour

The four major types of behaviour are:

- malignant: the neoplasm invades surrounding tissue or disseminates from its point of origin and begins to grow at another site,

- in situ: the neoplasm is malignant but still fully confined to the tissue in which it originated,

- benign: the neoplasm grows in the place of origin without the potential for spread,

- uncertain or unknown behaviour: it is undetermined or unknown whether the neoplasm is benign or malignant

The corresponding ICD code ranges are

- C00-C96 if malignant

- D00-D09 if in situ

- D10-D36 if benign

- D37-D48 if uncertain or unknown behaviour

Determine which code block to use as follows:

a) The term itself indicates behaviour

Look in the Alphabetical index for the term used on the certificate to describe the neoplasm. If both morphology and location are stated, then look up the morphology term first. For specific morphologies the Alphabetical index gives either the ICD code to use, or directs you to the proper part of the list at "Neoplasm" in the Alphabetical index. If the morphology is not stated, go to the "Neoplasm" list in the Alphabetical index and code by site and behaviour.

b) Other information on the certificate indicates behaviour

If the term used on the certificate does not indicate a specific behaviour, then look for other information indicating behaviour.

Code a neoplasm of unspecified behaviour, a neoplasm described as "in situ" [see example 8], and also growths that are not indexed to Chapter II (for example, certain polyps) [see example 9] as malignant if

- it is reported as the cause of secondary spread (terms such as metastases, infiltration, secondaries or similar) or of cachexia. [see example 1a, 1b, 1c, 2]

- it is reported on the same line as and next to a mention of secondary spread [see example 1d, and for when not to apply 1e]

- there is no mention of another neoplasm site but there are other indications of malignancy reported anywhere on the certificate (for example, carcinosis, malignant cachexia, malignant transformation) [see example 1g]

- it is reported as due to a malignant neoplasm -To decide whether it is primary or secondary, see the instructions in [see example 1h] Section 4.3.5B, Malignant neoplasm: primary or secondary?

Example 1a:	1(a) Liver metastases	C78.7
	(b)Colon tumour [D37.4]	C18.9
	(c)	
	(d)	
	2	

The colon tumour is reported as the cause of liver metastases so the colon tumour is considered malignant. Code the colon tumour as primary (C18.9).

Example 1b; 1(a) Cachexia [R64]   C80.9
             (b) Colon tumour [D37.4]   C18.9
             (c)
             (d)
             2

  Colon tumour is reported as the cause of cachexia. Consider the
  colon tumour malignant and code the colon tumour as primary
  (C18.9)

Example 1c: 1(a) Liver and lung metastases   C78.7, C78.0
             (b) Respiratory failure   J96.9
             (c) Colon tumour [D37.4]   C18.9
             (d)
             2

Both metastases and respiratory failure can be due to a colon
tumour. According to the instructions on how to interpret causal
relationships in Part 1 (see section 4.2.1, SP3) this means that two
valid causal relationships are reported on this certificate, 1) liver
and lung metastases due to colon tumour, and 2) respiratory failure
due to colon tumour. These relationships are valid even if liver and
lung metastases cannot be due to respiratory failure. Consider the
colon tumour malignant and code the colon tumour as primary
cancer C18.9

Example 1d: 1(a) Colon tumour [D37.4] with liver   C18.9, C78.7
                    metastases
             (b)
             (c)
             (d)
             2

The colon tumour is reported on the same line as and next to liver
metastases and is considered malignant. Code the colon tumour as
primary cancer (C18.9).

Example 1e: 1(a) Breast tumour, generalized   D48.6, I70.9, C18.9, C78.7
                    atherosclerosis, colon
                    cancer with liver metastases
             (b)
             (c)
             (d)
             2

The breast tumour is not reported next to secondary spread. Do not
consider it malignant and use the code for breast tumour in the
section for neoplasms of uncertain or unknown behaviour (D48.6).

Example 1f: 1(a) Respiratory failure   J96.9
                (b) Colon tumour [D37.4]   C18.9
                (c)
                (d)
                2 Liver and lung metastases   C78.0, C78.7
                All neoplasms except colon tumour are specified as secondary
                spread. Consider the colon tumour malignant and code the colon
                tumour as primary cancer (C18.9).

Example 1g: 1(a) Colon tumour [D37.4]   C18.9
                (b)
                (c)
                (d)
                2 Cancer cachexia   C80.9
                Colon tumour is the only neoplasm reported on the certificate, and
                cancer cachexia is mentioned in Part 2. Consider the colon tumour
                malignant and code the colon tumour as primary (C18.9).

Example 1h: 1(a) Brain tumour [D43.2]   C79.3
                (b) Breast cancer   C50.9
                (c)
                (d)
                2
                For multiple cause coding, consider brain tumour malignant and
                use the code for secondary malignant neoplasm of brain and
                cerebral meninges (C79.3). Breast cancer is the underlying cause
                (C50.9)

If a tumour is indexed to the Chapter II section for benign neoplasm but is reported
as the cause of metastases or infiltration, check in the Alphabetical index and in
Volume 1 if the there is a code for a malignant variety. If so, code it as malignant. If
there is no code for a malignant variety, first try to obtain clarification from the
certifier. If no further information is available, then accept the statement on the
certificate and use the code for benign tumour.

If there is no indication of malignancy, code as uncertain or unknown behaviour
(D37-D48).

B. Malignant neoplasms: Primary or secondary?

If the neoplasm is coded to C00-C96, next decide if it is primary or secondary.

The primary site is the anatomical location where the malignant neoplasm
originated. A malignant neoplasm may spread to other parts of the body, and these
sites are referred to as secondary or metastases. 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 instructions below should be applied only when clarification cannot be obtained.

The ICD provides the following code ranges for primary malignant neoplasms:

C00-C75	Malignant neoplasms, stated or presumed to be primary, of specified anatomical site. This block does not include lymphoid, haematopoietic and related tissues
C76	Malignant neoplasms of ill-defined sites
C80	Malignant neoplasm without specification of site
C81-C96	Malignant neoplasms, stated or presumed to be primary, of lymphoid, haematopoietic and related tissues

For secondary malignant neoplasms, ICD provides the code range

C77-C79	Malignant secondary neoplasms, stated or presumed to be metastatic spread from another site

For malignant neoplasms of unspecified site not stated or presumed to be primary or secondary, ICD provides the code C80.9 (Malignant neoplasm, primary site unspecified).

Sometimes malignant neoplasms are described as "metastatic", which might refer either to a primary malignant neoplasm that metastasizes to another site, or to secondary malignant neoplasms originating somewhere else. For instructions on how to code neoplasms described as "metastatic", see section 4.3.5 G ('Metastatic' cancer)

a) Common sites of metastases

When choosing between codes for primary and secondary malignant neoplasms, refer to the following list of common sites of metastases:

- Bone
- Brain
- Diaphragm
- Ill-defined sites (sites classifiable to C76)
- Liver
- Lung
- Lymph nodes

132

- Mediastinum
- Meninges
- Peritoneum
- Pleura
- Retroperitoneum
- Spinal cord

See below for further instructions on how to code neoplasms of sites on this list.

b) Malignant neoplasm reported as primary

If the certifier describes a malignant neoplasm as "primary", "primary in", "originating in", or with similar terms, then use a code for primary malignant neoplasm (C00-C76, C80.0 or C81-C96). Use the Alphabetical index to find the appropriate code. [example 12]

If the morphology has been stated always look up the morphology in Volume 3 first, because for some morphologies there are specific ICD codes that are different from the code given in the "Neoplasm" table by site and behaviour.

c) Other indication of primary malignant neoplasm

  [i]Also code a malignant neoplasm as primary, although not described as primary by the certifier, if

- All other malignant neoplasms on the certificate are described as secondary or as metastases. This applies whether the site not specified as secondary or as metastasis is on the list of common sites of metastases or not. See also Example 7.
- It is in the code range C81-C96
  - A primary neoplasm in C81-C96 may occur simultaneously together with another primary neoplasm in the same range. Code all malignant neoplasms classifiable to C81-C96 as primary, unless the certifier specifies them as secondary.
- The site is not on the list of common sites of metastases [example 3]

  [ii] If the site is on the list of common sites of metastases, code the malignant neoplasm as primary if

- The morphology indicates that it is primary of the reported site [example 10a, 10b, 19]

- It is described as caused by a known risk factor for malignant neoplasms of the stated site [2]: [example 4]

- It is the only malignant neoplasm mentioned on the death certificate, and it is not described as "metastatic" [example 10c]

  - *exception*: Code malignant neoplasm of lymph nodes as secondary even if it is the only reported neoplasm on the certificate, unless it is stated that the lymph node neoplasm is primary [example 11]

  - *note*: If the only malignant neoplasm reported on the certificate is malignant neoplasm of liver, and it is not specified as either primary or secondary, then use the code C22.9 (malignant neoplasm of liver, unspecified)

- It is malignant neoplasm of lung, and all other malignant neoplasms mentioned on the certificate are on the list of common sites of metastases

  - code lung as secondary if another malignant neoplasm is reported in the same part of the certificate (Part 1 or Part 2) and this other malignant neoplasm is coded as a primary malignant neoplasm [example 5,6,20]

- Always code lung as primary if the malignant neoplasm is described as bronchogenic or of bronchus

Code a neoplasm that is not indexed as malignant, for example meningioma, as primary malignant if it is reported as causing secondary or metastatic spread and a code for a malignant variety of the neoplasm is available. See also above, Section 4.3.5 A (Behaviour – malignant, in situ, benign or unknown/uncertain), subsection b) (Other information on the certificate indicates behaviour).

Exceptions are listed next:

- *exception:* If durations are stated, the secondary neoplasms must not have a longer duration than the presumed primary malignant neoplasm

- *exception:* If morphologies are stated, the secondary and presumed primary malignant neoplasms must have the same morphology

- *exception:* If a neoplasm that would not be coded as malignant is reported as the cause of another neoplasm that would not be coded as malignant, then code both neoplasms according to the Alphabetical index. Do not assume malignancy or metastatic spread. [example 13]

-

---

[2] To determine if the condition reported as causing the neoplasm is a known risk factor, check if it is mentioned as a risk factor of the site involved in textbooks or other reliable sources.

Example 2: 1(a) Brain metastasis   C79.3
            (b) Lung tumour [D38.1]   C34.9
            (c)
            (d)
            2

The lung tumour has caused metastatic spread and is considered malignant. It is also considered primary, since the other site mentioned (brain) is a metastasis. Code the lung tumour as primary of lung (C34.9).

Example 3: 1(a) Cancer of pancreas   C25.9
            (b) Cancer of stomach   C16.9
            (c)
            (d)
            2

Pancreas and stomach are not on the list of common sites of metastases. Code both cancers as primary (C25.9 and C16.9).

Example 4: 1(a) Cancer of liver and lung [C34.9]   C22.9, C78.0
            (b) Chronic hepatitis   K73.9
            (c)
            (d)
            2

Chronic hepatitis increases the risk of primary liver cancer. Therefore, consider the liver cancer primary and code to C22.9 (malignant neoplasm of liver, unspecified). Do not use the code for secondary malignancy of liver, C78.7. Code the lung cancer as secondary (C78.0), because the only other malignant neoplasm on the certificate is primary.

Example 5: 1(a) Kidney cancer and lung cancer [C34.9] C64, C78.0
            (b)
            (c)
            (d)
            2

Code the kidney cancer as primary (C64), since it is not on the list of common sites of metastases. Code lung cancer as secondary (C78.0), since it is reported in the same part of the certificate as the kidney cancer and the kidney cancer is considered primary.

Example 6: 1(a) Lung cancer   C34.9
            (b)
            (c)

	(d)		
	2	Kidney cancer	C64

Code the lung cancer as primary (C34.9). There is no other primary malignant neoplasm in the same part of the certificate as where lung cancer is reported, and the code for lung cancer is not influenced by neoplasms mentioned in another part of the certificate. Code the kidney cancer as primary (C64), since it is not on the list of common sites of metastases.

Example 7:	1(a)	Brain tumour [D43.2]	C71.9
	(b)		
	(c)		
	(d)		
	2	Lung tumour, probably secondary	C78.0

Consider both tumours as malignant since the certifier described one of the two as secondary, which is evidence of malignant behaviour. See Section 4.3.5 A (Behaviour – malignant, in situ, benign or unknown/uncertain), subsection b) (Other information on the certificate indicates behaviour). Code the brain tumour as primary, since the other malignant neoplasm on the certificate is described as secondary. The qualification "probably" is ignored, see Section 4.3.2 (Uncertain diagnosis).

Example 8:	1(a)	Metastatic involvement of chest wall	C79.8
	(b)	Carcinoma in situ of breast [D05.9]	C50.9
	(c)		
	(d)		
	2		

Code the carcinoma in situ of breast as primary malignant neoplasm of breast (C50.9). Since the breast tumour has spread to the chest wall it is no longer *in situ*.

Example 9:	1(a)	Secondary malignant neoplasm of lung and brain	C78.0
			C79.3
	(b)	Polyp of stomach [K31.7]	C16.9
	(c)		
	(d)		
	2		

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

Example 10a: 1(a)   Brain cancer (glioma)   C71.9
                (b)
                (c)
                (d)
                2   Kidney cancer   C64

 Brain is on the list of common sites of metastases, but the morphology glioma indicates that it is primary in brain. Use the code for primary malignant neoplasm of brain (C71.9). Code kidney cancer to C64, because kidney is not on the list of common sites of metastases.

Example 10b: 1(a)Bone cancer (osteosarcoma)   C40.9
                (b)Colon cancer   C18.9
                (c)
                (d)
                2

Bone is on the list of common sites of metastases, but the morphology osteosarcoma indicates that it is primary in bone. Use the code for primary malignant neoplasm of bone (C40.9). Code colon cancer to C18.9, because colon is not on the list of common sites of metastases

Example 10c: 1(a)   Brain cancer   C71.9
                (b)
                (c)
                (d)
                2

Brain is on the list of common sites of metastases, but in this case it is the only malignant neoplasm mentioned on the certificate. Use the code for primary malignant neoplasm of brain (C71.9).

Example 11:   1(a)   Cancer of cervical lymph nodes   C77.0
                (b)
                (c)
                (d)
                2

Code the cancer of cervical lymph nodes as secondary (C77.0). It is considered secondary to an unspecified primary malignant neoplasm.

Example 12:   1(a)   Cancer, primary in prostate   C61
               (b)
               (c)
               (d)
               2

               The cancer is described as primary in prostate. Code to C61, which
               is in the block of primary malignant neoplasms.

Example 13:   1(a)   Bladder tumour   D41.4
               (b)   Lung tumour   D38.1
               (c)
               (d)
               2

               None of the tumours is specified as malignant or benign. Therefore,
               do not assume malignancy or metastatic spread. Use codes from
               the block of neoplasms of unknown or unspecified behaviour,
               D41.4 (bladder) and D38.1 (lung).

d) Malignant neoplasm reported as secondary

If the certifier describes a neoplasm as secondary then use a code in C77-C79. Use
the list at "Neoplasm, secondary" in the Alphabetical index to find the appropriate
code.

e) Other indication of secondary malignant neoplasm

If a malignant neoplasm is not described as primary or secondary but the
morphology is stated, first look up the morphology in the Alphabetical index. If the
morphology is incompatible with the stated site of the neoplasm (i.e., the neoplasm
cannot be primary of the stated site according to textbooks and other reference
literature), then assign a code for a malignant neoplasm of unspecified site for the
morphology indicated. [example 23]

Code a malignant neoplasm as secondary if the neoplasm is:

- Specified as secondary by the certifier

- Unspecified whether primary or secondary, and the site is on the list of common
  sites of metastases

        ○ *exception*: if there is only one malignant neoplasm mentioned and
           the site is on the list of common sites of metastases, then code the
           neoplasm as primary although it is on the list of common sites of
           metastases. This does not apply to lymph nodes, which are always
           coded as secondary. See also Section 4.3.5 B (Malignant
           neoplasms: Primary or secondary?), subsection b) (Other indication
           of primary malignant neoplasm).

- ○ *exception*: code lung as primary, if all other sites in the same part of the certificate (Part 1 or Part 2) are on the list of common sites of metastases. However, code lung as secondary if the morphology indicates that a neoplasm of a common site of metastases, reported in the same part of the certificate, is primary of the reported site, or it is described as caused by a known risk factor for malignant neoplasms of the reported site;

- ○ *exception*: code a malignant neoplasm on the list of common sites of metastases as primary, if all other malignant neoplasms on the certificate are specified as secondary or as metastases. This applies whether these other malignant neoplasms are on the list of common sites of metastases or not. See also Example 7;

- ○ *exception*: code a malignant neoplasm on the list of common sites of metastases as primary, if the morphology is stated and is compatible with the site.[2] For example, code osteosarcoma of humerus as primary although bone is on the list of common sites of metastases.

- Unspecified whether primary or secondary, and the certifier states that the cancer is primary in another site. This applies whether the site is on the list of common sites of metastases or not [example 15]

  - ○ regardless of site, do not code a neoplasm as secondary if it is of a different morphology from another neoplasm stated to be primary. See also Section 4.3.5 C (More than one primary malignant neoplasm).

- Unspecified whether malignant, in situ or benign, and it is reported as due to a malignant neoplasm [example 16a and b]

  - ○ *exception*: If durations are stated, do not code the unspecified neoplasm as secondary if it has a duration that is longer than the durations of the malignant neoplasm reported as the cause of the unspecified neoplasm

- The morphology indicates that the neoplasm cannot be primary of the stated site (see example 23). In that case, use both the default code for a primary neoplasm of the morphology involved and a code for a secondary malignant neoplasm of the stated site.

- Do not use order of entry to determine if a neoplasm specified as malignant is primary or secondary. Code a malignant neoplasm reported as due to another malignant neoplasm as secondary only if it is described as secondary, metastatic spread or similar; or if it is on the list of common sites of metastases [example 21]

139

- Do not confuse "primary" with "primary in". Whereas "primary in" identifies one of several malignant tumours of the same or unspecified morphology as the primary tumour, "primary" simply means that the malignant neoplasm was not secondary. It does not necessarily mean that all other malignant neoplasms mentioned on the certificate were secondary.

- If the certificate states that the primary site was unknown, then code all neoplasm sites mentioned on the certificate as secondary (see example 15)

Note: There is one more instruction for this instruction (4.3.5.B.e) after example 23.

Example 14:   1(a)   Carcinoma of adrenal glands [C74.9]   C79.7
               (b)
               (c)
               (d)
               2   Primary in kidney   C64

The malignant neoplasm of adrenal glands is considered secondary, since the certificate states that the cancer was primary in kidney. Code the adrenal carcinoma as secondary (C79.7) and the primary in kidney as malignant primary neoplasm of kidney (C64).

Example 15:   1a)   Prostate cancer [C61]   C79.8
               b)   Primary site unknown   C80
               (c)
               (d)
               2

The primary site is described as unknown. Code to malignant neoplasm of unknown primary site (C80.0). Code prostate cancer as secondary (C79.8), since the primary malignant neoplasm clearly was in another site.

Example 16a: 1(a) Brain tumour [D34.2]   C79.3
               (b) Breast cancer   C50.9
               (c)
               (d)
                2

Example 16b: 1(a)   Brain tumour [C61]   C79.8
               (b)   Lung cancer   C34.9
               (c)
               (d)
               2

The brain tumour is considered malignant since it is reported as due to lung cancer. Also, it is considered secondary since it is on the list of common sites of metastases and reported together with lung cancer. Code the brain tumour as secondary malignant (C79.3).

140

Code the lung cancer as primary (C34.9), since the only other reported neoplasm is on the list of common sites of metastases.

Example 17:   1(a)   Cancer growth in liver [C22.9] and lymph nodes   C78.7
                                                                                                    C77.9

    (b)
    (c)
    (d)

2   Malignant neoplasm of stomach   C16.9

The cancer growth in liver and lymph nodes is considered secondary, since they are both on the list of common sites of metastases. Code as secondary malignant neoplasm of liver (C787) and lymph node (C79.7), and as malignant primary neoplasm of stomach (C16.9).

Example 18:   1(a)   Cancer of lung, pleura [C38.4] and chest wall [C76.1]
                                                                            C34.9,C78.2, C79.8

    (b)
    (c)
    (d)

2

Code the cancer of lung as primary (C34.9) since the other sites mentioned on the certificate, pleura and chest wall, are on the list of common sites of metastases. Code cancer of pleura and chest wall as secondary (C78.2 and C79.8).

Example 19:   1(a)   Mesothelioma of pleura and lymph nodes [C45.7]
                                                                            C45.0, C77.9

    (b)
    (c)
    (d)

2

Mesothelioma of pleura is indexed to C45.0, which is in the code range for primary malignant neoplasms. Pleura is on the list of common sites of metastases but since the morphology (mesothelioma) is compatible with the site (pleura) this does not change the coding. Therefore, code mesothelioma of pleura to C45.0. The malignant neoplasm of lymph nodes is considered secondary, since lymph nodes is on the list of common sites of metastases (C77.9).

Example 20:   1(a)   Lung cancer   C34.9
                 (b)
                 (c)
                 (d)
               2   Stomach cancer   C16.9

Code both lung cancer and stomach cancer as primary (C34.9, C16.9). Although lung is on the list of common sites of metastases it is the only malignant neoplasm mentioned in Part 1 of the certificate, and the coding of lung cancer is not influenced by neoplasms mentioned in another part of the certificate.

Example 21:   1(a)   Cancer of bladder   C67.9
                 (b)   Cancer of kidney   C64
                 (c)
                 (d)
               2

Code both cancer of bladder and cancer of kidney as primary (C67.9, C64), since none of them is on the list of common sites of metastases, and none of them is described as primary.

Example 22:   1(a)   Osteosarcoma of sacrum   C41.4
                 (b)   Clear cell cancer of kidney   C64
                 (c)
                 (d)
               2

Code both malignant neoplasms as primary. Bone is on the list of common sites of metastases, but osteosarcoma is indexed as a primary cancer of bone (C41.4). Also, it is of different morphology than clear cell cancer of kidney (C64).

Example 23:   1(a)   Osteosarcoma of lung   C41.9, C78.0
                 (b)
                 (c)
                 (d)
               2

The morphology indicates a primary neoplasm of bone, and the reported site (lung) is incompatible with the morphology. Code to osteosarcoma of unspecified site (C41.9). also add a code for secondary malignant neoplasm of lung (C78.0).

If all sites are on the list of common sites of metastases, then code all sites as secondary. It is recommended that you also add a code for unknown primary. Use C80.9 if no morphology is stated. If the morphology is stated, then code to the "unspecified site" code given in Volume 3 for the morphology involved.

exception: If all sites are on the list of common sits of metastases but one of them is lung, then code lung as primary (see example 18)

C. More than one primary malignant neoplasm

More than one primary malignant neoplasm may be reported on the same certificate. Code each primary malignant neoplasm with a code in C00-C76, C80 or C81-C96.

Indications of several primary malignant neoplasms are:

- Different morphologies [examples 22, 24]

- A site-specific morphology reported with a malignant neoplasm of another site that is not on the list of common sites of metastases [examples 25, 26]

- The sites are not on the list of common sites of metastases [example 21]

    o If one morphology term is less specific and covers a more specific term that is also used on the certificate, then consider the two as referring to the same neoplasm.

    o Do not consider "cancer" or "carcinoma" as morphologic terms, but as synonyms to "malignant neoplasm"

Example 24:   1(a)   Transitional cell carcinoma of bladder   C67.9
              (b)
              (c)
              (d)
              2   Osteosarcoma, primary in knee   C40.2

Bladder on 1(a) is not on the list of common sites of metastases. The malignant neoplasm reported in Part 2 is specified as primary. Further, the two neoplasms are of different morphology and both are considered primary. Code as malignant neoplasm of bladder (C67.9) and primary osteosarcoma of knee (C40.2).

Example 25:   1(a)   Hepatoma   C22.0
              (b)   Cancer of breast   C50.9
              (c)
              (d)
              2

The morphology "hepatoma" indicates a primary malignant neoplasm of liver. The breast cancer is also considered primary, since breast is not on the list of common sites of metastases. Code as hepatoma (C22.0) and primary malignant neoplasm of breast (C50.9).

Example 26:	1(a)	Glioblastoma	C71.9
	(b)	Cancer of breast	C50.9
	(c)		
	(d)		
	2		

The morphology 'glioblastoma' is primary in the central nervous system, usually in brain. Therefore, the instruction in section 4.3.5 B (e) above does not apply, even though brain is on the list of common sites of metastases. Code the glioblastoma as primary in brain (C71.9), which is the code for glioblastoma given by the alphabetical index if no other primary site is indicated. The breast cancer is also considered primary, since breast is not on the list of common sites of metastases. Code the breast cancer as primary malignant neoplasm of breast (C50.9).

D. Site not clearly indicated

If a malignant neoplasms is described as in the "area" or "region" of a site, or if the site is prefixed by "peri", "para", "pre", "supra", "infra" or similar expressions, then first check if this compound term is included in the Alphabetical index.

If the compound term is not in the Alphabetical index, then code morphologies 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's sarcoma)

C47 (peripheral nerves and autonomic nervous system),

C49 (connective and soft tissue),

C70 (meninges),

C71 (brain),

C72 (other parts of central nervous system),

to the appropriate subdivision of that category.

If the compound term is not in the Alphabetical index and the morphology is not classifiable to the categories above, or the morphology is not stated, then code to the appropriate subdivision of C76 (other and ill-defined sites).

Example 27:   1(a)   Fibrosarcoma in the region of the pancreas   C49.4
               (b)
               (c)
               (d)
               2

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

Example 28:   1(a)   Carcinoma in the lung area   C76.1
               (b)
               (c)
               (d)
               2

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

When the site of a primary malignant neoplasm is not specified, do not make any
assumption of the primary site from the location of other reported conditions such
as perforation, obstruction, or haemorrhage. These conditions may arise in sites
unrelated to the neoplasm. For example, intestinal obstruction may be caused by the
spread of a malignant neoplasm of ovary.

Example 29:   1(a)   Obstruction of intestine   K56.6
               (b)   Carcinoma   C80.9
               (c)
               (d)
               2

            Code the carcinoma as malignant neoplasm without specification
            of site (C80.9).

E. Primary site unknown

If the certificate states that the primary site is unknown and does not mention a
possible primary site, 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.

Example 30:   1(a)   Secondary carcinoma of liver   C78.7
               (b)   Primary site unknown   C80.0
               (c)
               (d)
               2

            The certificate states that the primary site is unknown. For line 1(b),
            use the code for primary carcinoma without specification of site
            (C80.0).

Example 31:   1(a)   Generalized metastases
                     C79.9
              (b)   Melanoma   C43.9
              (c)   Primary site unknown   C80.0
              (d)
              2

The certificate states that the primary site is unknown. Code as primary malignant melanoma of unspecified site (C43.9)

However, if the certificate mentions a probable or possible primary site, disregard the expression indicating doubt and code to that site. See also Section 4.3.2 (Uncertain diagnosis).

Example 32:   1(a)   Secondary carcinoma of liver   C78.7
              (b)   Primary site unknown, possibly stomach   C16.9
              (c)
              (d)
              2

The certificate states that the primary site is unknown, but it also mentions stomach as a possible primary site. Ignore "possibly" and code line 1(b) as primary malignant neoplasm of stomach (C16.9).

If the certificate mentions several possible primary sites, select a code according to the instructions in Section 4.3.3 A, (One condition, *either* one site *or* another) above.

Example 33:   1(a)   Secondary carcinoma of liver   C78.7
              (b)   Primary site unknown, probably stomach [C16.9] or colon
              [C18.9]   C26.9
              (c)
              (d)
              2

The certificate states that the primary site is unknown, but it also mentions stomach or colon as a possible primary site. Code line 1(b) as primary malignant neoplasm of ill-defined sites within the digestive system (C26.9).

F. Overlapping sites

The introduction to Chapter II in Volume 1 (Notes, Section 5) describes 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.

146

Example 34:   1(a) Overlapping malignant neoplasm of tongue and floor of mouth
C14.8
>   (b)
>   (c)
>   (d)
>   2

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

Example 35:   1(a)   Malignant neoplasm of rectosigmoid colon   C19
>   (b)
>   (c)
>   (d)
>   2

Code as 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, code the sites one by one according to the instructions given above.

Example 36:   1(a)   Malignant neoplasm of colon and gallbladder   C18.9, C23
>   (b)
>   (c)
>   (d)
>   2

There is no statement that "colon and gallbladder" refers to an overlapping neoplasm. None of the sites is on the list of common sites of metastases, and consequently they are considered as two independent primary sites. Code as primary malignant neoplasm of colon (C18.9) and primary malignant neoplasm of gallbladder (C23).

G. "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 4.3.5 G]

For multiple cause mortality coding, always follow the instructions in this section. This applies even if the alphabetical index indicates an ICD code for a 'metastatic' neoplasm or 'metastatic' disease148 other than the code you would arrive at by following these instructions. For example, the index might state a code in the section for secondary malignant neoplasms, but the multiple cause coding instructions might tell you to code the neoplasm as primary. If so, follow the instructions and code the neoplasm as primary.

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" a specified site

If a malignant neoplasm is described as "metastatic from" a specified site, or if a "due to" relationship implies a spread from a specified site, that site should be considered primary. This also applies to sites on the list of common sites of metastases. Use a code in C00-C76, C80.0 or C81-C96 for the primary site.

b) Malignant neoplasm "metastatic to" a specified site

If a malignant neoplasm is described as "metastatic to" a specified site, or if a "due to" relationship implies a spread to a specified site, that site should be considered secondary whether the site is on the list of common sites of metastases or not. Use a code in C77-C79 for this secondary site. However, if a morphology classifiable to C40-C47, C49, or C70-C72 is reported, code to the "unspecified site" subcategory of that morphological type.

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. Use a code in C00-C76, C80.0 or C81-C96 for the primary site and a code in C77-C79 for the secondary site.

d) "Metastatic" neoplasm of a specific morphology

If the certificate reports a malignant neoplasm specified as "metastatic" of a morphological type classifiable to C40-C47, C49 or C70-C72 and the site reported is consistent with the morphological type, then code to a primary malignant neoplasm of the specified morphological type. Use the appropriate site subcategory for the specified morphological type.

If the "metastatic" cancer is reported on the certificate and the site is not consistent with the morphological type, then code to a secondary malignant neoplasm of the specified site (C77-C79). Also add a code for a primary malignant neoplasm of unspecified site for the stated morphological type.

When applying the remaining instructions on 'metastatic' (sections 4.3.5 G (e)–(g) below), do not change codes in C40–C47, C49 or C70–C72 assigned according to the instructions in this section (d) to codes for secondary malignant neoplasms (C77-C79)

Example 37:   1(a)   Osteosarcoma of sacrum, metastatic   C41.4
          (b)
          (c)
          (d)
        2

The site sacrum is consistent with a primary cancer of bone. Code as primary osteosarcoma of sacrum (C41.4).

Example 38:   1(a) Osteosarcoma of kidney, metastatic   C41.9, C79.0
          (b)
          (c)
          (d)
        2

The specified seite (kidney) is not consistent with osteosarcoma, which is primary in bone. Code osteosarcoma of kidney as a secondary malignant neoplasm (C79.0). Since no primary site is reported, code C41.9, osteosarcoma of unspecified site.

e) "Metastatic" neoplasm on the list of common sites of metastases

- If the certificate mentions a single malignant neoplasm, it is on the list of common sites of metastases and is specified as 'metastatic', then code the neoplasm as secondary (C77– C79), even if no other neoplasm is mentioned on the certificate. Also add a code for unspecified primary malignant neoplasm (C80.9).

    - *exception*: Code a neoplasm, even if described as 'metastatic', of a site on the list of common sites of metastases as primary when it is reported as due to a condition that increases the risk of a malignant neoplasm of that site or tissue.

    - *exception*: If the only malignant neoplasm mentioned on the certificate is 'metastatic' neoplasm of lung, code to primary malignant neoplasm of lung (C34.-). If another malignant neoplasm is mentioned that is not on the list of common sites of metastases, then code a 'metastatic' malignant neoplasm of lung as secondary malignant neoplasm of lung (C78.0). This applies whether or not lung is mentioned in the same part of the certificate as the other malignant neoplasm.

    - *exception*: For 'metastatic' neoplasms of a specified morphology and on the list of common sites of metastases, see section 4.3.5 G (d) above.

Note that a malignant neoplasm of a site on the list of common sites of metastases is coded as primary if it is the only site mentioned and it is not described as 'metastatic'. See also section 4.3.5 B (c), Other indication of primary malignant neoplasm.

Example 39:   1(a) Metastatic cancer of lung (adenocarcinoma) C34.9
               (b)
               (c)
               (d)
            2

    Adenocarcinoma can be primary in lung, so lung is the only site mentioned or implied on the certificate. Code as primary malignant neoplasm of lung (C34.9).

- If the certificate mentions several malignant neoplasms that are on the list of common sites of metastases and one or more of them are specified as 'metastatic', then code all of them as secondary malignant neoplasms (C77–C79). Also add a code for unspecified primary malignant neoplasm (C80.9).

  - *exception*: Code a 'metastatic 'neoplasm of lung as primary malignant neoplasm of lung (C34.-) if all other neoplasm sites reported on the death certificate are on the list of common sites of metastases, whether they are described as 'metastatic' or not.

  - *exception*: For 'metastatic' neoplasms of a specified morphology and on the list of common sites of metastases, see section 4.3.5 G (d) above.

f) "Metastatic" malignant neoplasm not on the list of common sites of metastases

- If the certificate mentions several malignant neoplasms and some but not all are on the list of common sites of metastases and some but not all are specified as 'metastatic', then code a neoplasm on the list of common sites of metastases as secondary (C77–C79). Also, code a neoplasm not on the list of common sites of metastases and specified as 'metastatic' as secondary, and a neoplasm not on the list of common sites of metastases and not specified as 'metastatic' as primary (C00–C76, C80.0 or C81–C96).

  - *exception:* Code neoplasms, even if described as 'metastatic', as primary when reported as due to a condition that increases the risk of a malignant neoplasm of that site or tissue, whether the site ison the list of common sites of metastases or not.

Example 40:   1(a)   Bladder cancer   C76.9
               (b)   Metastatic prostate cancer   C79.8
               (c)
               (d)
               2

       Code as secondary prostate cancer (C79.8) and primary bladder
       cancer (C67.9). The order of entry does not impact on the coding.

Example 41:   1(a)   Liver cancer [C22.9]   C78.7
               (b)   Metastatic colon cancer   C18.9
               (c)
               (d)
               2
       Code as Secondary malignant neoplasm of liver (C78.7) and
       Primary malignant neoplasm of colon (C18.9). Liver is on the list
       of commons sites of metastases but colon is not.

Example 42:   1(a) Liver cancer [C22.9]   C78.7
               (b) Metastatic colon cancer   C78.5
               (c) Cancer of gallbladder   C23
               (d)
                2
       Code as Secondary malignant neoplasm of liver (C78.7), Secondary
       malignant neoplasm of colon (C78.5) and Primary malignant
       neoplasm of gallbladder (C23). Metastatic colon cancer is reported
       together with cancer of gallbladder which is not on the list of
       common sites of metastases, and therefore gallbladder is coded as
       primary and colon as secondary. Liver is coded as secondary, since
       it is on the list of common sites of metastases.

Example 43:   1(a) Metastatic gallbladder cancer   C23
               (b) Metastatic colon cancer   C18.9
               (c)
               (d)
               2
       Code as Primary malignant neoplasm of gallbladder (C23) and
       Primary malignant neoplasm of colon (C18.9). The order of entry
       does not impact on the coding.

4.3.6 Sequelae

A. Sequelae of tuberculosis (B90.-)

Sequelae of tuberculosis include conditions specified as such or as arrested, cured, healed, inactive, old, or quiescent; unless there is evidence of active tuberculosis. It does not include chronic tuberculosis, which should be coded as active infectious disease.

B. Sequelae of trachoma (B94.0)

Sequelae of trachoma 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. It does not include chronic trachoma, which should be coded as active infectious disease.

C. Sequelae of viral encephalitis (B94.1)

Sequelae of viral encephalitis include conditions specified as such, and late effects present one year or more after onset of the causal condition. It does not include chronic viral encephalitis, which should be coded as active infectious disease.

D. Sequelae of other infectious and parasitic diseases (B94.8)

Sequelae of other infectious and parasitic diseases include conditions specified as such or as arrested, cured, healed, inactive, old or quiescent. Sequelae also include conditions present one year or more after onset of conditions classifiable to categories A00-B89, unless there is evidence of active disease. It does not include chronic infectious and parasitic diseases, which should be coded as active infectious and parasitic disease.

E. Sequelae of rickets (E64.3)

Sequelae of rickets include conditions stated to be a sequela or late effect of rickets, or previous rickets as the cause of conditions present one year or more after onset of rickets. It does not include chronic malnutrition or nutritional deficiency, which should be coded to current malnutrition or nutritional deficiency.

F. Sequelae of inflammatory diseases of central nervous system (G09)

This category is provided for the coding of sequelae of conditions classifiable to G00.-, G03-G04, G06.- and G08. It should not be used for chronic inflammatory diseases of the central nervous system. Code these to current inflammatory disease of the central nervous system.

4.3.7   Specific instructions on other ICD categories

A. Rheumatic fever with heart involvement (I01) and Chronic rheumatic heart diseases (I05-I09)

Rheumatic heart diseases are classified to Rheumatic fever with heart involvement (I01) or to Chronic rheumatic heart diseases (I05-I09), depending upon the rheumatic process being described as active or inactive. If there is no statement that the rheumatic process was active or inactive at the time of death, code the following cardiac conditions as active (rheumatic fever with heart involvement (I01)):

- a cardiac condition reported as due to rheumatic fever, except cardiac arrest, acute heart failure, bacterial endocarditis;

- a cardiac condition specified as rheumatic and described as acute or subacute;

- carditis, endocarditis, heart disease, myocarditis or pancarditis, described as rheumatic or reported as due to a rheumatic disease, and the interval from onset is less than one year;

- carditis, endocarditis, heart disease, myocarditis or pancarditis, described as rheumatic or reported as due to a rheumatic disease, and the deceased is less than 15 years old.

B. Pneumonia and immobility (J18)

Code pneumonia in J18.0-J18.1 and J18.8-J18.9 reported with immobility or reduced mobility to J18.2 (hypostatic pneumonia, unspecified).

C. Obstetric death of unspecified cause, obstetric deaths 42 days – 1 year after delivery, sequelae of direct obstetric causes (O95, O96 and O97)

Categories O95, O96 and O97 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, do not use O95 but code to the appropriate category. Category O96 is used to classify deaths from any 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 obstetric cause which occur one year or more after termination of the pregnancy.

D. Perinatal deaths (P00-P99)

Use a code from Chapter XVI, certain conditions originating in the perinatal period, if

- the condition is indexed to a code in Chapter XVI,

- there is an index entry for the specified condition as congenital/perinatal/newborn, and the duration of the condition indicates that the condition developed in the neonatal or perinatal period. This applies even if the condition is not specified as neonatal or perinatal on the certificate.

- For some conditions diagnosed below a specific age it is assumed that the condition was congenital, see the following section (Congenital malformations, deformations and chromosomal abnormalities).

- Further, for children less than 28 days old, assume that a reported condition developed in the perinatal period; unless the duration is stated and the onset was after the first completed week of life.

- Note that some types of conditions are excluded from Chapter XVI, such as

    - tetanus neonatorum (A33)

    - congenital gonococcal infection (A54)

    - congenital syphilis (A50)

    - HIV disease (B20–B24)

    - infectious diseases acquired after birth (A00–B99)

    - intestinal infectious diseases (A00–A09)

    - neoplasms (C00–D48)

    - hereditary haemolytic anaemia (D55–D58)

    - transient hypogammaglobulinaemia of infancy (D80.7)

    - endocrine, nutritional and metabolic diseases (E00–E90)

    - certain congenital diseases of the nervous system classified to G00–G99

    - congenital cardiomyopathy

    - intestinal obstruction classifiable to K56.0–K56.5

    - pemphigus neonatorum and staphylococcal scalded skin syndrome (L00)

    - cradle cap (L21.0)

    - diaper [napkin] dermatitis (L22)

    - congenital malformations, deformations and chromosomal abnormalities (Q00–Q99)

○ laboratory evidence of human immunodeficiency virus (R75)

○ injury, poisoning and certain other consequences of external causes (S00–T98)

E. Congenital conditions

If the duration of a condition indicates that it existed from birth, then code the condition as congenital even if the condition is not specified as congenital on the certificate. This applies to all conditions for which a specific congenital code is available, whether or not the code is in Chapter XVII. Refer to the alphabetical index for the appropriate code of the condition with the modifier "congenital"

Further, the following conditions should be coded congenital 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.

F. Multiple injuries in the same body region (in S00-S99), Injuries involving multiple body regions (T00-T07) {xe "Multiple cause coding of multiple injuries"}

In multiple cause coding, do not use codes for multiple injuries of the same body region (in S00-S99) or codes for Injuries involving multiple body regions (T00-T07), if specific information on the injuries involved is available. Code each injury separately, and use as specific injury codes as possible,

G. Complications of surgical and medical care (T80–T88)

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 longstanding complications of organ function to the appropriate system chapter.

4.3.8   Consistency between sex of patient and diagnosis

Most categories of ICD-10 apply to persons of both sexes. Still, some diseases are more likely to occur in one sex than in the other. A list of those conditions is given in Annex 7.8.

The general recommendation for handling this situation follows; however legal requirements may vary for countries. That a code appears in Annex 7.8 does not mean that it cannot be used for both sexes.   However, there might be an

inconsistency between the sex of the deceased and the code. Therefore, in such cases check the information and make sure that no reporting error occurred.

Follow any additional information provided by the certifier. If it turns out that the code is in fact correct, then keep the code. Consider adding a note to the statistics that the reported cause of death was verified and is correct.

If no additional information can be obtained and there are no reasons to presume that the reported condition is correct (such as an indication of sex-change treatment), then use the code R99, Other ill-defined and unspecified causes of mortality. Consider adding a note to the statistics, specifying the number of cases recoded to R99 because of apparent inconsistencies between sex and cause that could not be verified.

4.4 Perinatal mortality: guidelines for certification and rules for coding

With the update of the International form of medical certificate of cause of death in 2016 it is recommended to use just one certificate for all cases (see Annex 7.1).

The previously recommended perinatal death certificate should be replaced by the form in Annex 7.1. If, because of legal or other constraints the implementation of the form in Annex 7.1 for perinatal deaths is delayed, the following rules should be followed.

Additional information mentioned in the following paragraphs might be helpful for the monitoring of perinatal and infant deaths of a country or region. However this information does not influence the coding result according to ICD-10 and should therefore be collected in a separate section of the death certificate.

4.4.1 Certification of perinatal deaths

If a separate certificate of cause of perinatal death should be completed the causes are to be set out as follows:

(a) main disease or condition in fetus or infant

(b) other diseases or conditions in fetus or infant

(c) main maternal disease or condition affecting fetus or infant

(d) other maternal diseases or conditions affecting fetus or infant

(e) other relevant circumstances.

The certificate should include identifying particulars with relevant dates and times, a statement as to whether the baby was born alive or dead, and details of the autopsy.

For a thorough analysis of perinatal mortality, the following data on both mother and child are needed, in addition to information about the causes of death, not only

in the case of perinatal death, but also for all live births.

Mother

Date of birth

Number of previous pregnancies: live births/stillbirths/abortions

Date and outcome of last previous pregnancy: live birth/stillbirth/abortion

Present pregnancy:

first day of last menstrual period (if unknown, then estimated duration of pregnancy in completed weeks)

antenatal care – two or more visits: yes/no/not known

delivery: normal spontaneous vertex/other (specify)

Child

Birth weight in grams

Sex: boy/girl/indeterminate

Single birth/first twin/second twin/other multiple birth

If stillborn, when death occurred: before labour/during labour/not known.

Other variables that might appear on the basic certificate include particulars of the birth attendant, as follows: physician/trained midwife/other trained person (specify)/other (specify).

The method by which the supplementary data are collected will vary according to the civil registration system obtaining in different countries. Where they can be collected at the registration of the stillbirth or early neonatal death, a form similar to the "Certificate of Cause of Perinatal Death" as shown below could be used. Otherwise, special arrangements would need to be made (for example, by linking birth and death records) to bring together the supplementary data and the cause of death.

Where civil registration requirements make it difficult to introduce a common death certificate for liveborn and stillborn infants, the problem could be met by separate certificates for stillbirths and early neonatal deaths, each incorporating the recommended format for the causes of death.

4.4.2   Statement of causes of death

The certificate has five sections for the entry of causes of perinatal deaths, labelled (a) to (e). In sections (a) and (b) should be entered diseases or conditions of the infant or fetus, the single most important in section (a) and the remainder, if any, in section (b). By "the single most important" is meant the pathological condition that, in the

157

opinion of the certifier, made the greatest contribution to the death of the infant or fetus. The mode of death, e.g. heart failure, asphyxia or anoxia, should not be entered in section (a) unless it was the only fetal or infant condition known. This also holds true for prematurity.

In sections (c) and (d) should be entered all diseases or conditions of the mother that, in the certifier's opinion, had some adverse effect on the infant or fetus. Again, the most important one of these should be entered in section (c) and the others, if any, in section (d). Section (e) is for the reporting of any other circumstances that have a bearing on the death but cannot be described as a disease or condition of the infant or mother, e.g. delivery in the absence of an attendant.

The following examples illustrate the statement of the causes of death for the cases described.

Example 1:   A woman, whose previous pregnancies had ended in spontaneous abortions at 12 and 18 weeks, was admitted when 24 weeks pregnant, in premature labour. There was spontaneous delivery of a 700 g infant who died during the first day of life. The main finding at autopsy was "pulmonary immaturity".
Causes of perinatal death:
(a)   Pulmonary immaturity
(b)   —
(c)   Premature labour, cause unknown
(d)   Recurrent aborter
(e)   —

Example 2:   A primigravida aged 26 years with a history of regular menstrual cycles received routine antenatal care starting at the 10th week of pregnancy. At 30–32 weeks, fetal growth retardation was noted clinically, and confirmed at 34 weeks. There was no evident cause apart from symptomless bacteriuria. A caesarean section was performed and a liveborn boy weighing 1600 g was delivered. The placenta weighed 300 g and was described as infarcted. Respiratory distress syndrome developed which was responding to treatment. The baby died suddenly on the third day. Autopsy revealed extensive pulmonary hyaline membrane and massive intraventricular haemorrhage.
Causes of perinatal death:
(a)   Intraventricular haemorrhage
(b)   Respiratory distress syndrome
        Retarded fetal growth
(c)   Placental insufficiency
(d)   Bacteriuria in pregnancy
        Caesarean section.

Example 3:   A known diabetic, who was poorly controlled during her first

pregnancy, developed megaloblastic anaemia at 32 weeks. Labour was induced at 38 weeks. There was spontaneous delivery of an infant weighing 3200 g. The baby developed hypoglycaemia and died on the second day. Autopsy showed truncus arteriosus.

Causes of perinatal death:
(a)   Truncus arteriosus
(b)   Hypoglycaemia
(c)   Diabetes
(d)   Megaloblastic anaemia
(e)   —

Example 4:   A 30-year-old mother of a healthy four-year-old boy had a normal pregnancy apart from hydramnios. X-ray at 36 weeks suggested anencephaly. Labour was induced. A stillborn anencephalic fetus weighing 1500 g was delivered.

Causes of perinatal death:
(a)   Anencephaly
(b)   —
(c)   Hydramnios
(d)   —
(e)   —

4.4.3   Tabulation of perinatal mortality by cause

For statistics of perinatal mortality derived from the form of certificate shown in the accompanying documentation, full-scale multiple-cause analysis of all conditions reported will yield the maximum benefit. Where this is impracticable, analysis of the main disease or condition in the fetus or infant (part (a)) and of the main maternal condition affecting the fetus or infant (part (c)) with cross-tabulation of groups of these conditions should be regarded as the minimum. Where it is necessary to select only one condition (for example, when it is necessary to incorporate early neonatal deaths in single-cause tables of deaths at all ages), the main disease or condition in the fetus or infant (part (a)) should be selected.

4.4.4   Coding of causes of death

Each condition entered in sections (a), (b), (c) and (d) should be coded separately. Maternal conditions affecting the infant or fetus, entered in sections (c) and (d), should be coded to categories P00–P04 and these codes should not be used for sections (a) and (b). Conditions in the infant or fetus, entered in section (a), can be coded to any categories other than P00–P04 but will most often be coded to categories P05–P96 (Perinatal conditions) or Q00–Q99 (Congenital anomalies). Only one code should be entered for sections (a) and (c), but for sections (b) and (d) as many codes should be entered as there are conditions reported.

Section (e) is for review of individual perinatal deaths and will not normally need to be coded. If, however, a statistical analysis of the circumstances entered in section (e) is desired, some suitable categories may exist in Chapters XX and XXI; where this is not the case, users should devise their own coding system for this information.

4.4.5　Coding rules

The selection rules for general mortality do not apply to the perinatal death certificate. It may happen, however, that perinatal death certificates are received on which the causes of death have not been entered in accordance with the guidelines given above. Whenever possible, these certificates should be corrected by the certifier, but if this is not possible, the following rules should be applied.

Rule P1.　　　Mode of death or prematurity entered in section (a).

If heart or cardiac failure, asphyxia or anoxia (any condition in P20.-, P21.-) or prematurity (any condition in P07.-) is entered in section (a) and other conditions of the infant or fetus are entered in either section (a) or section (b), code the first-mentioned of these other conditions as if it had been entered alone in section (a) and code the condition actually entered in section (a) as if it had been entered in section (b).

Example 1:	Liveborn; death at 4 days	Coding
(a)	Prematurity	Q05.9
(b)	Spina bifida	P07.3
(c)	Placental insufficiency	P02.2
(d)	—	

Prematurity is coded at (b) and spina bifida at (a).

Example 2:	Liveborn; death at 50 minutes	Coding
(a)	Severe birth asphyxia	Q03.9
	Hydrocephalus	
(b)	—	P21.0
(c)	Obstructed labour	P03.1
(d)	Severe pre-eclampsia	P00.0

Severe birth asphyxia is coded at (b) and hydrocephalus at (a).

Rule P2.　　　Two or more conditions entered in sections (a) or (c).

If two or more conditions are entered in section (a) or section (c), code the first-mentioned of these as if it had been entered alone in section (a) or (c) and code the others as if they had been entered in sections (b) or (d).

Example 3:	Stillborn; death before onset of labour	Coding
(a)	Severe fetal malnutrition	P05.0
	Light for dates	
	Antepartum anoxia	

(b)	—	P20.9
(c)	Severe pre-eclampsia	P00.0
	Placenta praevia	
(d)	—	P02.0

Light for dates with fetal malnutrition is coded at (a) and antepartum anoxia at (b); severe pre-eclampsia is coded at (c) and placenta praevia at (d).

Example 4:		Liveborn; death at 2 days	Coding
	(a)	Traumatic subdural haemorrhage	P10.0
		Massive inhalation of meconium	
		Intrauterine anoxia	
	(b)	Hypoglycaemia	P24.0
		Prolonged pregnancy	P20.9
			P70.4
			P08.2
	(c)	Forceps delivery	P03.2
	(d)	Severe pre-eclampsia	P00.0

Traumatic subdural haemorrhage is coded at (a) and the other conditions entered in (a) are coded at (b).

Rule P3.   No entry in sections (a) or (c).

If there is no entry in section (a) but there are conditions of the infant or fetus entered in section (b), code the first-mentioned of these as if it had been entered in section (a); if there are no entries in either section (a) or section (b), either code P95 (Fetal death of unspecified cause) for stillbirths or code P96.9 (Condition originating in the perinatal period, unspecified) for early neonatal deaths should be used for section (a).

Similarly, if there is no entry in section (c) but there are maternal conditions entered in section (d), code the first-mentioned of these as if it had been entered in section (c); if there are no entries in either section (c) or section (d) use some artificial code, e.g. xxx.x for section (c) to indicate that no maternal condition was reported.

Example 5:		Liveborn; death at 15 minutes	Coding
	(a)	—	P10.4
	(b)	Tentorial tear	P22.0
		Respiratory distress syndrome	
	(c)		xxx.x
	(d)	—	

Tentorial tear is coded at (a); xxx.x is coded at (c).

Example 6:   Liveborn; death at 2 days   Coding
              (a)   —   P96.9
              (b)   —
              (c)   —   P00.0
              (d)   Eclampsia (longstanding essential hypertension)
Unspecified perinatal cause is coded at (a); eclampsia is coded at (c).

Rule P4.   Conditions entered in wrong section.

If a maternal condition (i.e. conditions in P00–P04) is entered in section (a) or section (b), or if a condition of the infant or fetus is entered in section (c) or section (d), code the conditions as if they had been entered in the respective correct section.

If a condition classifiable as a condition of the infant or fetus or as a maternal condition is mistakenly entered in section (e), code it as an additional fetal or maternal condition in section (b) or (d) respectively.

Example 7:   Stillborn; death after onset of labour   Coding
              (a)   Severe intrauterine hypoxia   P20.9
              (b)   Persistent occipitoposterior
              (c)   —   P03.1
              (d)   —   P03.2
              (e)   Difficult forceps delivery
Persistent occipitoposterior is coded at (c); difficult forceps delivery is coded at (d).

4.5   Morbidity

At the time of the sixth revision of the ICD, adopted in 1948, a number of requests were received from public health administrators, health-care managers, social security authorities and researchers in various health disciplines for a classification suitable for morbidity applications. The ICD was, therefore, made suitable for grouping morbidity data, in addition to its traditional uses, and the morbidity aspect has since been progressively expanded through successive revisions. Morbidity data are increasingly being used in the formulation of health policies and programmes, and in their management, monitoring and evaluation, in epidemiology, in identification of risk populations, and in clinical research (including studies of disease occurrence in different socioeconomic groups).

The condition to be used for single-condition morbidity analysis is the main condition treated or investigated during the relevant episode of health care. The main condition is defined as the condition, diagnosed at the end of the episode of health care, primarily responsible for the patient's need for treatment or investigation. If there is more than one such condition, the one held most responsible for the greatest use of resources should be selected. If no diagnosis was made, the main symptom, abnormal finding or problem should be selected as the main condition.

In addition to the main condition, the record should, whenever possible, also list

separately other conditions or problems dealt with during the episode of health care. Other conditions are defined as those conditions that coexist or develop during the episode of health care and affect the management of the patient. Conditions related to an earlier episode that have no bearing on the current episode should not be recorded.

By limiting analysis to a single condition for each episode, some available information may be lost. It is therefore recommended, where practicable, to carry out multiple-condition coding and analysis to supplement the routine data. This should be done according to local rules, since no international rules have been established. However, experience in other areas could be useful in developing local schemes.

4.5.1 Guidelines for recording diagnostic information for single-condition analysis of morbidity data

General

The health-care practitioner responsible for the patient's treatment should select the main condition to be recorded, as well as any other conditions, for each episode of health care. This information should be organized systematically by using standard recording methods. A properly completed record is essential for good patient management and is a valuable source of epidemiological and other statistical data on morbidity and other health-care problems.

Specificity and detail

Each diagnostic statement should be as informative as possible in order to classify the condition to the most specific ICD category. Examples of such diagnostic statements include:

- transitional cell carcinoma of trigone of bladder
- acute appendicitis with perforation
- diabetic cataract, type 1
- meningococcal pericarditis
- antenatal care for pregnancy-induced hypertension
- diplopia due to allergic reaction to antihistamine taken as prescribed
- osteoarthritis of hip due to an old hip fracture
- fracture of neck of femur following a fall at home
- third-degree burn of palm of hand.

Uncertain diagnoses or symptoms

If no definite diagnosis has been established by the end of an episode of health care, then the information that permits the greatest degree of specificity and knowledge about the condition that necessitated care or investigation should be recorded. This should be done by stating a symptom, abnormal finding or problem, rather than qualifying a diagnosis as "possible", "questionable" or "suspected", when it has been considered but not established.

Contact with health services for reasons other than illness

Episodes of health care or contact with health services are not restricted to the treatment or investigation of current illness or injury. Episodes may also occur when someone who may not currently be sick requires or receives limited care or services; the details of the relevant circumstances should be recorded as the "main condition". Examples include:

- monitoring of previously treated conditions

- immunization

- contraceptive management, antenatal and postpartum care

- surveillance of persons at risk because of personal or family history

- examinations of healthy persons, e.g. for insurance or occupational reasons

- seeking of health-related advice

- requests for advice by persons with social problems

- consultation on behalf of a third party.

Chapter XXI (Factors influencing health status and contact with health services) provides a broad range of categories (Z00–Z99) for classifying these circumstances; reference to this chapter will give an indication of the detail required to permit classification to the most relevant category.

Multiple conditions

Where an episode of health care concerns a number of related conditions (e.g. multiple injuries, multiple sequelae of a previous illness or injury, or multiple conditions occurring in human immunodeficiency virus [HIV] disease), the one that is clearly more severe and demanding of resources than the others should be recorded as the "main condition" and the others as "other conditions". Where no one condition predominates, a term such as "multiple fractures", "multiple head injuries", or "HIV disease resulting in multiple infections" may be recorded as the "main condition", followed by a list of the conditions. If there are a number of such conditions, with none predominating, then a term such as "multiple injuries" or "multiple crushing injuries" should be recorded alone.

Conditions due to external causes

When a condition such as an injury, poisoning or other effect of external causes is recorded, it is important to describe fully both the nature of the condition and the circumstances that gave rise to it. For example: "fracture of neck of femur caused by fall due to slipping on greasy pavement"; "cerebral contusion caused when patient lost control of car, which hit a tree"; "accidental poisoning – patient drank disinfectant in mistake for soft drink"; or "severe hypothermia – patient fell in her garden in cold weather".

Treatment of sequelae

Where an episode of care is for the treatment or investigation of a residual condition (sequela) of a disease that is no longer present, the sequela should be fully described and its origin stated, together with a clear indication that the original disease is no longer present. For example: "deflected nasal septum – fracture of nose in childhood", "contracture of Achilles tendon – late effect of injury to tendon", or "infertility due to tubal occlusion from old tuberculosis".

Where multiple sequelae are present and treatment or investigation is not directed predominantly at one of them, a statement such as "sequelae of cerebrovascular accident" or "sequelae of multiple fractures" is acceptable.

4.5.2   Guidelines for coding "main condition" and "other conditions"

General

The "main condition" and "other conditions" relevant to an episode of health care should have been recorded by the responsible health-care practitioner, and coding is therefore usually straightforward, since the main condition stated should be accepted for coding and processing unless it is obvious that the guidelines given above have not been followed. Whenever possible, a record with an obviously inconsistent or incorrectly recorded main condition should be returned for clarification. Failing clarification, Rules MB1 to MB5 (Section 4.5.3) will help the coder to deal with some of the commoner causes of incorrect recording. The guidelines given below are for use when the coder may be unclear as to which code should be used.

It has been recommended that "other conditions" in relation to an episode of care should be recorded in addition to the main condition, even for single-cause analysis, since this information may assist in choosing the correct ICD code for the main condition.

Optional additional codes

In the guidelines below, a preferred code for the "main condition" is sometimes indicated, together with an optional additional code to give more information. The

preferred code indicates the "main condition" for single-cause analysis and an additional code may be included for multiple-cause analysis.

Coding of conditions to which the dagger and asterisk system applies

If applicable, both dagger and asterisk codes should be used for the main condition, since they denote two different pathways for a single condition.

Example 1:   Main condition: Measles pneumonia
                 Other conditions: —

                 Code to measles complicated by pneumonia (B05.2†) and pneumonia in viral diseases classified elsewhere (J17.1*).

Example 2:   Main condition: Tuberculous pericarditis
                 Other conditions: —

                 Code to tuberculosis of other specified organs (A18.8†) and pericarditis in bacterial diseases classified elsewhere (I32.0*).

Example 3:   Main condition: Lyme disease arthritis
                 Other conditions: —

                 Code to Lyme disease (A69.2†) and arthritis in Lyme disease (M01.2*).

Coding of suspected conditions, symptoms and abnormal findings
and non-illness situations

If the period of health care was for an inpatient, the coder should be cautious about classifying the main condition to Chapters XVIII and XXI. If a more specific diagnosis has not been made by the end of the inpatient stay, or if there was truly no codable current illness or injury, then codes from the above chapters are permissible (see also Rules MB3 and MB5, Section 4.5.3). The categories can be used in the normal way for other episodes of contact with health services.

If, after an episode of health care, the main condition is still recorded as "suspected", "questionable", etc., and there is no further information or clarification, the suspected diagnosis must be coded as if established.

Category Z03.- (Medical observation and evaluation for suspected diseases and conditions) applies to suspected diagnoses that can be ruled out after investigation.

Example 4:   Main condition: Suspected acute cholecystitis
                 Other conditions: —

                 Code to acute cholecystitis (K81.0) as "main condition".

Example 5:   Main condition: Admitted for investigation of suspected malignant neoplasm of cervix – ruled out

Code to observation for suspected malignant neoplasm (Z03.1) as "main condition".

Example 6:   Main condition: Ruled out myocardial infarction
Other conditions: —

Code to observation for suspected myocardial infarction (Z03.4) as "main condition".

Example 7:   Main condition: Severe epistaxis
Other conditions: —

Patient in hospital one day. No procedures or investigations reported.

Code to epistaxis (R04.0). This is acceptable since the patient was obviously admitted to deal with the immediate emergency only.

Coding of multiple conditions

Where multiple conditions are recorded in a category entitled "Multiple ...", and no single condition predominates, the code for the "Multiple ..." category should be used as the preferred code, and optional additional codes may be added for individual conditions listed.

Such coding applies mainly to conditions associated with HIV disease, to injuries and sequelae.

Coding of combination categories

The ICD provides certain categories where two conditions or a condition and an associated secondary process can be represented by a single code. Such combination categories should be used as the main condition where appropriate information is recorded. The Alphabetical Index indicates where such combinations are provided for, under the indent "with", which appears immediately after the lead term. Two or more conditions recorded under "main condition" may be linked if one of them may be regarded as an adjectival modifier of the other.

Example 8:   Main condition: Renal failure
Other conditions: Hypertensive renal disease

Code to hypertensive renal disease with renal failure (I12.0) as the

"main condition".

Example 9:   Main condition: Glaucoma secondary to eye inflammation
                   Other conditions: —

Code to glaucoma secondary to eye inflammation (H40.4) as the "main condition".

Example 10:   Main condition: Intestinal obstruction
                   Other conditions: Left inguinal hernia

Code to unilateral or unspecified inguinal hernia, with obstruction, without gangrene (K40.3).

Example 11:   Main condition: Cataract. Type 1 diabetes mellitus
                   Other conditions: Hypertension
                   Specialty: Ophthalmology

Code to type 1 diabetes mellitus with ophthalmic complications (E10.3†) and diabetic cataract (H28.0*) as the "main condition".

Example 12:   Main condition: Type 2 diabetes mellitus
                   Other conditions: Hypertension
                                      Rheumatoid arthritis
                                      Cataract
                   Specialty: General medicine

Code to type 2 diabetes mellitus without complications (E11.9) as "main condition". Note that in this example the linkage of cataract with diabetes must not be made since they are not both recorded under "main condition".

Coding of external causes of morbidity

For injuries and other conditions due to external causes, both the nature of the condition and the circumstances of the external cause should be coded. The preferred "main condition" code should be that describing the nature of the condition. This will usually, but not always, be classifiable to Chapter XIX. The code from Chapter XX indicating the external cause would be used as an optional additional code.

Example 13:   Main condition: Fracture of neck of femur caused by fall
                   due to tripping on uneven pavement
                   Other conditions: Contusions to elbow and upper arm

Code to fracture of neck of femur (S72.0) as "main condition". The external cause code for fall on same level from slipping, tripping or stumbling on street or highway (W01, place of occurrence 4)

may be used as an optional additional code.

Example 14:   Main condition: Severe hypothermia – patient fell in her garden in cold weather
Other conditions: Senility

Code to hypothermia (T68) as "main condition". The external cause code for exposure to excessive natural cold at home (X31, place of occurrence 0) may be used as an optional additional code.

Example 15:   Main condition: Diplopia due to allergic reaction to antihistamine taken as prescribed
Other conditions: —

Code to diplopia (H53.2) as the "main condition". The external cause code for antiallergic and antiemetic drugs causing adverse effects in therapeutic use (Y43.0) may be used as an optional additional code.

Example 16:   Main condition: Haemoglobinuria caused by training for marathon run (training on outdoor track at stadium)
Other conditions: —

Code to haemoglobinuria due to haemolysis from other external causes (D59.6) as "main condition". The external cause code for overexertion and strenuous, repetitive movements at sports and athletics area (X50, place of occurence 3) may be used as an optional additional code.

Coding of sequelae of certain conditions

The ICD provides a number of categories entitled "Sequelae of ..." (B90–B94, E64.-, E68, G09, I69.-, O97, T90–T98, Y85–Y89) which may be used to indicate conditions no longer present as the cause of a current problem undergoing treatment or investigation. The preferred code for the "main condition" is, however, the code for the nature of the sequela itself, to which the code for "Sequelae of ..." may be added as an optional additional code.

Where a number of different very specific sequelae are present and no one of them predominates in severity and use of resources for treatment, it is permissible for the description "Sequelae of ..." to be recorded as the "main condition" and this may then be coded to the appropriate category. Note that it is sufficient that the causal condition is described as "old", "no longer present", etc. or the resulting condition is described as "late effect of ...", or "sequela of ..." for this to apply. There is no minimum time interval.

169

Example 17:   Main condition: Dysphasia from old cerebral infarction
                   Other conditions: —

Code to dysphasia (R47.0) as the "main condition". The code for sequelae of cerebral infarction (I69.3) may be used as an optional additional code.

Example 18:   Main condition: Osteoarthritis of hip joint due to old hip fracture from motor vehicle accident 10 years ago
                   Other conditions: —

Code to other post-traumatic coxarthrosis (M16.5) as the "main condition". The codes for sequelae of fracture of femur (T93.1) and sequelae of motor vehicle accident (Y85.0) may be used as optional additional codes.

Example 19:   Main condition: Late effects of poliomyelitis
                   Other conditions: —

Code to sequelae of poliomyelitis (B91) as the "main condition" since no other information is available.

Coding of acute and chronic conditions

Where the main condition is recorded as being both acute (or subacute) and chronic, and the ICD provides separate categories or subcategories for each, but not for the combination, the category for the acute condition should be used as the preferred main condition.

Example 20:   Main condition: Acute and chronic cholecystitis
                   Other conditions: —

Code to acute cholecystitis (K81.0) as the "main condition". The code for chronic cholecystitis (K81.1) may be used as an optional additional code.

Example 21:   Main condition: Acute exacerbation of chronic obstructive bronchitis
                   Other conditions: —

Code to chronic obstructive pulmonary disease with acute exacerbation (J44.1) as the "main condition" since the ICD provides an appropriate code for the combination.

Coding of postprocedural conditions and complications

Categories are provided in Chapter XIX (T80–T88) for certain complications related

to surgical and other procedures, e.g. surgical wound infections, mechanical complications of implanted devices, shock, etc. Most body-system chapters also contain categories for conditions that occur either as a consequence of specific procedures and techniques or as a result of the removal of an organ, e.g. postmastectomy lymphoedema syndrome, post-irradiation hypothyroidism. Some conditions (e.g. pneumonia, pulmonary embolism) that may arise in the postprocedural period are not considered unique entities and are, therefore, coded in the usual way, but an optional additional code from Y83–Y84 may be added to identify the relationship to a procedure.

When postprocedural conditions and complications are recorded as the main condition, reference to modifiers or qualifiers in the Alphabetical Index is essential for choosing the correct code.

Example 22:   Main condition: Hypothyroidism since thyroidectomy 1 year ago
               Other conditions: —
               Specialty: General medicine

Code to postsurgical hypothyroidism (E89.0) as the "main condition".

Example 23:   Main condition: Excessive haemorrhage after tooth extraction
               Other conditions: Pain
               Specialty: Dentistry

Code to haemorrhage resulting from a procedure (T81.0) as the "main condition".

Example 24:   Main condition: Postoperative psychosis after plastic surgery
               Other conditions: —
               Specialty: Psychiatry

Code to psychosis (F09) as the "main condition" and supplement by Y83.8 (other specified surgical procedures [as the cause of abnormal reaction of the patient]) to indicate the postprocedural relationship.

4.5.3   Rules for reselection when the main condition is incorrectly recorded

The responsible health-care practitioner indicates the "main condition" to be coded, and this should normally be accepted for coding subject to the guidelines above and

in the chapter-specific notes in Section 4.5.4. However, certain circumstances or the availability of other information may indicate that the health- care practitioner has not followed the correct procedure. If it is not possible to obtain clarification from the health-care practitioner, one of the following rules may be applied and the "main condition" reselected.

Rules for reselection of main condition

Rule MB1. Minor condition recorded as "main condition", more significant condition recorded as "other condition"

Where a minor or longstanding condition, or an incidental problem, is recorded as the "main condition", and a more significant condition, relevant to the treatment given and/or the specialty that cared for the patient, is recorded as an "other condition", reselect the latter as the "main condition".

Rule MB2. Several conditions recorded as "main condition"

If several conditions that cannot be coded together are recorded as the "main condition", and other details on the record point to one of them as the "main condition" for which the patient received care, select that condition. Otherwise select the condition first mentioned.

Rule MB3. Condition recorded as "main condition" is presenting symptom of diagnosed, treated condition

If a symptom or sign (usually classifiable to Chapter XVIII), or a problem classifiable to Chapter XXI, is recorded as the "main condition" and this is obviously the presenting sign, symptom or problem of a diagnosed condition recorded elsewhere and care was given for the latter, reselect the diagnosed condition as the "main condition".

Rule MB4. Specificity

Where the diagnosis recorded as the "main condition" describes a condition in general terms, and a term that provides more precise information about the site or nature of the condition is recorded elsewhere, reselect the latter as the "main condition".

Rule MB5. Alternative main diagnoses

Where a symptom or sign is recorded as the "main condition" with an indication that it may be due to either one condition or another, select the symptom as the "main condition". Where two or more conditions are recorded as diagnostic options for the "main condition", select the first condition recorded.

Examples of application of the rules for reselection of main condition

Rule MB1.　　　Minor condition recorded as "main condition", more significant condition recorded as "other condition"

Where a minor or longstanding condition, or an incidental problem, is recorded as the "main condition", and a more significant condition, relevant to the treatment given and/or the specialty that cared for the patient, is recorded as an "other condition", reselect the latter as the "main condition".

Example 1:	Main condition:	Acute sinusitis
	Other conditions:	Carcinoma of endocervix
		Hypertension
		Patient in hospital for three weeks
	Procedure:	Total hysterectomy
	Specialty:	Gynaecology

Reselect carcinoma of endocervix as the "main condition" and code to C53.0.

Example 2:	Main condition:	Rheumatoid arthritis
	Other conditions:	Diabetes mellitus
		Strangulated femoral hernia
		Generalized arteriosclerosis
		Patient in hospital for two weeks
	Procedure:	Herniorrhaphy
	Specialty:	Surgery

Reselect strangulated femoral hernia as the "main condition" and code to K41.3.

Example 3:	Main condition:	Epilepsy
	Other conditions:	Otomycosis
	Specialty:	Ear, nose and throat

Reselect otomycosis as the "main condition" and code to B36.9† and H62.2*.

| *Example 4:* | Main condition: | Congestive heart failure |
| | Other conditions: | Fracture neck of femur due to fall from bed |

during hospitalization, Patient in hospital for four weeks
| | Procedure: | Internal fixation of fracture |
| | Specialty: | Internal medicine for 1 week then transfer |

to orthopaedic surgery for treatment of fracture

Reselect fracture of neck of femur as the "main condition" and code to S72.0.

Example 5:	Main condition:	Dental caries
	Other conditions:	Rheumatic mitral stenosis
	Procedure:	Dental extractions
	Specialty:	Dentistry

Select dental caries as the "main condition" and code to K02.9. Rule MB1 does not apply. Although dental caries can be regarded as a minor condition and rheumatic mitral stenosis as a more significant condition, the latter was not the condition treated during the episode of care.

Rule MB2.   Several conditions recorded as "main condition"

If several conditions that cannot be coded together are recorded as the "main condition", and other details on the record point to one of them as being the "main condition" for which the patient received care, select that condition. Otherwise select the condition first mentioned.

Note: See also 4.5.2, coding of multiple conditions and coding of combination categories.

Example 6:	Main condition:	Cataract
		Staphylococcal meningitis
		Ischaemic heart disease
	Other conditions:	—
		Patient in hospital for five weeks
	Specialty:	Neurology

Select staphylococcal meningitis as the "main condition" and code to G00.3.

Example 7:	Main condition:	Chronic obstructive bronchitis
		Hypertrophy of prostate
		Psoriasis vulgaris

Outpatient in the care of a dermatologist

Select psoriasis vulgaris as the "main condition" and code to L40.0.

Example 8:	Main condition:	Mitral stenosis
		Acute bronchitis
		Rheumatoid arthritis
	Other conditions:	—
	Specialty:	General medicine

No information about therapy

Select mitral stenosis, the first-mentioned condition, as the "main condition" and code to I05.0.

Example 9:	Main condition:	Chronic gastritis
		Secondary malignancy in axillary lymph nodes
		Carcinoma of breast
	Other conditions:	—
	Procedure:	Mastectomy

Select malignant neoplasm of breast as the "main condition" and code to C50.9.

Example 10:	Main condition:	Premature rupture of membranes
		Breech presentation
		Anaemia
	Other conditions:	—
	Procedure:	Spontaneous delivery

Select premature rupture of membranes, the first-mentioned condition, as the "main condition" and code to O42.9.

Rule MB3. Condition recorded as "main condition" is presenting symptom of diagnosed, treated condition

If a symptom or sign (usually classifiable to Chapter XVIII), or a problem classifiable to Chapter XXI, is recorded as the "main condition" and this is obviously the presenting sign, symptom or problem of a diagnosed condition recorded elsewhere and care was given for the latter, reselect the diagnosed condition as the "main condition".

Example 11:	Main condition:	Haematuria
	Other conditions:	Varicose veins of legs
		Papillomata of posterior wall of bladder
	Treatment:	Diathermy excision of papillomata
	Specialty:	Urology

Reselect papillomata of posterior wall of bladder as the "main condition" and code to D41.4.

Example 12:	Main condition:	Coma
	Other conditions:	Ischaemic heart disease
		Otosclerosis

	Type I diabetes mellitus
Specialty:	Endocrinology
Care:	Establishment of correct dose of insulin

Reselect type 1 diabetes mellitus as the "main condition" and code to E10.0. The information provided indicates that the coma was due to diabetes mellitus and coma is taken into account as it modifies the coding.

Example 13: Main condition: Abdominal pain
               Other conditions: Acute appendicitis
               Procedure: Appendectomy

Reselect acute appendicitis as the "main condition" and code to K35.9.

Example 14: Main condition: Febrile convulsions
               Other conditions: Anaemia
               No information about therapy

Accept febrile convulsions as the "main condition" and code to R56.0. Rule MB3 does not apply since the "main condition" as reported is not a presenting symptom of the other reported condition.

Rule MB4.   Specificity

Where the diagnosis recorded as the "main condition" describes a condition in general terms, and a term that provides more precise information about the site or nature of the condition is recorded elsewhere, reselect the latter as the "main condition".

Example 15: Main condition: Cerebrovascular accident
               Other conditions: Diabetes mellitus
                                    Hypertension
                                    Cerebral haemorrhage

Reselect cerebral haemorrhage as the "main condition" and code to I61.9.

Example 16: Main condition: Congenital heart disease
               Other conditions: Ventricular septal defect

Reselect ventricular septal defect as the "main condition" and code to Q21.0.

Example 17:   Main condition: Enteritis
                Other conditions: Crohn's disease of ileum

Reselect Crohn's disease of ileum as the "main condition" and code to K50.0.

Example 18:   Main condition: Dystocia
                Other conditions: Hydrocephalic fetus
                                       Fetal distress
                Procedure: Caesarean section

Reselect obstructed labour due to other abnormalities of fetus as the "main condition" and code to O66.3.

Rule MB5.   Alternative main diagnoses

Where a symptom or sign is recorded as the "main condition" with an indication that it may be due to either one condition or another, select the symptom as the "main condition". Where two or more conditions are recorded as diagnostic options for the "main condition", select the first condition recorded.

Example 19:   Main condition: Headache due to either stress and tension
                or acute sinusitis
                Other conditions: —

Select headache as the "main condition" and code to R51.

Example 20:   Main condition: Acute cholecystitis or acute pancreatitis
                Other conditions: —

Select acute cholecystitis as the "main condition" and code to K81.0.

Example 21:   Main condition: Gastroenteritis due to infection or food
                poisoning
                Other conditions: —

Select infectious gastroenteritis as the "main condition" and code to A09.

4.5.4   Chapter-specific notes

Guidance is given below for specific chapters where problems may be encountered in selecting preferred "main condition" codes. The preceding general guidelines and rules apply to all chapters unless a specific chapter note states otherwise.

Chapter I: Certain infectious and parasitic diseases

B20–B24 Human immunodeficiency virus [HIV] disease

A patient with a compromised immune system due to HIV disease may sometimes require treatment during the same episode of care for more than one disease, for example mycobacterial and cytomegalovirus infections. Categories and subcategories are provided in this block for HIV disease with various other resultant diseases. Code the appropriate subcategory for the "main condition" as selected by the health-care practitioner.

Where the "main condition" has been recorded as HIV disease with multiple accompanying diseases, the appropriate .7 subcategory from B20–B22 should be coded. Conditions classifiable to two or more subcategories of the same category should be coded to the .7 subcategory of the relevant category (e.g. B20 or B21). Subcategory B22.7 should be used when conditions classifiable to two or more categories from B20–B22 are present. Additional codes from within the block B20–B24 may be used, if desired, to specify the individual conditions listed.

In those rare instances when the associated condition clearly predates the HIV infection, the combination should not be coded and the selection rules should be followed.

Example 1:   Main condition: HIV disease and Kaposi sarcoma
                  Other conditions: —

                  Code to HIV disease resulting in Kaposi sarcoma (B21.0).

Example 2:   Main condition: Toxoplasmosis and cryptococcosis in HIV patient
                  Other conditions: —

                  Code to HIV disease resulting in multiple infections (B20.7). B20.8 (HIV disease resulting in other infectious and parasitic diseases) and B20.5 (HIV disease resulting in other mycoses) may be used as additional codes, if desired.

Example 3:   Main condition: HIV disease with *Pneumocystis carinii* pneumonia, Burkitt lymphoma and oral candidiasis
                  Other conditions: —

                  Code to HIV disease resulting in multiple diseases (B22.7). Additional codes B20.6 (HIV disease resulting in *Pneumocystis carinii* pneumonia), B21.1 (HIV disease resulting in Burkitt lymphoma) and B20.4 (HIV disease resulting in candidiasis) may be used, if desired.

The subcategories at B20–B23 are the only optional four-character codes for countries using the four-character version of ICD-10. Where it is not desired to use these optional fourth-character subcategories, codes from elsewhere in the classification should be used as additional codes to identify the specific resultant conditions. In Example 1 above, the "main condition" would be coded to B21 (HIV disease resulting in malignant neoplasm). Code C46.9 (Kaposi sarcoma) would be used as an additional code. In Example 2, the "main condition" would be coded to B20 (HIV disease resulting in infectious and parasitic diseases). Codes B58.9 (Toxoplasmosis, unspecified) and B45.9 (Cryptococcosis, unspecified) would be used as additional codes.

Whether to use the four-character subcategories of B20–B23 or multiple-cause coding to identify the specific conditions is a policy decision which should be made at the time ICD-10 is implemented.

B90–B94 Sequelae of infectious and parasitic diseases

These codes are not to be used as the preferred codes for "main condition" if the nature of the residual condition is recorded. When coding to the residual condition, B90–B94 may be used as optional additional codes (see Section 4.5.2, Coding of sequelae of certain conditions).

B95–B97 Bacterial, viral and other infectious agents

These codes are not to be used as "main condition" codes. The categories are provided for optional use as additional codes to identify the infectious agent or organism in diseases classified outside Chapter I. Infections of unspecified site due to these agents are classified elsewhere in Chapter I.

Example 4:   Main condition: Acute cystitis due to *E. coli*
             Other conditions: —

             Code to acute cystitis (N30.0) as the "main condition", B96.2 (*E. coli* as the cause of diseases classified to other chapters) may be used as an optional additional code.

Example 5:   Main condition: Bacterial infection
             Other conditions: —

             Code to bacterial infection, unspecified (A49.9), as the "main condition", not to a code from B95–B97.

Chapter II: Neoplasms

When coding neoplasms, refer to the notes introducing Chapter II in Volume 1 and

to the introduction of the Alphabetical Index (Volume 3) regarding code assignment and the use of morphological descriptions.

A neoplasm, whether primary or metastatic, that is the focus of care during a relevant episode of health care, should be recorded and coded as the "main condition". When the "main condition" as recorded by the health-care practitioner is a primary neoplasm that is no longer present (having been removed during a previous episode of care), code as the "main condition" the neoplasm of the secondary site, the current complication, or the appropriate circumstance codable to Chapter XXI (see Section 4.5.1, Contact with health services for reasons other than illness) that was the focus of the treatment or investigation during the current episode of care. An appropriate code from Chapter XXI for personal history of neoplasm may be used as an optional additional code.

Example 6:   Main condition: Carcinoma of prostate
                 Other conditions: Chronic bronchitis
                 Procedure: Prostatectomy

                 Code to malignant neoplasm of prostate (C61) as the "main condition".

Example 7:   Main condition: Carcinoma of breast – resected two years ago
                 Other conditions: Secondary carcinoma in lung
                 Procedure: Bronchoscopy with biopsy

                 Code to secondary malignant neoplasm of lung (C78.0) as the "main condition". Z85.3 (Personal history of malignant neoplasm of breast) may be used as an optional additional code.

Example 8:   Main condition: Previously excised bladder cancer – admitted for follow-up examination by cystoscopy
                 Other conditions: —
                 Procedure: Cystoscopy

                 Code to follow-up examination after surgery for malignant neoplasm (Z08.0) as the "main condition". Z85.5 (Personal history of malignant neoplasm of urinary tract) may be used as an optional additional code.

C79.9 Secondary malignant neoplasm, unspecified site

C79.9 should be used for "main condition" coding only when the malignancy is described as 'disseminated carcinomatosis' or 'generalised malignancy' (or other similar terms as described in the inclusion list for C79.9) and the specific sites are not documented.

C80   Malignant neoplasm without specification of site

C80.0 Malignant neoplasm, primary site unknown, so stated

C80.9 Malignant neoplasm, primary site unspecified

C80.- should be used for "main condition" coding only when the health care practitioner has clearly recorded the neoplasm as an unknown primary site or as an unspecified malignancy, assumed primary.

C97   Malignant neoplasms of independent (primary) multiple sites

C97 should be used when the health-care practitioner records as the "main condition" two or more independent primary malignant neoplasms, none of which predominates. Additional codes may be used to identify the individual malignant neoplasms listed.

Example 9:	Main condition:	Carcinomatosis
	Other conditions:	—

Code to secondary malignant neoplasm, unspecified site (C79.9). C80.9 (Malignant neoplasm, primary site unspecified) may be used as an additional code if the primary site is unspecified.). An appropriate code from Chapter XXI for personal history of neoplasm should be used for a primary neoplasm that is no longer present.

Example 10:	Main condition:	Multiple myeloma and primary
	adenocarcinoma of prostate	

Code to malignant neoplasms of independent (primary) multiple sites (C97). C90.0 (Multiple myeloma) and C61 (Malignant neoplasm of prostate) may be used as optional additional codes.

Chapter III: Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism

Certain conditions classifiable to this chapter may result from drugs or other external causes. Codes from Chapter XX may be used as optional additional codes.

Example 11:	Main condition:	Trimethoprim-induced folate deficiency
	anaemia	
	Other conditions:	—

Code drug-induced folate deficiency anaemia (D52.1) as the "main condition". Y41.2 (Antimalarials and drugs acting on other blood protozoa causing adverse effects in therapeutic use) may be used as an optional additional code.

Chapter IV: Endocrine, nutritional and metabolic diseases

Certain conditions classifiable to this chapter may result from drugs or other external causes. Codes from Chapter XX may be used as optional additional codes.

E10–E14 Diabetes mellitus

In coding the "main condition", the selection of an appropriate subcategory from the list that applies to all of these categories should be based on the "main condition" as recorded by the health-care practitioner. The subcategory .7 should be used as the "main condition" code only when multiple complications of diabetes have been recorded as the "main condition" without preference for any one complication. Codes for any individual complications listed may be added as optional additional codes.

Example 12:	Main condition:	Renal failure due to diabetic glomerulonephrosis
	Code to unspecified diabetes mellitus with renal complications (E14.2† and N08.3*).	

Example 13:	Main condition:	Type 1 diabetic with nephropathy, gangrene and cataracts
	Other conditions:	—
	Code to type 1 diabetes mellitus with multiple complications (E10.7). Codes E10.2† and N08.3* (Type 1 diabetes with nephropathy), E10.5 (Type 1 diabetes with peripheral circulatory complications) and E10.3† and H28.0* (Type 1 diabetes with cataract) may be added as optional additional codes to identify the individual complications.	

E34.0 Carcinoid syndrome

This code is not to be used as the preferred code for the "main condition" if a carcinoid tumour is recorded, unless the episode of care was directed predominantly at the endocrine syndrome itself. When coding to the tumour, E34.0 may be used as an optional additional code to identify the functional activity.

E64.- Sequelae of malnutrition and other nutritional deficiencies

E68 Sequelae of hyperalimentation

These codes are not to be used as the preferred code for the "main condition" if the nature of the residual condition is recorded. When coding to the residual condition, E64.- or E68 may be used as an optional additional code.

Chapter V: Mental and behavioural disorders

The definitions of the categories and subcategories in this chapter are provided to assist the health-care practitioner in establishing diagnostic labels; they should not be used by coders. The "main condition" code should be assigned on the basis of the diagnosis recorded by the practitioner, even if there appears to be a conflict between the condition as recorded and the definition. In some categories there is provision for optional additional codes.

Chapter VI: Diseases of the nervous system

Certain conditions classifiable to this chapter may result from the effects of drugs or other external causes. Codes from Chapter XX may be used as optional additional codes.

G09   Sequelae of inflammatory diseases of central nervous system

This code is not to be used as the preferred code for the "main condition" if the nature of the residual condition is recorded. When coding to the residual condition, G09 may be used as an optional additional code. Note that sequelae of categories G01[*], G02[*], G05[*] and G07[*] should not be assigned to G09, but rather to the categories established for sequelae of the underlying condition, e.g. B90–B94. If there is no sequelae category for the underlying condition, code to the underlying condition itself.

Example 14:	Main condition:	Deafness due to tuberculous meningitis
	Specialty:	Speech and hearing clinic

Code hearing loss, unspecified (H91.9) as the "main condition". B90.0 (Sequelae of central nervous system tuberculosis) may be used as an optional additional code.

Example 15:	Main condition:	Epilepsy due to old brain abscess
	Specialty:	Neurology

Code epilepsy, unspecified (G40.9) as the "main condition". G09 (Sequelae of inflammatory diseases of central nervous system) may be used as an optional additional code.

Example 16:	Main condition:	Mild	mental	retardation	after
	postimmunization encephalitis				
	Specialty:	Psychiatry			

Code mild mental retardation (F70.9) as the "main condition". G09 (Sequelae of inflammatory diseases of central nervous system) may be used as an optional additional code.

G81–G83 Paralytic syndromes

These codes are not to be used as the preferred code for the "main condition" if a current cause is recorded, unless the episode of care was mainly for the paralysis itself. When coding to the cause, G81–G83 may be used as optional additional codes.

Example 17:   Main condition: Cerebrovascular accident with hemiplegia
    Other conditions: —
    Specialty: Neurology

Code stroke, not specified as haemorrhage or infarction (I64) as "main condition". G81.9 (Hemiplegia, unspecified) may be used as an optional additional code.

Example 18:   Main condition: Cerebral infarction three years ago
    Other conditions: Paralysis of left leg
    Patient receiving physical therapy

Code monoplegia of lower limb (G83.1) as "main condition". I69.3 (Sequelae of cerebral infarction) may be used as an optional additional code.

Chapter VII: Diseases of the eye and adnexa

H54.- Visual impairment including blindness (binocular or monocular)

This code is not to be used as the preferred code for the "main condition" if the cause is recorded, unless the episode of care was mainly for the blindness itself. When coding to the cause, H54.- may be used as an optional additional code.

Chapter VIII: Diseases of the ear and mastoid process

H90–H91 Hearing loss

These codes are not to be used as the preferred code for the "main condition" if the cause is recorded, unless the episode of care was mainly for the hearing loss itself. When coding to the cause, H90.- or H91.- may be used as an optional additional code.

Chapter IX: Diseases of the circulatory system

I15.- Secondary hypertension

This code is not to be used as the preferred code for the "main condition" if the cause is recorded, unless the episode of care was mainly for the hypertension. When coding to the cause, I15.- may be used as an optional additional code.

I69.- Sequelae of cerebrovascular disease

This code is not to be used as the preferred code for the "main condition" if the nature of the residual condition is recorded. When coding to the residual condition, I69.- may be used as an optional additional code.

Chapter XV: Pregnancy, childbirth and the puerperium

O08.-   Complications following abortion and ectopic and molar pregnancy

This code is not to be used as the preferred code for the "main condition", except where a new episode of care is solely for treatment of a complication, e.g. a current complication of a previous abortion. It may be used as an optional additional code with categories O00–O02 to identify associated complications and with categories O03–O07 to give fuller details of the complication.

Note that the inclusion terms provided at the subcategories of O08 should be referred to when assigning the fourth-character subcategories of O03–O07.

Example 19:	Main condition: Specialty:	Ruptured tubal pregnancy with shock Gynaecology

Code ruptured tubal pregnancy (O00.1) as the "main condition". O08.3 (Shock following abortion and ectopic and molar pregnancy) may be used as an optional additional code.

Example 20:	Main condition: uterus Specialty:	Incomplete abortion with perforation of Gynaecology

Code incomplete abortion with other and unspecified complications (O06.3) as the "main condition". Code O08.6 (Damage to pelvic organs and tissues following abortion and ectopic and molar pregnancy) may be added as an optional additional code.

Example 21:	Main condition: following abortion performed two days ago at another facility Specialty:	Disseminated intravascular coagulation Gynaecology

Code delayed or excessive haemorrhage following abortion and ectopic and molar pregnancy (O08.1). No other code is required since the abortion was performed during a previous episode of care.

O80–O84 Delivery

Use of these codes to describe the "main condition" should be limited to cases where the only information recorded is a statement of delivery or the method of delivery. Codes O80–O84 may be used as optional additional codes to indicate a method or type of delivery where no separate data item or procedural classification is being used for this purpose.

Example 22:   Main condition: Pregnancy
                 Other conditions: —
                 Procedure: Low forceps delivery

> Code low forceps delivery (O81.0) as "main condition" since no other information is provided.

Example 23:   Main condition: Pregnancy delivered
                 Other conditions: Failed trial of labour
                 Procedure: Caesarean section

> Code failed trial of labour, unspecified (O66.4) as the "main condition". The code for caesarean section delivery, unspecified (O82.9), may be used as an optional additional code.

Example 24:   Main condition: Twin pregnancy delivered
                 Other conditions: —
                 Procedure: Spontaneous delivery

> Code twin pregnancy (O30.0) as the "main condition". O84.0 (Multiple delivery, all spontaneous) may be added as an optional additional code.

Example 25:   Main condition: Term pregnancy delivered of dead fetus, 2800 g
                 Other conditions: —
                 Procedure: Spontaneous delivery

> Code to maternal care for intrauterine death (O36.4) if no specific reason for the fetal death can be determined.

O98–O99   Maternal diseases classifiable elsewhere but complicating pregnancy, childbirth and the puerperium

The subcategories provided should be used as "main condition" codes in preference to categories outside Chapter XV when the conditions being classified have been indicated by the health-care practitioner to have complicated the pregnant state, to have been aggravated by the pregnancy, or to have been the reason for obstetric care. The pertinent codes from other chapters may be used as optional additional codes to allow specification of the condition.

Example 26: Main condition: Toxoplasmosis
Other conditions: Pregnancy undelivered
Specialty: High-risk antenatal clinic

Code protozoal diseases complicating pregnancy, childbirth and the puerperium (O98.6) as the main condition. B58.9 (Toxoplasmosis, unspecified) may be used as an optional additional code to identify the specific organism.

Chapter XVIII: Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified

Categories from this chapter should not be used as "main condition" codes unless the symptom, sign or abnormal finding was clearly the main condition treated or investigated during an episode of care and was unrelated to other conditions recorded by the health-care practitioner. See also Rule MB3 (4.5.3) and the introduction to Chapter XVIII in Volume 1 for further information.

Chapter XIX: Injury, poisoning and certain other consequences of external causes

Where multiple injuries are recorded and no one of these has been selected as the "main condition", code to one of the categories provided for statements of multiple injuries of:

- same type to the same body region (usually fourth character .7 in categories S00–S99);

- different types to the same body region (usually fourth character .7 in the last category of each block, i.e. S09, S19, S29, etc.); and

- same type to different body regions (T00–T05).

Note the following exceptions:

- for internal injuries recorded with superficial injuries and/or open wounds only, code to internal injuries as the "main condition";

- for fractures of skull and facial bones with associated intracranial injury, code to the intracranial injury as the "main condition";

- for intracranial haemorrhage recorded with other injuries to the head only, code to intracranial haemorrhage as the "main condition"; and

- for fractures recorded with open wounds of the same location only, code to fracture as the "main condition".

When the multiple injury categories are used, codes for any individual injuries listed may be used as optional additional codes. In the case of the exceptions mentioned,

in addition to the main condition code, the associated injury may be identified either by an optional additional code or by one of the digits provided for this purpose.

Example 27:   Main condition: Injury of bladder and urethra
                     Other conditions: —

Code to injury of multiple pelvic organs (S37.7) as the "main condition". S37.2 (Injury of bladder) and S37.3 (Injury of urethra) may be used as optional additional codes.

Example 28:   Main condition: Open intracranial wound with cerebellar haemorrhage
                     Other conditions: —

Code to traumatic cerebellar haemorrhage (S06.8) as the "main condition". The open intracranial wound may be indicated, if desired, by the addition of the code S01.9 (Open wound of head, part unspecified) or by the addition of the digit 1 (with open intracranial wound) to code S06.8 (S06.8.1).

T90–T98   Sequelae of injuries, of poisoning and of other consequences of external causes

These codes are not to be used as the preferred codes for "main condition" if the nature of the residual conditions is recorded. When coding to the residual condition, T90–T98 may be used as optional additional codes.

Chapter XX: External causes of morbidity and mortality

These codes are not to be used as "main condition" codes. They are intended for use as optional additional codes to identify the external cause of conditions classified in Chapter XIX, and may also be used as optional additional codes with conditions classified in any other chapter but having an external cause.

5. Statistical presentation

5.1 Introduction

This section presents the regulations regarding statistics for international comparison, and guidelines on data presentation in national and subnational statistical tables.

Those responsible for the analysis of the data should be involved in the development of the protocol for processing (including coding), not only of the diagnostic data but also of the other items to be cross-tabulated with them.

5.2 Source of data

The medical certification of the cause of death is normally the responsibility of the attending physician. The medical certificate of cause of death should be in line with the international recommendation (see Section 4.1.3). Administrative procedures should ensure the confidentiality of data from the death certificate or other medical records.

In the case of deaths certified by coroners or other legal authorities, the medical evidence supplied to the certifier should be stated on the certificate in addition to any legal findings.

5.3 Level of detail of cause in tabulations

There are standard ways of listing causes coded according to the ICD, and there are formal recommendations concerning lists for tabulation permitting international comparison (see Section 5.6). In other tabulations, the hierarchical structure of the ICD allows considerable flexibility for possible groupings.

The three- and four-character rubrics of the ICD allow for considerable detail. They are sometimes used to produce reference tables covering a whole range of data, which may not be published but retained in a central office where, on request, information can be extracted concerning specific diagnoses. The classification at this level is also used by specialists interested in the detailed study of a limited range of diagnoses. For these, more detail may be added at the fifth- or even sixth-character level, where coding has been done either to the supplementary characters given for some rubrics of the ICD or to one of the specialty-based adaptations of the family of classifications.

Although every effort has been made to ensure that the titles of ICD four-character subcategories are meaningful when they stand alone, they occasionally need to be read in conjunction with the three-character category title. Where this is so, it is

necessary either to include the three-character rubrics (and their totals) or to use specially adapted titles for the four-character rubrics, which are intelligible when they stand alone. There are over 2000 rubrics at the three-character level, identifying all conditions likely to be of public health interest.

There are also special tabulation lists in Volume 1 which are intended for circumstances in which the three-character list is too detailed, and are designed so that international comparison of significant diseases and groups of diseases is not frustrated by different groupings having been used in different countries.

5.4 The recommended special tabulation lists for mortality

The special tabulation lists for mortality are given in Volume 1.

5.4.1 The condensed lists

The two condensed lists, List 1 and List 3, provide items for each ICD chapter and also, within most chapters, identify the items of the selected lists together with residual items entitled "Remainder of...", which complete the coverage of the respective chapter. They thus condense the full range of ICD three-character categories into a manageable number of items for many publication purposes.

5.4.2 The selected lists

The two selected lists, List 2 and List 4, contain items within most ICD chapters, for conditions and external causes significant for the monitoring and analysis of population health status and mortality-related health concerns at both national and international levels. Chapter totals are not provided and only a few chapters have residual rubrics that enable such totals to be obtained.

5.4.3 Use of prefixes to identify the mortality lists

Use of the numerical prefixes to the item numbers prevents confusion between the special tabulation lists where items for the same condition carry different numbers. (The item numbers can be distinguished from ICD four-character codes which have a letter in the first position.) Where an adapted list is used for national or subnational purposes, an alternative identifying prefix should be used.

5.4.4 Locally designed lists

The four special tabulation lists provide for most countries an adequate source of information about the most important diseases and external causes of death. They also facilitate comparison over time and observation of shifts in the relative frequencies of, for example, infectious diseases and degenerative diseases, as health programmes take effect. They permit comparison between subnational areas and population subgroups. In addition, they make possible meaningful international comparisons of causes of death.

When there is no need for international comparison, lists similar to the special

tabulation lists can be designed for use locally. The ICD rubrics of such lists can be selected and grouped in whatever way is most appropriate and useful. Special lists would be needed, for example, for monitoring the progress, in terms of morbidity and mortality, of many local health programmes.

When adapting the special tabulation lists to national requirements, or when a tabulation list is being devised for a new or special project, it is helpful to have a test run, simply counting the number of cases falling into each three-character category, to determine for which conditions grouping to broad rubrics is appropriate and where the use of subcategories could be necessary.

Where a local list is constructed, the key to the condensed categories should contain the three (or four) character codes of the core classification.

5.5 The special tabulation list for morbidity

5.5.1 Description

The tabulation list for morbidity contains 298 detailed items. The morbidity list is a condensed list in which each category is included only once and totals for groups of diseases and ICD chapters can be obtained by the addition of sequential items.

The morbidity list is intended as a basis for national lists and for intercountry comparison. National lists can be constructed by either condensing or expanding the core classification as appropriate. The list is suitable for data on inpatient care and, with suitable adaptation – notably aggregation of some items and expansion of items relating to Chapter XVIII (Symptoms, signs and abnormal clinical and laboratory findings) and Chapter XXI (Factors influencing health status and contact with health services) – for information from other sources, such as ambulatory care and surveys. When a local list is constructed, the key to the condensed categories should contain the three (or four) character codes of the core classification.

The morbidity list includes the code numbers of asterisk categories for use when the asterisk code for dual classification is included in the analysis. The list can be used for either dagger-based or asterisk-based tabulations and it is important, therefore, to indicate in each table which basis has been used.

5.5.2 Modification of the special tabulation list for morbidity according to national requirements

If, after examination of the frequencies of the ICD three-character rubrics, it is felt necessary to expand the list, some of the items for a range of ICD categories can be subdivided according to the core classification or even to the four-character level. If the recommended list is considered to be too detailed or if a shorter list is required, selection can be made based on national or local health concerns. Depending on a

country's 'epidemiological profile', categories may be combined to shorten the list.

5.6 Recommendations in relation to statistical tables for international comparison

5.6.1 Statistical tables

The degree of detail in cross-classification by cause, sex, age and geographical area will depend both on the purpose and range of the statistics and on the practical limits to their tabulation. The following patterns, which are designed to promote international compatibility, present standard ways of expressing various characteristics. Where a different classification is used in published tables (e.g. in age-grouping), it should be reducible to one of the recommended groupings.

(a) Analysis by the International Classification of Diseases should, as appropriate, be in accordance with:

 (i) the detailed list of three-character categories, with or without four-character subcategories;

 (ii) one of the special tabulation lists for mortality;

 (iii) the special tabulation list for morbidity.

(b) Age classification for general purposes:

 (i) under 1 year, single years to 4 years, 5-year groups from 5 to 84 years, 85 years and over;

 (ii) under 1 year, 1–4 years, 5–14 years, 15–24 years, 25–34 years, 35–44 years, 45–54 years, 55–64 years, 65–74 years, 75 years and over;

 (iii) under 1 year, 1–14 years, 15–44 years, 45–64 years, 65 years and over.

(c) Classification by area should, as appropriate, be in accordance with:

 (i) each major civil division;

 (ii) each town or conurbation of 1 000 000 population and over, otherwise the largest town with a population of at least 100 000;

 (iii) a national aggregate of urban areas of 100 000 population and over;

 (iv) a national aggregate of urban areas of less than 100 000 population;

 (v) a national aggregate of rural areas.

Note 1. Statistics relating to (c) should include the definitions of urban and rural used.

Note 2. In countries where medical certification of the cause of death is incomplete or limited to certain areas, figures for deaths not medically certified should be published separately.

5.6.2   Tabulation of causes of death

Statistics of causes of death for a defined area should be in accordance with recommendation (a)(i) above, or, if this is not possible, with recommendation (a)(ii). Deaths should preferably be classified by sex and age group as in recommendation (b)(i).

Statistics of causes of deaths for the areas in recommendation (c) should comply with recommendation (a)(ii), or if this is not possible, with recommendation (a)(iii). They should preferably be tabulated by sex and age group as in recommendation (b)(ii).

5.7   Standards and reporting requirements related to fetal, perinatal, neonatal and infant mortality

The following definitions have been adopted by the World Health Assembly in relation both to statistics amenable to international comparison and to reporting requirements for the data from which they are derived. The definitions adopted by the World Health Assembly appear in Volume 1 and, for convenience, are restated below.

5.7.1   Definitions

Live birth

Live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy, which, after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered liveborn.

Fetal death (deadborn fetus)

Fetal death is death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy; the death is indicated by the fact that after such separation the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.

Birth weight

The first weight of the fetus or newborn obtained after birth.

For live births, birth weight should preferably be measured within the first hour of life before significant postnatal weight loss has occurred. While statistical

tabulations include 500 g groupings for birth weight, weights should not be recorded in those groupings. The actual weight should be recorded to the degree of accuracy to which it is measured.

The definitions of 'low', 'very low', and 'extremely low' birth weight do not constitute mutually exclusive categories. Below the set limits they are all-inclusive and therefore overlap (i.e. 'low' includes 'very low' and 'extremely low', while 'very low' includes 'extremely low').

Low birth weight

Less than 2500 g (up to and including 2499 g).

Very low birth weight

Less than 1500 g (up to and including 1499 g).

Extremely low birth weight

Less than 1000 g (up to and including 999 g).

Gestational age

The duration of gestation is measured from the first day of the last normal menstrual period. Gestational age is expressed in completed days or completed weeks (e.g. events occurring 280 to 286 completed days after the onset of the last normal menstrual period are considered to have occurred at 40 weeks of gestation).

Gestational age is frequently a source of confusion, when calculations are based on menstrual dates. For the purposes of calculation of gestational age from the date of the first day of the last normal menstrual period and the date of delivery, it should be borne in mind that the first day is day zero and not day one; days 0–6 therefore correspond to "completed week zero"; days 7–13 to "completed week one"; and the 40th week of actual gestation is synonymous with "completed week 39". Where the date of the last normal menstrual period is not available, gestational age should be based on the best clinical estimate. In order to avoid misunderstanding, tabulations should indicate both weeks and days.

Pre-term

Less than 37 completed weeks (less than 259 days) of gestation.

Term

From 37 completed weeks to less than 42 completed weeks (259 to 293 days) of gestation.

Post-term

42 completed weeks or more (294 days or more) of gestation.

Perinatal period

The perinatal period commences at 22 completed weeks (154 days) of gestation (the time when birth weight is normally 500 g), and ends seven completed days after birth.

Neonatal period

The neonatal period commences at birth and ends 28 completed days after birth. Neonatal deaths (deaths among live births during the first 28 completed days of life) may be subdivided into early neonatal deaths, occurring during the first seven days of life, and late neonatal deaths, occurring after the seventh day but before 28 completed days of life.

Age at death during the first day of life (day zero) should be recorded in units of completed minutes or hours of life. For the second (day 1), third (day 2) and through 27 completed days of life, age at death should be recorded in days.

5.7.2   Reporting criteria

The legal requirements for the registration of fetal deaths and live births vary from country to country and even within countries. If possible, all fetuses and infants weighing at least 500 g at birth, whether alive or dead, should be included in the statistics. When information on birth weight is unavailable, the corresponding criteria for gestational age (22 completed weeks) or body length (25 cm crown-heel) should be used. The criteria for deciding whether an event has taken place within the perinatal period should be applied in the order: (1) birth weight, (2) gestational age, (3) crown-heel length. The inclusion of fetuses and infants weighing between 500 g and 1000 g in national statistics is recommended both because of its inherent value and because it improves the coverage of reporting at 1000 g and over.

5.7.3   Statistics for international comparison

In statistics for international comparison, inclusion of the extremely low‑birth‑weight group disrupts the validity of comparisons and is not recommended. Countries should arrange registration and reporting procedures so that the events and the criteria for their inclusion in the statistics can be easily identified. Less mature fetuses and infants not corresponding to these criteria (i.e. weighing less than 1000g) should be excluded from perinatal statistics unless there are legal or other valid reasons to the contrary, in which case their inclusion must be explicitly stated. Where birth weight, gestational age and crown‑heel length are not known, the event should be included in, rather than excluded from, mortality statistics of the perinatal period. Countries should also present statistics in which both the numerator and the denominator of all ratios and rates are restricted to fetuses and infants weighing 1000g or more (weight-specific ratios and rates);

where information on birth weight is not available, the corresponding gestational age (28 completed weeks) or body length (35 cm crown‑heel) should be used.

In reporting fetal, perinatal, neonatal and infant mortality statistics, the number of deaths due to malformations should whenever possible be identified for live births and fetal deaths and in relation to birth weights of 500–999 g and 1000 g or more. Neonatal deaths due to malformations should be subdivided into early and late neonatal deaths. This information enables perinatal and neonatal mortality statistics to be reported with or without the deaths from malformations.

Ratios and rates

Published ratios and rates should always specify the denominator, i.e. live births or total births (live births plus fetal deaths). Countries are encouraged to provide the ratios and rates listed below, or as many of them as their data collection systems permit.

Fetal death ratio

$$\frac{\text{Fetal deaths}}{\text{Live births}} \times 1000$$

Fetal death rate

$$\frac{\text{Fetal deaths}}{\text{Total births}} \times 1000$$

Fetal death rate, weight-specific

$$\frac{\text{Fetal deaths weighing 1000g and over}}{\text{Total births weighing 1000g and over}} \times 1000$$

Early neonatal mortality rate

$$\frac{\text{Early neonatal deaths}}{\text{Live births}} \times 1000$$

Early neonatal mortality rate, weight-specific

$$\frac{\text{Early neonatal death of infants weighing 1000g and over at birth}}{\text{Live birth weighing 1000g and over}} \times 1000$$

Perinatal mortality ratio

Fetal death and early neonatal deaths
———————————————————— x 1000
Live births

Perinatal mortality rate

Fetal deaths and early neonatal deaths
———————————————————— x 1000
Total births

The perinatal mortality rate is the number of deaths of fetuses weighing at least 500 g (or, when birth weight is unavailable, after 22 completed weeks of gestation or with a crown-heel length of 25 cm or more), plus the number of early neonatal deaths, per 1000 total births. Because of the different denominators in each component, this is not necessarily equal to the sum of the fetal death rate and the early neonatal mortality rate.

Perinatal mortality rate, weight-specific

Fetal deaths weighing 1000g and over,
plus early neonatal deaths of infants weighing 1000g and over at birth
————————————————————————————————— x 1000
Total births weighing 1000g and over

Neonatal mortality rate

Neonatal deaths
————————— x 1000
Live births

Neonatal mortality rate, weight-specific

Neonatal deaths of infants weighing 1000g and over at birth
———————————————————————————— x 1000
Live births weighing 1000g and over

Infant mortality rate

Deaths under one year of age
———————————————— x 1000
Live births

Infant mortality rate, weight-specific

$$\frac{\text{Infant deaths among live births weighing 1000g and over at birth}}{\text{Live births weighing 1000g and over}} \times 1000$$

5.7.4 Presentation of causes of perinatal mortality

For statistics of perinatal mortality derived from the form of certificate recommended for this purpose (see Section 4.4.1), full-scale multiple-cause analysis of all conditions reported will be of greatest benefit. Where such analysis is impracticable, analysis of the main disease or condition in the fetus or infant (part (a)) and of the main maternal condition affecting the fetus or infant (part (c)) with cross-tabulation of groups of these two conditions should be regarded as the minimum. Where it is necessary to select only one condition (for example, when early neonatal deaths must be incorporated into single-cause tables of deaths at all ages), the main disease or condition in the fetus or infant (part (a)) should be selected.

Age classification for special statistics of infant mortality

(i) By single days for the first week of life (under 24 hours, 1, 2, 3, 4, 5, 6 days), 7–13 days, 14–20 days, 21–27 days, 28 days and up to, but not including, 2 months, by single months of life from 2 months to 1 year (2, 3, 4 ... 11 months).

(ii) Under 24 hours, 1–6 days, 7–27 days, 28 days up to, but not including, 3 months, 3–5 months, 6 months but under 1 year.

(iii)Under 7 days, 7–27 days, 28 days but under 1 year.

Age classification for early neonatal deaths

(i) Under 1 hour, 1–11 hours, 12–23 hours, 24–47 hours, 48–71 hours, 72–167 hours.

(ii) Under 1 hour, 1–23 hours, 24–167 hours.

Birth weight classification for perinatal mortality statistics

By weight intervals of 500 g, i.e. 1000–1499 g, etc.

Gestational age classification for perinatal mortality statistics

Under 28 weeks (under 196 days), 28–31 weeks (196–223 days), 32–36 weeks (224–258 days), 37–41 weeks (259–293 days), 42 weeks and over (294 days and over).

5.8 Standards and reporting requirements related to maternal mortality

5.8.1 Definitions

Maternal death

A maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

Late maternal death

A late maternal death is the death of a woman from direct or indirect obstetric causes more than 42 days but less than one year after termination of pregnancy.

Death occurring during pregnancy, childbirth and puerperium

A death occurring during pregnancy, childbirth and puerperium is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death (obstetric and non obstetric).

Maternal deaths should be subdivided into two groups.

1. **Direct obstetric deaths:** those resulting from obstetric complications of the pregnant state (pregnancy, labour and puerperium), from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above.

2. **Indirect obstetric deaths:** those resulting from previous existing disease or disease that developed during pregnancy and which was not due to direct obstetric causes, but which was aggravated by physiologic effects of pregnancy.

In order to improve the quality of maternal mortality data and provide alternative methods of collecting data on deaths during pregnancy or related to it, as well as to encourage the recording of deaths from obstetric causes occurring more than 42 days following termination of pregnancy, the Forty-third World Health Assembly in 1990 adopted the recommendation that countries consider the inclusion on death certificates of questions regarding current pregnancy and pregnancy within one year preceding death.

5.8.2 International reporting

For the purpose of the international reporting of maternal mortality, only those

199

maternal deaths occurring before the end of the 42-day reference period should be included in the calculation of the various ratios and rates, although the recording of later deaths is useful for national analytical purposes.

5.8.3   Published maternal mortality rates

Published maternal mortality rates should always specify the numerator (number of recorded maternal deaths), which can be given as:

- the number of recorded direct obstetric deaths, or
- the number of recorded obstetric deaths (direct plus indirect).

Note that when calculating maternal mortality rates, cases not coded to Chapter XV (O codes) should be included. These include those categories presented in the "Exclusion Note" at the beginning of Chapter XV, provided that they meet the specifications outlined in Section 4.2.8   for indirect obstetric causes.

5.8.4   Denominators for maternal mortality

The denominator used for calculating maternal mortality should be specified as either the number of live births or the number of total births (live births plus fetal deaths). Where both denominators are available, a calculation should be published for each.

Ratios and rates

Results should be expressed as a ratio of the numerator to the denominator, multiplied by k (where k may be 1000, 10 000 or 100 000, as preferred and indicated by the country). Maternal mortality ratios and rates can thus be expressed as follows:

Maternal mortality rate[3]1

$$\frac{\text{Maternal deaths (direct and indirect)}}{\text{Live births}} \times k$$

Direct obstetric mortality ratio

$$\frac{\text{Direct obstetric death only}}{\text{Live births}} \times k$$

---

[3]   1 The use of the term 'rate', although inexact in this context, is retained for the sake of continuity.

Ratio for death occurring during pregnancy, childbirth and puerperium

Deaths occurring during pregnancy, childbirth and puerperium

——————————————————————————————— x *k*

Live births

5.9 Proportion of deaths classified to ill-defined causes

The allocation of a high proportion of causes of death to Chapter XVIII (Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified) indicates a need to check or estimate the quality of the tabulated data allocated to more specific causes assigned to other chapters.

5.10 Morbidity

There are a wide variety of possible sources of information on morbidity. The data most suitable for analysis on a national or regional basis are those that enable some calculation to be made of the incidence of diseases, or at least of those diseases coming, for example, under medical or hospital care. It is primarily for data on episodes of health care that the formally agreed guidelines and definitions for recording causes of morbidity and selection of a single condition, where appropriate, are intended. Other types of data require the development of local rules.

The problems of morbidity statistics start with the very definition of 'morbidity'. There is much scope for improving morbidity statistics. International comparisons of morbidity data are, at present, feasible only to a very limited extent and for clearly defined purposes. National or regional information on morbidity has to be interpreted in relation to its source and with background knowledge of the quality of the data, diagnostic reliability, and demographic and socioeconomic characteristics.

5.11 Precautions needed when tabulation lists include subtotals

It may not always be apparent to those processing the data that some of the items in the tabulation lists are in fact subtotals; for instance, titles of blocks and, in the case of the four-character list of ICD-10, titles of three-character categories, as well as the items for chapter titles in the condensed versions of the mortality tabulation lists. These entries should be ignored when totals are calculated, otherwise cases would be counted more than once.

5.12 Problems of a small population

Population size is one of the factors that has to be considered when the health status of a population is assessed by means of mortality or morbidity data. In countries with small populations, the annual numbers of events in many categories of the short

lists will be very small, and will fluctuate randomly from year to year. This is especially so for separate age groups and sexes. The problems can be alleviated by one or more of the following measures:

- use or presentation of broad groupings of ICD rubrics, such as chapters;
- aggregation of data over a longer period, e.g. to take the preceding two years' data together with those for the current year and produce a "moving average" figure;
- using the broadest of the age groupings recommended at 5.6.1 and 5.7.4.

What applies for small national populations also holds true in general for subnational segments of larger populations. Investigations of health issues in population subgroups have to take into consideration the effect of the size of each of the subgroups on the type of analysis used. This need is generally recognized when dealing with sample surveys, but often overlooked when the investigation concerns the health problems of special groups in the national population.

5.13 'Empty cells' and cells with low frequencies

Whatever list of causes is being used, it may be found that no cases occur in certain cells of a statistical table. Where there are many empty lines in a table, it is worth considering the omission of such lines from a published table or from a computer printout. When only the occasional case of a disease occurs in a country, the line can be regularly omitted from the published table and a footnote added to indicate either that there were no cases or, when sporadic cases do occur, in which cell the case would have appeared.

For cells with very low frequencies, especially those relating to diseases that would not be expected to occur, it is important to establish that the cases existed and did not result from a coding or processing error. This should be carried out as part of the general quality control of the data.

5.14 Recommendations

Responsibility for medical certification of cause of death (see Section 5.2)

The medical certification of the cause of death is normally the responsibility of the attending physician. In the case of deaths certified by coroners or other legal authorities, the medical evidence supplied to the certifier should be stated on the certificate in addition to any legal findings.

Form of medical certificate of cause of death (see Annex 7.1)

The medical certificate of cause of death should be in line with the international recommendation (see Annex 7.1). Collection of perinatal mortality statistics should be consistent with the recommendations presented in Section 4.4.1.

Confidentiality of medical information (see Section 5.2)

Administrative procedures should ensure the confidentiality of data from the death certificate or other medical records.

Selection of the cause for mortality tabulation (see Section 4.1.1)

The causes of death to be entered on the medical certificate of cause of death are all diseases, morbid conditions or injuries resulting in or contributing to death and the circumstances of the accident or violence resulting in injuries. 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 and guidelines given in the ICD.

Use of the International Classification of Diseases (see sections 2.1, 2.2 and 3.3)

The purpose of the ICD is to permit the systematic recording, analysis, interpretation and comparison of mortality and morbidity data collected in different countries or areas and at different times. The 'core' classification of ICD-10 is the three-character code, which is the mandatory level of coding for international reporting to the WHO mortality database and for general international comparisons. The four-character subcategories, while not mandatory for reporting at the international level, are recommended for many purposes and form an integral part of the ICD, as do the special tabulation lists.

Mortality and morbidity statistics should be coded according to the tabular list of inclusions and the alphabetical index. Fourth-character subcategories, when published, should be those of the ICD. Any additions or variations should be indicated in published statistical tables.

Perinatal mortality statistics (see sections 5.7.2 and 5.7.3)

It is recommended that all fetuses and infants weighing at least 500 g at birth, whether alive or dead, should be included in *national* statistics. When information on birth weight is unavailable, the corresponding criteria for gestational age (22 completed weeks) or body length (25 cm crown-heel) should be used. The criteria for deciding whether an event has taken place within the perinatal period should be applied in the order: (1) birth weight; (2) gestational age; (3) crown-heel length. The inclusion of fetuses and infants weighing between 500 g and 1000 g in national statistics is recommended both because of its inherent value and because it improves the coverage of reporting at 1000 g and over.

In statistics for international comparison, inclusion of the extremely low-birth-weight group disrupts the validity of comparisons and is not recommended. Countries should also present statistics in which both the numerator and the

denominator of all ratios and rates are restricted to fetuses and infants weighing 1000 g or more (weight-specific ratios and rates); where information on birth weight is not available, the corresponding gestational age (28 completed weeks) or body length (35 cm crown-heel) should be used.

Maternal mortality statistics (see sections 5.8.2 and 5.8.3)

Published maternal mortality rates should always specify the numerator, which can be given as: the number of recorded direct obstetric deaths, or the number of recorded obstetric deaths (direct plus indirect). For the purpose of international reporting of maternal mortality, only those maternal deaths occurring before the end of the 42-day reference period should be included in the calculation of the various ratios and rates, although the recording of later deaths is useful for national analytical purposes.

Statistical tables (see sections 5.6.1 and 5.7.4)

The degree of detail in cross-classification by cause, sex, age, and geographical area will depend both on the purpose and range of the statistics and on the practical limits to their tabulation. Standard ways of presenting statistics are described in sections 5.6.1 and 5.7.4 to promote international compatibility.

Tabulation of causes of death (see sections 5.6.2 and 5.6.4)

Statistics of causes of death for a defined area should be in accordance with recommendations in Section 5.6.1. Deaths should preferably be classified by sex and age group as in recommendations in Section 5.6.1. For statistics of perinatal mortality, full-scale multiple-cause analysis of all conditions reported will be of greatest benefit. Where such analysis is impracticable, analysis of the main disease or condition in the fetus or infant and of the main maternal condition affecting the fetus or infant with cross-tabulation of groups of these two conditions should be regarded as the minimum. Where it is necessary to select only one condition, the main disease or condition in the fetus or infant should be selected.

6.   History of the development of the ICD[4]

6.1   Early history

Sir George Knibbs, the eminent Australian statistician, credited François Bossier de Lacroix (1706–1777), better known as Sauvages, with the first attempt to classify diseases systematically (*10*). Sauvages' comprehensive treatise was published under the title *Nosologia methodica*. A contemporary of Sauvages was the great methodologist Linnaeus (1707–1778), one of whose treatises was entitled *Genera morborum*. At the beginning of the 19th century, the classification of disease in most general use was one by William Cullen (1710–1790), of Edinburgh, which was published in 1785 under the title *Synopsis nosologiae methodicae*.

For all practical purposes, however, the statistical study of disease began a century earlier with the work of John Graunt on the London Bills of Mortality. The kind of classification envisaged by this pioneer is exemplified by his attempt to estimate the proportion of liveborn children who died before reaching the age of six years, no records of age at death being available. He took all deaths classed as thrush, convulsions, rickets, teeth and worms, abortives, chrysomes, infants, livergrown, and overlaid and added to them half the deaths classed as smallpox, swinepox, measles, and worms without convulsions. Despite the crudity of this classification his estimate of a 36% mortality before the age of six years appears from later evidence to have been a good one. While three centuries have contributed something to the scientific accuracy of disease classification, there are many who doubt the usefulness of attempts to compile statistics of disease, or even causes of death, because of the difficulties of classification. To these, one can quote Major Greenwood: "The scientific purist, who will wait for medical statistics until they are nosologically exact, is no wiser than Horace's rustic waiting for the river to flow away" (*11*).

Fortunately for the progress of preventive medicine, the General Register Office of England and Wales, at its inception in 1837, found in William Farr (1807–1883) – its first medical statistician – a man who not only made the best possible use of the imperfect classifications of disease available at the time, but laboured to secure better classifications and international uniformity in their use.

---

[4]   Most of the material presented in sections 6.1–6.3 is reproduced from the Introduction to the Seventh Revision of the ICD, which gives an excellent description of the early history of the classification.

Farr found the classification of Cullen in use in the public services of his day. It had not been revised to embody the advances of medical science, nor was it deemed by him to be satisfactory for statistical purposes. In the first Annual Report of the Registrar General (*12*), therefore, he discussed the principles that should govern a statistical classification of disease and urged the adoption of a uniform classification as follows:

> The advantages of a uniform statistical nomenclature, however imperfect, are so obvious, that it is surprising no attention has been paid to its enforcement in Bills of Mortality. Each disease has, in many instances, been denoted by three or four terms, and each term has been applied to as many different diseases: vague, inconvenient names have been employed, or complications have been registered instead of primary diseases. The nomenclature is of as much importance in this department of inquiry as weights and measures in the physical sciences, and should be settled without delay.

Both nomenclature and statistical classification received constant study and consideration by Farr in his annual "Letters" to the Registrar General published in the Annual Reports of the Registrar General. The utility of a uniform classification of causes of death was so strongly recognized at the first International Statistical Congress, held in Brussels in 1853, that the Congress requested William Farr and Marc d'Espine, of Geneva, to prepare an internationally applicable, uniform classification of causes of death. At the next Congress, in Paris in 1855, Farr and d'Espine submitted two separate lists which were based on very different principles. Farr's classification was arranged under five groups: epidemic diseases, constitutional (general) diseases, local diseases arranged according to anatomical site, developmental diseases, and diseases that are the direct result of violence. D'Espine classified diseases according to their nature (gouty, herpetic, haematic, etc.). The Congress adopted a compromise list of 139 rubrics. In 1864, this classification was revised in Paris on the basis of Farr's model and was subsequently further revised in 1874, 1880, and 1886. Although this classification was never universally accepted, the general arrangement proposed by Farr, including the principle of classifying diseases by anatomical site, survived as the basis of the International List of Causes of Death.

6.2   Adoption of the International List of Causes of Death

The International Statistical Institute, the successor to the International Statistical Congress, at its meeting in Vienna in 1891, charged a committee, chaired by Jacques Bertillon (1851–1922), Chief of Statistical Services of the City of Paris, with the preparation of a classification of causes of death. It is of interest to note that Bertillon was the grandson of Achille Guillard, a noted botanist and statistician, who had introduced the resolution requesting Farr and d'Espine to prepare a uniform classification at the first International Statistical Congress in 1853. The report of this committee was presented by Bertillon at the meeting of the International Statistical Institute in Chicago in 1893 and adopted by it. The classification prepared by Bertillon's committee was based on the classification of causes of death used by the

City of Paris, which, since its revision in 1885, represented a synthesis of English, German, and Swiss classifications. The classification was based on the principle, adopted by Farr, of distinguishing between general diseases and those localized to a particular organ or anatomical site. In accordance with the instructions of the Vienna Congress made at the suggestion of L. Guillaume, the Director of the Federal Bureau of Statistics of Switzerland, Bertillon included three classifications: the first, an abridged classification of 44 titles; the second, a classification of 99 titles; and the third, a classification of 161 titles.

The Bertillon Classification of Causes of Death, as it was first called, received general approval and was adopted by several countries, as well as by many cities. The classification was first used in North America by Jesus E. Monjaras for the statistics of San Luis de Potosi, Mexico (*13*). In 1898, the American Public Health Association, at its meeting in Ottawa, Canada, recommended the adoption of the Bertillon Classification by registrars of Canada, Mexico, and the United States of America. The Association further suggested that the classification should be revised every ten years.

At the meeting of the International Statistical Institute at Christiania in 1899, Bertillon presented a report on the progress of the classification, including the recommendations of the American Public Health Association for decennial revisions. The International Statistical Institute then adopted the following resolution (*14*):

> The International Statistical Institute, convinced of the necessity of using in the different countries comparable nomenclatures:
>
> Learns with pleasure of the adoption by all the statistical offices of North America, by some of those of South America, and by some in Europe, of the system of cause of death nomenclature presented in 1893;
>
> Insists vigorously that this system of nomenclature be adopted in principle and without revision, by all the statistical institutions of Europe;
>
> Approves, at least in its general lines, the system of decennial revision proposed by the American Public Health Association at its Ottawa session (1898):
>
> Urges the statistical offices who have not yet adhered, to do so without delay, and to contribute to the comparability of the cause of death nomenclature.

The French Government therefore convoked in Paris, in August 1900, the first International Conference for the Revision of the Bertillon or International List of Causes of Death. Delegates from 26 countries attended this Conference. A detailed classification of causes of death consisting of 179 groups and an abridged classification of 35 groups were adopted on 21 August 1900. The desirability of decennial revisions was recognized, and the French Government was requested to call the next meeting in 1910. In fact the next conference was held in 1909, and the

Government of France called succeeding conferences in 1920, 1929 and 1938.

Bertillon continued to be the guiding force in the promotion of the International List of Causes of Death, and the revisions of 1900, 1910 and 1920 were carried out under his leadership. As Secretary‑General of the International Conference, he sent out the provisional revision for 1920 to more than 500 people, asking for comments. His death in 1922 left the International Conference without a guiding hand.

At the 1923 session of the International Statistical Institute, Michel Huber, Bertillon's successor in France, recognized this lack of leadership and introduced a resolution for the International Statistical Institute to renew its stand of 1893 in regard to the International Classification of Causes of Death and to cooperate with other international organizations in preparation for subsequent revisions. The Health Organization of the League of Nations had also taken an active interest in vital statistics and appointed a Commission of Statistical Experts to study the classification of diseases and causes of death, as well as other problems in the field of medical statistics. E. Roesle, Chief of the Medical Statistical Service of the German Health Bureau and a member of the Commission of Expert Statisticians, prepared a monograph that listed the expansion in the rubrics of the 1920 International List of Causes of Death that would be required if the classification was to be used in the tabulation of statistics of morbidity. This careful study was published by the Health Organization of the League of Nations in 1928 (*15*). In order to coordinate the work of both agencies, an international commission, known as the "Mixed Commission", was created with an equal number of representatives from the International Statistical Institute and the Health Organization of the League of Nations. This Commission drafted the proposals for the Fourth (1929) and the Fifth (1938) revisions of the International List of Causes of Death.

6.3   The Fifth Decennial Revision Conference

The Fifth International Conference for the Revision of the International List of Causes of Death, like the preceding conferences, was convened by the Government of France and was held in Paris in October 1938. The Conference approved three lists: a detailed list of 200 titles, an intermediate list of 87 titles and an abridged list of 44 titles. Apart from bringing the lists up to date in accordance with the progress of science, particularly in the chapter on infectious and parasitic diseases, and changes in the chapters on puerperal conditions and on accidents, the Conference made as few changes as possible in the contents, number, and even in the numbering of the items. A list of causes of stillbirth was also drawn up and approved by the Conference.

As regards classification of diseases for morbidity statistics, the Conference recognized the growing need for a corresponding list of diseases to meet the statistical requirements of widely differing organizations, such as health insurance organizations, hospitals, military medical services, health administrations, and similar bodies. The following resolution, therefore, was adopted (*16*):

2. International Lists of Diseases

In view of the importance of the compilation of international lists of diseases corresponding to the international lists of causes of death:

The Conference recommends that the Joint Committee appointed by the International Institute of Statistics and the Health Organization of the League of Nations undertake, as in 1929, the preparation of international lists of diseases, in conjunction with experts and representatives of the organizations specially concerned.

Pending the compilation of international lists of diseases, the Conference recommends that the various national lists in use should, as far as possible, be brought into line with the detailed International List of Causes of Death (the numbers of the chapters, headings and subheadings in the said List being given in brackets).

The Conference further recommended that the Government of the United States of America continue its studies of the statistical treatment of joint causes of death in the following resolution (*16*):

3.   Death Certificate and Selection of Causes of Death where more than One Cause is given (Joint Causes)

The Conference,

Whereas, in 1929, the United States Government was good enough to undertake the study of the means of unifying the methods of selection of the main cause of death to be tabulated in those cases where two or more causes are mentioned on the death certificate,

And whereas, the numerous surveys completed or in the course of preparation in several countries reveal the importance of this problem, which has not yet been solved,

And whereas, according to these surveys, the international comparability of death rates from the various diseases requires, not only the solution of the problem of the selection of the main tabulated cause of death, but also the solution of a number of other questions;

(1) Warmly thanks the United States Government for the work it has accomplished or promoted in this connection;

(2) Requests the United States Government to continue its investigations during the next ten years, in co‑operation with other countries and organizations, on a slightly wider basis, and

(3) Suggests that, for these future investigations, the United States Government should set up a subcommittee comprising representatives of countries and organizations participating in the investigations undertaken in this connection.

6.4   Previous classifications of diseases for morbidity statistics

In the discussion so far, classification of disease has been presented almost wholly in relation to cause‑of‑death statistics. Farr, however, recognized that it was desirable "to extend the same system of nomenclature to diseases which, though not fatal, cause disability in the population, and now figure in the tables of the diseases of armies, navies, hospitals, prisons, lunatic asylums, public institutions of every kind, and sickness societies, as well as in the census of countries like Ireland, where the diseases of all the people are enumerated" (*9*). In his *Report on nomenclature and statistical classification of diseases*, presented to the Second International Statistical Congress, he therefore included in the general list of diseases most of those diseases that affect health as well as diseases that are fatal. At the Fourth International Statistical Congress, held in London in 1860, Florence Nightingale urged the adoption of Farr's classification of diseases for the tabulation of hospital morbidity in the paper, *Proposals for a uniform plan of hospital statistics*.

At the First International Conference to revise the Bertillon Classification of Causes of Death in Paris in 1900, a parallel classification of diseases for use in statistics of sickness was adopted. A parallel list was also adopted at the second conference in 1909. The extra categories for non‑fatal diseases were formed by subdivision of certain rubrics of the cause‑of‑death classification into two or three disease groups, each of these being designated by a letter. The translation in English of the Second Decennial Revision, published by the United States Department of Commerce and Labor in 1910, was entitled *International Classification of Causes of Sickness and Death*. Later revisions incorporated some of the groups into the detailed International List of Causes of Death. The Fourth International Conference adopted a classification of illness which differed from the detailed International List of Causes of Death only by the addition of further subdivisions of 12 titles. These international classifications of illnesses, however, failed to receive general acceptance, as they provided only a limited expansion of the basic cause‑of‑death list.

In the absence of a uniform classification of diseases that could be used satisfactorily for statistics of illness, many countries found it necessary to prepare their own lists. A Standard Morbidity Code was prepared by the Dominion Council of Health of Canada and published in 1936. The main subdivisions of this code represented the 18 chapters of the 1929 Revision of the International List of Causes of Death, and these were subdivided into some 380 specific disease categories. At the Fifth International Conference in 1938, the Canadian delegate introduced a modification of this list for consideration as the basis for an international list of causes of illness. Although no action was taken on this proposal, the Conference adopted the resolution quoted above.

In 1944, provisional classifications of diseases and injuries were published in both the United Kingdom and the United States for use in the tabulation of morbidity statistics. Both classifications were more extensive than the Canadian list, but, like

it, followed the general order of diseases in the International List of Causes of Death. The British classification was prepared by the Committee on Hospital Morbidity Statistics of the Medical Research Council, which was created in January 1942. It is entitled *A provisional classification of diseases and injuries for use in compiling morbidity statistics* (*17*). It was prepared with the purpose of providing a scheme for collecting and recording statistics of patients admitted to hospitals in the United Kingdom, using a standard classification of diseases and injuries, and was used throughout the country by governmental and other agencies.

A few years earlier, in August 1940, the Surgeon‑General of the United States Public Health Service and the Director of the United States Bureau of the Census published a list of diseases and injuries for tabulation of morbidity statistics (*18*). The code was prepared by the Division of Public Health Methods of the Public Health Service in cooperation with a committee of consultants appointed by the Surgeon‑General. *The Manual for coding causes of illness according to a diagnosis code for tabulating morbidity statistics*, consisting of the diagnosis code, a tabular list of inclusions, and an alphabetical index, was published in 1944. The code was used in several hospitals, in a large number of voluntary hospital insurance plans and medical care plans, and in special studies by other agencies in the United States.

6.5   United States Committee on Joint Causes of Death

In compliance with the resolution of the Fifth International Conference, the American Secretary of State in 1945 appointed the United States Committee on Joint Causes of Death under the chairmanship of Lowell J. Reed, Professor of Biostatistics at Johns Hopkins University. Members and consultants of this committee included representatives of the Governments of Canada and the United Kingdom and the Health Section of the League of Nations. The committee recognized the general trend of thought with regard to lists of morbidity and mortality statistics, and decided that, before taking up the matter of joint causes, it would be advantageous to consider classifications from the point of view of morbidity and mortality, since the problem of joint causes pertained to both types of statistics.

The committee also took into account that part of the resolution on International Lists of Diseases of the previous International Conference recommending that the "various national lists in use should, as far as possible, be brought into line with the detailed International List of Causes of Death". It recognized that the classification of sickness and injury is closely linked with the classification of causes of death. The view that such lists are fundamentally different arises from the erroneous belief that the International List is a classification of terminal causes, whereas it is in fact based upon the morbid condition that initiated the train of events ultimately resulting in death. The committee believed that, in order to utilize fully both morbidity and mortality statistics, not only should the classification of diseases for both purposes be comparable, but if possible there should be a single list.

Furthermore, an increasing number of statistical organizations were using medical records involving both sickness and death. Even in organizations that compile only morbidity statistics, fatal as well as non‑fatal cases must be coded. A single list, therefore, greatly facilitates their coding operations. It also provides a common base for comparison of morbidity and mortality statistics.

A subcommittee was therefore appointed, which prepared a draft of a Proposed Statistical Classification of Diseases, Injuries and Causes of Death. A final draft was adopted by the committee after it had been modified on the basis of trials undertaken by various agencies in Canada, the United Kingdom and the United States of America.

6.6   Sixth Revision of the International Lists

The International Health Conference held in New York City in June and July 1946 (*19*) entrusted the Interim Commission of the World Health Organization with the responsibility of:

> reviewing the existing machinery and of undertaking such preparatory work as may be necessary in connection with:

> (i)   the next decennial revision of "The International Lists of Causes of Death" (including the lists adopted under the International Agreement of 1934, relating to Statistics of Causes of Death); and

> (ii) the establishment of International Lists of Causes of Morbidity

To meet this responsibility, the Interim Commission appointed the Expert Committee for the Preparation of the Sixth Decennial Revision of the International Lists of Diseases and Causes of Death.

This Committee, taking full account of prevailing opinion concerning morbidity and mortality classification, reviewed and revised the above‑mentioned proposed classification which had been prepared by the United States Committee on Joint Causes of Death.

The resulting classification was circulated to national governments preparing morbidity and mortality statistics for comments and suggestions under the title, *International Classification of Diseases, Injuries, and Causes of Death*. The Expert Committee considered the replies and prepared a revised version incorporating such changes as appeared to improve the utility and acceptability of the classification. The Committee also compiled a list of diagnostic terms to appear under each title of the classification. Furthermore, a subcommittee was appointed to prepare a comprehensive alphabetical index of diagnostic statements classified to the appropriate category of the classification.

The Committee also considered the structure and uses of special lists of causes for tabulation and publication of morbidity and mortality statistics and studied other

problems related to the international comparability of mortality statistics, such as form of medical certificate and rules for classification.

The International Conference for the Sixth Revision of the International Lists of Diseases and Causes of Death was convened in Paris from 26 to 30 April 1948 by the Government of France under the terms of the agreement signed at the close of the Fifth Revision Conference in 1938. Its secretariat was entrusted jointly to the competent French authorities and to the World Health Organization, which had carried out the preparatory work under the terms of the arrangement concluded by the governments represented at the International Health Conference in 1946 (*19*).

The Conference adopted the classification prepared by the Expert Committee as the Sixth Revision of the International Lists (*20*). It also considered other proposals of the Expert Committee concerning the compilation, tabulation and publication of morbidity and mortality statistics. The Conference approved the International Form of Medical Certificate of Cause of Death, accepted the underlying cause of death as the main cause to be tabulated, and endorsed the rules for selecting the underlying cause of death as well as the special lists for tabulation of morbidity and mortality data. It further recommended that the World Health Assembly should adopt regulations under *Article 21*(*b*) of the WHO Constitution to guide Member States in compiling morbidity and mortality statistics in accordance with the International Statistical Classification.

In 1948, the First World Health Assembly endorsed the report of the Sixth Revision Conference and adopted World Health Organization Regulations No. 1, prepared on the basis of the recommendations of the Conference. The International Classification, including the Tabular List of Inclusions defining the content of the categories, was incorporated, together with the form of the medical certificate of cause of death, the rules for classification and the special lists for tabulation, into the *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death* (*21*). The Manual consisted of two volumes, Volume 2 being an alphabetical index of diagnostic terms coded to the appropriate categories.The Sixth Decennial Revision Conference marked the beginning of a new era in international vital and health statistics. Apart from approving a comprehensive list for both mortality and morbidity and agreeing on international rules for selecting the underlying cause of death, it recommended the adoption of a comprehensive programme of international cooperation in the field of vital and health statistics. An important item in this programme was the recommendation that governments establish national committees on vital and health statistics to coordinate the statistical activities in the country, and to serve as a link between the national statistical institutions and the World Health Organization. It was further envisaged that such national committees would, either singly or in cooperation with other national committees, study statistical problems of public health importance and make the results of their investigations available to WHO.

213

6.7   The Seventh and Eighth Revisions

The International Conference for the Seventh Revision of the International Classification of Diseases was held in Paris under the auspices of WHO in February 1955 (*22*). In accordance with a recommendation of the WHO Expert Committee on Health Statistics, this revision was limited to essential changes and amendments of errors and inconsistencies (*23*).

The Eighth Revision Conference convened by WHO met in Geneva, from 6 to 12 July 1965 (*24*). This revision was more radical than the Seventh but left unchanged the basic structure of the Classification and the general philosophy of classifying diseases, whenever possible, according to their etiology rather than a particular manifestation.

During the years that the Seventh and Eighth Revisions of the ICD were in force, the use of the ICD for indexing hospital medical records increased rapidly and some countries prepared national adaptations which provided the additional detail needed for this application of the ICD.

6.8   The Ninth Revision

The International Conference for the Ninth Revision of the International Classification of Diseases, convened by WHO, met in Geneva from 30 September to 6 October 1975 (*25*). In the discussions leading up to the conference, it had originally been intended that there should be little change other than updating of the classification. This was mainly because of the expense of adapting data‑processing systems each time the classification was revised. There had been an enormous growth of interest in the ICD and ways had to be found of responding to this, partly by modifying the classification itself and partly by introducing special coding provisions. A number of representations were made by specialist bodies which had become interested in using the ICD for their own statistics. Some subject areas in the classification were regarded as inappropriately arranged and there was considerable pressure for more detail and for adaptation of the classification to make it more relevant for the evaluation of medical care, by classifying conditions to the chapters concerned with the part of the body affected rather than to those dealing with the underlying generalized disease. At the other end of the scale, there were representations from countries and areas where a detailed and sophisticated classification was irrelevant, but which nevertheless needed a classification based on the ICD in order to assess their progress in health care and in the control of disease.

The final proposals presented to and accepted by the Conference retained the basic structure of the ICD, although with much additional detail at the level of the four‑digit subcategories, and some optional five‑digit subdivisions. For the benefit of users not requiring such detail, care was taken to ensure that the categories at the three‑digit level were appropriate.

For the benefit of users wishing to produce statistics and indexes oriented towards medical care, the Ninth Revision included an optional alternative method of classifying diagnostic statements, including information about both an underlying general disease and a manifestation in a particular organ or site. This system became known as the dagger and asterisk system and is retained in the Tenth Revision. A number of other technical innovations were included in the Ninth Revision, aimed at increasing its flexibility for use in a variety of situations.

The Twenty-ninth World Health Assembly, noting the recommendations of the International Conference for the Ninth Revision of the International Classification of Diseases, approved the publication, for trial purposes, of supplementary classifications of Impairments and Handicaps and of Procedures in Medicine as supplements to, but not as integral parts of, the International Classification of Diseases. The Conference also made recommendations on a number of related technical subjects: coding rules for mortality were amended slightly and rules for the selection of a single cause for tabulation of morbidity were introduced for the first time; definitions and recommendations for statistics in the field of perinatal mortality were amended and extended and a certificate of causes of perinatal death was recommended; countries were encouraged to do further work on multiple-condition coding and analysis, but no formal methods were recommended; and a new basic tabulation list was produced.

6.9   Preparations for the Tenth Revision

Even before the Conference for the Ninth Revision, WHO had been preparing for the Tenth Revision. It had been realized that the great expansion in the use of the ICD necessitated a thorough rethinking of its structure and an effort to devise a stable and flexible classification, which should not require fundamental revision for many years to come. The WHO Collaborating Centres for Classification of Diseases (see Volume 1) were consequently called upon to experiment with models of alternative structures for ICD-10.

It had also become clear that the established 10 year interval between revisions was too short. Work on the revision process had to start before the current version of the ICD had been in use long enough to be thoroughly evaluated, mainly because the necessity to consult so many countries and organizations made the process a very lengthy one. The Director-General of WHO therefore wrote to the Member States and obtained their agreement to postpone until 1989 the Tenth Revision Conference, which was originally scheduled for 1985 and to delay the introduction of the Tenth Revision which would have been due in 1989. In addition to permitting experimentation with alternative models for the structure of the ICD, this allowed time for the evaluation of ICD-9, for example through meetings organized by some of the WHO Regional Offices and through a survey organized at headquarters.

An extensive programme of work followed which culminated in the Tenth Revision of the ICD and is described in the Report of the International Conference for the Tenth Revision of the International Classification of Diseases, reproduced in Volume 1.

7.   Annexes

7.1   International form of medical certificate of cause of death

7.1.1   International form of medical certificate of cause of death

Additional data, that might be necessary for the reporting system of countries, can be added to the certificate. It should not replace the information shown below.

Administrative Data (can be further specified by country)			
Sex	☐ Female	☐ Male	☐ Unknown
Date of birth	D D M M Y Y Y Y	Date of death	D D M M Y Y Y Y

Frame 1: Medical data: Part I and II			
1 Report disease or condition directly leading to death on line a	a	Cause of death	Time interval from onset to death
Report chain of events in due to order (if applicable)	b	Due to:	
	c	Due to:	
State the underlying cause on the lowest used line	d	Due to:	
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)			

Frame 2: Other medical data			
Was **surgery** performed within the last 4 weeks?	☐ Yes	☐ No	☐ Unknown
If yes please specify date of surgery			D D M M Y Y Y Y
If yes please specify reason for surgery (disease or condition)			
Was an autopsy requested?	☐ Yes	☐ No	☐ Unknown
If yes were the findings used in the certification?	☐ Yes	☐ No	☐ Unknown

Manner of death:

☐ Disease	☐ Assault	☐ Could not be determined
☐ Accident	☐ Legal intervention	☐ Pending investigation
☐ Intentional self harm	☐ War	☐ Unknown

If External cause or poisoning:	Date of injury	D D M M Y Y Y Y
Please describe how external cause occurred (If poisoning please specify poisoning agent)		

Place of occurrence of the external cause:

☐ At home	☐ Residential institution	☐ School, other institution, public administrative area	☐ Sports and athletics area
☐ Street and highway	☐ Trade and service area	☐ Industrial and construction area	☐ Farm
☐ Other place (please specify):			☐ Unknown

Fetal or infant Death			
Multiple pregnancy	☐ Yes	☐ No	☐ Unknown
Stillborn?	☐ Yes	☐ No	☐ Unknown
If death within 24h specify number of hours survived		Birth weight (in grams)	
Number of completed weeks of pregnancy		Age of mother (years)	
If death was perinatal, please state conditions of mother that affected the fetus and newborn			

For women, was the deceased pregnant?	☐ Yes	☐ No	☐ Unknown
☐ At time of death	☐ Within 42 days before the death		
☐ Between 43 days up to 1 year before death	☐ Unknown		
Did the pregnancy contribute to the death?	☐ Yes	☐ No	☐ Unknown

7.1.2 Cause of Death on the Death Certificate In line with ICD-10 - Quick reference guide-

-Quick reference guide-

Cause of Death
on the
Death Certificate
In line with ICD-10

World Health Organization

Cause of death information serves
-epidemiology and prevention
-managing health care
-comparing health in different populations

Certification of death is one of the first steps in getting an overview of the health of people.

The diseases or conditions recorded on a death certificate represent the best medical opinion.

A properly completed cause-of-death certificate provides a description of the order, type and association of events that have resulted in the death.

The diagnoses reported on the certificate are coded with the International Classification of Diseases, 10th edition. This coded data is analyzed and used both nationally and internationally no matter what language was used to complete the certification.

www.who.int/classifications   © WHO 2015

Frequently used ill-defined terms

Accident	Specify **circumstances** Specify **intent**, as 'car accident' suicidal, or assault'; Specify **place** of occurrence
Alcohol, drugs	Specify **use**: long term or single, addiction
Complication of surgery	Specify **disease**: disease that caused surgery
Dementia	Specify **cause**: Alzheimer, infarction, old age, other
Hepatitis	Specify **course, etiology**: acute or chronic, alcoholic If **viral**: specify Type (A, B, C, ...)
Infarction	Specify **site**: heart, brain, ... Specify **cause**: arteriosclerotic, thrombotic, embolic ...
Infection	Specify: primary or secondary, causative **organism** If **primary**: specify bacterial or viral If **secondary**: specify the primary infection
Leukaemia	Specify: acute, subacute, chronic lymphatic, myeloid, monocytic
Pneumonia	Specify: primary, aspiration, **cause**, causative organism If due to **immobility**: specify the cause of the immobility
Pulmonary embolism	Specify **cause**: cause of embolism If **post-surgical or immobility: specify disease that** caused surgery or immobility
Renal failure	Specify: acute, chronic or terminal, underlying **cause** of insufficiency, like arteriosclerosis, or infection If due to **immobility**: specify the cause of the immobility
Thrombosis	Specify: arterial or venous Specify: the blood **vessel** If **post-surgical or immobility**: specify disease that caused surgery or immobility
Tumour	Specify: behaviour, location, metastases
Urinary tract infection	Specify: **site** in the urinary tract, causative **organism**, underlying **cause** of infection If due to **immobility**: specify the cause of the immobility

Cause of Death on the certificate - how to fill in?

Frame A: Death certificates may look different in most countries. But the **section on the cause of death** is identical world wide. This is also referred to as '**Frame A**'. It has two parts, called Part 1 and Part 2, and a section to record the time interval between the onset of each condition and the date of death.

Part 1 - is used for diseases or conditions that form part of the **sequence of events** leading directly to death.

The immediate (direct) cause of death is entered on the first line, I(a).

There must always be an entry on line I(a).

The entry on line Ia may be the only condition reported in Part I of the certificate.

Where there are **two or more conditions** that form part of the sequence of events leading directly to death. Each event in the sequence should be recorded on a separate line.

In any case you must record the disease, injury or external cause that resulted in the death. Do no record the **mode of dying**, such as cardiac arrest, respiratory failure or heart failure. Try to be as specific as you can.

"**Unknown**" cause of death should be recorded in cases where thorough testing or autopsy examination cannot determine a cause of death. "Unknown" is better than any speculation on the possible cause of death. Always fully spell out all terms. **Abbreviations** can be interpreted in different ways. Terms such as "suspected" or "possible" are ignored in evaluation of the entries. For example "suspected Diabetes" will be interpreted as "Diabetes". The four lines may not provide enough space for the chain of events. Do not waste space with **unnecessary words**. Some clinical terms are very vague. For example, "tumour" does not specify behaviour (see also last page of this flyer).

Duration - is the time interval between the **onset** of each condition that is entered on the certificate (not the time of diagnosis of the condition), and the date of death. The duration information is useful in coding certain diseases and also provides a useful check on the order of the reported sequence of conditions.

Part 2 - is used for conditions that do not belong in part 1 but whose presence contributed to death.

Frame B: Some detail is frequently forgotten in part 1 and 2 (frame A). Separate detailed questions ask for detail like previous surgery, mode of death or place of occurrence. Frame B is not shown in this information sheet.

Cause of Death on the certificate - step by step

Start at line 1(a), with the immediate (direct) cause, then go back in time to preceding conditions until you get to the one that started the sequence of events. You will get very close to the time the patient was healthy.

Now, you should have reported the underlying or originating cause on the lowest used line and a sequence of events leads from the underlying cause up to the immediate (direct) cause in the first line 1(a).

Finally, record the time interval between the onset of each condition entered on the certificate and the date of death. Where the time or date of onset is not known you should record a best estimate. Enter the unit of time (minutes, hours, days, weeks, months, years).

Example

1	**Cause of death**		Time interval between onset and death
Report disease or condition directly leading to death on line a		Direct cause of death	
	a	Cerebral haemorrhage	4 hours
Report chain of events in due to order (if applicable)		Due to	
	b	Metastasis of the brain	4 months
State the underlying cause on the lowest used line		Due to	
	c	Breast cancer	5 years
		Due to	
	d		
2 Other significant conditions contributing to death (time intervals can be included in brackets after the condition)		Arterial hypertension (3 years); Diabetes mellitus (10 years)	

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

- **Write clearly** and do not use abbreviations.
- Be sure the information is **complete**.
- **Do not speculate** on the cause of death.
- Do not fill in laboratory results or statements like "found by partner". (there may be separate fields on the form for this kind of information)
- **One condition per line** should be sufficient.

7.1.3 Suggested additional detail of stillbirths and liveborn infants dying within 168 hours (1 week) from birth

Identifying particulars									
Child was born live on	D	D	M	M	Y	Y	at hh:mm		hours
This child was stillborn on	D	D	M	M	Y	Y	at hh:mm		hours
	☐ died before labour			☐ during labour			☐ not known		

Mother	Date of birth				D	D	M	M	Y	Y

Number of previous pregnancies	**Date of last pregnancy**	D	D	M	M	Y	Y
Livebirths _____	**Outcome** of last previous pregnancy						
Stillbirths _____	☐ Live birth						
Abortions _____	☐ Stillbirth						
	☐ Abortion						

1st day of last menstrual period	D	D	M	M	Y	Y

Delivery:	**Antenatal care, two or more visits:**
☐ Normal spontaneous vertex	☐ Yes
☐ Other (specify)	☐ No
	☐ Not known

Attendant at birth			
☐ Physician	☐ Trained midwife	☐ Other trained person Specify_____	☐ Other Specify_____

Child			
☐ Single birth	☐ First twin	☐ Second twin	☐ Other multiple (specify)

7.2 List of conditions to be considered direct consequences of surgery and other invasive medical procedures

The list in this section contains conditions that might develop as complications to surgery or other invasive medical procedures. This does not mean that the conditions on the list should always be considered as complications, and the following restrictions apply:

- Do not consider a condition on the list as a complication of surgery or an invasive medical procedure if the surgery or procedure was carried out more than four weeks before death.

- Do not consider a condition on the list as a complication of surgery or an invasive procedure if there is evidence that the condition was present before the

220

surgery or procedure was carried out.

- Do not consider a condition flagged with "OCPR" (Other Cause of Procedure Required) as a complication of surgery or an invasive procedure unless the certificate reports another condition of the same site that was treated by surgery or some other invasive procedure..

- Do not consider a condition flagged with "DSAP" (Duration Stated, developed After Procedure) as a complication unless there is clear evidence that the condition developed after the surgery or invasive procedure.

- Note that adhesions are considered as complications of surgery or an invasive procedure in the same site or region, even after more than four weeks since the date of the surgery or procedure. If the procedure was performed more than one year before death, use the codes for sequelae of medical care.

7.2.1 List of conditions to be considered obvious consequences of surgery

Infections	Flag
abscess	OCPR
bacteraemia	
fistula	OCPR, and for a procedure of the same site or region only
gas gangrene	
infection, haemolytic	
infection NOS	DSAP
infection in surgical wound	
sepsis	
septic	
Haemorrhage, haemolysis	
coagulopathy, consumption	
DIC (disseminated intravascular coagulation)	
haemorrhage NOS	
haemorrhage, gastrointestinal	OCPR
haemorrhage, intraabdominal	OCPR
haemorrhage, rectal	OCPR
haemorrhage, surgical wound	

haemorrhage, specified site	for a procedure of the same site or region only
haematemesis	OCPR
haematoma	OCPR
haemothorax	OCPR
haemolysis	
melaena	OCPR

Cardiac complications	Flag
arrest, cardiac	
arrhythmia NOS	DSAP
asystole	
block, cardiac	DSAP
failure/insufficiency, cardiac	
fibrillation, atrial	DSAP
fibrillation, ventricular	
infarction (myocardial)	
ischaemia, myocardial (acute)	
rupture, myocardial	

Cerebrovascular and other cerebral complications	Flag
apoplexy	DSAP
damage, brain (anoxic)	DSAP
embolism, cerebral	DSAP
haemorrhage, cerebral/intracranial	DSAP
infarction, cerebral	DSAP
ischaemia, cerebral/cerebrovascular	DSAP
lesion, cerebral/cerebrovascular	DSAP
meningitis	DSAP
oedema, cerebral	DSAP

stroke	DSAP
thrombosis, cerebral	DSAP

Other vascular complications	**Flag**
arrest, circulatory	
embolism (arterial)	
embolism, fat/air	
embolism, pulmonary	
embolism, venous	
failure/insufficiency, circulatory	
hypotension	
infarction, pulmonary	
infarction (any site)	
occlusion (any site)	
phlebitis (any site)	
phlebothrombosis (any site)	
thrombophlebitis (any site)	
thrombosis, arterial	
thrombosis, venous	
thrombosis NOS (any site)	

Respiratory complications	**Flag**
alkalosis and acidosis, respiratory	
ARDS (adult respiratory distress syndrome)	
arrest, respiratory	
aspiration	
atelectasis	
bronchitis	DSAP

effusion, pleura

empyema   OCPR

fistula, bronchopleural or oesophageal   OCPR

failure/insufficiency, pulmonary

failure/insufficiency, respiratory

mediastinitis

obstruction, upper airway   OCPR

oedema, laryngeal   OCPR

oedema/hypostasis, pulmonary

pneumonia

pneumothorax   OCPR

Gastrointestinal complications	Flag
abscess, intra-abdominal	OCPR
constipation	OCPR
dilatation, gastric	OCPR
disorder, circulatory, gastrointestinal	OCPR
embolism, mesenterial	OCPR
failure, hepatic	DSAP
fistula, biliary/ bowel/rectovaginal	OCPR
Ileus	OCPR
ischaemia, intestinal	OCPR
necrosis, gastrointestinal	OCPR
obstruction, bowel (mechanical)	OCPR
peritonitis	OCPR
ulcer, gastrointestinal (stress)	OCPR
volvulus	OCPR

Renal and urinary complications	Flag
anuria	
failure/insufficiency, renal	

fistula, urinary	OCPR
infection, urinary	
pyelonephritis	DSAP
retention, urine	
stricture, urethra	OCPR
uraemia	
urosepsis	

Other complications	Flag
adhesions	for a procedure of the same site or region only
shock NOS	
shock, anaphylactic	
"complication(s)" NOS	
crisis, thyrotoxic	DSAP
displacement, prosthesis	
failure, (multi)organ	
Gangrene	
insufficiency, anastomosis	OCPR
necrosis, fat/wound	OCPR
syndrome, compartment	OCPR
seizures (epileptic)	DSAP
ulcer, decubitus	

7.2.2 List of conditions to be considered obvious consequences of other invasive medical procedures

Obvious consequences of cardiac catheterization (Y84.0)
- Sepsis, septic shock
- Bacteraemia
- MRSA
- Fungal sepsis
- Fungaemia
- Vascular catheter or port infection
- Septic thrombophlebitis
- Infectious endocarditis

- Myocardial infarction   *Only if indicated as following the catheterization*
- Coronary thrombosis   *Only if indicated as following the catheterization*
- Coronary embolism   *Only if indicated as following the catheterization*
- Coronary rupture   *Only if indicated as following the catheterization*
- Cardiac arrest
- Cardiac embolism
- Cholesterol embolic syndrome
- Pulmonary embolism
- Haemorrhage
- Blood loss
- Haemoperitoneum
- Cardiogenic shock   *Only if indicated as following the catheterization*
- Hypotensive shock   *Only if indicated as following the catheterization*

B. Obvious consequences of kidney dialysis (Y84.1)
- Sepsis, septic shock
- Bacteraemia
- MRSA
- Infectious endocarditis
- Fungal sepsis
- Fungaemia
- Vascular catheter or port infection
- Septic thrombophlebitis
- Peritonitis
- Pneumonia'
- Hypotension (during dialysis)
- Hypovolemic shock
- Haemorrhage

C. Obvious consequences of radiological procedures and therapy (Y84.2)

Pericarditis	*If radiation of the same site*
Restrictive lung disease	*If radiation of the same site*
Small bowel obstruction	*If radiation of the same site*
Cervical myelitis	*If radiation of the same site*
(Interstitial) fibrosis	*If radiation of the same site*
Osteonecrosis	*If radiation of the same site*
Mucositis	*If radiation of the same site*
Fistula	*If radiation of the same site*
Stricture or scarring	*If radiation of the same site*

D. Obvious consequences of aspiration of fluid (Y84.4)

Haemothorax	*If aspiration or puncture of the same site*
Haemorrhage	*If aspiration or puncture of the same site*

E. Obvious consequences of urinary catheterization (Y84.6)
Urinary tract infection
Urosepsis

F. Obvious consequences of other medical procedures (Y84.8)
 – *Feeding tube, PEG*

Aspiration pneumonia	
Abdominal wound infection	
Abdominal wall infection	*If abscess or infection of PEG site*
Aspiration Fistula	*If fistula of PEG site*

 – Bone marrow transplant
      Sepsis, septic shock
      Bacteraemia
      MRSA
      Fungal sepsis
      Fungaemia
      Necrotizing fasciitis
      Thrombocytopenia
      Graft vs host disease
 – Intravenous line/artery catheter
      Sepsis, septic shock
      Bacteraemia
      MRSA
      Fungal sepsis
      Fungaemia
      Vascular catheter or port infection

Septic thrombophlebitis	*If infection of catheter/port site*

      Infectious endocarditis

Cellulitis	*If from vascular catheter/port site*
Abscess	*If from vascular catheter/port site*
Haematoma	*If from vascular catheter/port site*
Haemorrhage	*If from vascular catheter/port site*
Haemothorax	*If from vascular catheter/port site*

– Resuscitation
  Rib fracture(s)

– Biopsy

Haemorrhage	*If of the same site*
Pneumothorax	*If of the same site*
Adhesions	***If of the same site***

7.3   List of ill-defined conditions

Use this table in Step SP7. Conditions in this table are considered ill-defined.

Category or subcategory	Code
I46.1	Sudden cardiac death
I46.9	Cardiac arrest, unspecified
(I50.-)	Acute heart failure in I50.-
I95.9	Hypotension, unspecified
I99	Circulatory disease, unspecified
J96.0	Acute respiratory failure
J96.9	Respiratory failure, unspecified
P28.5	Respiratory failure of newborn
R00-R57.1, R57.8-R64, R65.2-R65.3, R68.0-R94, R96-R99	Symptoms, signs and abnormal laboratory findings

7.4   List of conditions unlikely to cause death

Code	Category or subcategory title
A31.1	Cutaneous mycobacterial infection
A42.8	Other forms of cutaneous actinomycosis
A53.0	Latent syphilis, unspecified as early or late
A60.0	Herpesviral infection of genitalia and urogenital tract
A63.0	Anogenital (venereal) warts
A71.0–A71.9	Trachoma
A74.0	Chlamydial conjunctivitis
B00.2	Herpesviral gingivostomatitis
B00.5	Herpesviral ocular disease
B00.8	Herpesviral whitlow
B07	Viral warts
B08.1	Molluscum contagiosum
B08.8	Foot and mouth disease
B30.0–B30.9	Viral conjunctivitis
B35.0–B35.9	Dermatophytosis
B36.0–B36.9	Other superficial mycoses
B85.0–B85.4	Pediculosis and phthiriasis
E28.0	Estrogen excess
E28.1	Androgen excess
E28.3	Primary ovarian failure
E28.8	Other ovarian failure
E28.9	Ovarian dysfunction, unspecified
E29.0	Testicular hyperfunction
E29.1	Testicular hypofunction

Code	Category or subcategory title
E29.8	Other testicular dysfunction
E29.9	Testicular dysfunction, unspecified
E30.0	Delayed puberty
E30.1	Precocious puberty
E30.8	Other disorders of puberty
E30.9	Disorder of puberty, unspecified
E34.3	Short stature, not elsewhere classified
E34.4	Constitutional tall stature
E34.5	Androgen resistance syndrome
E65	Localized adiposity
F06.7	Mild cognitive disorder
F32.0	Mild depressive episode
F32.1	Moderate depressive episode
F33.0	Recurrent depressive disorder current episode mild
F33.1	Recurrent depressive disorder current episode moderate
F33.4	Recurrent depressive disorder currently in remission
F45.0	Somatization disorder
F45.1	Undifferentiated somatoform disorder
F45.2	Hypochondriacal disorder
F45.3–F45.9	Somatoform disorders
F50.1, F50.3–F50.9	Eating disorders
F51.0–F51.9	Nonorganic sleep disorders
F52.0–F52.9	Sexual dysfunction, not caused by organic disorder or disease
F53.0	Mild mental and behavioural disorders associated with the puerperium, not elsewhere classified

Code	Category or subcategory title
F60.0–F60.9	Specific personality disorders
F61	Mixed and other personality disorders
F62.0–F62.9	Enduring personality changes, not attributable to brain damage and disease
F63.0–F63.9	Habit and impulse disorders
F64.0–F64.9	Gender identity disorders
F65.0–F65.9	Disorders of sexual preference
F66.0–F66.9	Psychological and behavioural disorders associated with sexual development and orientation
F68.0–F68.9	Other disorders of adult personality and behaviour
F69	Unspecified disorder of adult personality and behaviour
F70.0	Mild mental retardation with the statement of no, or minimal, impairment of behaviour
F71.0	Moderate mental retardation with the statement of no, or minimal, impairment of behaviour
F80–F89	Disorders of psychological development
F93.0	Separation anxiety disorder of childhood
F93.1	Phobic anxiety disorder of childhood
F93.2	Social anxiety disorder of childhood
F93.3	Sibling rivalry disorder
F93.8	Other childhood emotional disorders
F93.9	Childhood emotional disorder, unspecified
F94.0	Elective mutism
F94.1	Reactive attachment disorder of childhood
F94.2	Disinhibited attachment disorder of childhood
F94.8	Other childhood disorders of social functioning
F94.9	Childhood disorder of social functioning unspecified

Code	Category or subcategory title
F95.0–F95.9	Tic disorders
F98.0–F98.9	Other behavioural and emotional disorders with an onset usually occurring in childhood and adolescence
G43.0–G43.2, G43.8–G43.9	Migraine, except complicated migraine (G43.3)
G44.0–G44.2	Other headache syndromes
G44.3	Chronic post-traumatic headache
G44.4	Drug-induced headache, not elsewhere classified
G44.8	Other specified headache syndromes
G45.0–G45.9	Transient cerebral ischaemic attacks and related syndromes
G47.0	Disorder of initiating and maintaining sleep [insomnias]
G47.2	Disorders of the sleep-wake schedule
G50.0–G50.9	Disorders of trigeminal nerve
G51.0–G51.9	Facial nerve disorders
G52.0	Disorders of olfactory nerve
G54.0–G54.9	Nerve root and plexus disorders
G56.0–G56.9	Mononeuropathies of upper limb
G57.0–G57.9	Mononeuropathies of lower limb
G58.0	Intercostal neuropathy
G58.7	Mononeuritis multiplex
H00.0–H00.1	Hordeolum and chalazion
H01.0–H01.9	Other inflammation of eyelid
H02.0–H02.9	Other disorders of eyelid
H04.0–H04.9	Disorders of lacrimal system
H10.0–H10.9	Conjunctivitis
H11.0–H11.9	Other disorders of conjunctiva

Code	Category or subcategory title
H15.0–H15.9	Disorders of sclera
H16.0–H16.9	Keratitis
H17.0–H17.9	Corneal scars and opacities
H18.0–H18.9	Other disorders of cornea
H20.0–H20.9	Iridocyclitis
H21.0–H21.9	Other disorders of iris and ciliary body
H25.0–H25.9	Senile cataract
H26.0–H26.9	Other cataract
H27.0–H27.9	Other disorders of lens
H30.0–H30.9	Chorioretinal inflammation
H31.0–H31.9	Other disorders of choroid
H33.0–H33.5	Retinal detachments and breaks
H34.0–H34.9	Retinal vascular occlusions
H35.0–H35.9	Other retinal disorders
H40.0–H40.9	Glaucoma
H43.0–H43.9	Disorders of vitreous body
H46	Optic neuritis
H47.0–H47.7	Other disorders of optic (2nd) nerve and visual pathways
H49.0–H49.9	Paralytic strabismus
H50.0–H50.9	Other strabismus
H51.0–H51.9	Other disorders of binocular movement
H52.0–H52.7	Disorders of refraction and accommodation
H53.0–H53.9	Visual disturbances
H54.0–H54.7	Blindness and low vision

Code	Category or subcategory title
H55	Nystagmus and other irregular eye movements
H57.0–H57.9	Other disorders of eye and adnexa
H60.0–H60.9	Otitis externa
H61.0–H61.9	Other disorders of external ear
H68.1	Obstruction of Eustachian tube
H69.0	Patulous Eustachian tube
H69.8	Other specified disorders of Eustachian tube
H69.9	Eustachian tube disorder, unspecified
H72.0	Central perforation of tympanic membrane
H72.1	Attic perforation of tympanic membrane
H72.2	Other marginal perforations of tympanic membrane
H72.8	Other perforations of tympanic membrane
H72.9	Perforation of tympanic membrane, unspecified
H73.8	Other specified disorders of tympanic membrane
H73.9	Disorder of tympanic membrane, unspecified
H74.0	Tympanosclerosis
H74.1	Adhesive middle ear disease
H74.2	Discontinuity and dislocation of ear ossicles
H74.3	Other acquired abnormalities of ear ossicles
H74.4	Polyp of middle ear
H74.8	Other specified disorders of middle ear and mastoid
H74.9	Disorder of middle ear and mastoid, unspecified
H80.0–H80.9	Otosclerosis
H81.0	Ménière's disease
H81.1	Benign paroxysmal vertigo
H81.2	Vestibular neuronitis

Code	Category or subcategory title
H81.3	Other peripheral vertigo
H81.4	Vertigo of central origin
H81.8	Other disorders of vestibular function
H81.9	Disorder of vestibular function, unspecified
H83.0	Labyrinthitis
H83.1	Labyrinthine fistula
H83.2	Labyrinthine dysfunction
H83.3–H83.9	Other diseases of inner ear
H90.0–H90.8	Conductive and sensorineural hearing loss
H91.0–H91.9	Other hearing loss
H92.0–H92.2	Otalgia and effusion of ear
H93.0–H93.9	Other disorders of ear, not elsewhere classified
J00	Acute nasopharyngitis [common cold]
J01.9	Acute sinusitis, unspecified
J06.0–J06.9	Acute upper respiratory infections of multiple and unspecified sites
J30.0–J30.4	Vasomotor and allergic rhinitis
J33.0–J33.9	Nasal polyp
J34.1	Cyst and mucocele of nose and nasal sinus
J34.2	Deviated nasal septum
J34.3	Hypertrophy of nasal turbinates
J35.0–J35.9	Chronic disease of tonsils and adenoids
K00.0–K00.9	Disorders of tooth development and eruption
K01.0–K01.1	Embedded and impacted teeth
K02.0–K02.9	Dental caries

Code	Category or subcategory title
K03.0–K03.9	Other diseases of hard tissues of teeth
K04.0–K04.9	Diseases of pulp and periapical tissues
K05.0–K05.6	Gingivitis and periodontal diseases
K06.0–K06.9	Other disorders of gingiva and edentulous alveolar ridge
K07.0–K07.9	Dentofacial anomalies (including malocclusion)
K08.0–K08.9	Other disorders of teeth and supporting structures
K09.0–K09.9	Cyst of oral region, not elsewhere classified
K10.0–K10.9	Other diseases of jaws
K11.0–K11.9	Diseases of salivary glands
K13.1	Cheek and lip biting
K14.0–K14.9	Diseases of tongue
K59.1	Functional diarrhoea
K59.2	Neurogenic bowel, not elsewhere classified
K59.4	Anal spasm
L01.0–L01.1	Impetigo (for infants over 1 year of age)
L03.0	Cellulitis of finger and toe
L04.0–L04.9	Acute lymphadenitis
L05.0–L05.9	Pilonidal cyst
L08.0–L08.8	Other local infections of skin and subcutaneous tissue
L20.0–L20.9	Atopic dermatitis
L21.0–L21.9	Seborrhoeic dermatitis
L22	Diaper [napkin] dermatitis
L23.0–L23.9	Allergic contact dermatitis
L24.0–L24.9	Irritant contact dermatitis
L25.0–L25.9	Unspecified contact dermatitis
L28.0–L28.2	Lichen simplex chronicus and prurigo

Code	Category or subcategory title
L29.0–L29.9	Pruritus
L30.0–L30.9	Other dermatitis
L40.0	Psoriasis vulgaris
L40.4	Guttate psoriasis
L41.0–L41.9	Parapsoriasis
L42	Pityriasis rosea
L43.0–L43.9	Lichen planus
L44.0–L44.9	Other papulosquamous disorders
L50.2	Urticaria due to cold and heat
L50.3	Dermatographic urticaria
L50.4	Vibratory urticaria
L50.5	Cholinergic urticaria
L50.6	Contact urticaria
L53.9	Erythematous condition, unspecified
L55.0–L55.1, L55.8–L55.9	Sunburn, except sunburn of third degree (L55.2)
L56.0–L56.9	Other acute skin changes due to ultraviolet radiation
L57.0–L57.9	Skin changes due to chronic exposure to nonionizing radiation
L58.0–L58.9	Radiodermatitis
L59.0–L59.9	Other disorders of skin and subcutaneous tissue related to radiation
L60.0–L60.9	Nail disorders
L63.0–L63.9	Alopecia areata
L64.0–L64.9	Androgenic alopecia
L65.0–L65.9	Other nonscarring hair loss

237

Code	Category or subcategory title
L66.0–L66.9	Cicatricial alopecia [scarring hair loss]
L67.0–L67.9	Hair colour and hair shaft abnormalities
L68.0–L68.9	Hypertrichosis
L70.0–L70.9	Acne
L71.0	Perioral dermatitis
L71.1	Rhinophyma
L71.8	Other rosacea
L71.9	Rosacea, unspecified
L72.0–L72.9	Follicular cysts of skin and subcutaneous tissue
L73.0–L73.9	Other follicular disorders
L74.0–L74.9	Eccrine sweat disorders
L75.0–L75.9	Aprocrine sweat disorders
L80	Vitiligo
L81.0–L81.9	Other disorders of pigmentation
L82	Seborrhoeic keratosis
L83	Acanthosis nigricans
L84	Corns and callosities
L85.0–L85.9	Other epidermal thickening
L87.0–L87.9	Transepidermal elimination disorders
L90.0–L90.9	Atrophic disorders of skin
L91.0–L91.9	Hypertrophic disorders of skin
L92.0–L92.9	Granulomatous disorders of skin and subcutaneous tissue
L94.0–L94.9	Other localized connective tissue disorders
L95.0	Livedoid vasculitis
L98.0–L98.3, L98.5–L95.9	Other disorders of skin and subcutaneous tissue, not elsewhere classified

Code	Category or subcategory title
M12.2	Villonodular synovitis (pigmented)
M12.3	Palindromic rheumatism2
M20.0–M20.6	Acquired deformities of fingers and toes
M21.0–M21.9	Other acquired deformities of limbs
M22.0–M22.9	Disorders of patella
M23.0–M23.9	Internal derangement of knee
M24.0–M24.9	Other specific joint derangements
M25.0–M25.8	Other joint disorders, not elsewhere classified
M35.3	Polymyalgia rheumatica
M40.0–M40.5	Kyphosis and lordosis
M41.0	Infantile idiopathic scoliosis
M41.1	Juvenile idiopathic scoliosis
M41.2	Other idiopathic scoliosis
M41.3	Thoracogenic scoliosis
M41.4	Neuromuscular scoliosis
M41.5	Other secondary scoliosis
M41.8	Other forms of scoliosis
M41.9	Scoliosis, unspecified
M43.6	Torticollis, unspecified
M43.8–M43.9	Other and unspecified deforming dorsopathies
M48.0	Spinal stenosis (except for the cervical region)
M53.0–M53.9	Other dorsopathies, not elsewhere classified
M54.0–M54.9	Dorsalgia
M60.0–M60.9	Myositis
M62.4	Contracture of muscle

Code	Category or subcategory title
M62.5	Muscle wasting and atrophy, not elsewhere classified
M62.6	Muscle strain
M65.0–M65.9	Synovitis and tenosynovitis
M66.0–M66.5	Spontaneous rupture of synovium and tendon
M67.0–M67.9	Other disorders of synovium and tendon
M70.0–M70.9	Soft tissue disorders related to use, overuse and pressure
M71.0–M71.9	Other bursopathies
M72.0	Palmar fascial fibromatosis [Dupuytren]
M72.1	Knuckle pads
M72.2	Plantar fascial fibromatosis
M75.0–M75.9	Shoulder lesions
M76.0–M76.9	Enthesopathies of lower limb, excluding foot
M77.0–M77.9	Other enthesopathies
M79.0–M79.9	Other soft tissue disorders, not elsewhere classified
M89.1	Epiphyseal arrest
M89.2	Other disorders of bone development and growth
M89.3	Hypertrophy of bone
M89.4	Other hypertrophic osteoarthropathy
M91.2	Coxa plana
M91.3	Pseudocoxalgia
M91.8	Other juvenile osteochondrosis of hip and pelvis
M91.9	Juvenile osteochondrosis of hip and pelvis, unspecified
M92.0	Juvenile osteochondrosis of humerus
M92.1	Juvenile osteochondrosis of radius and ulna
M92.2	Juvenile osteochondrosis of hand
M92.3	Other juvenile osteochondrosis of upper limb

Code	Category or subcategory title
M92.4	Juvenile osteochondrosis of patella
M92.5	Juvenile osteochondrosis of tibia and fibula
M92.6	Juvenile osteochondrosis of tarsus
M92.7	Juvenile osteochondrosis of metatarsus
M92.8	Other specified juvenile osteochondrosis
M92.9	Juvenile osteochondrosis, unspecified
M95.0–M95.9	Other acquired deformities of musculoskeletal system and connective tissue
M99.0–M99.9	Biomechanical lesions, not elsewhere classified
N39.3	Stress incontinence
N39.4	Other specified urinary incontinence
N42.2	Atrophy of prostate
N46	Male infertility
N47	Redundant prepuce, phimosis, and paraphimosis
N48.3	Priapism
N48.4	Impotence of organic origin
N50.0	Atrophy of testis
N60.0–N60.9	Benign mammary dysplasia
N62	Hypertrophy of breast
N64.2	Atrophy of breast
N64.3	Galactorrhoea not associated with childbirth
N64.4	Mastodynia
N64.5	Other signs and symptoms in breast
N75.0	Cyst of Bartholin's gland
N84.0–N84.9	Polyp of female genital tract

Code	Category or subcategory title
N85.0–N85.9	Other noninflammatory disorders of uterus, except cervix
N86	Erosion and ectropion of cervix uteri
N87.0–N87.9	Dysplasia of cervix uteri
N88.0–N88.9	Other noninflammatory disorders of cervix uteri
N89.0–N89.9	Other noninflammatory disorders of vagina
N90.0–N90.9	Other noninflammatory disorders of vulva and perineum
N91.0–N91.5	Absent, scanty, and rare menstruation
N92.0–N92.6	Excessive, frequent, and irregular menstruation
N93.0–N93.9	Other abnormal uterine and vaginal bleeding
N94.0–N94.9	Pain and other conditions associated with female genital organs and menstrual cycle
N95.1	Menopausal and female climacteric states
N95.2	Postmenopausal atrophic vaginitis
N95.3	States associated with artificial menopause
N96	Habitual aborter
N97.0–N97.9	Female infertility
O26.1	Low weight gain in pregnancy
O26.2	Pregnancy care of habitual aborter
O28.0	Abnormal haematological finding on antenatal screening of mother
O28.1	Abnormal biochemical finding on antenatal screening of mother
O28.2	Abnormal cytological finding on antenatal screening of mother
O28.3	Abnormal ultrasonic finding on antenatal screening of mother
O28.4	Abnormal radiological finding on antenatal screening of

Code	Category or subcategory title
	mother
O28.5	Abnormal chromosomal and genetic finding on antenatal screening of mother
O28.8	Other abnormal findings on antenatal screening of mother
O28.9	Abnormal finding on antenatal screening of mother, unspecified
O92.0	Retracted nipple associated with childbirth
O92.2	Other and unspecified disorders of breast associated with childbirth
O92.3	Agalactia
O92.4	Hypogalactia
O92.5	Suppressed lactation
O92.6	Galactorrhoea
O92.7	Other and unspecified disorders of lactation
Q10.0–Q10.7	Congenital malformations of eyelid, lacrimal apparatus and orbit
Q11.0–Q11.3	Anophthalmos, microphthalmos and macrophthalmos
Q12.0–Q12.9	Congenital lens malformations
Q13.0–Q13.9	Congenital malformations of anterior segment of eye
Q14.0–Q14.9	Congenital malformations of posterior segment of eye
Q15.0–Q15.9	Other congenital malformations of eye
Q16.0–Q16.9	Congenital malformations of ear causing impairment of hearing
Q17.0–Q17.9	Other congenital malformations of ear
Q18.0–Q18.9	Other congenital malformations of face and neck
Q38.1	Tongue tie
Q50.0	Congenital absence of ovary

Code	Category or subcategory title
Q51.0	Agenesis and aplasia of uterus
Q51.1	Doubling of uterus with doubling of cervix and vagina
Q51.2	Other doubling of uterus
Q51.3	Bicornate uterus
Q51.4	Unicornate uterus
Q52.1	Doubling of vagina
Q52.6	Congenital malformation of clitoris
Q54.0	Hypospadias, balanic
Q54.1	Hypospadias, penile
Q54.2	Hypospadias, penoscrotal
Q54.3	Hypospadias, perineal
Q54.4	Congenital chordee
Q54.8	Other hypospadias
Q54.9	Hypospadias, unspecified
Q55.0	Absence and aplasia of testis
Q55.1	Hypoplasia of testis and scrotum
Q55.5	Congenital absence and aplasia of penis
Q56.0	Hermaphroditism, not elsewhere classified
Q56.1	Male pseudohermaphroditism, not elsewhere classified
Q56.2	Female pseudohermaphroditism, not elsewhere classified
Q56.3	Pseudohermaphroditism, unspecified
Q56.4	Indeterminate sex, unspecified
Q65.0–Q65.9	Congenital deformities of hip
Q66.0–Q66.9	Congenital deformities of feet
Q67.0–Q67.8	Congenital musculoskeletal deformities of head, face, spine and chest

Code	Category or subcategory title
Q68.0–Q68.8	Other congenital musculoskeletal deformities
Q69.0–Q69.9	Polydactyly
Q70.0–Q70.9	Syndactyly
Q71.0–Q71.9	Reduction defects of upper limb
Q72.0–Q72.9	Reduction defects of lower limb
Q73.0–Q73.8	Reduction defects of unspecified limb
Q74.0–Q74.9	Other congenital malformations of limb(s)
Q75.2	Hypertelorism
Q80.0–Q80.3, Q80.8–Q80.9	Congenital ichthyosis, except Harlequin fetus (Q80.4)
Q81.0	Epidermolysis bullosa simplex
Q81.2–Q81.9	Other forms of epidermolysis bullosa, except epidermolysis bullosa letalis (Q81.1)
Q82.0–Q82.9	Other congenital malformations of skin
Q83.0–Q83.9	Congenital malformations of breast
Q84.0–Q84.9	Other congenital malformations of integument
Q87.1	Congenital malformation syndromes predominantly associated with short stature
Q87.2	Congenital malformation syndromes predominantly involving limbs
S00.0–S00.9	Superficial injury of head
S05.0, S05.1, S05.8	Superficial injuries (any type) of eye and orbit (any part)
S10.0–S10.9	Superficial injury of neck
S20.0–S20.8	Superficial injury of thorax
S30.0–S30.9	Superficial injury of abdomen, lower back and pelvis
S40.0–S40.9	Superficial injury of shoulder and upper arm

Code	Category or subcategory title
S50.0–S50.9	Superficial injury of forearm
S60.0–S60.9	Superficial injury of wrist and hand
S70.0–S70.9	Superficial injury of hip and thigh
S80.0–S80.9	Superficial injury of lower leg
S90.0–S90.9	Superficial injury of ankle and foot
T09.0	Superficial injury of trunk, level unspecified
T11.0	Superficial injury of upper limb, level unspecified
T13.0	Superficial injury of lower limb, level unspecified
T14.0	Superficial injury of unspecified body region
T20.1	Burn of first degree of head and neck
T21.1	Burn of first degree of trunk
T22.1	Burn of first degree of shoulder and upper limb, except wrist and hand
T23.1	Burn of first degree of wrist and hand
T24.1	Burn of first degree of hip and lower limb except ankle and foot
T25.1	Burn of first degree of ankle and foot

7.5   Causes of HIV

Use this list in Step SP3–SP4.

C00-C96	S97-S99
D47.7	T01-T08
D50-D53	T09.1
D55-D59	T09.8-T09.9
D60-D64	T10
D65-D69	T11.1
F11	T11.6-T11.9
F13-F16	T12
F19	T13.1
R75	T13.6-T13.9
S01-S02	T14.1-T14.2
S07-S09.0	T14.5
S09.7-S09.9	T14.7-T14.9
S11-S12	T15-T32
S15	T80.2
S17-S19	T80.8-T80.9
S21-S22	T90.1
S28-S29	T90.8-T90.9
S31-S32	T91.1-T92.2
S35-S39	TT92.6-T92.9
S41-S42	T93.0-T93.2
S45	T93.6-T93.9
S47-S49	T94-T95
S51-S52	T98
S55	Y60
S57-S59	Y62
S65	Y64
S67-S69	Y83-Y84
S71-S72	
S75	
S77-S79	
S81-S82	
S85	
S87-S89	
S95	

247

7.6 List of conditions that can cause diabetes

Acceptable sequences for diabetes "due to" other diseases

Type of Diabetes	Due to	Type of Diabetes	Due to
E10	B25.2		only)
	E40-E46		D13.6-D13.7
	E63.9		D35.0
	E64.0		E05-E06
	E64.9		E22.0
	M35.9		E24
	P35.0		E80.0-E80.2
E11	E24		E83.1
	E40-E46		E84
	E63.9		E89.1
	E64.0		F10.1-F10.2
	E64.9		G10
	M35.9		G11.1
	O24.4		G25.8
	P35.0		G71.1
E12	E40-E46		K85
	E63.9		K86.0-K86.1
	E64.0		K86.8-K86.9
	E64.9		M35.9
E13	B25.2		O24.4
	B26.3		P35.0
	C25		Q87.1
	C78.8 (pancreas		Q90

INTERNATIONAL CLASSIFICATION OF DISEASES

Type of Diabetes	Due to	Type of Diabetes	Due to
	Q96		E05-E06
	Q98		E22.0
	Q99.8		E24
	S36.2		E40-E46
	T37.3		E63.9
	T37.5		E64.0
	T38.0-T38.1		E64.9
	T42.0		E80.0-E80.2
	T46.5		E83.1
	T46.7		E84
	T50.2		E89.1
	Y41.3		F10.1-F10.2
	Y41.5		G10
	Y42.0-Y42.1		G11.1
	Y46.2		G25.8
	Y52.5		G71.1
	Y52.7		K85
	Y54.3		K86.0-K86.1
E14	B25.2		K86.8-K86.9
	B26.3		M35.9
	C25		O24.4
	C78.8 (pancreas only)		P35.0
	D13.6-D13.7		Q87.1
	D35.0		Q90

249

Type of Diabetes	Due to	Type of Diabetes	Due to
	Q96		T46.7
	Q98		T50.2
	Q99.8		Y41.3
	S36.2		Y41.5
	T37.3		Y42.0-Y42.1
	T37.5		Y46.2
	T38.0-T38.1		Y52.5
	T42.0		Y52.7
	T46.5		Y54.3

7.7   Priority Ranking of ICD-10 Nature-of-Injury Codes

(1= Highest priority rank)

Code	Rank	Code	Rank
S00.0-S00.9	6	S08.0-S08.1	6
S01.0-S01.8	6	S08.8-S08.9	4
S01.9	5	S09.0	5
S02.0	3	S09.1-S09.2	6
S02.1	4	S09.7	4
S02.2-S02.6	6	S09.8	6
S02.7	3	S09.9	3
S02.8	4	S10.0-S10.1	6
S02.9	3	S10.7-S10.9	6
S03.0	5	S11.0	4
S03.1-S03.2	6	S11.1	5
S03.3	5	S11.2	4
S03.4-S03.5	6	S11.7	5
S04.0-S04.9	6	S11.8	6
S05.0-S05.6	6	S11.9	3
S05.7	5	S12.0-S12.7	3
S05.8-.S05.9	6	S12.8	3
S06.0	6	S12.9	3
S06.1-S06.2	1	S13.0	6
S06.3-S06.6	2	S13.1	3
S06.7	1	S13.2	5
S06.8	2	S13.3	3
S06.9	2	S13.4	5
S07.0	5	S13.5-S13.6	6
S07.1	1	S14.0	5
S07.8-S07.9	1	S14.1	3

Code	Rank	Code	Rank
S14.2-S14.5	6	S25.3	3
S14.6	5	S25.4	1
S15.0	1	S25.5	4
S15.1	2	S25.7	3
S15.2-S15.3	3	S25.8	4
S15.7-S15.9	1	S25.9	4
S16	6	S26.0	3
S17.0	3	S26.8-S26.9	2
S17.8	3	S27.0-S27.2	3
S17.9	3	S27.3-S27.5	2
S18	1	S27.6	4
S19.7	3	S27.7	1
S19.8	4	S27.8-S27.9	2
S19.9	5	S28.0-S28.1	3
S20.0-S20.8	6	S29.0	6
S21.0	6	S29.7	3
S21.1-S21.9	5	S29.8	6
S22.0-S22.1	5	S29.9	3
S22.2-S22.3	6	S30.0-S30.9	6
S22.4	5	S31.0-S31.1	6
S22.5	2	S31.2-S31.3	5
S22.8-S22.9	5	S31.4-S31.8	6
S23.0	6	S32.0-S32.3	6
S23.1-S23.2	5	S32.4	5
S23.3-S23.5	6	S32.5	6
S24.0-S24.1	4	S32.7-S32.8	5
S24.2-S24.6	5	S33.0-S33.2	6
S25.0	1	S33.3	5
S25.1	5	S33.4-S33.6	6
S25.2	1	S33.7	5

INTERNATIONAL CLASSIFICATION OF DISEASES

Code	Rank	Code	Rank
S34.0-S34.6	6	S42.9	5
S34.8	5	S43.0-S43.7	6
S35.0-S35.1	1	S44.0-S44.9	6
S35.2	3	S45.0-S45.1	3
S35.3	2	S45.2-S45.9	5
S35.4	5	S46.0-S46.9	6
S35.5	3	S47	5
S35.7	2	S48.0-S48.9	3
S35.8-S35.9	5	S49.7	5
S36.0-S36.9	3	S49.8-S49.9	6
S37.0-S37.9	5	S50.0-S50.9	6
S38.0	6	S51.0-S51.9	6
S38.1	5	S52.0-S52.9	5
S38.2	4	S53.0-S53.4	6
S38.3	3	S54.0-S54.9	6
S39.0	6	S55.0	6
S39.6	3	S55.1-S55.9	5
S39.7	4	S56.0-S56.9	6
S39.8	6	S57.0-S57.9	6
S39.9	4	S58.0-S58.9	4
S40.0-S40.9	6	S59.7	4
S41.0-S41.7	6	S59.8	6
S41.8	5	S59.9	5
S42.0	6	S60.0-S60.9	6
S42.1-S42.2	5	S61.0-S61.9	6
S42.3	5	S62.0-S62.7	6
S42.4	6	S62.8	5
S42.7-S42.8	5	S63.0-S63.7	6

Code	Rank	Code	Rank
S64.0-S64.9	6	S82.0-S82.9	5
S65.0	6	S83.0-S83.7	6
S65.1	5	S84.0-S84.9	6
S65.2-S65.8	6	S85.0	5
S65.9	5	S85.1-S85.2	6
S66-S68.3S66.0-S66.9	6	S85.3	5
S67.0-S67.8	6	S85.4-S85.5	6
S68.0-S68.3	6	S85.7	5
S68.4-S68.9	4	S85.8	6
S69.7-S69.9	5	S85.9	5
S70.0-S70.9	6	S86.0-S86.7	6
S71.0-S71.8	6	S86.8	5
S72.0-S72.2	3	S86.9	6
S72.3-S72.9	4	S87.0	6
S73.0-S73.1	6	S87.8	5
S74.0-S74.1	6	S88.0-S88.1	3
S74.2-S74.7	5	S88.9	4
S74.8-S74.9	6	S89.7-S89.9	5
S75.0	4	S90.0-S90.9	6
S75.1	5	S91.0-S91.7	6
S75.2	6	S92.0-S92.9	6
S75.7	5	S93.0-S93.6	6
S75.8	6	S94.0-S94.9	6
S75.9	5	S95.0	6
S76.0-S76.7	6	S95.1	5
S77.0-S77.2	5	S95.2-S95.9	6
S78.0-S78.9	3	S96.0-S96.9	6
S79.7-S79.9	5	S97.0	6
S80.0-S80.9	6	S97.1	5
S81.0-S81.9	6	S97.8	6

254

INTERNATIONAL CLASSIFICATION OF DISEASES

Code	Rank	Code	Rank
S98.0	4	T09.0	6
S98.1-S98.3	6	T09.1	5
S98.4	4	T09.2	6
S99.7-S99.9	5	T09.3	3
T00.0-T00.9	6	T09.4	4
T01.0	6	T09.5	6
T01.1	4	T09.6	1
T01.2-T01.6	6	T09.8-T09.9	5
T01.8	5	T10	5
T01.9	6	T11.0-T11.1	6
T02.0-T02.1	3	T11.2	6
T02.2-T02.4	5	T11.3	5
T02.5-T02.9	3	T11.4	4
T03.0-T03.8	6	T11.5	6
T03.9	5	T11.6	3
T04.0	4	T11.8-T11.9	5
T04.1-.3T04.1-T04.3	5	T12	5
T04.4	5	T13.0-T13.3	6
T04.7	5	T13.4	5
T04.8	4	T13.5	6
T04.9	5	T13.6	3
T05.0-T05.9	3	T13.8	4
T06.0-T06.1	3	T13.9	5
T06.2-T06.4	5	T14.0	6
T06.5	3	T14.1	5
T06.8	5	T14.2	5
T07	2	T14.3-T14.4	6
T08	5	T14.5	5

Code	Rank	Code	Rank
T14.6	6	T24.0-T24.2	6
T14.7	2	T24.3	5
T14.8-T14.9	6	T24.4-T24.6	6
T15.0-T15.8	6	T24.7	5
T15.9	5	T25.0-T25.2	6
T16	6	T25.3	5
T17.0-T17.9	5	T25.4-T25.6	6
T18.0-T18.2	6	T25.7	5
T18.3-T18.4	5	T26.0-T26.2	6
T18.5-T18.9	6	T26.3	5
T19.0-T19.1	6	T26.4-T26.6	6
T19.2	5	T26.7-T26.9	5
T19.3-T19.8	6	T27.0-T27.7	3
T19.9	5	T28.0	5
T20.0-T20.2	6	T28.1-T28.4	3
T20.3	3	T28.5	6
T20.4-T20.6	6	T28.6-T28.9	3
T20.7	3	T29.0	3
T21.0-T21.2	6	T29.1-T29.2	6
T21.3	3	T29.3	3
T21.4-T21.6	6	T29.4-T29.6	6
T21.7	3	T29.7	3
T22.0-T22.2	6	T30.0	3
T22.3	5	T30.1-T30.2	6
T22.4-T22.6	6	T30.3-T30.4	3
T22.7	5	T30.5-T30.6	6
T23.0-T23.2	6	T30.7	3
T23.3	5	T31.0-T31.1	5
T23.4-T23.6	6	T31.2	4
T23.7	5	T31.3	3

Code	Rank	Code	Rank
T31.4-T31.6	2	T69.8	4
T31.7-T31.9	1	T69.9	4
T32.0-T32.1	5	T70.0	5
T32.2	4	T70.1	4
T32.3	3	T70.2	3
T32.4-T32.5	2	T70.3	5
T32.6	3	T70.4-T70.8	6
T32.7-T32.9	1	T70.9	5
T33.0-T33.9	6	T71	1
T34.0-T34.4	6	T73.0	3
T34.5	5	T73.1	5
T34.6-T34.9	6	T73.2	6
T35.0	6	T73.3	5
T35.1	4	T73.8-T73.9	6
T35.2-T35.5	6	T74.0-T74.9	6
T35.6	6	T75.0	4
T35.7	5	T75.1	2
T66	6	T75.2-T75.3	6
T67.0	3	T75.4	3
T67.1-T67.3	6	T75.8	6
T67.4	3	T76	6
T67.5-T67.6	6	T90.0-T90.4	6
T67.7	2	T90.5	3
T67.8	6	T90.8	6
T67.9	5	T90.9	3
T68	3	T91.0-T91.1	6
T69.0	6	T91.2-T91.3	4
T69.1	5	T91.4	3

Code	Rank	Code	Rank
T91.5-T91.8	6	T93.5-T93.9	6
T91.9	1	T94.0-T94.1	3
T92.0-T92.2	5	T95.0	6
T92.3-T92.8	6	T95.1	5
T92.9	3	T95.2-T95.3	6
T93.0	6	T95.8-T95.9	3
T93.1	5	T98.0-T98.1	1
T93.2-T93.3	6	T95.4	3
T93.4	5	T98.2	6

7.8 List of code categories limited to, or more likely to occur in, just one sex

7.8.1 List of categories limited to, or more likely to occur in, female persons

A34	D06.0	E28.3	N73.5	N80.5
B37.3	D06.1	E28.8	N73.6	N80.6
C51.0	D06.7	E28.9	N73.8	N80.8
C51.1	D06.9	E89.4	N73.9	N80.9
C51.2	D07.0	F52.5	N74.0	N81.0
C51.8	D07.1	F53.0	N74.1	N81.1
C51.9	D07.2	F53.1	N74.2	N81.2
C52	D07.3	F53.8	N74.3	N81.3
C53.0	D25.0	F53.9	N74.4	N81.4
C53.1	D25.1	F84.2	N74.8	N81.5
C53.8	D25.2	I86.3	N75.0	N81.6
C53.9	D25.9	L29.2	N75.1	N81.8
C54.0	D26.0	L70.5	N75.8	N81.9
C54.1	D26.1	M80.0	N75.9	N82.0
C54.2	D26.7	M80.1	N76.0	N82.1
C54.3	D26.9	M81.0	N76.1	N82.2
C54.8	D27	M81.1	N76.2	N82.3
C54.9	D28.0	M83.0	N76.3	N82.4
C55	D28.1	N70.0	N76.4	N82.5
C56	D28.2	N70.1	N76.5	N82.8
C57.0	D28.7	N70.9	N76.6	N82.9
C57.1	D28.9	N71.0	N76.8	N83.0
C57.2	D39.0	N71.1	N77.0	N83.1
C57.3	D39.1	N71.9	N77.1	N83.2
C57.4	D39.2	N72	N77.8	N83.3
C57.7	D39.7	N73.0	N80.0	N83.4
C57.8	D39.9	N73.1	N80.1	N83.5
C57.9	E28.0	N73.2	N80.2	N83.6
C58	E28.1	N73.3	N80.3	N83.7
C79.6	E28.2	N73.4	N80.4	N83.8

N83.9	N89.8	N95.0	O03.3	O07.0
N84.0	N89.9	N95.1	O03.4	O07.1
N84.1	N90.0	N95.2	O03.5	O07.2
N84.2	N90.1	N95.3	O03.6	O07.3
N84.3	N90.2	N95.8	O03.7	O07.4
N84.8	N90.3	N95.9	O03.8	O07.5
N84.9	N90.4	N96	O03.9	O07.6
N85.0	N90.5	N97.0	O04.0	O07.7
N85.1	N90.6	N97.1	O04.1	O07.8
N85.2	N90.7	N97.2	O04.2	O07.9
N85.3	N90.8	N97.3	O04.3	O08.0
N85.4	N90.9	N97.4	O04.4	O08.1
N85.5	N91.0	N97.8	O04.5	O08.2
N85.6	N91.1	N97.9	O04.6	O08.3
N85.7	N91.2	N98.0	O04.7	O08.4
N85.8	N91.3	N98.1	O04.8	O08.5
N85.9	N91.4	N98.2	O04.9	O08.6
N86	N91.5	N98.3	O05.0	O08.7
N87.0	N92.0	N98.8	O05.1	O08.8
N87.1	N92.1	N98.9	O05.2	O08.9
N87.2	N92.2	N99.2	O05.3	O10.0
N87.9	N92.3	N99.3	O05.4	O10.1
N88.0	N92.4	O00.0	O05.5	O10.2
N88.1	N92.5	O00.1	O05.6	O10.3
N88.2	N92.6	O00.2	O05.7	O10.4
N88.3	N93.0	O00.8	O05.8	O10.9
N88.4	N93.8	O00.9	O05.9	O11
N88.8	N93.9	O01.0	O06.0	O12.0
N88.9	N94.0	O01.1	O06.1	O12.1
N89.0	N94.1	O01.9	O06.2	O12.2
N89.1	N94.2	O02.0	O06.3	O13
N89.2	N94.3	O02.1	O06.4	O14.0
N89.3	N94.4	O02.8	O06.5	O14.1
N89.4	N94.5	O02.9	O06.6	O14.2
N89.5	N94.6	O03.0	O06.7	O14.9
N89.6	N94.8	O03.1	O06.8	O15.0
N89.7	N94.9	O03.2	O06.9	O15.1

O15.2	O26.3	O32.3	O36.0	O60.0
O15.9	O26.4	O32.4	O36.1	O60.1
O16	O26.5	O32.5	O36.2	O60.2
O20.0	O26.6	O32.6	O36.3	O60.3
O20.8	O26.7	O32.8	O36.4	O61.0
O20.9	O26.8	O32.9	O36.5	O61.1
O21.0	O26.9	O33.0	O36.6	O61.8
O21.1	O28.0	O33.1	O36.7	O61.9
O21.2	O28.1	O33.2	O36.8	O62.0
O21.8	O28.2	O33.3	O36.9	O62.1
O21.9	O28.3	O33.4	O40	O62.2
O22.0	O28.4	O33.5	O41.0	O62.3
O22.1	O28.5	O33.6	O41.1	O62.4
O22.2	O28.8	O33.7	O41.8	O62.8
O22.3	O28.9	O33.8	O41.9	O62.9
O22.4	O29.0	O33.9	O42.0	O63.0
O22.5	O29.1	O34.0	O42.1	O63.1
O22.8	O29.2	O34.1	O42.2	O63.2
O22.9	O29.3	O34.2	O42.9	O63.9
O23.0	O29.4	O34.3	O43.0	O64.0
O23.1	O29.5	O34.4	O43.1	O64.1
O23.2	O29.6	O34.5	O43.2	O64.2
O23.3	O29.8	O34.6	O43.8	O64.3
O23.4	O29.9	O34.7	O43.9	O64.4
O23.5	O30.0	O34.8	O44.0	O64.5
O23.9	O30.1	O34.9	O44.1	O64.8
O24.0	O30.2	O35.0	O45.0	O64.9
O24.1	O30.8	O35.1	O45.8	O65.0
O24.2	O30.9	O35.2	O45.9	O65.1
O24.3	O31.0	O35.3	O46.0	O65.2
O24.4	O31.1	O35.4	O46.8	O65.3
O24.9	O31.2	O35.5	O46.9	O65.4
O25	O31.8	O35.6	O47.0	O65.5
O26.0	O32.0	O35.7	O47.1	O65.8
O26.1	O32.1	O35.8	O47.9	O65.9
O26.2	O32.2	O35.9	O48	O66.0

O66.1	O71.8	O81.5	O89.1	O98.2
O66.2	O71.9	O82.0	O89.2	O98.3
O66.3	O72.0	O82.1	O89.3	O98.4
O66.4	O72.1	O82.2	O89.4	O98.5
O66.5	O72.2	O82.8	O89.5	O98.6
O66.8	O72.3	O82.9	O89.6	O98.7
O66.9	O73.0	O83.0	O89.8	O98.8
O67.0	O73.1	O83.1	O89.9	O98.9
O67.8	O74.0	O83.2	O90.0	O99.0
O67.9	O74.1	O83.3	O90.1	O99.1
O68.0	O74.2	O83.4	O90.2	O99.2
O68.1	O74.3	O83.8	O90.3	O99.3
O68.2	O74.4	O83.9	O90.4	O99.4
O68.3	O74.5	O84.0	O90.5	O99.5
O68.8	O74.6	O84.1	O90.8	O99.6
O68.9	O74.7	O84.2	O90.9	O99.7
O69.0	O74.8	O84.8	O91.0	O99.8
O69.1	O74.9	O84.9	O91.1	P54.6
O69.2	O75.0	O85	O91.2	Q50.0
O69.3	O75.1	O86.0	O92.0	Q50.1
O69.4	O75.2	O86.1	O92.1	Q50.2
O69.5	O75.3	O86.2	O92.2	Q50.3
O69.8	O75.4	O86.3	O92.3	Q50.4
O69.9	O75.5	O86.4	O92.4	Q50.5
O70.0	O75.6	O86.8	O92.5	Q50.6
O70.1	O75.7	O87.0	O92.6	Q51.0
O70.2	O75.8	O87.1	O92.7	Q51.1
O70.3	O75.9	O87.2	O94	Q51.2
O70.9	O80.0	O87.3	O95	Q51.3
O71.0	O80.1	O87.8	O96.0	Q51.4
O71.1	O80.8	O87.9	O96.1	Q51.5
O71.2	O80.9	O88.0	O96.9	Q51.6
O71.3	O81.0	O88.1	O97.0	Q51.7
O71.4	O81.1	O88.2	O97.1	Q51.8
O71.5	O81.2	O88.3	O97.9	Q51.9
O71.6	O81.3	O88.8	O98.0	Q52.0
O71.7	O81.4	O89.0	O98.1	Q52.1

Q52.2	Q97.9	Y76.0	Z35.1	Z37.2
Q52.3	R87.0	Y76.1	Z35.2	Z37.3
Q52.4	R87.1	Y76.2	Z35.3	Z37.4
Q52.5	R87.2	Y76.3	Z35.4	Z37.5
Q52.6	R87.3	Y76.8	Z35.5	Z37.6
Q52.7	R87.4	Z01.4	Z35.6	Z37.7
Q52.8	R87.5	Z12.4	Z35.7	Z37.9
Q52.9	R87.6	Z30.1	Z35.8	Z39.0
Q96.0	R87.7	Z30.3	Z35.9	Z39.1
Q96.1	R87.8	Z30.5	Z36.0	Z39.2
Q96.2	R87.9	Z31.1	Z36.1	Z64.0
Q96.4	S31.4	Z31.2	Z36.2	Z64.1
Q96.8	S37.4	Z32.0	Z36.3	Z87.5
Q96.9	S37.5	Z32.1	Z36.4	Z91.7
Q97.0	S37.6	Z33	Z36.5	Z97.5
Q97.1	T19.2	Z34.0	Z36.8	
Q97.2	T19.3	Z34.8	Z36.9	
Q97.3	T83.3	Z34.9	Z37.0	
Q97.8	Y42.4	Z35.0	Z37.1	

7.8.2 **List of categories limited to, or more likely to occur in, male persons**

B26.0	D29.9	N43.0	N50.8	Q55.9
C60.0	D40.0	N43.1	N50.9	Q98.0
C60.1	D40.1	N43.2	N51.0	Q98.1
C60.2	D40.7	N43.3	N51.1	Q98.2
C60.8	D40.9	N43.4	N51.2	Q98.3
C60.9	E29.0	N44	N51.8	Q98.4
C61	E29.1	N45.0	P83.5	Q98.5
C62.0	E29.8	N45.9	Q53.0	Q98.6
C62.1	E29.9	N46	Q53.1	Q98.7
C62.9	E89.5	N47	Q53.2	Q98.8
C63.0	F52.4	N48.0	Q53.9	Q98.9
C63.1	I86.1	N48.1	Q54.0	R86.0
C63.2	L29.1	N48.2	Q54.1	R86.1
C63.7	N40	N48.3	Q54.2	R86.2
C63.8	N41.0	N48.4	Q54.3	R86.3
C63.9	N41.1	N48.5	Q54.4	R86.4
D07.4	N41.2	N48.6	Q54.8	R86.5
D07.5	N41.3	N48.8	Q54.9	R86.6
D07.6	N41.8	N48.9	Q55.0	R86.7
D17.6	N41.9	N49.0	Q55.1	R86.8
D29.0	N42.0	N49.1	Q55.2	R86.9
D29.1	N42.1	N49.2	Q55.3	S31.2
D29.2	N42.2	N49.8	Q55.4	S31.3
D29.3	N42.3	N49.9	Q55.5	Z12.5
D29.4	N42.8	N50.0	Q55.6	
D29.7	N42.9	N50.1	Q55.8	
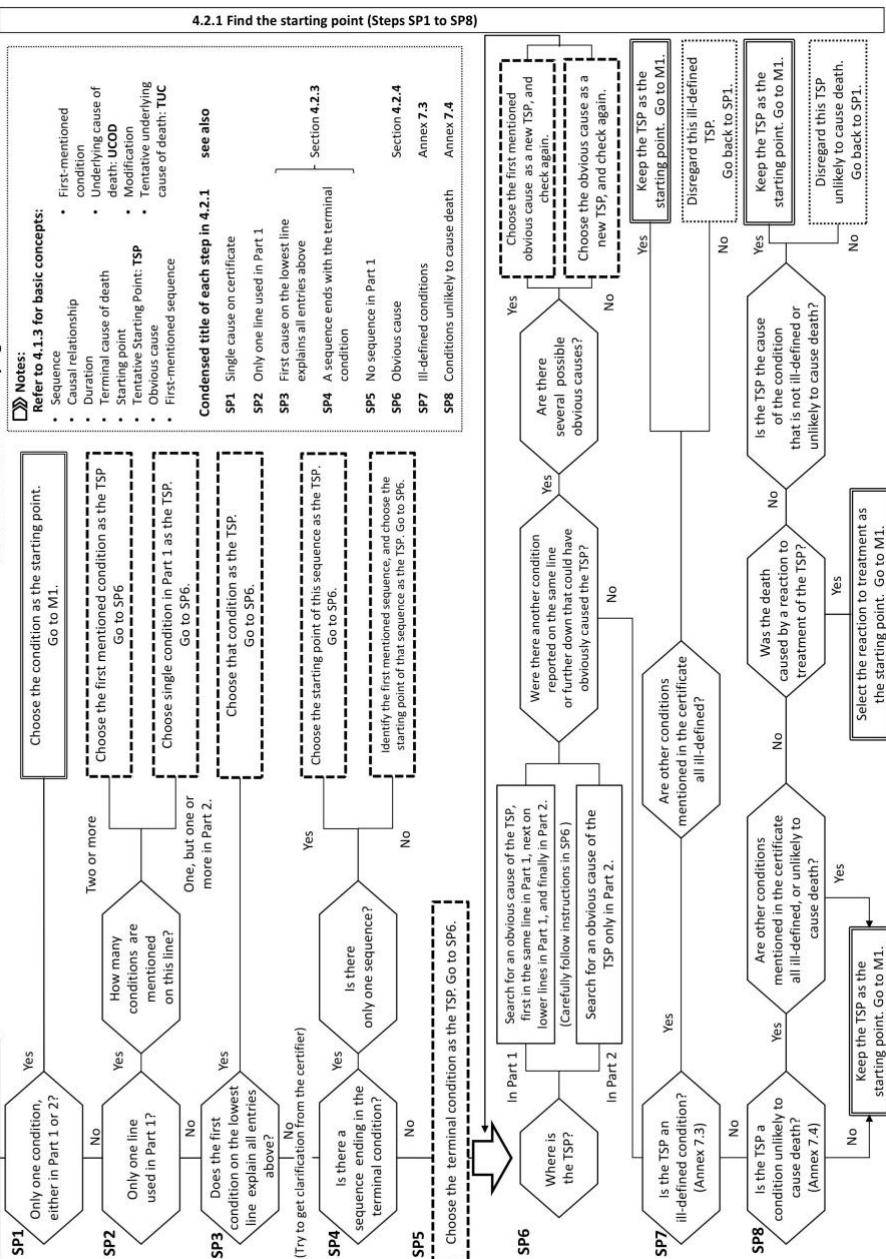
7.9   List of revised terms in the coding instructions for mortality

ICD-10, previous editions	ICD-10, 2016 edition
Originating antecedent cause	Starting point
Originating cause	Starting point
Rules for selection of the originating antecedent cause	Find the starting point
General Principle	Step SP3 - More than one line used in Part 1, first cause on lowest line explains all entries above
Rule 1	Step SP4 – First cause on lowest used line does not explain all entries above, but a sequence ends with the terminal condition
Rule 2	Step SP5 – No sequence in Part 1
Rule 3	Step SP6 – Obvious cause
Rule A. Senility and other ill-defied conditions	Step SP7 – Ill-defined conditions
Rule B. Trivial conditions	Step SP8 – Conditions unlikely to cause death
Modification rules	Check for modifications of the starting point
Rule C. Linkage	Step M1 – Special instructions
Rule D. Specificity	Step M2 – Specificity
"when reported as the originating antecedent cause of"	"when reported as the cause of"
nature of injury	main injury

7.10 Selection of the single underlying cause of death

Annex 7.10 Workflow diagram of the application of the coding instructions for the selection of underlying cause of death

4.2.1 Find the starting point (Steps SP1 to SP8)

First assign ICD codes to all conditions mentioned on the death certificate

Notes:
Refer to 4.1.3 for basic concepts:
- Sequence
- Causal relationship
- Duration
- Terminal cause of death
- Starting point
- Tentative Starting Point: TSP
- Obvious cause
- First-mentioned sequence

- First-mentioned condition
- Underlying cause of death: **UCOD**
- Modification
- Tentative underlying cause of death: **TUC**

Condensed title of each step in 4.2.1   see also

SP1 Single cause on certificate
SP2 Only one line used in Part 1
SP3 First cause on the lowest line explains all entries above   Section 4.2.3
SP4 A sequence ends with the terminal condition
SP5 No sequence in Part 1
SP6 Obvious cause   Section 4.2.4
SP7 Ill-defined conditions   Annex 7.3
SP8 Conditions unlikely to cause death   Annex 7.4

SP1 Only one condition, either in Part 1 or 2?
Yes → Choose the condition as the starting point. Go to M1.

SP2 Only one line used in this line?
No → How many conditions are mentioned on this line?
Two or more → Choose the first mentioned condition as the TSP. Go to SP6
One, but one or more in Part 2. → Choose single condition in Part 1 as the TSP. Go to SP6.

SP3 Does the first condition on the lowest line explain all entries above?
Yes → Choose that condition as the TSP. Go to SP6.
No (Try to get clarification from the certifier)

SP4 Is there a sequence ending in the terminal condition?
Yes → Is there only one sequence?
Yes → Choose the starting point of this sequence as the TSP. Go to SP6.
No → Identify the first mentioned sequence, and choose the starting point of that sequence as the TSP. Go to SP6.

SP5 Choose the terminal condition as the TSP. Go to SP6.

SP6 Where is the TSP?
In Part 1 → Search for an obvious cause of the TSP, first in the same line in Part 1, next on lower lines in Part 1, and finally in Part 2. (Carefully follow instructions in SP6)
In Part 2 → Search for an obvious cause of the TSP only in Part 2.
→ Were there another condition reported on the same line or further down that could have obviously caused the TSP?
Yes → Are there several possible obvious causes?
Yes → Choose the first mentioned obvious cause as a new TSP, and check again.
No → Choose the obvious cause as a new TSP, and check again.
No → Are other conditions mentioned in the certificate all ill-defined?

SP7 Is the TSP an ill-defined condition? (Annex 7.3)
Yes → Are other conditions mentioned in the certificate all ill-defined, or unlikely to cause death?
Yes → Keep the TSP as the starting point. Go to M1.
No → Keep the TSP as the starting point. Go to M1.
No → Disregard this ill-defined TSP. Go back to SP1.

SP8 Is the TSP a condition unlikely to cause death? (Annex 7.4)
Yes → Are other conditions mentioned in the certificate all ill-defined, or unlikely to cause death?
No → Was the death caused by a reaction to treatment of the TSP?
Yes → Select the reaction to treatment as the starting point. Go to M1.
No → Is the TSP the cause of the condition that is not ill-defined or unlikely to cause death?
Yes → Keep the TSP as the starting point. Go to M1.
No → Disregard this TSP unlikely to cause death. Go back to SP1.

4.2.2 Check for modifications of the starting point (Steps M1 to M4)

TSP identified by SP1 to SP8 is now considered the tentative underlying cause (TUC).

M1   Special Instructions

Does any special coding instruction apply to the TUC? — Yes → Assign a new TUC and check again.

Carefully follow the instructions in M1 and refer to 4.2.5 Special instructions on linkages and other provisions

No ↓

M2   Specificity

Is there a more informative term than the TUC? — Yes → Assign a new TUC and check again.

No ↓

M3   Recheck

Is the TUC same with the starting point identified by SP1 to SP8? — No → The TUC selected in M1 or M2 is not ill-defined and is reported correctly due to another condition — No → The TUC is a reaction to treatment of a condition unlikely to cause death selected in SP8 — No → Go back to SP6. Repeat the procedures in SP6, M1 and M2.

Yes ↓ (from recheck) / Yes (from other condition) / Yes (from reaction)

M4   Medical procedures, poisoning, main injury, maternal death

Does the TUC apply either of the special instructions for M4? — Yes → Follow instructions and refer to sections indicated in the following table.

No ↓

Confirmation: The TUC is not further changed in either SP6 or M1 to M4

Yes ↓

The TUC is the underlying cause of death.

TUC is...	Special instructions	Refer to section...
Surgery or medical procedure		4.2.9 Other medical procedures
Chapter XIX Injury or poisoning	Code the external cause as the UCOD	
Chapter XX External cause	Also select the main injury.	4.2.6 Main injury in death from external causes
Poisoning and more than toxic substance is reported	Identify the most important drug involved.	4.2.7 Poisoning by drugs etc.
Decedent is a woman and pregnancy, childbirth or pueperium is reported.	Determine whether to assign Chapter XV as the UCOD	4.2.8 Maternal mortality

References

International classification of diseases for oncology (ICD-O), 2nd ed. Geneva, World Health Organization, 1990.

Systematized nomenclature of medicine (SNOMED). Chicago, IL, College of American Pathologists, 1976.

Manual of tumor nomenclature and coding (MOTNAC). New York, NY, American Cancer Society, 1968.

Systematized nomenclature of pathology (SNOP). Chicago, IL, College of American Pathologists, 1965.

The ICD-10 classification of mental and behavioural disorders: clinical descriptions and diagnostic guidelines. Geneva, World Health Organization, 1992.

International classification of procedures in medicine (ICPM). Vols. 1 and 2. Geneva, World Health Organization, 1978.

International classification of impairments, disabilities, and handicaps. A manual of classification relating to the consequences of disease. Geneva, World Health Organization, 1980.

International Nomenclature of Diseases. Geneva, Council for International Organizations of Medical Sciences and World Health Organization (for details of individual volumes, see text).

Sixteenth annual report. London, Registrar General of England and Wales, 1856, App. p. 73.

Knibbs G.H. *The International Classification of Disease and Causes of Death and its revision*. Medical Journal of Australia, 1929, 1:2–12.

Greenwood M. *Medical statistics from Graunt to Farr*. Cambridge, Cambridge University Press, 1948.

First annual report. London, Registrar General of England and Wales, 1839:99.

Bertillon J. Classification of the causes of death (abstract). In: *Transactions of the 15th International Congress on Hygiene Demography*. Washington, DC, 1912.

Bulletin of the Institute of International Statistics, 1900, 12:280.

Roesle E. *Essai d'une statistique comparative de la morbidité devant servir à établir les listes spéciales des causes de morbidité*. Geneva, League of Nations Health Organization, 1928 (document C.H. 730).

International list of causes of death. The Hague, International Statistical Institute, 1940.

Medical Research Council, Committee on Hospital Morbidity Statistics. *A

provisional classification of diseases and injuries for use in compiling morbidity statistics. London, Her Majesty's Stationery Office, 1944 (Special Report Series No. 248).

US Public Health Service, Division of Public Health Methods. *Manual for coding causes of illness according to a diagnosis code for tabulating morbidity statistics.* Washington, DC, Government Publishing Office, 1944 (Miscellaneous Publication No. 32).

Official Records of the World Health Organization, 1948, 11, 23.

Official Records of the World Health Organization, 1948, 2, 110.

Manual of the international statistical classification of diseases, injuries, and causes of death. Sixth revision. Geneva, World Health Organization, 1949.

Report of the International Conference for the Seventh Revision of the International Lists of Diseases and Causes of Death. Geneva, World Health Organization, 1955 (unpublished document WHO/HA/7 Rev. Conf./17 Rev. 1).

Third Report of the Expert Committee on Health Statistics. Geneva, World Health Organization, 1952 (WHO Technical Report Series, No. 53).

Report of the International Conference for the Eighth Revision of the International Classification of Diseases. Geneva, World Health Organization, 1965 (unpublished document WHO/ICD9/74.4).

Manual of the international statistical classification of diseases, injuries, and causes of death, Vol. 1. Geneva, World Health Organization, 1977.

Index