How to use this Reference Guide

This Reference Guide for ICD-11 is divided into 3 Parts. While each Part will contain information valuable for your understanding and use of ICD-11, each has been created to be relevant to your primary purpose for coming to the Guide.

If you are looking to gain a general, broad understanding of ICD-11, with little or no prior experience with ICD, we suggest you start with Part 1.

If you are looking to understand how codes are created, and the details of the organisation and statistics behind ICD-11, we suggest you start with Part 2.

If you are already familiar with ICD, having used especially ICD-10, we suggest you start with Part 3 to see what is new (and what has not changed) in ICD-11.
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<tr>
<td>AMR</td>
<td>Antimicrobial Resistance</td>
</tr>
<tr>
<td>ATC/DDD</td>
<td>The Anatomical Therapeutic Chemical Classification with Defined Daily Doses</td>
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<tr>
<td>DRG</td>
<td>Diagnostic Related Group</td>
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<tr>
<td>DSAP</td>
<td>Duration Stated, developed After Procedure</td>
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<tr>
<td>DSM-(5 or V)</td>
<td>Diagnostic and Statistical Manual of Mental Disorders (fifth edition)</td>
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<tr>
<td>ICD</td>
<td>The International Classification of Diseases and Related Health Problems</td>
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<td>ICD-O</td>
<td>The International Classification of Disease for Oncology</td>
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<td>ICD-PCI</td>
<td>The International Classification of Disease for Primary Care</td>
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<td>ICECI</td>
<td>The International Classification of External Causes of Injury</td>
</tr>
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<td>ICF</td>
<td>The International Classification of Functioning, Disability, and Health</td>
</tr>
<tr>
<td>ICHI</td>
<td>The International Classification of Health Interventions</td>
</tr>
<tr>
<td>ICNP</td>
<td>The International Classification of Nursing Practice</td>
</tr>
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<td>ICPC</td>
<td>The International Classification of Primary Care</td>
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<tr>
<td>INN</td>
<td>International Non-proprietary Names</td>
</tr>
<tr>
<td>ISO9999</td>
<td>International Standards Organization for technical aids for persons with disabilities</td>
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<tr>
<td>MMS</td>
<td>Mortality and Morbidity Statistics</td>
</tr>
<tr>
<td>NEC</td>
<td>in an ICD category, indicates Not Elsewhere Classified</td>
</tr>
<tr>
<td>NOS</td>
<td>in an ICD category, indicates Not Otherwise Specified</td>
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<tr>
<td>OCPR</td>
<td>Other Cause of Procedure Required</td>
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<td>PCL</td>
<td>Primary Care Low resources settings</td>
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<td>SMoL</td>
<td>Startup Mortality List</td>
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<tr>
<td>SNOMED-CT</td>
<td>The Standardized Nomenclature of Medicine Clinical Terms</td>
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<td>TAG</td>
<td>Topic Advisory Group</td>
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<tr>
<td>TM</td>
<td>Traditional Medicine</td>
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<tr>
<td>URI</td>
<td>Uniform Resource Identifier, referred to as Unique Identifier in this document</td>
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<tr>
<td>WHODAS</td>
<td>The World Health Organization Disability Assessment Scale</td>
</tr>
<tr>
<td>WHO-FIC</td>
<td>The World Health Organization - Family of International Classifications</td>
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<tr>
<td>WM</td>
<td>Western Medicine</td>
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WONCA  World Organization of National Colleges, Academies, and Academic Associations of General Practice/Family Practitioners
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<tr>
<td>Activity limitations</td>
<td>In the International Classification of Functioning, Disability, and Health, the level of functioning an individual may have in executing activities.</td>
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<td>Body functions</td>
<td>In the International Classification of Functioning, Disability, and Health, the physiological functions of body systems (including psychological functions).</td>
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<td>Body structures</td>
<td>In the International Classification of Functioning, Disability, and Health, the anatomical parts of the body such as organs, limbs, and their components.</td>
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<td>Casemix</td>
<td>A system that collects information about patients and procedures into groups based on the condition, complexity, and need. Used for resource allocation.</td>
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<td>Causal relationship (coding)</td>
<td>Exists if a condition is caused by another condition (e.g. on the same death certificate or in a morbidity coding situation where one condition or factor causes another condition).</td>
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<td>Classification</td>
<td>An exhaustive set of mutually exclusive categories to aggregate data a pre-prescribed level of specialization for a specific purpose.</td>
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<td>Cluster coding</td>
<td>Cluster coding refers to a convention used (either a forward slash (/) or ampersand (&amp;)) to show more than one code used together (e.g. stem code/stem code(s)&amp;extension code(s)) to describe a documented clinical concept.</td>
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<td>Derived classification</td>
<td>Classifications, often tailored for use at the national or international level, or for use in a specialty, based upon reference classifications.</td>
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<td>Direct cause of death (coding)</td>
<td>The first condition entered on the first used line of Part 1 of the death certificate.</td>
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<td>Dual coding</td>
<td>The term ‘Dual coding’ is used in all situations (Traditional Medicine and Western Medicine) where clinical terms are coded in two different classification systems or versions for purposes of comparison, transition, mapping, casemix grouping or understanding the implications of change from one system to another.</td>
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<tr>
<td>Duration (coding)</td>
<td>The time-period between the onset of the disease and the time of death.</td>
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<tr>
<td>Environmental factors</td>
<td>In the International Classification of Functioning, Disability, and Health, the physical, social, and attitudinal environment in which people live and conduct their lives.</td>
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<td>Extension code</td>
<td>Extension codes are designed to standardize the way additional information is added to a stem code when users and settings are</td>
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interested in reporting more detail than is included in a stem code. Extension codes can never be used without a stem code and can never appear in the first position in a cluster.

**Foundation component**
A large collection of terms and their relationships, which describe health and health-related domains. Underlying data base content that holds all necessary information to generate print versions of the tabular list and the alphabetical index as well as additional information that is needed to generate specialty linearizations of ICD-11 and country specific modifications.

**Impairments**
In the International Classification of Functioning, Disability, and Health, the problems in body function or structure such as a significant deviation or loss.

**Integrated coding**
Integrated coding in context of Traditional Medicine use of ICD-11 means full use of all chapters (choosing codes from Western Medicine and Traditional Medicine (TM1) chapters) for classification of clinical terms.

**Modification rule**
When coding for mortality from death certificates, the procedure by which an ICD code for the starting point (see below) is replaced by another code, due to special instructions.

**Precoordination**
Stem codes may contain all pertinent information about a clinical concept in a pre-combined fashion.

**Postcoordination**
Postcoordination refers to the use of multiple codes (i.e. stem codes and/or extension codes) together to fully describe a documented clinical concept.

**Reference classification**
Classifications that cover the main parameters of the health system – disease (ICD), disability, functioning, and health (ICF), and health interventions (ICHI).

**Sequence (coding)**
In the context of mortality coding, a chain or series of medical events in which each step is a complication of, or caused by, the previous step.

**Stand-alone coding**
Stand-alone coding in Traditional Medicine context means classification of clinical terms using Chapter 26 only.

**Starting point (coding)**
Normally the condition or event reported that started the sequence of acceptable causal relationships ending with the terminal cause of death; or when a death certificate is filled out properly, the condition reported on lowest used line in Part 1 of the death certificate.

**Stem code**
Stem codes are codes that can be used alone. They are found in the tabular list of ICD-11 for Mortality and Morbidity Statistics. Stem codes may be entities or groupings of high relevance, or clinical conditions that should always be described as one single category. The design of stem codes makes sure that in use cases
that require only one code per case, a meaningful minimum of information is collected.

**Underlying cause of death**
The disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury

**Verbal autopsy**
Method used to ascertain the cause of a death based on an interview with next of kin or other caregivers.
1 Part 1 - An Introduction to ICD-11

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3.8.3 Types of proposals for ICD-11-MMS maintenance
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1 Part 1 - An Introduction to ICD-11
1.1 Purpose and multiple uses of ICD

The International Classification of Diseases and Related Health Problems (ICD) is a tool for recording, reporting and grouping conditions and factors that influence health. It contains categories for diseases, health related conditions, and external causes of illness or death. The purpose of the ICD is to allow 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 into an alphanumeric code, which allows storage, retrieval, and analysis of the data. The ICD has become the international standard diagnostic classification for all general epidemiological and many health management purposes. These include analysis of general health situations of population groups, monitoring of incidence and prevalence of diseases, and other health problems in relation to other variables, such as the characteristics and circumstances of the affected individuals. ICD is also suitable for studies of financial aspects of a health system, such as billing or resource allocation.

The ICD has evolved over the past 150 years from an International List of Causes of Death to a comprehensive classification system for use in mortality, morbidity, casemix, quality measurement and patient safety. It can be used in primary care, secondary care, and research. The ICD is used to allocate the majority of global health resources. Users of the ICD include physicians, nurses, other health care providers, researchers, health information management professionals, coders, health information technology workers, analysts, policy-makers, insurers, patient organisations, and many more.

The ICD is used in various settings with different levels of resolution ranging from a set of 100 codes to more than 10,000 codes. It therefore includes an information framework that contains a fully specified set of health concepts and their characteristics and relationships. The ICD–11 ensures consistency with traditional use cases of earlier ICD versions, because it has been built with the past revisions in mind. Past data analyses based on older versions of ICD can be linked to analyses of data based on ICD–11.

All World Health Organization (WHO) Member States are expected to use the most current version of the ICD for reporting death and illness (according to an international treaty, the ‘WHO Nomenclature Regulations’, adopted by the World Health Assembly in 1967). ICD–10 has been translated into 43 languages, and ICD–11 has been available in all 6 official languages since its publication (English, French, Spanish, Russian, Chinese, Arabic). Most countries (115 in 2017) use the system to report mortality data, a primary indicator of health status.

The ICD is primarily designed for the classification of diseases and injuries. However, not every problem or reason for coming into contact with health services can be categorized in this way. Consequently, the ICD includes a wide variety of signs, symptoms, abnormal findings, complaints and social factors that represent the content from health-related records (see section on morbidity). The ICD 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 are derived, for treatment, prevention, or patient safety.
1.1.1 Intended use

The ICD has been designed to address the needs of a broad range of use cases: Mortality, morbidity, epidemiology, casemix, quality and safety, primary care. Detailed information on the different use cases is available in other sections for mortality use and different morbidity uses. A situation may arise, which anticipates using the ICD-11 for a purpose for which it has not been designed. In this situation, the categorization used within the ICD-11 and its additional features may not be able to address such a new use case. In such cases, it is recommended to consult with the WHO to ensure that the information collected is appropriate to the intended new use.

1.1.2 Classification

A classification is ‘an exhaustive set of mutually exclusive categories to aggregate data at a pre- prescribed level of specialization for a specific purpose’ (ISO 17115). Classification involves the categorization of relevant concepts for the purposes of systematic recording or analysis. The categorization is based on one or more logical rules. The purpose of a health classification varies. For example, it may be used in the analysis of cause of death (mortality), morbidity, activity limitation, or participation restriction. Low frequency concepts tend to be grouped but rare concepts may be individually classified if necessary. Coding rules must be incorporated in the classification to achieve consistency of coding and comparability of coded data over time and space. Classifications are complementary to terminologies, since they are designed to be used for standardised coding of information for statistical purposes.

1.1.3 ICD in the context of WHO Family of International Classifications (WHO-FIC)

The WHO Family of International Classifications (WHO-FIC) comprises classifications that have been endorsed by the WHO to describe various aspects of health and the health system in a consistent manner.

The WHO-FIC provides standardised building blocks for health information systems and consists of three broad groups: Reference classifications, Derived classifications, and Related classifications.

The Reference and the Derived classifications are based on the Foundation Component, which is a large collection of terms and their relationships, which describe health and health related domains.

Terms related to diseases and health related problems are organised into the ICD, those pertaining to functioning into the ICF, and those related to interventions into ICHI (International Classification of Health Interventions). Terms from the Foundation Component may be used in more than one Reference classification.

Derived Statistical Classifications and Tabulations (‘derived classifications’) draw on terms that may come from one or more of the Reference classifications. Within the WHO-FIC Family, Related classifications are regarded as complementary to the Reference and
Derived classifications. Related classifications have their own sets of terms, but can also share terms as part of the WHO-FIC Family. For example, the International Classification of Nursing Practice (ICNP), a related classification in the Family, draws on terms from the Foundation Component in the same way that the reference and derived classifications draw on terms from the Foundation Component. ICNP also uses terms specific to nursing practice which are not found in the Foundation Component, but which may be included in the future.

**Figure 1:** Relationships between the WHO Family of International Classifications and related classification, the Foundation Component, and shared terminologies.

The purpose of the WHO-FIC is to assist the development of reliable statistical systems at local, national, and international levels, with the aim of improving health status and health care. The classifications are the property of the WHO or other groups. Health related information might sometimes require additional detail to that contained in the ICD. A group or ‘family’ of health relevant classifications covers these needs both by classification of domains different from those of the ICD and provision of more detail for specific uses, e.g. cancer registration. The WHO-FIC 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 health care systems. For example, the ICD as a reference classification is mainly used to capture mortality and morbidity. Functioning is classified in the International Classification of Functioning, Disability and Health (ICF) and health interventions in the International Classification of Health Interventions (ICHI).
In general, the WHO-FIC aims to provide a conceptual framework of information dimensions which are related to health and health management. In this way, it provides a common language that improves communication and permits comparisons of data within countries, across countries, health care disciplines, services, and time. The WHO and the WHO-FIC Network (including Collaborating Centres, Non-Governmental Organisations, and selected experts) strive to build the family of classifications based on sound scientific and taxonomic principles, ensure that it is culturally appropriate and internationally applicable, and meet the needs of its different users by focusing on the multi-dimensional aspects of health.

1.1.4 WHO-FIC: Reference Classifications

Reference classifications cover the main parameters of the health system, such as death and disease (ICD), disability, functioning, and health (ICF) and health interventions (ICHI). WHO-FIC 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. The three Reference classifications are:

1. International Classification of Diseases and Health Related Problems (ICD)
2. International Classification of Functioning, Disability & Health (ICF)
3. International Classification Health Intervention (ICHI)

1.1.4.1 Disability and Functioning – ICF

The ICF is the WHO’s framework for measuring health and functioning/disability at both the individual and population levels. While the ICD classifies diseases and causes of death, the ICF classifies health domains. ICD and ICF together provide tools to capture the full picture of health.

The ICF classifies health and health-related states in two parts. Part one addresses functioning and disability, described from the perspectives of the body, the individual, and society, and is composed of two components: Body Functions and Structures and Activities and Participation life areas. Part two covers contextual factors and has two components: Environmental Factors and Personal Factors (currently not classified in ICF), since an individual’s functioning occurs in a context.

Functioning is a generic term for body functions (e.g. memory), body structures (e.g. occipital lobe), and activities and participation life areas (e.g. walking, engaging in paid work). It denotes the neutral aspects of the interaction between an individual (related to the individual’s health) 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). Disabilities are envisioned as a continuum and therefore the ICF and the codes
within it do not confer an international binary status of disabled/not disabled. Levels of disability can be used descriptively in clinical settings when formulating a case. Program and policy decision-makers can apply the ICF and specify their own standards for the level of disability as eligibility criteria that are relevant for specific purposes.

ICF includes the following other definitions: - **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.

ICF includes codes for Body Functions (b), Body Structures (s), Activities and Participation (d), and Environmental Factors (e).

ICF codes are only complete with the presence of a qualifier, which denotes the level of health (i.e. severity of the problem from ‘no problem’ to ‘complete problem’). Without qualifiers, codes have no inherent meaning. The ICF acknowledges that every human being can experience a decrement in health and thereby experience some disability. Disabilities can be temporary and may be brief (such as staying home from work for a few days with the flu); they can also be chronic or permanent and may fluctuate in severity over time.

**1.1.4.2 Interventions – ICHI**

Intervention classifications are designed to include all kinds of health interventions for treatment, diagnosis, or prevention. The International Classification of Health Interventions (ICHI) includes interventions across all functional sectors of the health system, covering acute care, primary care, rehabilitation, assistance with functioning, prevention, public health, and ancillary services. Interventions provided by all types of providers have been included. The importance of describing and classifying health interventions has long been understood. An International Classification of Procedures in Medicine (ICPM) was published by WHO in 1978 but was not maintained. ICHI is much broader than the former ICPM because it includes the full range of health interventions. Development of ICHI began in 2007, as a joint effort of the WHO- FIC Network and WHO. Its structure has been completed, an alpha version published in 2012 and a beta version in 2015. Finalisation is planned for 2019.

**Table 1: Definitions and terms used in creation of ICHI classifications.**

<table>
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<th>Axes</th>
<th>Inclusions</th>
<th>Example</th>
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<tr>
<td>The <strong>Target axis</strong> contains the entities on which the action is carried out.</td>
<td>Anatomy, Human function, Person or client, Group or population</td>
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The **Action axis** is defined as a deed which is done by an actor to a target during a health care intervention.

The **Means axis** contains the entities describing the processes and methods by which the action is carried out.

Investigation, Treating, Managing, Informing, Assisting, Preventing

**Approach:** the process by which the target of the action is accessed

**Technique** used as part of the action

**Method** describing how the action is undertaken

- open, endoscopic
- radiation, magnetic resonance
- law enforcement, method of transport.

Other attributes of interventions are included as ‘Means’ in the ICHI Content Model. The content of the axes has been restricted to attributes that are common to many interventions. In particular:

- Devices have not been included as an axis because most interventions do not involve a device and devices change rapidly
- Drugs or other substances administered through an intervention are classified elsewhere (ICD, The Anatomical Therapeutic Chemical Classification with Defined Daily Doses (ATC/DDD), INN).

The coding system comprises a 7-character category structure for the three axes:

- Three letters for the Target
- Two letters for the Action
- Two letters for the Means

ICHI is a flat file comprising valid 7 letter combinations of the three axes. For each intervention included in ICHI, the appropriate 7 letter combination is identified. Not every possible combination of the three axes represents a valid ICHI domain.

1.1.4.3 WHO-FIC: Derived Classifications

Derived classifications are often tailored for use at the national or international level or for use in a particular specialty. Derived classifications are based upon reference classifications (ICD, ICF, ICHI). Derived classifications may be prepared by:

- adopting the reference classification structure and classes
- providing additional detail beyond that provided by the reference classification, or through rearrangement or by aggregation of items from one or more reference classifications.

ICD-11 has specialty linearizations that are derived from the common foundation. These include a version for dermatology, one for primary care and one for mental health. Others may follow.
1.1.4.4 Related Classifications

Related classifications are included in WHO-FIC to describe important aspects of health or the health system not covered by reference or derived classifications. Related classifications are:

- International Classification of Primary Care (ICPC)
- International Classification of External Causes of Injury (ICECI)
- Technical aids for persons with disabilities (ISO9999)
- The Anatomical Therapeutic Chemical Classification with Defined Daily Doses (ATC/DDD)
- The International Classification for Nursing Practice (ICNP)

1.1.5 ICD Use in health information systems

Health information systems include a range of different components for collection, analysis, and use of the data. Information sources could for example be population-based, health facility-based, or focused on particular diseases. The main population-based sources of health information are census data, household surveys, and vital registration systems.

Health facility-related data sources include public health surveillance, health services data (that may be referred to as health management information systems or routine health information systems), and health system monitoring data (e.g. human resources, health infrastructure, financing).

National health accounts are designed to provide a comprehensive picture of health financing. Coding enables the recording of health information in a language independent way. Standardization of coding enables both intra- and international data comparison. For example, ICD coded data can be compared across different sectors of the health system – if the same coding rules are applied.

Health information systems are increasingly based on digital (electronic) reporting and coding. ICD–11 is designed to be used in such environments. In many places information collection is based on paper reporting in a traditional analogue way. ICD–11 can be produced in a printed version for use in paper based systems.

1.1.5.1 Use of ICD–11 in a digital setting and web services

The ICD-11 is used for coding of diagnoses, in electronic health records or electronic death certificates, or in other places. Special tools facilitate finding specific ICD-11 codes for any of the several dimensions that define an ICD-11 entity or category. Additional detail can be added using multiple codes for one condition. Retaining the unique identifier of the coded ICD-11 entity allows the same information to be reused across different translations. WHO has developed the ICD web services (https://icd.who.int/icdapi); designed to support interoperable machine-to-machine interaction.
1.1.5.2 Use of ICD–11 in an analog paper-based setting

The ICD-11 is used as analogue printed version in some countries. Information is reported on paper version and then coded with the ICD-11. It should be noted that paper-based recording requires manual transcription of the information into electronic systems and should be substituted by electronic reporting as early as possible in the information chain. Further problems with paper-based recording include readability and timeliness. ICD-11 supports many ways of computer assisted coding including sanctioning of code combinations and other possible plausibility checks. The long term goal for all users should be coding of ICD-11 in an electronic environment.

In the print version, the information is divided into 3 volumes, the tabular list, the reference guide, and the index. All three are needed to use the ICD correctly.

1.1.5.3 Electronic version

In the browser version of the ICD, most information is interlinked and visible in the relevant context. The WHO provides this version for browsing ICD-11 in multiple languages (linked from https://icd.who.int). This tool allows the user to retrieve concepts by searching terms, anatomy or any other element of the content model. With this browser, users can also contribute to the updating and continuous improvement of ICD with comments and solutions. Such input is reviewed for consideration for inclusion on an annual basis.

ICD–11 can also be accessed using web services with user specific software. The IT guide to the ICD provides more details on compatibility requirements: https://icd.who.int/icdapi. Both the web services and the online browser allow access to all Tabular lists of the ICD, for mortality and morbidity statistics, primary care, or for a specialty linearization for certain specialized domains.

1.1.6 Links with other Classifications and Terminologies

ICD coded entities or categories can be used in conjunction with other health relevant classifications or terminologies to fully document an episode of care, or a case for research.

1.1.6.1 Integrated use with Terminologies

Classification involves grouping information according to logical rules. Terminology allows the reporting of information at any desired level of detail: for example, body parts, findings, or other elements that constitute a disease. Only items defined in a terminology can be reported on (i.e. Terminologies have no mechanism to report new information that has not previously been added to the terminology). In contrast, a classification has residual classes ('other specified' or 'unspecified') that ensures that all cases can always be classified. In a terminology, as much as in a modern disease classification, a disease can be defined, for example by establishing linkages between its elements, such as anatomy or findings. Terminologies retain the information without emphasizing any aspect of the recorded information.
In contrast, classifications allow for identification of ‘relevant parts’ of the content, for example, for public health. International agreement about these relevant parts makes sure that the aggregated information is internationally comparable. The standardised use of the aggregation logic of a classification and the standardised use of the detailed information of a terminology aim at the same result: comparability. International agreement processes are necessary in both cases – and must be the same as soon as the same question has to be answered by the aggregation/classification.

Terminologies and classifications should be considered complementary. The Systematized Nomenclature of Medicine Clinical Terms (SNOMED CT) is an example for a linked terminology within ICD-11. The information coded through SNOMED CT can be categorized with ICD. Additional terminologies include for example ICD-O, INN or ICECI.

1.1.6.2 Functioning in ICD and joint use with ICF

Historically, the ICD has used certain disability concepts as common disease or disorder entities, such as: Blindness, Deafness, Mental Retardation, Learning Disability, or Paraplegia, as well as certain disability concepts for other purposes, such as ‘disability as a sequela of injury’, and ‘limitation of activities due to disability’. The ICF was developed after the publication of ICD–10. The ICD–11 has been created both to share concepts and be used jointly with the ICF. This partnership may assist with the following tasks:

- evaluation for general medical practice (e.g. fitness for work)
- evaluation for social benefits (e.g. disability, pension)
- payment or reimbursement purposes
- needs assessment (e.g. for rehabilitation, occupational assistance, long term care.)
- outcome evaluation of interventions

Signs and symptoms in the ICD are aligned with body functions in the ICF, and ‘factors influencing health status’ in the ICD align with contextual factors in the ICF.

Additional selected ICF categories are drawn from the component activities and participation and help to describe the functional limitations commonly associated with the specific health conditions in a functioning pattern. The impact of the disease or disorder in the daily activities of a person may vary depending on the severity of the condition as well as the contextual factors (e.g. environmental factors) and possible co-morbidities. The ICD takes an approach that identifies ‘severity’ as a property of the disease/disorder and describes the impact of the health condition on the daily life of a person as a functioning set.

The functioning section that is embedded in ICD serves to generate a summary functioning score based on assessment of the individual. The set of functioning items in ICD-11 allows the WHO Disability Assessment Scale (WHODAS), and the Model Disability Survey (MDS, module 4000, Functioning) to be used to generate the summary score. Wherever full functioning reporting is desired, the ICF should be used.
1.2 Structure and taxonomy of the ICD Classification System

The chapter and block structure of the ICD has evolved in 11 iterations over 100 years. The authoring of ICD follows a set of rules that ensure the functional and structural integrity of the classification. The evolution of ICD carefully balances the need for categories that match current knowledge while allowing statistical comparability over space and time.

The chapter structure of ICD reflects major aspects of diseases. Chapters are not intended to delimit areas of medical expertise or domains of specialties. The link to any specialty or reimbursement schemes is secondary. In particular, reimbursement schemes can be easily adapted. The ICD has categories for diseases, disorders, syndromes, signs, symptoms, findings, injuries, external causes of morbidity and mortality, factors influencing health status, reasons for encounter of the health system, and traditional medicine. ICD-11 complements these categories with additional detail such as anatomy, substances, infectious agents, or place of injury. ICD-11 also comes with a set of rules and explanations for its use, required reporting formats, and necessary metadata.

The most widespread use of ICD over time and geographically is for cause of death statistics. ICD is also used for classification of clinical documentation, to provide standardised, language independent information for morbidity use, such as resource allocation, casemix, patient safety and quality of care, as well as primary care and research. ICD and its definitions are also used as a framework in legislation.

1.2.1 Taxonomy

After death statistics, the second most important use of ICD is classification of clinical documentation to provide pertinent information for resource allocation, casemix, patient safety and quality of care as well as primary care and other kinds of statistics. A statistical classification of diseases must be confined to a limited number of mutually exclusive categories able to encompass the complete range of morbid conditions. The categories are chosen to facilitate the statistical study of disease phenomena. 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. The following measures apply in determining whether an entity qualifies to become a unique category:

1. Epidemiological evidence: frequency analyses of coded mortality and morbidity data
2. Clinical evidence: disease evidence provided by the medical specialties
3. Granularity: minimum detail reported and useful in mortality (mortality data) or primary care
4. Continuity: preserve the level of detail pre-existing in ICD
5. Parsimony: the need to limit the number of categories for international mandatory reporting

A statistical classification can allow for different levels of detail if it has a hierarchical structure and 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 the attainment of useful and understandable information. The same general principles apply 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 aetiology, anatomical site, circumstances of onset, or other criteria.

ICD-11 draws extensively on the method of combining several codes to describe a clinical condition to the desired level of detail. Its electronic architecture allows assignment of unique identifiers to any condition listed - independently whether the condition is grouped in a statistical class or whether it represents a class of its own. The two approaches together allow the option of keeping coding simple where diagnostic detail is limited; and the alternative to add detail where diagnostic reporting requires a high level of sophistication.

1.2.2 Chapter structure

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

These groups remain in the chapters of ICD-11. The structure has stood the test of time and, though in some ways arbitrary, is still regarded as more useful for general epidemiological purposes than any of the alternatives tested. The conservation of the structure acknowledges the need for stability while allowing incorporation of additional sections.

The special groups 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. These conditions formulate the ‘special groups’ chapters:

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Certain infectious or parasitic diseases</td>
</tr>
<tr>
<td>2</td>
<td>Neoplasms</td>
</tr>
<tr>
<td>3</td>
<td>Diseases of the blood or blood-forming organs</td>
</tr>
<tr>
<td>4</td>
<td>Diseases of the immune system</td>
</tr>
<tr>
<td>18</td>
<td>Pregnancy, childbirth, or the puerperium</td>
</tr>
<tr>
<td>19</td>
<td>Certain conditions originating in the perinatal period</td>
</tr>
<tr>
<td>20</td>
<td>Developmental anomalies</td>
</tr>
<tr>
<td>22</td>
<td>Injury, poisoning or certain other consequences of external cause</td>
</tr>
</tbody>
</table>

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. This principle is enforced in the ‘excludes’ notes at the beginning of each chapter in the ICD. For example, cervical dysplasia grade 1 is coded to Chapter 2 ‘Neoplasms’ because distinction between dysplasia and neoplasia and clinical management are subject to a set of recommended criteria that may change over time.

1.2.3 Revision major steps

The revision of ICD-11 has taken place in several phases. First, a list of issues that were known from the use of ICD-10 and that could not be solved in its classification structure was compiled and possible solutions were formulated.

Second, input was received from many scientific groups in the key subject areas with a focus on the clinical perspective.

Finally, centralised editing occurred, aimed to adjust imbalances in content generated by multiple, independently operating expert groups in the previous phase of the revision, and to ensure the overall structure is consistent and practicable for users in mortality and morbidity statistics. The final version also received input from field testing, Member State comments, and ongoing submission and processing of proposals.

1.2.4 General features of ICD-11

The main structural innovation of ICD–11 is that it is built on a Foundation Component from which the tabular list (the statistical classification for morbidity and mortality) can be derived.

Table 1: ICD-11 Terminology

<table>
<thead>
<tr>
<th>ICD-11 Term</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation component</td>
<td>Underlying data base content that holds all necessary information to generate print versions of the tabular list and the alphabetical index, as well as additional information that is needed to generate specialty linearisations of ICD-11 and country specific modifications.</td>
</tr>
<tr>
<td>Stem code</td>
<td>Stem codes are codes that can be used alone. They are found in the tabular list of ICD-11 for Mortality and Morbidity Statistics. Stem codes may be entities or groupings of high relevance, or clinical conditions that should always be described as one single category. The design of stem codes makes sure that in use cases that require only one code per case, a meaningful minimum of information is collected.</td>
</tr>
<tr>
<td>Extension code</td>
<td>Extension codes are designed to standardise the way additional information is added to a stem code when users and settings are</td>
</tr>
</tbody>
</table>
interested in reporting more detail than is included in a stem code. Extension codes can never be used without a stem code and can never appear in the first position in a cluster.

Precoordination Stem codes may contain all pertinent information about a clinical concept in a pre-combined fashion. This is referred to as ‘precoordination’.

Example: BD50.40 Abdominal aortic aneurysm with perforation
Example: CA40.04 Pneumonia due to Mycoplasma pneumoniae

Postcoordination Postcoordination refers to linking (through cluster coding) multiple codes (i.e. stem codes and/or extension codes) together, to fully describe a documented clinical concept.

Example: Diagnosis: Duodenal ulcer with acute haemorrhage, Cluster: DA63.Z/ME24.90; Condition - DA63 Duodenal ulcer, unspecified; Has manifestation (use additional code, if desired) - ME24.90 Acute gastrointestinal bleeding, not elsewhere classified

Cluster coding Cluster coding refers to a convention used (either forward slash (/) or ampersand (&)) to show more than one code used together (e.g. stem code/stem code(s)&extension code(s)) to describe a documented clinical concept.

Example: Diagnosis: Duodenal ulcer with acute haemorrhage, Cluster: DA63.Z/ME24.90; Condition - DA63 Duodenal ulcer, unspecified; Has manifestation (use additional code, if desired) - ME24.90 Acute gastrointestinal bleeding, not elsewhere classified

Primary and secondary parents The hierarchy of ICD-11 is defined the same as it was in previous versions of ICD. The possibility to connect specific diseases and concepts within the classification to another parent code was introduced to enable specific extracts of the Tabular list for medical specialties or for specific use cases.

Example: A code for a malignant neoplasm of the skin is in the chapter for malignant neoplasms. The primary parent for this code is a code or a block from this chapter. However, a medical doctor treating only skin diseases might want to see only codes from the classification that are relevant for his or her specific clinical purpose. Therefore, a secondary parent was defined in the skin chapter which will only show the code in this chapter if the specific extract of code for his or her use case is selected.

1.2.4.1 Coding scheme
- The coding scheme always has a letter in the second position to differentiate from the codes of ICD–10.
- In ICD–11, the first character of the code always relates to the chapter number. It may be a number or a letter. The code range of a single chapter always has the same character in the first position.
- In order to describe a causal relationship between conditions in a code title the preferred term is ‘due to’.
- In order to indicate the concurrence of two conditions in a code title the preferred term is ‘associated with’.
The codes of the ICD–11 are alphanumeric and cover the range from 1A00.00 to ZZ9Z.ZZ. Codes starting with ‘X’ indicate an extension code (see Extension codes). The inclusion of a forced number at the 3rd character position prevents spelling ‘undesirable words’. The letters ‘O’ and ‘I’ are omitted to prevent confusion with the numbers ‘0’ and ‘1’. Chapters are indicated by the first character. For example, 1A00 is a code in Chapter 1, and BA00 is a code in Chapter 11.

1.2.4.2 Extension codes

ICD–11 allows for adding specific detail to coded entities using the following mechanisms:

1. The extension codes comprised of groups of codes e.g. anatomy, agent, histopathology and other aspects that may be used to add detail to a stem code. Extension codes are not to be used alone but must be added to a stem code. Not all extension codes can be used with every stem code.

2. ‘Code also’ instructions provide additional aetiological information which is mandatory to code in conjunction with certain categories, because that additional information is relevant for primary tabulation. The ‘code also’ instruction marks the categories that must be used in conjunction with the indicated condition. In some instances, they may be a reason for treatment in their own right, where aetiology is unknown.

3. ICD–11 has an explicit way of marking codes that are postcoordinated to describe one condition, called cluster coding. This is a notable new feature in ICD-11 that creates an ability to link core diagnostic concepts (i.e. stem code concepts) when desired, and/or to add clinical concepts captured in extension codes to primary stem code concepts. Either way, it should be emphasized that the clustering ability inherent to ICD-11 is one of the significant changes relative to ICD-10.

1.2.4.3 Other general features

ICD–11 categories have short and long descriptions labelled ‘additional information’. The short description is a maximum of 100 words on the entity that states things that are always true about a disease or condition and necessary to understand the scope of the rubric. It appears in the tabular list of the classification. The long ‘additional information’ is the full description, without length restriction.

- Special tabulation lists continue to exist in ICD-11, but there are three additional lists - the Startup Mortality List (SMoL), the list for verbal autopsy, and the list for infectious diseases by agent. Specialty linearizations allow the representation of content from the angle of a specialty, such as dermatology or neurology, creating subsets, and allowing the pre-coordination of more detail, if desired.

- For morbidity, the definition of main condition has changed to be the condition that is determined to be the reason for admission, established at the end of the stay. This definition is less prone to interpretation, and countries that had switched from the
'most resource intensive' definition to the 'reason for admission established at the end of the stay' using ICD-10, noticed only small changes in their activity statistics.

1.2.5 Foundation Component and Tabular Lists of ICD–11

The Foundation Component is a multidimensional collection of all ICD entities. Entities can be diseases, disorders, injuries, external causes, signs and symptoms. Some entities may be very broad, for example 'injury of the arm', while others are more detailed, for example 'laceration of the skin of the thumb'. The Foundation Component also has the necessary information to use the entities to build a tabular list. The Foundation Component includes information on where and how a certain entity is represented in a tabular list, whether it becomes a grouping, a category with a stem code, or whether it is mentioned as an inclusion term in a particular category.

Several different tabular lists can be built from the Foundation Component. Drawing on the same Foundation Component, a set of tabular lists that builds on the same hierarchical tree can be created – a set of so called congruent tabular lists. The Foundation Component includes instructions on how to combine certain codes in a tabular list to achieve more detail in coding. These rules help coders and computer systems to visualize the permitted code combinations when they are using a tabular list.

In a tabular list, entities of the Foundation Component become categories. The categories are mutually exclusive and jointly exhaustive and linked to a mono hierarchical tree (they have only one parent). The information related to an entity that has become a category and has multiple parents is still available from the Foundation Component. This information can be used to visualize that category in more than one place in the tabular list, e.g. showing them in black font in its place for reference tabulation and in grey font in any other place for browsing or alternative tabulations. ICD–11 has multiple congruent tabular lists with varying levels of detail.

1.2.5.1 Precoordination and Postcoordination, Cluster coding

A health condition may be described to any level of detail, by applying more than one code, or by 'postcoordinating' (i.e. combining):

- two or more stem codes, (i.e. code1/code2)
- stem codes with one or more extension codes. (i.e. stem code & extension code1 & extension code2)

In this manner, the classification can address a large number of clinical concepts with a limited range of categories.

Stem codes contain all pertinent information in a pre-combined fashion. This is referred to as 'precoordination'. When additional detail that pertains to a condition is described by combining multiple codes, this is referred to as 'postcoordination'. The mechanism of showing that codes are postcoordinated is called cluster coding in ICD-11.

Example
Precoordination of concepts in a single code
Condition: 2C25.2 Squamous cell carcinoma of bronchus or lung.
In precoordination, both site and pathology are combined in a single precoordinated stem code.

Example
Postcoordination of concepts combined through cluster coding
In postcoordination, the condition urinary tract infection due to Extended spectrum beta-lactamase producing Escherichia coli is expressed through a combination of two linked or clustered stem codes.
Condition: GC08.0 Urinary tract infection, site not specified, due to Escherichia coli
Has manifestation (use additional code, if desired): MG50.27 Extended-spectrum beta-lactamase producing Escherichia coli
Cluster code: GC08.0/MG50.27

1.2.5.2 Multiple Parenting
An entity may be correctly classified in two different places, e.g. by site or by aetiology. For a disease like oesophageal cancer this would mean that it could be classified to cancers (malignant neoplasms) or to conditions of the digestive system. In the same way, cerebral ischaemic conditions could be classified to the vascular system – where the problem arises - or to the nervous system – where the ischaemia impacts and manifests with symptoms.

1.2.6 Language independent ICD entities
ICD-11 entities are language independent. All entities have unique identifier (URI), and have a specific place in a hierarchy of groups, categories, and narrower terms. The maintenance of the ICD-11 on an international level is handled in the English language but the content model of ICD–11 is language independent and allows binding of any desired language to the elements of its Foundation Component. In this way, an international translation base facilitates translations or multilingual browsing.

1.2.7 Organisation of a Congruent System
Many countries use a single coding system (tabular list) for all use cases. Congruent, telescopically expandable and collapsible purpose-independent subsets for morbidity coding in different settings (comparable to Verbal Autopsy, or initial implementation lists for mortality) allow gathering of information at different levels of detail and still allow for comparison of the collected information at the level of the common description.

1.3 Main Uses of the ICD: Mortality
Mortality statistics are widely used for medical research, monitoring of public health, evaluating health interventions, and planning and follow-up of health care. Rules adopted by the World Health Assembly regarding the selection of a single cause or condition, from death certificates, for routine tabulation of mortality statistics are provided to standardise production of mortality data. Implementation of the ICD for mortality requires setting up an infrastructure for reporting and storing information, designing information flows,
quality assurance and feedback, and training for classification users working with the input or output of data.

1.4 Main Uses of the ICD: Morbidity

Morbidity data are used for statistical reporting mostly at national or local levels. While some of this statistical reporting is conducted within an academic research context, it is commonly conducted in applied settings to inform health system and public health agency decision-making. ICD coded data also forms the basis of different casemix systems, such as different varieties of Diagnosis Related Groups (DRGs). Coded morbidity data can also be used to inform a variety of clinical guidelines through provision of Foundation Component information on burden of disease.

1.4.1 What is coded: Conditions of patient

The health care practitioner responsible for the patient’s treatment is also responsible for documenting the patient’s health conditions. This information should be organised systematically by using standard recording methods. A properly completed record is essential for good patient management. It is also an essential prerequisite to the creation of a valid coded record of patient diagnoses, derived through a coding process from written information describing a patient’s medical condition. When a sound written record of patient conditions is available, successful coding of this information in ICD and associated classifications produces a valuable source of epidemiological and other statistical data on morbidity and other health care problems. The person transforming the information on the stated condition to codes (the ‘coder’) may be the health care practitioner or a clinical coder (who is not responsible for the patient’s treatment). In the latter situation, which is quite common among member countries, the coder depends on the adequacy of clinical documentation of patient conditions by health care practitioners in the medical record. The primary importance of clinical documentation by health care practitioners as the starting point for coded health data cannot be overstated, and needs to be underlined as being a matter of key importance within countries and internationally – with implications for health information and clinical documentation teaching within health care practitioner training programs.

1.5 Traditional Medicine

Traditional Medicine (TM) is an integral part of health services provided in many countries. International standardization by including Traditional Medicine within the ICD allows for measuring, counting, comparing, formulating questions and monitoring over time. Although some of these countries have had national classification systems for many years, information from such systems has not been standardised or available globally.

It is recommended that coding of cases with ICD-11’s chapter on Traditional Medicine disorders and patterns (TM1) be used in conjunction with the Western Medicine concepts of ICD Chapters 1-25. Such integration will bring community benefit and enable issues such as safety and efficacy of treatments for different conditions to be established. The Traditional Medicine (TM1) chapter can also be used alone.
As with other ICD chapters, the TM1 chapter is not judging TM practice or the efficacy of any TM intervention. As a tool for classifying, diagnosing, counting, communicating and comparing TM conditions, it will also assist research and evaluation to assess the safety and efficacy of TM.

1.6 ICD maintenance and application

The ICD maintenance process allows the continuous adaptation of the ICD following the evolution in the understanding of diseases, treatments, and prevention. A proposal and review mechanism on the online platform makes the process transparent. Workflows ensure that proposed changes are considered both from a medical and scientific perspective and from their value and place in a particular use case. As a result, the Foundation Component and the related tabular list(s) will be released in updated versions.

1.6.1 ICD–11 Update Process

Official releases of the ICD-11 MMS classification are produced annually for international use in mortality and morbidity (blue browser). The ICD-11 Foundation Component is continuously updated. A standardised process has been established to ensure that the proposed updates are collected, routed, reviewed, and duly considered before being implemented. The updating is carried out at different levels with different frequencies. Updates that impact on the 4 and 5 digit structures will be published every 5 years. Updates at a more detailed level can be published more frequently. Additions to the index can be done on an ongoing basis. Mortality and morbidity rules that have serious impact on statistics will be updated in long term cycles of 10 years.

1.6.1.1 Proposals and Review Mechanisms and workflow

Any individual can submit a proposal for an update to the ICD. Such updates can refer to one or more entities of the ICD. They may address the position of entities in a tabular list, in the Foundation Component, and any element of the content model. The maintenance platform of ICD-11 (orange browser) is used for proposals and comments. Any input to ICD-11 and its components requires proper mention of sources, scientific evidence, and permission by the owner of the copyright, where applicable.

1.6.2 Applicability and Intellectual Property

The following paragraph provides an overview of the legal regulations in relation to ICD. It is understood that this text does not prejudge in any way the wording of the legal arrangements that are made between WHO and the relevant parties.

The ICD is intellectual property of WHO and changes to the ICD are subject to contractual arrangements and approval through the updating mechanism.

The ICD provides a set of core tabular lists with categories that are mandatory for international reporting.
ICD is distributed free of charge for personal, research, governmental, and other non-commercial uses. Commercial users of the ICD are subject to royalties payable to the WHO.

Users may access and use the ICD from the Internet for personal use. Users will register and agree to the end user license agreement prior to accessing ICD files for download. A print version can be bought or ordered from the WHO bookshop.

Web services for ICD coding and browsing are available subject to signature of relevant agreements.

The ICD may be translated into any language. For translation, interested parties (the Translator) are requested to contact the WHO and comply with the relevant regulations in a signed contract. The Translator will use the WHO translation platform, thus allowing the WHO to verify correctness and completeness of the translation. The translations of WHO official languages are a product of WHO and all rights are vested with WHO. Translations of other languages are a product of the Translator. WHO is automatically granted a perpetual and irrevocable, non-exclusive, world-wide, royalty-free, sub-licensable right to use, change, adapt, translate, publish, and disseminate such work product in any manner and in any format in conjunction with the work of WHO. Any adaptation, translation, publication (including in scientific journals), and dissemination to be made by either party will be coordinated between them.

In some instances, users may feel the need to change parts of the ICD in order to produce a special version of ICD. Production of special versions require a dedicated contractual arrangement with WHO. Such versions will be produced from the WHO production platform by WHO. All changes to ICD must be submitted on the WHO-ICD maintenance platform (for details see Section 2.1.1 'ICD-11 update process). Requests for production of a special version will be subject to requests for funding of the related work.

For international reporting, the most up to date version of the ICD is used, as stipulated in the Nomenclature Regulations (1967).

No publicity may be displayed in the coding or browsing pages. In case of embedding in a local website, or running a local version, a link to the ICD homepage at the WHO must be included. No publicity may be displayed in the ICD print versions.

Ideally users will access the ICD online or through the web services. This will ensure proper joint use of index, content model, and tabular lists and facilitate dissemination of updates, where applicable. Any coding mechanism produced by 3rd parties must provide the same coding results as the reference online coding tool.

1.6.3 National Modifications for morbidity coding

The use of ICD in the specific context of the health care system of a country may require the development of modifications to the ICD-11, for example, due to specific settings or due to reimbursement system requirements. Such changes will be subject to the same international process as are all other changes to ICD, then become part of the Foundation Component and eventually of the MMS, prior to their implementation in the requesting country.
A situation may arise, where a national government or an equally important national body requests a modification to be implemented immediately. In such exceptional circumstances, conflicts with the current Foundation Component must be avoided, and the relevant changes will be subject to special mechanisms of the international updating process. All countries planning to produce national modifications must make the relevant contractual arrangements with WHO. This includes regulations on distribution within the respective country and the resources necessary.

For developing a national modification of ICD-11 the following rules must be followed:

1. Modifications will be agreed by the ICD-11 maintenance bodies before they are implemented nationally
2. Modifications are only added below the level of coding depth that is specified in the Tabular List for Morbidity and Mortality Statistics, and should not conflict with the foundation.
3. All national modifications will consider if suitable additional detail exists already in the foundation.
4. If a change is performed to the international version the respective national modification must be adapted as soon as possible.

Example

‘Diabetes Type 1’ in WHO Version of ICD-11 is 5A10. In a national modification there might be the need for additional detail which can be added in the routine notation of ICD-11 codes: ‘Diabetes Type 1, uncontrolled’ can be coded in that national modification to 5A10; Diabetes Type 1, uncontrolled’ to 5A10.1 However, the mechanisms for postcoordination via cluster coding would allow to code that detail without additional pre-coordination.

1.7 History of the development of the ICD

1.7.1 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 (1). Sauvages' comprehensive treatise was published under the title Nosologia methodica. A contemporary of Sauvages was the great methodologist Linnaeus (1707-1778), author of Genera morborum, a catalogue of diseases. More recently, Moriyama et al (2) have referred to 16th century and 17th predecessors Fernel and Sydenham. 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 published in 1662. 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, when no records of age at death were available. He took all deaths classed them using terms from the time,
such 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 36% mortality before the age of six years appears from later evidence to have been a good one. While three centuries have contributed 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’ (3).

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. Farr was 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.

Farr found Cullen’s classification in use in the public services. It had not been revised to embody the advances of medical science, nor was it deemed by him to be satisfactory for statistical purposes. Farr realised that small numbers that would result from a detailed classification would not permit statistical inferences to be made. In the first Annual Report of the Registrar General (4), 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. Farr did much to promote his classification but could not find general acceptance (4). 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 Genevan Marc d’Espine 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 aetiology followed by anatomical site, survived as the basis of the International
List of Causes of Death.

Importantly, the 1855 Congress also recommended that each country should ask for
information on causes of death from the doctor who had been attending the deceased, and
that each country should take measures to ensure that all deaths were verified by doctors
(4).

1.7.2 Adoption of the International List of Causes of Death

At its 1891 meeting in Vienna, the International Statistical Institute, the successor to the
International Statistical Congress, 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. The committee’s report was presented and adopted at the
meeting of the International Statistical Institute in Chicago in 1893.

For main headings, Bertillon adopted the anatomical site rather than the nature of disease,
according to Farr’s plan. Bertillon’s list included defined diseases most worthy of study by
reason of their transmissible nature or their frequency of occurrence. In accordance with
the instructions of the Vienna Congress, Bertillon included three classifications: an
abridged classification of 44 titles; a classification of 99 titles; and a classification of 161
titles. Bertillon also prepared some rules or guidelines on the resolution of problems; for
example, how statistical clerks should classify what is written without imputing what the
doctor might have meant (5). 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 (5). 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 (6): 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 assembled 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 was adopted on 21 August 1900. The desire for 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 organisations in preparation for subsequent revisions. The Health organisation 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 Statistical Experts, 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 were to be used in the tabulation of statistics of morbidity. This careful study was published by the Health organisation of the League of Nations in 1928 (7). In order to coordinate the work of both agencies, an international ‘Mixed Commission’ was created with an equal number of representatives from the International Statistical Institute and the Health organisation 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.

1.7.3 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 organisations, such as health insurance organisations, hospitals, military medical services, health administrations, and similar bodies. The following resolution, therefore, was adopted (8):
1.7.3.1 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 organisation of the League of Nations undertake, as in 1929, the preparation of international lists of diseases, in conjunction with experts and representatives of the organisations 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 United States Government continue its studies of the statistical treatment of joint causes of death in the following resolution (9):
  - 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;
    - Warmly thanks the United States Government for the work it has accomplished or promoted in this connection;
  - Requests the United States Government to continue its investigations during the next ten years, in cooperation with other countries and organisations, on a slightly wider basis, and
  - Suggests that, for these future investigations, the United States Government should set up a subcommittee comprising representatives of countries and organisations participating in the investigations undertaken in this connection.

1.7.4 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" (10). 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’ (8). 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 (9). 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.

1.7.5 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. Recognizing a trend, the committee decided that 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 organisations were using medical records
involving both sickness and death. Even in organisations that compile only morbidity
statistics, fatal as well as non-fatal cases needed to 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.

1.7.6 Sixth Revision of the International Lists

The International Health Conference held in New York City in June and July 1946 (11)
entrusted the Interim Commission of the World Health Organisation 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 changes 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 Organisation, 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 (12).

The Conference adopted the classification prepared by the Expert Committee as the Sixth Revision of the International Lists (13). 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 Organisation 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 (22). The Manual consisted of two volumes, Volume 2 being an alphabetical index of diagnostic terms coded to the appropriate categories. In the Sixth Revision, morbid conditions
resulting from injuries, poisonings and other external causes were classified according to both the external circumstances giving rise to the injury and to the kind of injury.

The adoption of this dual classification was regarded at the time as a bold step to deal with the simultaneous interest in more than one aspect of injury. 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 Organisation. 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 the WHO.

1.7.7 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 the WHO in February 1955 (14). 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 (15). The Eighth Revision Conference convened by the WHO met in Geneva, from 6 to 12 July 1965 (16). 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 aetiology 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.

1.7.8 The Ninth Revision

The International Conference for the Ninth Revision of the International Classification of Diseases, convened by the WHO, met in Geneva from 30 September to 6 October 1975 (17). 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 generalised 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. 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.

1.7.9 The Tenth Revision

Even before the Conference for the Ninth Revision, the WHO had been preparing for the Tenth Revision. It recognised 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 www.who.int/classification) were consequently called upon to experiment with models of alternative structures for ICD–10.

It had also become clear that the established ten-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 organisations made the process a very lengthy one. The Director General of the WHO therefore wrote to the Member States and obtained their agreement to postpone a 1985 Tenth Revision Conference until 1989, 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 organised by some of the WHO Regional Offices and through a survey organised at headquarters.

The International Conference for the Tenth Revision of the International Classification of Diseases, attended by delegates from 43 Member States, was convened by the World Health organisation in Geneva from 26 September to 2 October 1989. The United Nations, the International Labour Organisation, and the WHO Regional Offices sent representatives to participate in the Conference, as did the Council for International organisations of Medical
Sciences. Twelve other non-governmental organisations concerned with cancer registration, the deaf, epidemiology, family medicine, gynaecology and obstetrics, hypertension, health records, preventive and social medicine, neurology, psychiatry, rehabilitation and sexually transmitted diseases were also invited.

Extensive preparatory activity had been devoted to a radical review of the suitability of the structure of the ICD, essentially a statistical classification of diseases and other health problems, to serve a wide variety of needs for mortality and health-care data. Ways of stabilizing the coding system to minimize disruption at successive revisions had been investigated, as had the possibility of providing a better balance between the content of the different chapters of the ICD. Even with a new structure, it was plain that one classification could not cope with the extremes of the requirements. The concept had therefore been developed of a ‘family’ of classifications, which would include the ICD for traditional mortality and morbidity statistics, while needs for more detailed, less detailed or different classifications and associated matters would be dealt with by other members of the family. The potential for different members of the ‘family’ in the medico-social and multidimensional assessment in relation not only to health but also to activities of daily living, as well as the social and physical environment, was recognised. It was demonstrated that effective information could be obtained through use of the ICD and the International Classification of Impairments, Disabilities, and Handicaps (ICIDH) (18), and through use of the codes from Chapter XXI of the Tenth Revision.

The main innovation in the Tenth Revision was the use of an alphanumeric coding scheme of one letter followed by three numbers at the four-character level. This had the effect of more than doubling the size of the coding frame in comparison with the Ninth Revision and enabled the vast majority of chapters to be assigned a unique letter or group of letters, each capable of providing 100 three-character categories. Of the 26 available letters, 25 had been used, the letter U being left vacant for future additions and changes, and for possible interim classifications to solve difficulties arising at the national and international level between revisions.

Another important innovation was the creation towards the end of certain chapters of categories for postprocedural disorders. These identified important conditions that constituted a medical care problem in their own right. Postprocedural conditions that were not specific to a particular body system continued to be classified in the chapter on ‘Injury, poisoning and certain other consequences of external causes’. The Revision included definitions, standards, and reporting requirements related to maternal mortality and to foetal, perinatal, neonatal and infant mortality. It was published in three volumes: one containing the Tabular List, a second containing all related definitions, standards, rules and instructions, and a third containing the Alphabetical Index.

The Tenth Revision Conference discussed the difficulties experienced during the extended period of use of the Ninth Revision, related to the emergence of new diseases and the lack of an updating mechanism to accommodate them. It recognized that it would not be feasible to hold revision conferences more frequently than every 10 years. It also recognized that any changes introduced during the lifetime of the Tenth Revision would need to be considered carefully in relation to their impact on analyses and trends.
1.7.10 The WHO Family of International 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. Also, the ICD 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 provided the basis for the development of a ‘family’ of health classifications. This was given added momentum during the 1990s by the development of the International Classification of Functioning, Disability and Health (ICF) (19), approved by the World Health Assembly in 2001.

In 2001, the WHO Family of International Classifications (WHO-FIC) was created. At the core of the Family are its reference classifications, currently the ICD and the ICF; the International Classification of Health Interventions (ICHI), now under development, is the third reference classification. The WHO-FIC also includes derived classifications, which provide additional detail to core classifications or are rearrangements or aggregations of terms in core classifications; the WHO has licensed several countries to develop national modifications of the ICD as derived classifications. As well, the WHO-FIC includes related classifications to cover health functions which are not (or are only partially) covered by other WHO-FIC members. The WHO-FIC is supported by a network of Collaborating Centres, based on the former Collaborating Centres for the ICD and the ICF, but continuously expanded by the addition of new centres.

Table 1: Evolution of ICD

<table>
<thead>
<tr>
<th>Iteration</th>
<th>Year</th>
<th>Document</th>
<th>Note</th>
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<tr>
<td>0</td>
<td>1891</td>
<td>Bertillon Classification of Causes of Death</td>
<td>Drafted by International Statistical Institute</td>
</tr>
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<td>1900</td>
<td>Bertillon/International List of Causes of Death</td>
<td>First International Conference for Revision of List of Causes of Death</td>
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<td>2</td>
<td>1910</td>
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<td>179 titles, call for revision every 10 years</td>
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<td>3</td>
<td>1920</td>
<td>International List of Causes of Death</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1929</td>
<td>International List of Causes of Death</td>
<td>Drafted jointly by International Statistical Institute and Health organisation of the League of Nations</td>
</tr>
<tr>
<td>5</td>
<td>1938</td>
<td>International List of Causes of Death</td>
<td>200 titles, additions to infectious and parasitic</td>
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<td>6</td>
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<td>International Classification of Diseases, Injuries, and Causes of Death</td>
<td>Recognition of classification of disease and injury, in addition to causes of death</td>
</tr>
<tr>
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<td>Event</td>
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<tr>
<td>------</td>
<td>-------</td>
<td></td>
<td></td>
</tr>
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<td>International Classification of Diseases, Injuries, and Causes of Death</td>
<td></td>
<td></td>
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</table>

**1.7.11 Updating of ICD between revisions**

As foreshadowed at the Tenth Revision conference, updating of the tenth revision of ICD commenced in 2000. Updating proposals came from, and were carefully considered by, the WHO and Collaborating Centres, including the impact on trends. The updating process has allowed an extended life for the Tenth Revision while maintaining its clinical and scientific currency.

**1.7.12 Preparations for the Eleventh Revision**

By 2003, it was becoming clear to the WHO and the Collaborating Centres that a further revision of the ICD could not be long delayed. The extent to which ICD updating could encapsulate emerging developments was limited by the structure of ICD–10, and some issues needed extended development and discussion with expert groups. A special meeting of Collaborating Centres in Helsinki in 2004 discussed the need for a revision and issues to be addressed as part of the revision process. The 2004 WHO-FIC meeting subsequently adopted a revision process work-plan which was progressively developed at ensuing meetings.

In 2007, the WHO formally launched the revision process. Oversight has been provided through a broad-based Revision Steering Group. Technical work has been undertaken by a series of Topic Advisory Groups, with cross-cutting groups examining mortality, morbidity and quality and safety issues. For the first time, a chapter on description of diseases and patterns of diseases from a Traditional medicine standpoint has been included.

A Content Model, including a range of components for each ICD entity has been developed, giving a rich Foundation for the ICD. Other classifications and terminologies are linked or included where possible to ensure ICD is aligned with them, and items used in other members of the WHO Family of Classifications have been aligned wherever possible. The
more traditional statistical classification for mortality and morbidity is obtained from the Foundation Component of ICD–11 as a tabular list. Extension codes are used to limit content volume but still allow detailed classification of disease entities.

1.7.13 References for history of ICD
2 Part 2 - Using ICD-11
2.1 ICD maintenance and application

The ICD maintenance process allows the continuous adaptation of the ICD following the evolution in the understanding of diseases, treatments, and prevention. A proposal and review mechanism on an online platform makes the process transparent. Workflows ensure that proposed changes are considered both from a medical and scientific perspective and from their value and place in a particular use case. As a result, the Foundation Component and the related tabular list(s) will be released in updated versions.

2.1.1 ICD–11 update process

The ICD is continuously updated (development version). Official releases are produced annually for international use in mortality and morbidity. A standardised process has been established to ensure that the proposed updates are collected, routed, reviewed, and duly considered before being implemented.

The updating is carried out at different levels with different frequencies. That will keep stability for mortality and allow quicker updates for morbidity use.

- Updates that impact on international reporting (the 4 and 5-digit structure of the stem codes) will be published every five years.
- Updates at a more detailed level can be published at annual rates, and pending the needs of clinical modifications also twice a year.
- Additions to the index can be done on an ongoing basis.
- Mortality and morbidity rules will be updated in long term cycle.

2.1.1.1 Proposals, review mechanisms, and workflow

Any individual can submit a proposal for an update to the ICD. Such updates can refer to one or more entities of the ICD. The proposals will be reviewed by scientific experts and classification experts. Decision on taking into account a particular proposal will be based on the recommendations by these experts. A workflow between a mortality and a morbidity reference group, a medical scientific advisory committee (MSAC), and a classification and statistics advisory committee (CSAC) will ensure that all aspect concerning a proposal are taken into account. Reviews of the synthesis by classification experts ensure suitability of the proposed changes to the diverse use cases of the ICD. The process is based on consensus of the members of the CSAC about a proposed change. All rounds of editing will be handled through electronic platforms. Where consensus cannot be achieved, the proposal can either be deferred to subsequent cycles of editing pending arbitration by the WHO or be solved in a face to face meeting of classification and content experts. In all other cases, a consensus recommendation is given to the WHO for final decision.

All proposals for change must be submitted through the proposal mechanism to ensure a clear and transparent review of the proposed content. The different types of proposals that may move through a workflow in order to ensure consistency, structural integrity, and scientific correctness of the classification. The different workflows warrant proper use of
the available resources of the Network and WHO. All changes are reported. There can be the need of steps for verification of updates.

For more detailed information on this topic, please see the Annex 3.8 - ‘ICD-11 Updating and Maintenance’

2.1.2 Applicability and Intellectual Property

The following paragraph provides an overview of the legal regulations in relation to ICD. It is understood that this text does not prejudge in any way the wording of the legal arrangements that are made between WHO and the relevant parties.

The ICD is intellectual property of WHO and changes to the ICD are subject to contractual arrangements and approval through the updating mechanism.

The ICD provides a set of core tabular lists with categories that are mandatory for international reporting.

ICD is distributed free of charge for personal, research, governmental, and other non-commercial uses. Commercial users of the ICD are subject to royalties payable to the WHO.

Users may access and use the ICD from the Internet for personal use. Users will register and agree to the end user license agreement prior to accessing ICD files for download. A print version can be bought or ordered from the WHO bookshop.

Web services for ICD coding and browsing are available subject to signature of relevant agreements.

The ICD may be translated into any language. For translation, interested parties (the Translator) are requested to contact the WHO and comply with the relevant regulations in a signed contract. The Translator will use the WHO translation platform, thus allowing the WHO to verify correctness and completeness of the translation. The translations of WHO official languages are a product of WHO and all rights are vested with WHO. Translations of other languages are a product of the Translator. WHO is automatically granted a perpetual and irrevocable, non-exclusive, world-wide, royalty-free, sub-licensable right to use, change, adapt, translate, publish, and disseminate such work product in any manner and in any format in conjunction with the work of WHO. Any adaptation, translation, publication (including in scientific journals), and dissemination to be made by either party will be coordinated between them.

In some instances, users may feel the need to change parts of the ICD in order to produce a special version of ICD. Production of special versions require a dedicated contractual arrangement with WHO. Such versions will be produced from the WHO production platform by WHO. All changes to ICD must be submitted on the WHO-ICD maintenance platform (for details see Section 2.1.1 ‘ICD-11 update process). Requests for production of a special version will be subject to requests for funding of the related work.

For international reporting, the most up to date version of the ICD is used, as stipulated in the Nomenclature Regulations (1967).
No publicity may be displayed in the coding or browsing pages. In case of embedding in a local website, or running a local version, a link to the ICD homepage at the WHO must be included. No publicity may be displayed in the ICD print versions.

Ideally users will access the ICD online or through the web services. This will ensure proper joint use of index, content model, and tabular lists and facilitate dissemination of updates, where applicable. Any coding mechanism produced by 3rd parties must provide the same coding results as the reference online coding tool.

### 2.1.3 National modifications for morbidity coding

The use of ICD in the specific context of the health care system of a country may require the development of modifications to the ICD-11, for example, due to specific settings or due to reimbursement system requirements. Such changes will be subject to the same international process as are all other changes to ICD, then become part of the Foundation Component and eventually of the MMS, prior to their implementation in the requesting country.

A situation may arise, where a national government or an equally important national body requests a modification to be implemented immediately. In such exceptional circumstances, conflicts with the current Foundation Component must be avoided, and the relevant changes will be subject to special mechanisms of the international updating process. All countries planning to produce national modifications must make the relevant contractual arrangements with WHO. This includes regulations on distribution within the respective country and the resources necessary.

For developing a national modification of ICD-11 the following rules must be followed:

1. Modifications will be agreed by the ICD-11 maintenance bodies before they are implemented nationally
2. Modifications are only added below the level of coding depth that is specified in the Tabular List for Morbidity and Mortality Statistics, and should not conflict with the foundation.
3. All national modifications will consider if suitable additional detail exists already in the foundation.
4. If a change is performed to the international version the respective national modification must be adapted as soon as possible.

**Example**

‘Diabetes Type 1’ in WHO Version of ICD-11 is 5A10. In a national modification there might be the need for additional detail which can be added in the routine notation of ICD-11 codes: ‘Diabetes Type 1, uncontrolled’ can be coded in that national modification to 5A10; Diabetes Type 1, uncontrolled’ to 5A10.1 However, the mechanisms for postcoordination via cluster coding would allow to code that detail without additional pre-coordination.
2.1.4 Interventions - ICHI

Intervention classifications are designed to include all kinds of health interventions for treatment, diagnosis, or prevention. The International Classification of Health Interventions (ICHI) includes interventions across all functional sectors of the health system, covering acute care, primary care, rehabilitation, assistance with functioning, prevention, public health, and ancillary services. Interventions provided by all types of providers have been included. The importance of describing and classifying health interventions has long been understood. An International Classification of Procedures in Medicine (ICPM) was published by WHO in 1978 but was not maintained. ICHI is much broader than the former ICPM because it includes the full range of health interventions. Development of ICHI began in 2007, as a joint effort of the WHO- FIC Network and WHO. Its structure has been completed, an alpha version published in 2012 and a beta version in 2015. Finalisation is planned for 2019.

Table 1: Definitions and terms used in creation of ICHI classifications.

<table>
<thead>
<tr>
<th>Axes</th>
<th>Inclusions</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>The <strong>Target axis</strong> contains the entities on which the action is carried out.</td>
<td>Anatomy, Human function, Person or client, Group or population</td>
<td></td>
</tr>
<tr>
<td>The <strong>Action axis</strong> is defined as a deed which is done by an actor to a target during a health care intervention.</td>
<td>Investigation, Treating, Managing, Informing, Assisting, Preventing</td>
<td></td>
</tr>
<tr>
<td>The <strong>Means axis</strong> contains the entities describing the processes and methods by which the action is carried out.</td>
<td><strong>Approach</strong>: the process by which the target of the action is accessed</td>
<td>open, endoscopic</td>
</tr>
<tr>
<td></td>
<td><strong>Technique</strong> used as part of the action</td>
<td>radiation, magnetic resonance</td>
</tr>
<tr>
<td></td>
<td><strong>Method</strong> describing how the action is undertaken</td>
<td>law enforcement, method of transport.</td>
</tr>
</tbody>
</table>

Other attributes of interventions are included as ‘Means’ in the ICHI Content Model. The content of the axes has been restricted to attributes that are common to many interventions. In particular:

- Devices have not been included as an axis because most interventions do not involve a device and devices change rapidly
- Drugs or other substances administered through an intervention are classified elsewhere (ICD, The Anatomical Therapeutic Chemical Classification with Defined Daily Doses (ATC/DDD), INN).

The coding system comprises a 7-character category structure for the three axes:
• Three letters for the Target
• Two letters for the Action
• Two letters for the Means

ICHI is a flat file comprising valid 7 letter combinations of the three axes. For each intervention included in ICHI, the appropriate 7 letter combination is identified. Not every possible combination of the three axes represents a valid ICHI domain.

2.1.5 Functioning in ICD and joint use with ICF

The ICD–11 has been created both to share concepts and be used jointly with the ICF. This partnership may assist with the following tasks:

• evaluation for general medical practice (e.g. fitness for work)
• evaluation for social benefits (e.g. disability, pension)
• payment or reimbursement purposes
• needs assessment (e.g. for rehabilitation, occupational assistance, long term care)
• outcome evaluation of interventions

Signs and symptoms in the ICD are aligned with body functions in the ICF, and ‘factors influencing health status’ in the ICD with contextual factors in the ICF. The items of Section V of ICD are a subset of the entities contained in ICF.

The functioning section that is embedded in ICD serves to generate a summary functioning score based on assessment of the individual. The set of functioning items in ICD-11 allows the WHO Disability Assessment Scale (WHODAS), and the Model Disability Survey (MDS, module 4000, Functioning) to be used to generate the summary score. The set can also be used for assessment. Where more detail for assessment is required, the full ICF should be used. The functioning of the individual items is assessed using the combined questionnaire in the Annex (WHODAS 36 + MDS). The set is complemented by elements of the generic core set. The severity is reported using a negative scale qualifier identical to the one used in ICF:

<table>
<thead>
<tr>
<th>Code</th>
<th>Descriptor</th>
<th>Estimated broad range</th>
</tr>
</thead>
<tbody>
<tr>
<td>x.0</td>
<td>NO problem</td>
<td>0-4 %</td>
</tr>
<tr>
<td>x.1</td>
<td>MILD problem</td>
<td>5-24%</td>
</tr>
<tr>
<td>x.2</td>
<td>MODERATE problem</td>
<td>25-49</td>
</tr>
<tr>
<td>x.3</td>
<td>SEVERE problem</td>
<td>50-95%</td>
</tr>
<tr>
<td>x.4</td>
<td>COMPLETE problem</td>
<td>95-100%</td>
</tr>
<tr>
<td>x.8</td>
<td>not specified</td>
<td></td>
</tr>
<tr>
<td>x.9</td>
<td>not applicable</td>
<td></td>
</tr>
</tbody>
</table>
2.1.6 Structure and taxonomy of the ICD Classification System

The authoring of ICD follows a set of rules that ensure the functional and structural integrity of the classification. The evolution of ICD carefully balances the need for categories that match current knowledge while allowing statistical comparability over space and time.

The chapter structure of ICD reflects major aspects of diseases. Chapters are not intended to delimit areas of medical expertise or domains of specialties. The ICD has categories for diseases, disorders, syndromes, signs, symptoms, findings, injuries, external causes of morbidity and mortality, factors influencing health status, reasons for encounter of the health system, and traditional medicine. ICD-11 complements these categories with additional detail such as anatomy, substances, infectious agents, or place of injury. ICD-11 also comes with a set of rules and explanations for its use, required reporting formats, and necessary metadata.

The most widespread use of ICD over time and geographically, is for cause of death statistics. The second important use is classification of clinical documentation to provide standardised, language independent information for morbidity use, such as resource allocation, casemix, patient safety and quality of care as well as primary care and research. ICD and its definitions are also used as a framework in legislation.

A statistical classification of diseases must be confined to a limited number of mutually exclusive categories able to encompass the complete range of diseases or morbid conditions. The categories are 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 are assigned to groups of separate but related conditions. Every 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. The following measures are used to determine whether an entity qualifies to become a unique category:

1. Epidemiological evidence: frequency analyses of coded mortality and morbidity data
2. Clinical evidence: disease evidence provided by the medical specialties
3. Granularity: minimum detail reported and useful in mortality (mortality data) or primary care
4. Continuity: preserve the level of detail pre-existing in ICD
5. Parsimony: the need to limit the number of categories for international mandatory reporting.

The concepts of classification, nomenclature and terminology are closely related. It is the element of grouping that distinguishes a statistical classification from a nomenclature or terminology, which must have separate titles for each known morbid condition. However, nomenclatures or terminologies are also often arranged systematically. A statistical classification can make allowances for different levels of detail if it has a hierarchical structure and subdivisions.
A statistical classification of diseases should retain the ability to identify specific disease entities while allowing statistical presentation of data of broader groups to enable the generation of useful and understandable information. The same general principles apply 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 aetiology, anatomical site, circumstances of onset, or other criteria.

ICD-11 draws extensively on the method of combining several codes to describe a morbid entity to the desired level of detail. Its electronic architecture allows assignment of unique identifiers to any condition listed - independently whether the condition is grouped in a statistical class or whether it represents a class of its own. The two approaches together allow the option of keeping coding simple where required diagnostic detail is limited; and the alternative to add detail where diagnostic reporting requires a high level of sophistication.

**2.1.7 Chapter structure**

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: - epidemic diseases - constitutional or general diseases - local diseases arranged by site - developmental diseases – injuries. These groups remain in the chapters of ICD–11. The structure has stood the test of time and, though in some ways arbitrary, is still regarded as more useful for general epidemiological purposes than any of the alternatives tested. The conservation of the structure acknowledges the need for stability while allowing incorporation of additional sections. The special groups 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. These conditions formulate the ‘special groups’ chapters:

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Certain infectious or parasitic diseases</td>
</tr>
<tr>
<td>2</td>
<td>Neoplasms</td>
</tr>
<tr>
<td>3</td>
<td>Diseases of the blood or blood-forming organs</td>
</tr>
<tr>
<td>4</td>
<td>Diseases of the immune system</td>
</tr>
<tr>
<td>18</td>
<td>Pregnancy, childbirth, or the puerperium</td>
</tr>
<tr>
<td>19</td>
<td>Certain conditions originating in the perinatal period</td>
</tr>
<tr>
<td>20</td>
<td>Developmental anomalies</td>
</tr>
<tr>
<td>22</td>
<td>Injury, poisoning or certain other consequences of external cause</td>
</tr>
</tbody>
</table>

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. This principle is enforced in the ‘excludes’ notes at the beginning of each chapter in the ICD. For example, cervical dysplasia grade 1 is coded to the chapter 2 ‘Neoplasms’ because distinction between dysplasia and neoplasia and clinical management are subject to a set of recommended criteria that may change over time.

2.1.8 Guiding principles

Allocation of entities in the classification follows a set of rules that serve to maintain the structural and functional integrity of the classification. The core set of rules listed here is complemented by additional rules that address special cases or serve to ensure consistent user guidance. They are listed in order of priority.

1. No changes to the classification, including movement of categories or groups between chapters, without rationale and documented change in aetiology or prevention method. (e.g. Chapter 4 - ‘Diseases of the immune system’ was added as a new chapter as there was sufficient scientific evidence to support this move). Alternatively, it was suggested to move ‘wounds of skin’ to ‘Diseases of the skin’. The wound of the skin, being an injury, remains grouped with injuries because prevention will focus on the cause of the wound.

2. Conditions are classified predominantly by their aetiology.
   - Local manifestations of important ‘aetiologies’ are located in the aetiology chapter (e.g. Viral hepatitis is in ‘Certain infectious or parasitic disease’).
   - Where one condition can be due to multiple different aetiologies, and it is more relevant to retain the affected body system, it is usually classified with the body system (e.g. some gastric ulcers are caused by bacteria, but they remain in the ‘Digestive system’ chapter).
   - Where the aetiology of the condition is unknown, it is allocated to the most relevant organ system (e.g. Costen syndrome is in the ‘Digestive system’ chapter).
   - Systemic ‘aetiologies’ are primarily in their relevant aetiology chapter (e.g. Idiopathic inflammatory myopathy is in “Diseases of the immune system”).

3. Conditions that could arguably be in two or more places of the classification remain in their legacy location.
   - For example, injuries of the eye are equally important for the eye and their prevention. Despite the suggestion of including them in the eye chapter, they remained where they were, in the injury chapter.
   - Where aetiology and body system are equally important, the legacy location remains unchanged (e.g. ocular motor nerve palsies).

4. Keeping a group of subtypes together in one location may override anatomical or aetiological considerations (e.g. human prion diseases - some have a genetic component, others a transmissible component).
2.1.9 Guiding principles for classification of special concepts

1. Clinical findings are located in the chapter ‘Symptoms, signs or clinical findings, not elsewhere classified’. (e.g. ‘Abnormal serum enzyme levels’ or ‘Results of function studies of the circulatory system’)

2. Manifestations of diseases and a relevant point for a health intervention are ‘clinical manifestations’ and are located in the body system chapter where they manifest. The underlying condition has to be coded as well. (e.g. myocarditis)

3. Syndromes, where the aetiology is unknown, are allocated with the most relevant body system. (e.g. Costen syndrome is in the ‘Digestive’ chapter)

4. The number of categories with ‘due to’ in the title are restricted to certain exceptions. (e.g. acute bronchiolitis due to respiratory syncytial virus)

5. Very specific, chronic, postprocedural conditions are grouped at the end of the body system chapter where they manifest. (e.g. lymphoedema due to surgery or radiotherapy). Residual categories do not exist for these groups.

6. Acute postprocedural complications are identified by combinations of codes from body system or injury chapters, and external causes chapter (e.g. an accidental puncture of an organ during an intervention is classified with a code for the injured organ (harm), a code describing what surgery caused the injury (cause), and a code identifying the accidental puncture as the mode/mechanism of injury.).

7. Categories with mention of ‘multiple’ are restricted to exceptions and require coding of the different multiple conditions individually (e.g. multiple injuries are to be coded individually when possible).

8. Categories with mention of ‘sequelae’ are restricted to exceptions. The specific condition resulting as a sequela needs to be coded along with the underlying cause. In some instances, they will continue to exist with the label ‘late effects of...’ (e.g. late effects of cerebrovascular disease or late syphilis). ‘Sequelae’ include residual effects of diseases or disorders, injuries or poisonings specified as such, or as late effect of, arrested, cured, healed, inactive, old or quiescent condition unless there is evidence of active disease.

9. Categories with mention of ‘history of’ are limited to exceptions (e.g. personal history of malignant neoplasms lists only the more frequent anatomical sites).

10. High level groupings need to be meaningful.

11. Residual categories exist only where they are meaningful. (e.g. where conditions are either congenital or acquired, there is no ‘other’ residual, but there will be an ‘unspecified’ option)

2.1.10 Improving user guidance

The following rules serve to provide user guidance. Users may expect to find conditions in certain places when browsing the tree structure. User groups may need to group data or create subsets for other reasons. The multiple parenting in the Foundation Component serves to address that issue.
1. Where a condition could be in two or more places, identify these other places and add them as secondary parents, e.g. malignant neoplasm of the colon is coded to the neoplasm chapter, but is also shown in the chapter of diseases of the digestive system. In case a set of conditions needs to be shown in more than one place and there is no grouping matching that set, create a window (no primary children, no terms, no residual categories) in the appropriate place.

2. Where a condition could be confused with another condition bearing a similar name, add an exclusion note. (e.g. 'Influenza due to seasonal influenza virus' has a note 'Exclusion: Haemophilus influenzae [H. influenzae] meningitis').

3. Where alternative ways of tabulating data are required, create a special linearization list as a second parent (e.g. infectious diseases by agent). The coding scheme of the individual entries will remain the one used for the full international classification.

4. Where diseases of certain body systems are spread across different chapters, allow for a specialty linearization of the pertinent diseases. The coding scheme of the individual entries will remain the one used for the full international classification. Currently there are specialty linearizations for primary care, dermatology, neurology, ophthalmology, and in special cases such as the International Classification of Disease for Oncology (ICD-O) and the International Classification of External Causes of Injury (ICECI).

### 2.1.11 General features of ICD-11

The main structural innovation of ICD–11 is that it is built on a Foundation Component from which the tabular list (the statistical classification for morbidity and mortality) can be derived.

**Table 1: ICD-11 Terminology**

<table>
<thead>
<tr>
<th>ICD-11 Term</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation component</td>
<td>Underlying data base content that holds all necessary information to generate print versions of the tabular list and the alphabetical index, as well as additional information that is needed to generate specialty linearizations of ICD-11 and country specific modifications.</td>
</tr>
<tr>
<td>Stem code</td>
<td>Stem codes are codes that can be used alone. They are found in the tabular list of ICD-11 for Mortality and Morbidity Statistics. Stem codes may be entities or groupings of high relevance, or clinical conditions that should always be described as one single category. The design of stem codes makes sure that in use cases that require only one code per case, a meaningful minimum of information is collected.</td>
</tr>
<tr>
<td>Extension code</td>
<td>Extension codes are designed to standardise the way additional information is added to a stem code when users and settings are interested in reporting more detail than is included in a stem code.</td>
</tr>
</tbody>
</table>
Extension codes can never be used without a stem code and can never appear in the first position in a cluster.

**Precoordination**
Stem codes may contain all pertinent information about a clinical concept in a pre-combined fashion. This is referred to as ‘precoordination’.

**Example:** BD50.40 Abdominal aortic aneurysm with perforation
**Example:** CA40.04 Pneumonia due to Mycoplasma pneumoniae

**Postcoordination**
Postcoordination refers to linking (through cluster coding) multiple codes (i.e. stem codes and/or extension codes) together, to fully describe a documented clinical concept.

**Cluster coding**
Cluster coding refers to a convention used (either forward slash (/) or ampersand (&)) to show more than one code used together (e.g. stem code/stem code(s)&extension code(s)) to describe a documented clinical concept.

**Example: Diagnosis:** Duodenal ulcer with acute haemorrhage, **Cluster:** DA63.Z/ME24.90; **Condition** - DA63 Duodenal ulcer, unspecified; **Has manifestation (use additional code, if desired)** - ME24.90 Acute gastrointestinal bleeding, not elsewhere classified

**Primary and secondary parents**
The hierarchy of ICD-11 is defined the same as it was in previous versions of ICD. The possibility to connect specific diseases and concepts within the classification to another parent code was introduced to enable specific extracts of the Tabular list for medical specialties or for specific use cases.

**Example:** A code for a malignant neoplasm of the skin is in the chapter for malignant neoplasms. The primary parent for this code is a code or a block from this chapter. However, a medical doctor treating only skin diseases might want to see only codes from the classification that are relevant for his or her specific clinical purpose. Therefore, a secondary parent was defined in the skin chapter which will only show the code in this chapter if the specific extract of code for his or her use case is selected.

### 2.1.12 Foundation Component and Tabular Lists of ICD–11

The Foundation Component is a multidimensional collection of all ICD entities. Entities can be diseases, disorders, injuries, external causes, signs and symptoms. Some entities may be very broad, for example 'injury of the arm', while others are more detailed, for example 'laceration of the skin of the thumb'. The Foundation Component also has the necessary information to use the entities to build a tabular list. The Foundation Component includes information on where and how a certain entity is represented in a tabular list, whether it becomes a grouping, a category with a stem code, or whether it is mentioned as an inclusion term in a particular category.
Several different tabular lists can be built from the Foundation Component. Drawing on the same Foundation Component, a set of tabular lists that builds on the same hierarchical tree can be created – a set of so called congruent tabular lists. Data that is collected with any tabular list of such a congruent set can always be aggregated to the smallest common denominator (provided the same rules for reporting, coding and selection have been applied). The Foundation Component includes instructions on how to combine certain codes in a tabular list to achieve more detail in coding. These rules help coders and computer systems to visualize the permitted code combinations when they are using a tabular list.

**Core tabular lists for international use:**

- Mortality and Morbidity Statistics (MMS)
- Primary care low resources settings (PCL)
- Verbal Autopsy (VA)
- Startup Mortality List (SMoL)

The full name of such a tabular list will always include ‘ICD–11’, e.g. ICD–11 MMS.

In a tabular list, entities of the Foundation Component become categories. The categories are mutually exclusive and jointly exhaustive and linked to a mono hierarchical tree (they have only one parent). The information related to an entity that has become a category and has multiple parents is still available from the foundation. This information can be used to visualize that category in more than one place in the tabular list, e.g. showing them in black in its place for reference tabulation and in grey in any other place for browsing or alternative tabulations. ICD–11 has multiple congruent tabular lists with varying levels of detail.

### 2.1.13 Precoordination and Postcoordination, Cluster coding

A health condition may be described to any level of detail, by applying more than one code, or by ‘postcoordinating’ (i.e. combining):

- two or more stem codes, (i.e. code1/code2)
- stem codes with one or more extension codes. (i.e. stem code&extension code1&extension code2)

In this manner, the classification can address many clinical concepts with a limited range of categories.

**Example**

Precoordination of concepts in a single code Condition: 2C25.2 Squamous cell carcinoma of bronchus or lung In precoordination, both site and pathology are combined in a single precoordinated stem code.

**Example**

Postcoordination of concepts combined through cluster coding In postcoordination, the condition urinary tract infection due to Extended spectrum beta-lactamase producing Escherichia coli’ is expressed through a combination of two linked or clustered stem codes. Condition: GC08.0 Urinary tract infection, site not specified, due to
Escherichia coli Associated with (use additional code, if desired): MG50.27 Extended-spectrum beta-lactamase producing Escherichia coli Cluster code: GC08.0/MG50.27

Stem codes contain all pertinent information in a pre-combined fashion. This is referred to as ‘precoordination’. When additional detail that pertains to a condition is described by combining multiple codes, this is referred to as ‘postcoordination’. The mechanism of showing which codes are postcoordinated is called cluster coding in ICD-11.

2.1.13.1 Multiple Parenting

An entity may be correctly classified in two different places, e.g. by site or by aetiology. For a disease like oesophageal cancer this would mean that it could be classified to cancers (malignant neoplasms) or to conditions of the digestive system. In the same way, cerebral ischaemic conditions could be classified to the vascular system – where the problem arises - or to the nervous system – where the ischaemia impacts and manifests with symptoms.

Indications of multiple parenting:

- ‘Excludes’ or ‘Code elsewhere’ note
- Display of multiple parents in Foundation Component view
- Display of multiple parents in tabular list. Example for oesophageal cancer: primary parent malignant neoplasm will appear in black and the digestive system for the oesophageal cancer in grey

In the Foundation Component, ‘excludes’ notes for these examples will mention possible parents (multiple parents). However, for the tabulation of statistical outputs from any tabular list, there can be only one parent for primary tabulation. When there are such multiple parents, in the Foundation Component view both parents will be displayed the same way. However, in a tabular list, the primary parent place will show the entity and its parents in black, and possibly the secondary parent place in grey.

Every time an entity is parented elsewhere, it will continue to show the code from the primary parent. The primary parent is sometimes referred to as the ‘Tabular list parent’.

<table>
<thead>
<tr>
<th>Postcoordination axis</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘Has causing condition’ - this field is indicating the causing condition that always should be coded. Causing condition can be compared to the ‘dagger’ code in ICD-10. This option is found at entities that are typically caused by a range of different conditions.</td>
<td>It is mandatory to code the underlying condition for primary tabulation when it is known. ‘Causing condition’ is added to categories that are caused by an underlying disease. For example, retinopathy has a ‘causing condition’ of diabetes. Causing condition should be considered required in almost all situations, and should be used exclusively for conditions that are manifestations.</td>
</tr>
<tr>
<td>‘Has manifestation’ - prompts to code any manifestations. Manifestation can be compared to ‘asterisk’ codes in ICD-10.</td>
<td>It is optional to code manifestations of a disease. For example, diabetes ‘Has manifestations’ such as retinopathy. This coding should be considered ‘Allowed’ in</td>
</tr>
</tbody>
</table>
This option is found at entities that can develop manifestations. almost all situations, and used exclusively for conditions that have manifestations. The listed manifestations are usually a sample of the ones frequently resulting in the condition.

‘Associated with’ - when conditions are captured together for a full picture but not necessarily a cause and effect scenario. This field is used when multiple codes are required to fully describe a condition (e.g. 3-part model for Quality and Safety). For example, ‘Associated with’ is used to link the codes for antimicrobial resistance to the codes for the infection. This coding can be either ‘Allowed’ or ‘Required’ depending on the situation.

Rules for postcoordination:

1. Antimicrobial resistance is ‘allowed’ with codes for infection. This information is not mandatory as it is not available everywhere.
2. The external cause code to identify a specific drug is ‘allowed’ with entities beginning with or including the phrase ‘Drug-induced’.

2.1.14 The Content Model

The Content Model is a structured framework that defines each entity found in the ICD in a standard way. The purpose of the Content Model is to present the background knowledge that provides the basis for the definition of each ICD entity in a systematic way to allow for computerization. ICD–11 holds all its content in the Foundation Component. Here, every entity is specified by a definition, machine readable properties that have values, and one or more parent-child relationship(s). Additional links provide information for postcoordination. All this multi-dimensional information is then projected on one line with mutually exclusive categories, as the tabular lists. The Foundation Component includes information on where and how a certain entity is represented in a tabular list. An entity might become a grouping, a category, or just a term that is, for example, listed in the index.

A disease is usually defined using a set of relevant aspects drawn from the pattern below. A disease is a set of dysfunctions in any body system defined by:

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptomatology or manifestations</td>
<td>Known pattern of signs, symptoms, and related findings</td>
</tr>
<tr>
<td>Aetiology</td>
<td>An underlying explanatory mechanism</td>
</tr>
<tr>
<td>Course and outcome</td>
<td>A distinct pattern of development over time</td>
</tr>
<tr>
<td>Treatment response</td>
<td>A known pattern of response to interventions</td>
</tr>
<tr>
<td>Linkage to genetic factors</td>
<td>E.g., genotypes, patterns of gene expression, etc.</td>
</tr>
<tr>
<td>Linkage to environmental factors</td>
<td></td>
</tr>
</tbody>
</table>
Each ICD entity can be seen from different dimensions. The Content Model represents each one of these dimensions as a ‘property’. For example, there are currently 12 defined main properties in the content model to describe an entity in the ICD.

The key components of the definition of disease are included as different properties within the Content Model. The 12 main properties of the Content Model are:

1. ICD Entity Title
2. Classification Properties
3. Textual Definitions
4. Terms
5. Body System/Body Part
6. Temporal Properties
7. Severity of Subtypes Properties
8. Manifestation Properties (Signs, Symptoms or Investigation Findings)
9. Causal Properties
10. Specific Condition Properties
11. Treatment Properties
12. Diagnostic Criteria

For each ICD entity, various properties can be given if necessary to reach the correct coding result. At the time of initial release of ICD-11, only absolutely necessary properties will be defined in order to avoid the necessity of frequent updates and to reduce the resources needed by implementing countries to update the classification within a short timeframe. Additions of property values on the international level can be managed through the regular update cycle whenever coding problems indicate the necessity to do so. For example:

**ICD entity: Invasive ductal carcinoma of breast**

<table>
<thead>
<tr>
<th>Properties</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anatomy</td>
<td>Breast</td>
</tr>
<tr>
<td>Morphology</td>
<td>Invasive ductal carcinoma</td>
</tr>
</tbody>
</table>

The full range of different values for a given property is predefined using standard terminologies and ontologies. This range of values is called a 'Value set'.

2.1.14.1 Descriptions

Descriptions of ICD–11 entities inform analysts and translators about the meaning of an entity and its descriptive characteristics. There are two different types of descriptions: a short description (maximum of 100 words) that is available in both the content model and the tabular list, and a detailed description with comprehensive detail at the level required for each entity. The detailed description is labelled ‘additional information’ and appears only in online electronic versions. Coders are cautioned not to use the descriptions for coding. Coders must assign codes based on the diagnosis(es) documented by the clinician. The descriptor information that is included for the individual entities of the ICD-11
provides users of the ICD clear insight regarding the intended meaning and scope of rubrics or terms in the tabular list and the Foundation Component. The descriptors guide translators, coders, and users of coded data. The goal is to enhance the comparability, consistency, and interpretation of coded information for everyone, everywhere. There are four levels of descriptor information in the ICD–11 content model:

- **Fully Specified Term** - This is an unambiguous title that does not assume context. For example, ‘systemic illness with predominant gastrointestinal diarrheal symptoms attributable to vibrio cholera’, as opposed to ‘cholera’ or ‘other’ (where the meaning of other would have been clear from the hierarchical context).

- **Short Description** - The short description is a characterization (maximum of 100 words) of the entity that states things that are always true about a disease or condition and necessary to understand the scope of the rubric. Descriptions do not contain elements intended for in level 3 (common epidemiology) or things that may be true for level 4 (clinical criteria).

- **Additional Information** - This is a text field that is not mandatory, but that may contain any additional information about, or characteristics of the diseases or conditions included in the entity. This text field provides more context for the entity. For example, the most common epidemiologic circumstances, putative or highly suspected aetiologic agents, or other information that may not always be true but may be common, typical, or expected.

- **Clinical or Diagnostic Criteria** - This element is presently unpopulated within the Foundation content model. It is intended to contain one or more scenarios of clinical criteria and characteristics that would be sufficient to diagnose the condition(s) or syndrome(s) of the given class or concept.

Such scenarios should contain multiple variations, or embedded logic to accommodate ‘x out of n’ variations, that are necessary or useful to make the diagnosis. For example, a myocardial infarction (MI) in high-resource diagnostic settings would typically include a longitudinal pattern of cardiac enzymes, specific electrocardiogram changes, and stereotypical symptoms. However, only two out of these three needs to be present as there are such things as ‘silent MIs’ (without symptoms) and similar variations.

It is expected that these scenarios will be divided over technology capabilities. For example, diagnosing a myocardial infarction in the high-resource diagnostic settings would likely involve different technology and criteria than in low-resource settings. ICD diagnostic criteria draw on various WHO guidelines that have identified diagnostic rules. Extensions to the ICD, as specialty linearizations, may use such diagnostic rules.

The ICD-11 architecture, and the future evolution of this component of information, could eventually serve decision algorithms based on these criteria. Assignment of diagnoses and conditions could automatically be proposed from data arising in electronic medical records.

Populating the clinical criteria is a future project that requires further planning. If necessary, diagnostic criteria describe diagnostic methodology that determines how health
providers diagnose cases that are classified to an entity. It contains the core diagnostic information necessary and sufficient to describe a category, and enables the digital representation of the diagnostic algorithms using standardised terminology and other elements as appropriate. There may be different sets of diagnostic criteria for different settings. Diagnostic Criteria draw on content of other attributes.

2.1.15 Language independent ICD entities

ICD-11 entities are language independent. All entities have a unique identifier or uniform resource identifier (URI), and have a specific place in a hierarchy of groups, categories and narrower terms. The maintenance of the ICD-11 on an international level is handled in the English language but the content model of the ICD–11 is language independent and allows binding of any desired language to the elements of its foundation. In this way, an international translation base facilitates translations or multilingual browsing. The URI remains valid independently whether an ICD entity is still valid or has been retired. The hierarchical structure of groups, categories, subcategories, and inclusions (parents, children and narrower terms) serves also as a language independent backbone for translations of ICD. This structure is essential when building an index in a local language. It helps (in conjunction with the ICD translation platform) to identify the things that need to be translated in order to be able to address ICD categories with terms reported in the local language.

2.1.16 Organisation of a congruent system

Many countries use a single coding system (tabular list) for all use cases. Congruent, telescopically expandable and collapsible, purpose-independent subsets for morbidity coding in different settings (comparable to Verbal Autopsy, or initial implementation lists for mortality) allow gathering of information at different levels of detail and still allow for comparison of the collected information at the level of the common description.

2.2 ICD–11 conventions

ICD–11 has standard ways of presenting its content. Conventions describe textual content and also apply to the coding structure.

2.2.1 Code structure

The codes of ICD–11 are alphanumeric and cover the range from 1A00.00 to ZZ9Z.ZZ. Codes starting with 'X' indicate an extension code (see Section 2.5 ‘Extension Codes’). The inclusion of a forced number at the 3rd character position prevents spelling ‘undesirable words’. The letters ‘O’ and ‘I’ are omitted to prevent confusion with the numbers ‘0’ and ‘1’. Technically, the coding scheme would be described as below:

ED1E.EE

- E corresponds to a ‘base 34 number’ (0-9 and A-Z; excluding 0, I);
- D corresponds to ‘base 24 number’ (A-Z; excluding 0, I); and
- 1 corresponds to the ‘base 10 integers’ (0-9)
• The first E starts with ‘1’ and is allocated for the chapter. (i.e. 1 is for the first chapter, 2: chapter 2, ... A chapter 10, etc.)

The terminal letter Y is reserved for the residual category ‘other specified’ and the terminal letter ‘Z’ is reserved for the residual category ‘unspecified’. For the chapters that have more than 240 blocks, ‘F’ (‘other specified’) and ‘G’ (‘unspecified’) are also used to indicate residual categories (due to problems with the coding space).

Chapters are indicated by the first character. For example, 1A00 is a code in chapter 1, and BA00 is a code in chapter 11.

Blocks are not coded within this code structure – each has its own. However, hierarchical relations are retained in the 4-digit codes. There is unused coding space allocated in all blocks to allow for later updates and to keep the codes stable.

2.2.2 Inclusions

Within the coded categories there are typically other optional diagnostic terms. These are known as ‘inclusion terms’ and are given, in addition to the title, as examples of the diagnostic statements to be classified to that category. They may refer to different conditions or be synonyms. They are not a sub-classification of the category.

Inclusion terms are listed primarily as a guide to the content of the category, in addition to the definition. Many of the items listed relate to important or common terms belonging to the category. 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.

Alternative names of diagnostic entities (synonyms) are included and shown in the electronic coding tool and the Alphabetic Index.

It is sometimes necessary to read inclusion terms in conjunction with titles. This usually occurs when the inclusion terms describe lists of sites or pharmaceutical products, where appropriate words from the title (e.g. ‘malignant neoplasm of ...’, ‘injury to ...’, ‘toxic effects of ...’) need to be understood. General diagnostic descriptions common to a range of categories, or to all the subcategories in a four-character category, are to be found in the notes heading 'Inclusions', immediately following a chapter, group, or category title.

2.2.3 Exclusions

Certain categories contain lists of conditions preceded by the word ‘Exclusions’. These are terms which are classified elsewhere. An example of this is 5A60 Hyperfunction of pituitary gland which excludes Cushing syndrome.

Exclusions serve as a cross reference in ICD and help to delimitate the boundaries of a category.

General exclusions for a range of categories or for all subcategories are found in the notes heading 'Excludes', immediately following a chapter, group or category title.
Multiple parenting in ICD-11 shows categories in the context of siblings that are placed elsewhere in the classification. This is also an indication of an exclusion and means 'some sibling is coded elsewhere'. In the print and the coder version this information is displayed as an exclusion as well.

2.3 ‘Code also’ and ‘Use additional code, if desired’ instructions

‘Code also’ instructions inform the user about mandatory additional aetiological information which is mandatory to be coded in a cluster with certain categories because that additional information is relevant for primary tabulation. The ‘code also’ statement marks the categories that must be used in conjunction with the indicated second code(s). However, in some instances there may be a reason for treatment in their own right, where aetiology is unknown, and the code is reported alone.

For example, the category Diabetic cataract indicates ‘code also’ type of diabetes. This means that in conjunction with the code for ‘diabetic cataract’, you always also code the type of diabetes and report both stem codes in a cluster.

‘Use additional code, if desired’ - instructions inform the user about optional additional detail that can be coded.

2.3.1 ‘NEC’ and ‘NOS’

2.3.1.1 ‘NEC’

The words ‘not elsewhere classified’, when used in a category title, serve as a warning that certain specified variants of the listed conditions may appear in other parts of the classification. For example, NF09 Adverse effects, not elsewhere classified.

2.3.1.2 ‘NOS’

The letters NOS are an abbreviation for ‘not otherwise specified’, implying that the documentation that is used for classifying does not provide more detail beyond the term (implying ‘unspecified’, ‘incompletely specified’ 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, ‘pharyngitis’ is commonly used to mean ‘acute pharyngitis’. 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 to be accounted for; 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 (this is no longer the case since ICD–10). In ICD-11 in most instances the ‘NOS’ point to unspecified categories, so that the later data analysis can take care of assumptions or not regarding the linguistic meaning.

2.3.2 ‘Certain’

The term ‘certain’ informs that some entities that could be grouped here are grouped somewhere else outside the current chapter or block. For example, 8B22 Certain specified cerebrovascular diseases.

2.3.3 Residual categories – ‘Other’ and ‘Unspecified’

ICD-11 coding should always be completed to include the highest level of detail possible with the use of one code or multiple codes as described above. There are, however, circumstances when that is not possible and for that reason the ICD-11 includes categories titled ‘other’ and ‘unspecified’. In some instances, necessary information to select a specific category may not be available in the source documentation. When this is the case, the residual category ‘unspecified’ is selected. Conversely, there are instances where the information in the source documentation is very specific, but the tabular list does not include a specific category. In this case, users identify the closest category match, and code to the residual category titled ‘other’.

Additional terms permitted in ICD coding:

- Certain
- Other
- Unspecified
- And
- Or
- Due to
- With
- Caused by
- Attributed to
- Secondary to
- Associated with

2.3.4 Use of ‘And’ and ‘Or’

The words ‘and’ and ‘or’ in ICD–11 are used in their meaning in formal logic. A term that includes a statement of the kind ‘A and B’ means that both, A and B, have to be present in order to use that category. A term that includes a statement of the kind ‘A or B’ means that either A or B, or both, have to be present in order to use the category. Because A or B can mean either A or B or both, ‘or’ now means ‘and/or’. (The term ‘and’ meaning ‘and/or’ found in ICD–10 has not been carried over into ICD–11.)
2.3.5 ‘Due to’ and ‘Associated with’

‘Due to’ is the preferred term for categories where two conditions are mentioned and a causal sequence exists. Other terms, such as ‘caused by’ or ‘attributed to’ are allowable synonyms. The phrase ‘secondary to’ is equivalent and may also be included as a synonym. ‘Associated with’ is the preferred term for categories where two conditions are mentioned and there is no causal sequence implied.

2.3.6 Spelling, parentheses, grammar and other conventions

Spelling and grammar of ICD-11 follow the British rules with exceptions and amendments conforming to WHO spelling rules. The detailed conventions are listed below. The alphabetic index uses the following conventions:

- Terms are listed in their singular form. For example, ‘Superficial injury of scalp’ instead of ‘Superficial injuries of scalp’
- No use of apostrophes with eponyms. For example: ‘Hodgkin lymphoma’ (instead of ‘Hodgkin’s lymphoma’)
- Entities are described using natural language. For example: ‘myocardial infarction’ (instead of ‘infarction, myocardial’).
- Abbreviations are printed using upper case letters, and followed by the complete title in full. For example: ‘MI – myocardial infarction’.
- Parentheses are used in the tabular list to enclose the code to which an exclusion term refers.

For example: 9A01.3 Infectious blepharitis Exclusions: Blepharoconjunctivitis (9A60.4)

2.4 Stem codes

ICD–11 stem codes are codes in a particular tabular list that can be used alone. Stem codes may be entities or groupings of high relevance, or clinical entities that should always be described as one entity. The design of stem codes makes sure that in use cases that require only one code per case a meaningful minimum of information is collected.

The stem codes of the ICD-11 are organised in 26 chapters that follow the traditional pattern of ICD, relating to aetiology, relevant organ system, maternal status, perinatal status, external causes, and factors influencing health status.

2.4.1 Combining stem codes and extension codes, and how to order these in a complex code cluster

Stem codes from other parts of ICD and extension codes can be linked together to describe a clinical concept in detail. They have to be grouped together in order to not lose the information conveyed by the joint group of codes in data transmission and evaluation. Such a group of codes is called a cluster. Cluster coding requires use of a specific syntax to show which codes belong together when postcoordination is used. This syntax has to comply with the following rules:
1. If only one stem code is coded, no clustering mechanisms need to be observed.
   E.g. Condition: Acute ST elevation myocardial infarction BA41.0 Acute ST elevation myocardial infarction

2. When postcoordinating to form a cluster, stem codes are always coded before extension codes. (Note, however, the complex clustering scenario depicted in Example 5 below, where a combination of multiple stem codes and linked extension codes are combined in a single complex cluster).

3. If one stem code is postcoordinated with one or more extension codes, the combining syntax used is the ampersand (&).

   Example 1: Acute ST elevation myocardial infarction, anterior wall, LAD
   Condition (code) - Acute ST elevation myocardial infarction BA41.0 Acute ST elevation myocardial infarction
   Specific anatomy - XA7RE3 Anterior wall of heart
   Specific anatomy - XA7NQ7 Left anterior descending coronary artery **Cluster**: BA41.0&XA7RE3&XA7NQ7

   Example 2: Acute pyelonephritis, left side, E. coli Condition (code) - GB51 Acute pyelonephritis
   Laterality - XK8G Left Infectious agent - XN6P4 Escherichia coli **Cluster**: GB51&XK8G&XN6P4

4. If two stem codes are postcoordinated to provide additional detail, it is important to follow the order (within a cluster) according to the use case (e.g. mortality or morbidity). The first stem code will be separated from the second stem code by a slash (/).

   If only one code can be retained during data analysis for mortality (underlying cause of death) and public health prevention, priority of order should be given to the code that best describes the aetiology of a condition. If only one code can be retained for morbidity data analysis, priority should be given to the main condition (reason for admission after study established at the end of the episode of health care).

   Example 3: Mortality (underlying cause of death) code ordering within a cluster
   Patient died because of their diabetic coma. The patient had Type 2 diabetes mellitus. Condition (terminal cause of death): 5A23 Diabetic coma Condition (underlying cause of death): 5A11 Type 2 diabetes mellitus **Mortality cluster order**: 5A11/5A23

   Example 4: Morbidity (main condition) code ordering within a cluster (if only one code can be retained during data analysis)
   Patient admitted to hospital in a diabetic coma. The patient had Type 2 diabetes mellitus. Main condition: 5A23 Diabetic coma Other condition: 5A11 Type 2 diabetes mellitus **Morbidity cluster order**: 5A23/5A11

5. If a stem code is postcoordinated with extension codes and another stem code with some more extension codes within a cluster, the specific syntax should be designed to make a clear distinction between which extension codes in the cluster belong to which stem codes. The following syntax has to be followed: The first stem code is reported, followed by a ‘&’ followed by one or more extension codes, each of them separated by
‘&’. Then a slash ‘/’ separates this first section of the cluster from the next stem code which is followed by ‘&’ and the extension codes for this specific stem code, each again separated by ‘&’.

Example 5: stem code & extension code / stem code & extension code & extension code

Left inguinal hernia with acute obstruction Condition (code) - DD51 Inguinal hernia
Laterality - XK8G Left
Associated with (use additional code, if desired) - ME24.2 Digestive system obstruction
Course - XT5R Acute Cluster: DD51&XK8G/ME24.2&XT5R

Postcoordination is only to be used to combine codes to describe and fully characterize a documented clinical concept. If the documentation describes two distinct clinical concepts that are represented by separate stem codes, they should not be reported together in a postcoordinated cluster.

Example 6: Pedestrian fall injury

Concussion and open fracture shaft of left ulna due to fall on uneven sidewalk:

Condition (code) 1 - NA07.0 Concussion
Has causing condition (code also) - PA60 Unintentional fall on the same level or from less than 1 metre
Substance producing injury - XE1DA Uneven surface, not elsewhere classified
Place of occurrence - XE53A Sidewalk Cluster - NA07.0/ PA60& XE1DA&XE53A

Condition (code) 2 - NC32.2 Fracture of shaft of ulna
Laterality - XK8G Left
Fracture open or closed - XJ7YM Open fracture
Associated with: PA60 Unintentional fall on the same level or from less than 1 metre
Objects of living things involved in causing - XE1DA Uneven surface, not elsewhere classified
Place of occurrence - XE53A Sidewalk Cluster: NC32.2 & XK8G& XJ7YM /PA60 & XE1DA & XE53A

Permissible combinations of stem codes and extension codes are described by sanctioning rules that are embedded in the Foundation Component of ICD–11. They will prevent impossible combinations, and the creation of combinations that already exist in precoordination in the tabular list.

2.4.2 Special extension codes

The inclusion of the new Extension codes in ICD–11 provides capacity for coding qualifying information of linked stem codes.

2.4.2.1 Diagnosis Timing - ‘Present on admission’ vs. ‘Developed during stay’

The inclusion of the new Extension codes in ICD–11 provides capacity for coding qualifying information of linked stem codes. Among the new qualifying features is the particularly important status display feature that allows for distinction of diagnoses present at admission from diagnoses arising after hospital stay began.

The latter distinction is particularly important, because it allows for the targeted identification of a number of in-hospital diagnoses that may represent adverse events associated with health care. A majority of coded concepts in a hospital record are present at
admission. Recognizing this, the most common operational desire in ICD-11 will be to flag a diagnosis that developed after admission.

Example 1:

A patient with long-standing type 1 diabetes, admitted to hospital because of a myocardial infarction. Main condition: Myocardial infarction Other condition: Diabetes mellitus, type 1 In this instance, both conditions are present at admission, but one of them (myocardial infarction) does not need to be coded as being ‘present on admission’ because it is the main condition, designated in this example as being ‘the condition that is determined to be the reason for admission, established at the end of the episode of health care’. The appropriate coding of this scenario therefore includes a combination of two clustered coding entities, each of which involves a stem code linked to an accompanying extension code i.e.:

- ‘Stem code for myocardial infarction’&’Discharge Diagnosis Type Extension code for reason for main condition’
- ‘Stem code for diabetes mellitus type 1’&’Diagnosis timing Extension code for present on admission’

Note that for both coded entities in the above example, an ampersand (&) is used. In the first cluster, the stem code for myocardial infarction is linked to a diagnosis type extension code for main condition diagnosis type. In the second cluster, the stem code for diabetes mellitus type 1 is linked to a diagnosis timing extension code for present on admission.

Example 2:

A patient with long-standing type 1 diabetes, admitted to hospital because of chest pain. After assessment diagnosed with myocardial infarction. The patient develops deep vein thrombosis as an in-hospital complication of care. Main condition: Myocardial infarction Other conditions: Diabetes mellitus, type 1; Deep vein thrombosis (arising after hospital stay began)

In this example, a diagnosis timing extension code for ‘developed after admission’ is linked by cluster coding to a stem code for ‘deep vein thrombosis’. The first two diagnostic concepts, meanwhile, are coded exactly as per the preceding example. i.e.,

- ‘Stem code for myocardial infarction’&’Discharge Diagnosis Type Extension code for main condition’
- ‘Stem code for diabetes mellitus type 1’&’Diagnosis Timing Extension code for present on admission’
- ‘Stem code for deep vein thrombosis’&’Diagnosis Timing Extension code for developed after admission’

Again, each of the three cluster entities uses an ampersand ‘&’ because the second code in the cluster is an extension code.

2.5 Extension codes

Extension codes have been designed to standardise the way additional information is added to stem codes, and the adoption of multi-dimensional coding results in a substantially reduced amount of stem codes.
Extension codes should never be used alone and must always be linked to a stem code. One or more extension codes can be linked when coding a specific condition. Extension codes are provided for use as supplementary or additional codes when it is desired to identify more detail in entities classified elsewhere.

There are two main types of Extension codes:

- Type 1 extension codes allow the user to add detail to a stem code. The category refers to the same diagnosis with or without the Type I extension code. These extension codes provide important additional information, such as whether a condition is acute or old - and where it is located.

- Type 2 extension codes represent diagnosis code descriptors. The meaning of the code refers to the same condition, but the use of type 2 – diagnosis code descriptor extension code alters its interpretation.

**Overview of the Type 1 Extension codes**

- Severity scale value
- Temporality (course of the condition)
- Aetiology
- Topology Scale Value
- Specific anatomic detail
- Histopathology
- Dimensions of injury
- Dimensions of external causes
- Consciousness
- Substances

**Overview of Type 2 – Diagnosis Code Descriptors - Extension codes**

- Discharge diagnosis types
- Diagnosis timing
- Diagnosis timing in relation to surgical procedure
- Diagnosis method of confirmation
- Diagnosis certainty
- Obstetrical diagnosis timing
- Capacity or context

**2.6 ICD Print and Electronic version**

The ICD provides a standard for reporting, coding, selecting, and tabulating conditions for different use cases. It provides guidance on finding the right code from a reported condition.
In the electronic version of the ICD, most information is interlinked and visible in the relevant context. The content of the Reference Guide is the only additional document required when coding with ICD-11.

In the print version, the information is divided into 3 volumes, the tabular list, the reference guide, and the index. All three are needed to use the ICD correctly.

2.7 Tabular List, Special Tabulation Lists, Qualifiers, and Modifiers

Volume 1 contains the Tabular list, which is an alphanumeric listing of diseases and disease groups, inclusion and exclusion notes, and some coding rules. Chapters 1 to 25 of the ICD approximately 15,000 entities at the 4, 5 or 6-character level.

In addition, there is a section on extension codes and one on traditional medicine. At the end of Volume 1 the special tabulation lists are presented. These are not designed for coding, but are for tabulation only.

2.8 Reference Guide

The Reference Guide contains an introduction to the context, components, and intended use of the ICD. It describes the diverse components of ICD-11, provides guidelines for certification, recording, rules for mortality coding (i.e., causes of death) and morbidity coding (e.g., hospital statistics) and lists for tabulation of statistical data.

2.9 Index

The Alphabetical Index is a list of approximately 120,000 clinical terms (including synonyms or phrases). The Index is used to find the relevant ICD codes or code combinations for terms.

2.10 The Foundation Component

The Foundation Component is the data source for production and maintenance of tabular lists, index and the Reference Guide. It also includes additional content (see ‘content model’) that goes beyond the traditional paper-based use of a classification. Depending on the setting within a country it can be decided to use the full Foundation component or to focus on the parts that are essential to production and maintenance of the Index and the Tabular list.

The Foundation Component serves to align the different tabular lists in content and to define the categories. As such it allows standardised use of the ICD-11, independent of the setting in which it is used. The Foundation Component includes, for example, links to other classifications or terminologies that can be expanded in the future. Only if relevant for a country this information, or subsets of it, can be used in the application of ICD-11.
2.11 Online tools

The WHO provides the ICD–11 browser for ICD in multiple languages (linked from https://icd.who.int). This tool allows the user to retrieve concepts by searching terms, anatomy or any other element of the content model. With this browser, users can also contribute to the updating and continuous improvement of ICD with comments and solutions. Such input is reviewed for consideration for inclusion on an annual basis.

ICD–11 can also be accessed using web services with user specific software. The IT guide to the ICD provides more details on compatibility requirements. Both the web services and the online browser allow access to all Tabular lists of the ICD, for mortality and morbidity statistics, primary care, or for a specialty linearization for certain specialised domains.

2.12 Basic coding and reporting guidelines

Coding is the assignment of one or more codes in order to represent the meaning of a condition in as much detail as required. Before attempting to code, the coder should be acquainted with the principles of classification and coding. In some instances, using one code will provide sufficient detail. In other instances, it may be necessary to use several codes together in order to express the level of detail required by the use case, setting, or laws. For coding, users may use a print version of ICD, an online version, or local software.

2.13 Coding step by step – clinical term

The table below compares the coding steps in a paper and an electronic environment. The essential component of coding is finding a match to the reported clinical term – having a good dictionary in the relevant language, and verifying the resulting code against additional rules. In an electronic environment a sanctioning mechanism can verify compliance with the coding rules.

<table>
<thead>
<tr>
<th>Electronic</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Enter the statement or term in the coding tool</td>
<td>1. Look up the lead term in the Alphabetical Index and applicable secondary terms.</td>
</tr>
<tr>
<td>2. Select the matching term, or one closest to what you are looking for, among the displayed options</td>
<td>2. Select the appropriate term, or one closest to what you are looking for, among the listed options</td>
</tr>
<tr>
<td>3. Verify the result in the tabular list browser view for exclusions, inclusions and notes given at the level of that category, its grouping levels and at the chapter level.</td>
<td>3. Verify the result in the tabular list (Volume 1) for exclusions, inclusions and notes given at the level of that category, its grouping levels and at the chapter level.</td>
</tr>
</tbody>
</table>

The WHO online browser and coding tool are available at [https://icd.who.int](https://icd.who.int).
2.14 Adding detail – postcoordination and cluster coding with multiple stem codes and extension codes

All cases should be coded in a way to inform about aetiology and the manifestation of the condition of interest. In some instances, the ICD category refers to both, while in other instances more than one stem code (and extension code) needs to be used in order to express the relevant detail. Postcoordination will be used in these cases.

E.g. Acute bleeding duodenal ulcer

Stem Code: DA63 Duodenal ulcer, unspecified Has manifestation (use additional code, if desired): ME24.90 Acute gastrointestinal bleeding, not elsewhere classified Cluster: DA63/ME24.90

However, postcoordination must never be used to replicate the meaning of a condition that is a precoordinated concept.

E.g. Acute RSV bronchiolitis

Code: CA41.0 Acute bronchiolitis due to respiratory syncytial virus Explanation: Since RSV bronchiolitis is a precoordinated concept in ICD-11, it is incorrect/prohibited to replicate the meaning of the diagnostic statement using a stem code and extension code (i.e. do not code: CA41.Z Acute bronchiolitis, unspecified&XN275 Human respiratory syncytial virus)

E.g. Fracture, shaft of ulna

Code: NC32.2 Fracture of shaft of ulna Explanation: Since fracture of shaft of ulna is a precoordinated concept in ICD-11, it is incorrect/prohibited to replicate the meaning of the diagnostic statement using a stem code and extension code (i.e. do not code: NC32 Fracture of forearm, unspecified&XA8U33 shaft of the ulna)

There may be less obvious cases across the ICD. In an electronic environment, sanctioning rules will help to avoid this kind of mistake. For reporting purposes, any correlated codes are linked using a forward slash (/) between stem codes and an ampersand (&) is used to separate stem codes with extension codes.

2.15 Electronic reporting

Electronic documentation will follow the principle of lossless collection of information at the source. Best practice includes:

1. A text field that captures the clinical term or cause of death with the exact wording reported by the health provider.
2. A data field that retains the identifier (URI) of the most exact matching chosen entity of ICD-11 (index, code title or other element).
3. A data field for the relevant ICD-11 code.

In this way, the quality of the coding can be verified at any point in time. Also, specific conditions can be identified and analysed, independently of them being linked to an individual ICD code or lumped together in a code with other conditions.
2.16 Main uses of the ICD: Mortality

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. Guidelines are also provided for the application of the rules and for coding of the condition selected for tabulation. Implementation of the ICD for mortality requires setting up an infrastructure for reporting and storing information, designing information flows, quality assurance and feedback, and training for classification users working with the input or output of data.

Following the introductory information in Sections 2.16-2.17, Section 2.18 explains the basic concepts used in mortality coding. Sections 2.19-2.23, supplemented by Annexes in Section 2.23, guides how to code and identify the underlying cause of death, and Sections 2.27 explains definitions used in statistical tabulation and international reporting for mortality.

2.17 Mortality statistics

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 standardise production of mortality data, 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 follows the procedures detailed next, since any deviation from the international instructions will impair international comparability. The definition of a single underlying cause of death, and selected approaches to capture further information on causes of death also reported on a certificate, enables the identification of trends in health for a given population. The following sections contain information on coding causes of death for mortality statistics. It explains the basic concepts, how to code conditions reported on death certificates, and how to select and tabulate the underlying cause of death.

The aim of these instructions is to optimize the mortality statistics from a public health point of view. Some of the instructions may 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 WHO through the online proposal mechanism. WHO 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.
2.17.1 What is tabulated: Underlying cause of death

Effective public health interventions prevent harm or death by breaking the chain of events that lead to harm. For this purpose, the underlying cause of death 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’, and is selected for routine single-cause tabulation of mortality statistics. See Sections 2.19-2.24 for specific coding instructions to identify the underlying cause of death.

2.17.2 Data source: 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 as recommended by the WHO (see Figure 1). The medical data part of the international form (FRAME A) is split into two parts: Part 1 is for diseases related to the train of events leading directly to death, and Part 2 is for other significant conditions contributing to death. All other information in the form is also used in identifying the underlying cause of death for tabulation.

In order to align the way this information is collected internationally, the form should be followed as closely as possible. Otherwise, the causes of death cannot be coded and selected 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 of the certificate. Further, information reported elsewhere on the certificate, such as manner of death or whether pregnancy contributed to the death, is essential when assigning multiple cause codes to the conditions stated on the certificate and selecting an underlying cause for tabulation.

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 pre-existing conditions giving rise to this cause. The certifier should use his or her clinical judgement in completing the medical certificate of cause of death. Automated systems must not include lists or other prompts to guide the certifier, as these necessarily limit the range of diagnoses and therefore have an adverse effect on the accuracy and usefulness of the report.
**Figure 1: International Death Certificate**

### Administrative Data (can be further specified by country)

- **Sex**
  - [ ] Female
  - [ ] Male
  - [ ] Unknown

- **Date of birth**
  - [ ] D
  - [ ] M
  - [ ] Y
  - [ ] Y

- **Date of death**
  - [ ] D
  - [ ] M
  - [ ] Y
  - [ ] Y

### Frame A: Medical data: Part 1 and 2

1. **Report disease or condition directly leading to death on line a**
   - [ ] Cause of death
   - [ ] Time interval from onset to death

2. **Report chain of events in due to order (if applicable)**
   - [ ] Due to:

3. **State the underlying cause on the lowest used line**
   - [ ] Due to:

4. **Other significant conditions contributing to death (time intervals can be included in brackets after the condition)**

### Frame B: Other medical data

- **Was surgery performed within the last 4 weeks?**
  - [ ] Yes
  - [ ] No
  - [ ] Unknown

  - Date of surgery
  - [ ] D
  - [ ] M
  - [ ] Y

- **If yes please specify date of surgery**
  - [ ] D
  - [ ] M
  - [ ] Y

- **If yes please specify reason for surgery (disease or condition)**
  - [ ] Yes
  - [ ] No
  - [ ] Unknown

- **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
  - [ ] M
  - [ ] 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
  - [ ] Unknown

- **Between 43 days up to 1 year before death**
  - [ ] Unknown

- **Did the pregnancy contribute to the death?**
  - [ ] Yes
  - [ ] No
  - [ ] Unknown
2.17.3 Routine use and special cases

2.17.3.1 Routine cause of death

In routine cause of death reporting systems, every individual death is certified by a qualified medical doctor who carries out an accurate post mortem examination, collects history from relatives, and has access to all pre-existing medical information about the defunct. The medical certification of the cause of death is usually the responsibility of the attending physician and should be in line with international recommendations. Administrative procedures should ensure confidentiality of data from death certificates 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.

Routine cause of death reporting is usually embedded in the certification of death process. Death certificates are a legal requirement for burial and for inheritance.

2.17.3.2 Verbal autopsy

Verbal autopsy (VA) is a method used to ascertain the cause of a death based on an interview with next of kin or other caregivers. This is done using a standardised questionnaire that elicits information on signs, symptoms, medical history, and circumstances preceding death. The cause of death, or the sequence of causes that led to death, are assigned based on the data collected by the questionnaire and other available information. Rules and guidelines, algorithms or computer programs, may assist in evaluating the information to determine the cause of death.

The main objective of the VA is to describe the causes of death at the community or population level in areas, where civil registration and death certification systems are weak and where most people die at home without having had contact with the health system. A standard VA instrument comprises a VA questionnaire, cause of death or mortality classification system, and diagnostic criteria (either expert or data derived algorithms) for deriving causes of death.

The VA process consists of interviews, data recording, and identification of the cause of death from the reports. At any step, factors can influence the cause-specific mortality fractions estimated throughout the process. Besides research, VA is a viable method for causes of death identification in settings where no physician can evaluate the deceased.

2.18 Basic concepts

Mortality coders must be familiar with the basic concepts introduced in this section.
**Figure 1**: References to parts of International Death Certificate for coders

### 2.18.1 Direct cause of death

The disease or condition entered first on the first used line of Frame A, Part 1 of the death certificate is the direct cause of death also known as terminal or immediate cause of death.

**Example 1**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 1 | (a) Myocardial infarction and pulmonary oedema  
   |   due to  
   | (b) Coronary atherosclerosis  
   |   due to  
   | (c) |

The myocardial infarction is the direct cause of death, since it is entered first on the first used line of the certificate.

### 2.18.2 Causal relationship and Sequence

A causal relationship exists if a condition mentioned on the certificate can be caused by another condition also mentioned on the certificate. And 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. While a causal relationship is a concept between a condition and another
condition regardless of where each condition was reported, a sequence, in a correctly reported death certificate, is a set of conditions reported line by line with a causal relationship between each element.

Whether a causal relationship is considered acceptable 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.

In addition, a reported sequence that appears improbable should be accepted if one or more intervening steps would explain the causal relationship. However, such assumed intervening causes do not qualify for a code, as it is an assumption and not a condition reported.

To decide whether a stated causal relationship is acceptable, always apply the instructions in Section 2.20.1 ‘Step M1 - Special instructions’. Stated relationships that are not listed in Section 2.20.1 should be accepted as far as possible, because the certifier’s opinion about the causes leading to death should not be disregarded.

Example 1

1. (a) Myocardial infarction
   due to
2. (b) Coronary thrombosis
   due to
3. (c) Coronary atherosclerosis

The direct cause of death is myocardial infarction. It is caused by the coronary thrombosis, which, in 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
2. (b) Traumatic amputation of right leg
   due to
3. (c) Run over by a street car

The direct cause of death is haemorrhage. It is a complication of the traumatic amputation, which, in turn, is caused by the street car accident. Consequently, the sequence is: extensive haemorrhage caused by traumatic amputation of the right leg caused by being run over by a street car.
### 2.18.3 Starting point

The starting point is the condition or event that started the sequence of acceptable causal relationships ending with the direct cause of death. In a correctly completed certificate, the condition reported first on the lowest used line in Part 1 is the starting point of the sequence. The instructions on how to identify the starting point is provided in Section 2.19.3 ‘Find the starting point (Steps SP1 to SP8)’.

If the certificate is not correctly filled out, the starting point may be reported elsewhere and instructions are given to identify the starting point also for such cases in a standardised manner. Therefore, it is important to apply the instructions in Section 2.19.3 in a systematic manner.

A condition that is provisionally considered as the starting point when applying the instructions step by step is referred to as a ‘tentative starting point (TSP)’ and may change several times as the instructions are applied to the certificate.

**Example 1**

|   | (a) | Myocardial infarction and pulmonary oedema  
|   |     | due to  
|   | (b) | Coronary atherosclerosis  
|   |     | due to  
|   | (c) |  |

2

Coronary atherosclerosis is the starting point, since it led to the myocardial infarction.

**Example 2**

|   | (a) | Pneumonia  
|   |     | due to  
|   | (b) | Hip fracture  
|   |     | due to  
|   | (c) | Tripped on carpet  |

2

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

### 2.18.4 Duration

On death certificates, each reported condition should also include information about duration. The duration refers to the interval from the onset of the disease or condition to 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.
2.18.5 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 (See also Step SP4).

To identify the first-mentioned sequence, begin with the direct cause of death (the condition entered first on the first used line of Part 1). Check if the conditions on the next line in Part 1 can cause the direct cause of death. If several conditions are reported on the same line, check from left to right in turn until you find a condition that could cause the direct cause of death. The first condition found to be able to cause the direct cause of death this is the tentative starting point. And if there is no conditions reported on the lower lines, the sequence between this tentative starting point and the direct cause of death is the first-mentioned sequence. The tentative starting point is the starting point of this first-mentioned sequence.

First Mentioned Sequence A

First Mentioned Sequence B

If no condition on the next line can cause the direct cause of death, there is no sequence ending with the direct cause of death. Specific instruction is given also when you find no sequence (see Step SP5).

First Mentioned Sequence C

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. Check the conditions on the next lower line in Part 1, from left to right, whether or not they 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.

First Mentioned Sequence D

First Mentioned Sequence E

First Mentioned Sequence F

First Mentioned Sequence G

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 figures illustrate examples of certificates where each condition reported is shown by a circle. The starting point of the first-mentioned sequence is in grey, and the causal relationship of the first-mentioned sequence is indicated by an arrow.

Example 1

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a)</td>
<td>Pneumonia due to</td>
</tr>
<tr>
<td></td>
<td>(b)</td>
<td>Hip fracture and heart failure due to</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
<td>Tripped on carpet, coronary atherosclerosis</td>
</tr>
</tbody>
</table>

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 2

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a)</td>
<td>Pneumonia due to</td>
</tr>
<tr>
<td></td>
<td>(b)</td>
<td>Heart failure and hip fracture due to</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
<td>Coronary atherosclerosis and tripped on carpet</td>
</tr>
</tbody>
</table>

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 3

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a)</td>
<td>Pneumonia due to</td>
</tr>
<tr>
<td></td>
<td>(b)</td>
<td>Hip fracture and heart failure due to</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
<td>Coronary atherosclerosis and tripped on carpet</td>
</tr>
</tbody>
</table>

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.
2.18.6 Priority underlying condition

Some mortality coding instructions (e.g. Steps SP6, M1) refer to the ‘priority underlying condition’. It is a concept to set a priority order giving precedence to the underlying condition, when specific requirements in each instruction apply to several conditions in the certificate.

To identify the priority underlying condition, start from the first condition reported on the lowest used line of Part 1. If there are several conditions reported, search from the lowest used line, and the next line above in turn, and from left to right for each line. If you cannot find the priority underlying condition in Part 1, then search Part 2, again from left to right.

| 1 | (a) Myocardial infarction | due to |
|  | (b) Coronary atherosclerosis | due to |
|  | (c) Generalised atherosclerosis |
| 2 |  |

Priority Underlying Condition

2.18.7 Underlying cause of death (UCOD)

The underlying cause of death (UCOD), as defined in Section 2.17.1, is the condition selected for single-cause tabulation of mortality statistics.

A condition that is provisionally considered as the underlying cause of death when applying the instructions step by step is referred to as a ‘tentative underlying cause of death (TUC)’ and may change several times as the instructions are applied to the certificate.

Example 1

Generalised 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 the 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 the tentative underlying cause, and is the underlying cause of death in this case.
2.18.8 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 code for underlying cause 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. Instructions on how to apply these special instructions to identify the underlying cause of death is given in Section 2.20 ‘Check for modifications of the starting point (Steps M1 to M4)’.

Example 1

<table>
<thead>
<tr>
<th></th>
<th>(a) Heart disease</th>
<th>(b) Generalised atherosclerosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>due to</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Generalised atherosclerosis started the sequence of events leading to death, so it is the starting point. However, according to a special instruction on generalised atherosclerosis, generalised 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.

2.19 Coding instructions for mortality

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 whether or not any of the instructions apply, you need to know the ICD codes for all conditions on the certificate, because other conditions reported on the certificate may affect the coding of the condition you are trying to code. This is called multiple cause coding.

2.19.1 Basic coding and multiple cause coding guidelines

To start coding, refer to Basic coding guidelines given in Sections 2.12 to 2.14. When multiple causes are reported also refer to Section 2.22 ‘Coding instructions for mortality: multiple causes’. 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 coexisting 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.

Once you have assigned ICD codes to each disease or condition on the certificate, now you are ready to select the underlying cause of death.
2.19.2 Selecting the underlying cause of death

For most death certificates, selecting the underlying cause of death is a straightforward 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. The first step is to identify the starting point (Steps SP1 through SP8 below) – the disease or event that started the chain of events leading to death. The next is to modify the starting point, if any of the special instructions apply, to retain further information provided on the death certificate useful for public health (Steps M1 through M4 below). See Sections 2.20-2.21 for specific instructions. In addition, Section 2.19.11 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 that follow, the ‘due to’ statement between the lines in Part 1 is not included. But it is important to bear in mind that anything reported on an upper line in Part 1 is meant to be due to what is reported on the line below.

2.19.3 Find the starting point (Steps SP1 to SP8)

To identify the starting point, follow the eight steps specified in this section. The steps are named SP1 to SP8 (Starting point rule 1 to 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.

2.19.4 Step SP1 – Single cause on certificate

If there is only one condition reported on the certificate, in either Part 1 or Part 2, this is the starting point. Next, go to Section 2.20 ‘Check for modification of the starting point (Steps M1 to M4).

If there are two or more conditions on the certificate, go to Step SP2.

2.19.5 Step SP2 – First condition on the only line used

If the certifier has used only one line in Part 1 and:

- has reported only one condition on this line, but has reported one or more conditions in Part 2, then the single condition in Part 1 is the tentative starting point. Next, go to Step SP6.
• has reported two or more conditions on this line, then the first condition is the tentative starting point. This applies whether or not one or more conditions are reported in Part 2. 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)

2

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

Example 2

1  (a) Myocardial infarction
    (b) 
    (c)

2  Diabetes mellitus

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

2.19.6 Step SP3 – First condition on the lowest used line causing all entries above

If there are conditions reported on more than one line in Part 1, check if each 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 yes, then this condition is the tentative starting point. Next, go to Step SP6.
• If not, go to Step SP4.

To assess causal relationship, refer to Section 2.18.2 ‘Causal relationship and Sequence’, and to Section 2.21.1 ‘Special instructions on accepted and rejected sequences (Steps SP3 and SP4)’.

Example 1

1  (a) Bronchopneumonia
    (b) Hemiplegia
    (c) Cerebral infarction

2

Both bronchopneumonia and hemiplegia can be caused by cerebral infarction. This means that cerebral infarction is the tentative starting point.
Example 2

1. (a) Liver metastases
   (b) Bronchopneumonia
   (c) Stomach cancer

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 3

1. (a) Liver metastases
   (b) Bronchopneumonia
   (c) Stomach cancer and cerebral infarction

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.

Example 4

1. (a) Liver metastases
   (b) Bronchopneumonia and stomach cancer
   (c)

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.

2.19.7 Step SP4 – Starting point of the first-mentioned sequence

A sequence is a set of conditions reported line by line with a causal relationship between each element (see Section 2.18.2).

- If there is only one sequence ending with the direct cause of death, find the starting point of this sequence. This is the tentative starting point. Next, go to Step SP6.
- If there are two or more sequences ending with the direct cause of death, identify the first-mentioned sequence (see Section 2.18.5), and find the starting point of this first-mentioned sequence. Next, go to Step SP6.

If there is no sequence ending with the direct cause of death, go to Step SP5.

To assess causal relationship, refer to Section 2.18.2 ‘Causal relationship and Sequence’, and to Section 2.21.1 ‘Special instructions on accepted and rejected sequences (Steps SP3 and SP4)’.

Example 1

1. (a) Liver metastases
(b) Cerebral infarction and stomach cancer
(c) Atherosclerosis and stomach cancer

Cerebral infarction cannot cause liver metastases (Step SP3 does not apply), but liver metastases can be due to stomach cancer. This is the only sequence ending with the direct cause of death, so stomach cancer is the tentative starting point.

Example 2

1 (a) Bronchopneumonia
   (b) Cerebral infarction and liver metastases
   (c) Atherosclerosis and stomach cancer
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.

2.19.8 Step SP5 – Direct cause of death when no sequence

If there is no sequence ending with the direct cause of death, then the direct cause of death is also the tentative starting point. Next, go to Step SP6.

Example 1

1 (a) Liver metastases
   (b) Cerebral infarction
   (c) Atherosclerosis
2 Stomach cancer

Atherosclerosis cannot cause liver metastases (Step SP3 does not apply). Also, there is no sequence in Part 1 that ends with the direct cause of death, because cerebral infarction cannot cause liver metastases (Step SP4 does not apply). Because there is no sequence ending with the direct cause of death, the direct cause of death itself – liver metastases – is the tentative starting point.

2.19.9 Step SP6 – Obvious cause

If the tentative starting point selected in Steps SP1 to SP5 was obviously caused by another condition on the certificate, select the obvious cause as the new tentative starting point. Conditions that are considered to have an ‘obvious’ causal relationship are specified in Section 2.21.2 ‘Special instructions on obvious cause (Step SP6)’. To identify which Part of the certificate you should search for, apply following rules:

- If the tentative starting point is in Part 1, the obvious cause must be either on the same line, further down in Part 1, or 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, the obvious cause must also be in Part 2. Do not look for obvious causes in Part 1.

Next, reapply Step SP6 to the new tentative starting point. Continue looking for a new tentative starting point until you find a tentative 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 reported on the certificate that obviously caused the tentative starting point selected in Steps SP1 to SP5, go to Step SP7.

The word 'obviously' is important, and there must be no doubt about the relationship between the conditions. 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. Always refer to Section 2.21.2.

Do not apply Step SP6 if the tentative starting point has a longer duration than the obvious cause.

If more than one obvious cause of the tentative starting point is reported, select the priority underlying condition (see Section 2.18.6).

Example 1

1 (a) Sepsis
   (b) Peritonitis
   (c)
2 Appendicitis with rupture

Sepsis can be caused by peritonitis, and peritonitis is the tentative starting point (Step SP3). But, appendicitis with rupture is an obvious cause of peritonitis, and appendicitis with rupture is the new tentative starting point.

Example 2

1 (a) Liver metastases
   (b) Cerebral infarction
   (c)
2 Stomach cancer

Cerebral infarction cannot cause liver metastases, and liver metastases is the tentative starting point (Step SP5). But stomach cancer is an obvious cause of liver metastases, and stomach cancer is the new tentative starting point.

Example 3

1 (a) Sepsis
   (b) Peritonitis
   (c)
2 Mesenteric embolism, rupture appendicitis
Sepsis can be caused by peritonitis, and peritonitis is the tentative starting point (Step SP3). Next, both mesenteric embolism and ruptured appendicitis are obvious causes of peritonitis. Because mesenteric embolism is mentioned first and is the priority underlying condition, it is the new tentative starting point.

Example 4

1 (a) Sepsis
(b) Peritonitis
(c) Necrosis of intestine, mesenteric infection

Sepsis can be caused by peritonitis, and peritonitis is the tentative starting point (Step SP3). 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.

2.19.10 Step SP7 – Ill-defined conditions

If the tentative starting point selected in Steps SP1 to SP6 is listed in the ‘List of ill-defined conditions’ (see Section 2.23.8), and:

- 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 all other conditions reported on the certificate are ill-defined, go to Step M1.

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

Note that the following are not considered ill-defined:

- Septic shock
- Sudden infant death syndrome

Example 1

1 (a) Respiratory failure
(b) 
(c)
2 Mesenteric embolism

Respiratory failure is the only condition mentioned in Part 1 and it is the tentative starting point according to Steps SP2. But respiratory failure is in the table of ill-defined conditions, and there is a condition not ill-defined, Mesenteric embolism, so disregard respiratory failure and restart the selection procedure. Mesenteric embolism is the new starting point according to Step SP1.

2.19.11 Step SP8 – Conditions unlikely to cause death

If the tentative starting point selected in Steps SP1 to SP7 is listed in the table of ‘List of conditions unlikely to cause death’ (see Section 2.23.9), and:
• If all other conditions reported on the certificate are also unlikely to cause death or ill-defined, then keep this condition unlikely to cause death as the starting point. Next, go to Step M1.
• If this condition was the cause of another condition that is not unlikely to cause death and that is not ill-defined, then keep this condition unlikely to cause death as the starting point. Next, go to Step M1.
• If the death was caused by a reaction to treatment of the condition unlikely to cause death, select the reaction to treatment as the starting point. Next, go to Step M1.
• If the above three does not apply, and there is at least one condition that is not unlikely to cause death and not ill-defined, 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 tentative starting point is not listed in the table of 'List of conditions unlikely to cause death', keep that condition as the starting point and go to Step M1.

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.

Example 1

1  (a) Hearing loss
   (b)
   (c)
2  Ischemic heart disease

Hearing loss is the tentative starting point according to Step SP2, but hearing loss is in the 'List of conditions considered unlikely to cause death'. There is another condition on the certificate, ischaemic heart disease, which is not in the 'List of conditions considered unlikely to cause death'. Disregard hearing loss and restart the selection procedure from Step SP1. Ischaemic heart disease is the new starting point according to Step SP1.

Example 2

1  (a) Liver failure
   (b) Excessive use of paracetamol
   (c) Migraine-type headache
2

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

Example 3

1  (a) Sepsis
   (b) Submandibular abscess
   (c) Caries
Caries is the tentative starting point according to Step SP3. It is in the ‘List of conditions considered unlikely to cause death’, but in this case it caused complications that are not in the list of Annexes 2.23.8-9. Because of that, select caries as the starting point.

Example 4

1  (a)  Headache
    (b)  Caries
    (c)
2  Ischemic heart disease

Caries is the tentative starting point according to Step SP3. It is in the ‘List of conditions considered unlikely to cause death’. A complication is reported, headache, but it is in the list of ill-defined conditions. Disregard both caries and headache and restart the selection procedure from Step SP1. Ischaemic heart disease is the new starting point according to Step SP1.
Figure 1: Flowchart of steps SP1 to SP8, and to Steps M1 to M4.
2.20 Check for modifications of the starting point (Steps M1 to M4)

The starting point you identified using Steps SP1 to SP8 is now considered the tentative underlying cause. There may be special coding instructions on this tentative underlying cause, or other reasons to modify the tentative underlying cause. Check whether the tentative underlying cause should be modified by applying the modification rules described in steps M1 to M3 (Modification rule 1 to 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.

2.20.1 Step M1 – Special instructions

If the tentative underlying cause (TUC) selected in Steps SP1 to SP8 applies to a special instruction listed in Section 2.21.3 ‘Special instructions on linkages and other provisions (Step M1)’, assign a new tentative underlying cause according to the instruction.

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

If the tentative underlying cause does not apply to instructions in Section 2.21.3, go to Step M2.

If more than one instruction in Section 2.21.3 applies to the tentative underlying cause, select the instruction relating to the priority underlying condition (see Section 2.18.6).

Note that there are two types of combination, ‘with mention of’ and ‘when reported as a cause of’. Refer to Section 2.21.3 for details.

Sometimes the classification itself 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 Section 2.21.3 indicates otherwise.

*Examples of ‘with mention of’:

**Example 1**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 1 | (a) Myocardial infarction  
   | (b) Ischaemic heart disease  
   | (c) |
| 2 |

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

**Example 2**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Ischaemic heart disease</td>
</tr>
</tbody>
</table>

* Examples of ‘with mention of’:
Atherosclerosis is the tentative starting point according to Step SP3. There is a special instruction on ‘atherosclerosis reported with ischaemic heart disease’, and another one on ‘atherosclerosis reported with cerebral infarction’. Ischaemic heart disease is the priority underlying condition, so apply the instruction on ‘atherosclerosis reported with ischaemic heart disease’ and select ischaemic heart disease as the new tentative underlying cause.

Example 3

1  (a) Cerebrovascular infarction
    (b) Atherosclerosis
    (c) Hypertension
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 the priority underlying condition, so apply the instruction on ‘hypertension reported with cerebrovascular infarction’ and select cerebrovascular infarction as the new tentative underlying cause.

Example 4

1  (a) Ischaemic heart disease
    (b) Atherosclerosis
    (c)
2  Myocardial infarction

Atherosclerosis is the tentative starting point according to Step SP3. There is a special instruction on ‘atherosclerosis reported with ischaemic heart disease’, and another one on ‘atherosclerosis reported with myocardial infarction’. Ischaemic heart disease is the priority underlying condition, so apply the instruction on ‘atherosclerosis reported with ischaemic heart disease’ and select ischaemic heart disease as the new starting point. Next, there is a special instruction on ‘ischaemic heart disease reported with myocardial infarction’. Apply this instruction and select myocardial infarction as the new tentative underlying cause.

*Examples of ‘when reported as the cause of’:

Example 5

1  (a) Dementia
    (b) Atherosclerosis
    (c)
2

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

Example 6

1  (a) Atherosclerosis
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.

### 2.20.2 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, assign this more informative term as the new tentative underlying cause.

Next, reapply Step M2 to the new tentative underlying cause. Repeat until you have found a tentative underlying cause that cannot be specified further.

If there is no term that further specifies the tentative underlying cause, go to Step M2.

The more specific description must refer to the same condition as the tentative underlying cause. Do not disregard a generalised condition such as atherosclerosis because a more specific but unrelated condition is reported on the certificate (see also Example 2).

If there are several other expressions that provide more precise information on the tentative underlying cause, select the priority underlying condition (see Section 2.18.6).

Note that the new tentative underlying cause itself is sometimes specified further by the general term (see Example 3).

#### Example 1

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Cerebrovascular accident</td>
</tr>
<tr>
<td></td>
<td>(b) Atherosclerosis</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
</tr>
</tbody>
</table>

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 2

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Cerebrovascular accident</td>
</tr>
<tr>
<td></td>
<td>(b) Atherosclerosis</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
</tr>
</tbody>
</table>

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 according to Step M1. There is no more specific description of the type of cerebrovascular accident on the certificate, so cerebrovascular accident remains the tentative underlying cause.

Example 3

1  (a)  Meningitis
    (b)  Tuberculosis
    (c)  

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.

2.20.3 Step M3 – Recheck Steps SP6, M1 and M2

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

If the tentative underlying cause is the same with the starting point selected in Step SP1 to SP8, go to Step M4.

- 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 1

1  (a)  Sepsis
    (b)  Arterial disease, arterial embolism of left leg
    (c)  

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 to SP8. Colon cancer is an obvious cause of arterial embolism, so colon cancer is the new starting point. No further modifications apply. Code colon cancer (Malignant neoplasm of colon, unspecified) as the underlying cause of death.

Example 2

1  (a)  Sepsis
    (b)  Arterial disease, arterial embolism of left leg
    (c)  Atherosclerosis

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, embolism and thrombosis of arteries of lower extremities’ as the underlying cause of death.

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

Finally, apply the following instructions to the tentative underlying cause selected by applying Steps SP1 to SP8 and Steps M1 to M3.

If the tentative underlying cause is:

- Surgery, another type of medical procedure or a postprocedural condition, apply the instructions in Section 2.21.4 ‘Special instructions on surgery and other medical procedures (Step M4)’.
- In Chapter 22 Injury, poisoning or certain other consequences of external causes, first code the external cause of the injury or poisoning as the underlying cause of death. And add the main injury to the cluster by following instructions in Section 2.21.5 ‘Special instructions on main injury in deaths from external causes (Step M4)’.
- In Chapter 23, External causes of morbidity and mortality, also add the main injury to the cluster by following instructions in Section 2.21.5 ‘Special instructions on main injury in deaths from external causes (Step M4)’.
- Poisoning, use additional code from Chapter X, if applicable, to identify the specific name of drug or toxic substance reported. And add the main injury from Chapter 22 to the cluster. If more than one drug or toxic substance is reported on the certificate, apply instructions in Section 2.21.6 ‘Special instructions on poisoning by drugs, medicaments and biological substances (Step M4)’, to identify the drug, medicament or substance most likely to have caused the death, and add the main injury from Chapter 22 to the cluster.

If the decedent is a woman, and pregnancy, childbirth or puerperium is reported on the certificate, determine whether to code the tentative underlying cause to Chapter 18, Pregnancy, childbirth and the puerperium, according to the instructions in Section 2.21.7 ‘Special instructions on maternal mortality (Step M4)’.

When creating a cluster in Step M4, always put the code for the underlying cause of death at the beginning of the cluster.

If the tentative underlying cause selected by applying Steps SP1 to SP8 and Steps M1 to M3 does not apply to either of the instructions in M4, or if the tentative underlying cause is not further changed after application of M4, the tentative underlying cause you have arrived is the underlying cause of death.

Note that other restrictions may apply, for example that the cause is limited to one of the sexes (see also Section 2.22.7 and Annexes 2.23.11 – 2.23.12) or to a specific age range, or that the cause of death is improbable, considering the geographical setting. Therefore, always check whether any such restrictions apply to the underlying cause you selected.
2.21 Special instructions in selecting the underlying cause of death

The following sections are to be referred to in applying each instruction of Section 2.19 (Steps SP1 to SP8) and Section 2.20 (Steps M1 to M4).

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

This section lists sequences of causes of death that should be accepted or rejected when selecting the underlying cause of death. As described in Section 2.18.2 ‘Causal relationship and Sequence’, these instructions are set aiming to produce the most useful mortality statistics. 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 reported causal relationship not listed as rejected in this section should be accepted, as far as possible, because the certifier’s opinion about the causes leading to death should not be disregarded lightly.

When applying Steps SP3 and SP4, reject the relationships listed in this section. Exceptions are listed as ‘accept’ in the table following each instruction.

Note that all information on causal relationship provided on the certificate should be considered. 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 disease ‘A’ was due to a disease ‘B’, then consider ‘B’ as the tentative starting point.

2.21.1.1 Conflicting durations

Do not accept a condition with a stated duration as due to a condition with a shorter duration.

<table>
<thead>
<tr>
<th>Consequence</th>
<th>Caused by</th>
</tr>
</thead>
<tbody>
<tr>
<td>A condition with a stated duration</td>
<td>Do not accept a condition with a shorter duration</td>
</tr>
</tbody>
</table>

2.21.1.2 Infectious diseases due to other conditions

*Cholera and certain infectious disease due to other conditions*

Do not accept the following infectious and parasitic diseases as due to any other causes, not even human immunodeficiency virus (HIV) disease, malignant neoplasms or conditions impairing the immune system:

- Cholera 1A00
- Botulism 1A11
- Leprosy 1B20
- Scarlet fever 1B50
• Leptospirosis 1B91
• Plague 1B93
• Tularaemia 1B94
• Brucellosis 1B95
• Anthrax 1B97
• Trench fever 1C11.1
• Whooping cough 1C12
• Tetanus 1C13
• Obstetrical tetanus 1C14
• Tetanus neonatorum 1C15
• Diphtheria 1C17
• Meningococcal disease 1C1C
• Diseases due to Chlamydia psittaci 1C22
• Trochoma 1C23.Z
• Rickettsioses 1C3Z
• Viral infections of the central nervous system 1C80-1C8Z
• Dengue 1D20-1D2Z
• Yellow fever 1D47
• Chikungunya virus disease 1D40
• O’nyong-nyong fever 1D42
• Rift Valley fever 1D44
• Zika virus disease 1D48
• Crimean-Congo haemorrhagic fever 1D49
• Omsk haemorrhagic fever 1D4A
• Kyasanur Forest disease 1D4B
• Alkhurma haemorrhagic fever 1D4C
• Certain arthropod-borne viral fevers 1D4Z
• Ebola disease 1D60.0
• Marburg disease 1D60.1
• Argentinian haemorrhagic fever 1D61.0
• Bolivian haemorrhagic fever 1D61.1
• Lassa fever 1D61.2
• Haemorrhagic fever with renal syndrome 1D62.0
• Severe acute respiratory syndrome 1D65
• Mumps 1D80
• Viral haemorrhagic fever, not elsewhere classified 1D86
• Influenza due to identified zoonotic or pandemic influenza virus 1E31
• Acute hepatitis B 1E50.1
• Acute hepatitis C 1E50.2
• Chronic hepatitis B 1E51.0
• Chronic hepatitis C 1E51.1
• Chronic hepatitis D 1E51.2
• Smallpox 1E70
• Monkeypox 1E71
• Rubella 1F02
• Measles 1F03
• Malaria 1F40-1F4Z
• African trypanosomiasis 1F51
• Chagas disease 1F53
• Leishmaniasis 1F54
• Subacute sclerosing panencephalitis 8A45.01
• Genetic Creutzfeldt-Jakob disease 8E02.0

**Consequence condition**  **Causing condition**

| Cholera etc., listed above | **Do not accept** other causes |

**Typhoid and certain infectious disease due to other conditions**

Do not accept the following infectious diseases as due to other causes, except HIV disease, malignant neoplasms and conditions impairing the immune system:

• Intestinal infections due to Shigella 1A02
• Typhoid fever 1A07
• Paratyphoid fever 1A08
• Infections due to other Salmonella 1A09
• Tuberculosis 1B10-1B1Z

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intestinal infections due to Shigella</td>
<td><strong>Accept</strong> HIV disease, malignant neoplasms, and conditions impairing the immune system</td>
</tr>
<tr>
<td>Typhoid fever</td>
<td><strong>Do not accept</strong> other causes</td>
</tr>
<tr>
<td>Paratyphoid fever</td>
<td></td>
</tr>
<tr>
<td>Infections due to other Salmonella</td>
<td></td>
</tr>
<tr>
<td>Tuberculosis</td>
<td></td>
</tr>
</tbody>
</table>

**HIV due to other conditions**

Do not accept HIV 1C62 as due to other conditions, except:

• 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 the Annex 2.23.5, Causes of HIV. Note that the list in Annex 2.23.5 is not complete.

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV</td>
<td><strong>Accept</strong></td>
</tr>
<tr>
<td></td>
<td>- conditions necessitating blood transfusion, such as haemophilia, anaemia and major injuries</td>
</tr>
<tr>
<td></td>
<td>- invasive procedures, such as surgery</td>
</tr>
<tr>
<td></td>
<td>- drug abuse</td>
</tr>
<tr>
<td></td>
<td>(for examples, refer to Annex 2.23.5)</td>
</tr>
<tr>
<td></td>
<td><strong>Do not accept</strong> other causes</td>
</tr>
</tbody>
</table>

**Influenza due to other conditions**

Do not accept Influenza as due to any other cause.

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza</td>
<td><strong>Do not accept</strong> other causes</td>
</tr>
</tbody>
</table>

**Infectious diseases not listed above due to other conditions**

Infectious diseases not listed above are accepted to be caused by other conditions.

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious diseases not listed above</td>
<td><strong>Accept</strong> other causes</td>
</tr>
</tbody>
</table>

**2.21.1.3 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 disease 1C60:

- Blastic plasmacytoid dendritic cell neoplasm 2A60.5, specified as primary in brain
- Follicular lymphoma 2A80, specified as primary in brain
- Diffuse large B-cell lymphomas 2A81, specified as immunoblastic
- Mantle cell lymphoma 2A85.5, specified as primary in brain
- Burkitt lymphoma including Burkitt leukaemia 2A85.6
- B-cell lymphoma, mixed features 2A86, specified as primary in brain
- Mature B-cell neoplasms, unspecified 2A8Z, specified as primary in brain
- Mature T-cell or NK-cell neoplasms 2A90-2B2Z, specified as primary in brain
- Hodgkin lymphoma 2B30, specified as primary in brain
- Kaposi sarcoma, primary site 2B57
- Malignant neoplasms of oropharynx 2B6A
- Malignant neoplasms of anus or anal canal 2C00
- Malignant neoplasms of vulva 2C70
- Malignant neoplasms of vagina 2C71
- Malignant neoplasms of cervix uteri 2C77, specified as invasive
- Malignant neoplasms of penis 2C81

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malignant neoplasm of oropharynx etc., listed above</td>
<td><strong>Accept</strong> HIV diseases</td>
</tr>
<tr>
<td>Malignant neoplasms not listed above</td>
<td><strong>Do not accept</strong> other causes</td>
</tr>
</tbody>
</table>

**2.21.1.4 Haemophilia due to other conditions**

Do not accept haemophilia as due to any other cause.

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemophilia</td>
<td><strong>Do not accept</strong> other causes</td>
</tr>
</tbody>
</table>

**2.21.1.5 Diabetes due to other conditions**

Do not accept Type 1 diabetes mellitus as due to any other cause except conditions causing autoimmune destruction of beta-cells.

Do not accept Type 2 diabetes mellitus as due to any other cause except conditions causing insulin resistance.

Do not accept ‘Other and Unspecified diabetes mellitus’ as due to any other cause except conditions causing damage to the pancreas.

See Annex 2.23.6 for a list of the conditions that can cause diabetes.

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1 diabetes mellitus</td>
<td><strong>Accept</strong> conditions causing autoimmune destruction of beta cells</td>
</tr>
<tr>
<td></td>
<td><strong>Do not accept</strong> other causes</td>
</tr>
<tr>
<td>Type 2 diabetes mellitus</td>
<td><strong>Accept</strong> conditions causing insulin resistance</td>
</tr>
<tr>
<td></td>
<td><strong>Do not accept</strong> other causes</td>
</tr>
<tr>
<td>Other and Unspecified diabetes mellitus</td>
<td>Accept conditions causing damage to the pancreas</td>
</tr>
<tr>
<td></td>
<td><strong>Do not accept</strong> other causes</td>
</tr>
</tbody>
</table>

**2.21.1.6 Rheumatic fever due to other conditions**

Do not accept Acute rheumatic fever 1B40-1B42 and Heart valve diseases BB60-BC0Z with fourth character (.0) rheumatic due to other causes, except:

- Scarlet fever 1B50
- Streptococcal sepsis, due to Streptococcus group A or unspecified
• Streptococcal pharyngitis 1B51
• Streptococcal tonsillitis CA03.0

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute rheumatic fever</td>
<td>Accept</td>
</tr>
<tr>
<td>Chronic rheumatic heart diseases</td>
<td>- Scarlet fever</td>
</tr>
<tr>
<td></td>
<td>- Streptococcal sepsis, due to Streptococcus group A or unspecified</td>
</tr>
<tr>
<td></td>
<td>- Streptococcal pharyngitis</td>
</tr>
<tr>
<td></td>
<td>- Streptococcal tonsillitis</td>
</tr>
<tr>
<td><strong>Do not accept</strong> other causes</td>
<td></td>
</tr>
</tbody>
</table>

2.21.1.7 Hypertension due to other conditions

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

• endocrine neoplasms
• renal neoplasms
• carcinoid tumours

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertensive conditions</td>
<td>Accept</td>
</tr>
<tr>
<td></td>
<td>- endocrine neoplasms</td>
</tr>
<tr>
<td></td>
<td>- renal neoplasms</td>
</tr>
<tr>
<td></td>
<td>- carcinoid tumours</td>
</tr>
<tr>
<td><strong>Do not accept</strong> other neoplasms</td>
<td></td>
</tr>
</tbody>
</table>

2.21.1.8 Certain ischaemic heart disease due to other conditions

Do not accept Angina pectoris BA40 and Chronic ischaemic heart disease BA50-BA5Z as due to a neoplasm.

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angina pectoris</td>
<td>Accept other causes</td>
</tr>
<tr>
<td>Chronic ischaemic heart disease</td>
<td><strong>Do not accept</strong> neoplasms</td>
</tr>
</tbody>
</table>

2.21.1.9 Atherosclerosis due to other conditions

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

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>An atherosclerotic condition</td>
<td>Accept other causes</td>
</tr>
<tr>
<td><strong>Do not accept</strong> neoplasms</td>
<td></td>
</tr>
</tbody>
</table>
2.21.1.10 Congenital anomalies due to other conditions

Do not accept a congenital anomaly as due to any other cause, including immaturity, except:

- congenital anomaly due to a chromosome abnormality or a congenital malformation syndrome
- Pulmonary Hypoplasia due to a congenital anomaly

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A congenital anomaly</td>
<td><strong>Accept</strong> chromosome abnormality, congenital malformation syndrome</td>
</tr>
<tr>
<td></td>
<td><strong>Do not accept</strong> other causes, including immaturity</td>
</tr>
<tr>
<td>Pulmonary Hypoplasia</td>
<td><strong>Accept</strong> a congenital anomaly</td>
</tr>
<tr>
<td></td>
<td><strong>Do not accept</strong> other causes, including immaturity</td>
</tr>
</tbody>
</table>

2.21.1.11 Accidents due to other conditions

Do not accept accidents as due to causes coded in other chapters, except:

- Fall as due to a Disorder of bone density and structure
- Fall as due to a (pathological) fracture caused by a Disorder of bone density and structure
- Asphyxia and aspiration as due to other causes

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidents not listed below</td>
<td><strong>Do not accept</strong> causes in other chapters</td>
</tr>
<tr>
<td>Fall PA60 Unintentional fall on the same level or from less than 1 metre</td>
<td><strong>Accept</strong> a Disorder of bone density and structure</td>
</tr>
<tr>
<td></td>
<td>FB80 Certain specified disorders of bone density or structure</td>
</tr>
<tr>
<td></td>
<td><strong>Do not accept</strong> other causes in other chapters</td>
</tr>
<tr>
<td>Unintentional threat to breathing</td>
<td><strong>Accept</strong> other causes</td>
</tr>
</tbody>
</table>

2.21.1.12 Suicide due to other conditions

Do not accept suicide as due to any other cause.

<table>
<thead>
<tr>
<th>Consequence condition</th>
<th>Causing condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide</td>
<td><strong>Do not accept</strong> other causes</td>
</tr>
</tbody>
</table>

2.21.2 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 Steps SP1 to SP5.
2.21.2.1 Complications of HIV

**Infectious diseases and HIV**

Consider HIV disease 1C60-1C62 as an obvious cause of infectious diseases:

- Cryptosporidiosis 1A32
- Cystoisosporiasis 1A33
- Infections due to non-tuberculous mycobacteria 1B21
- Certain mycobacterial infections affecting the skin EA5Y
- Progressive multifocal leukoencephalopathy 8A45.02
- Herpes simplex infection, of skin or mucous membrane 1F00.0, disseminated 1F00.3, other 1F00.Y or unspecified 1F00.Z, specified as chronic ulcers, bronchitis, pneumonia, or oesophagitis
- Cytomegaloviral disease 1D82, except Cytomegaloviral hepatitis 1D82.0, and except for liver, spleen, lymph nodes
- Candidosis of gastrointestinal tract 1F23.2, specified as esophagus
- Pulmonary candidosis 1F23.31
- Coccidiodomycosis 1F25
- Histoplasmosis 1F2A
- Cryptococcosis 1F27
- Pneumonia due to pneumocystis CA40.20

Consider HIV disease (1C60-1C62), as an obvious cause of infectious diseases (Chapter 1) not listed above, except those listed in Section ‘Cholera and certain infectious disease due to other conditions’. Note that Laboratory evidence of HIV (MA14.0) is not considered as an obvious cause of these conditions.

**Malignant neoplasms and HIV**

Consider both HIV disease HIV disease 1C60-1C62 and Laboratory evidence of HIV MA14.0 as the obvious cause of the following malignant neoplasms:

- Follicular lymphoma 2A80, specified as primary in brain
- Diffuse large B-cell lymphomas 2A81, specified as immunoblastic
- Mantle cell lymphoma 2A85.5, specified as primary in brain
- Burkitt lymphoma including Burkitt leukaemia 2A85.6
- B-cell lymphoma, mixed features 2A86, specified as primary in brain
- Mature B-cell neoplasms, unspecified 2A8Z, specified as primary in brain
- Hodgkin lymphoma 2B30, specified as primary in brain
- Kaposi sarcoma, primary site 2B57
- Malignant neoplasms of cervix uteri 2C77, specified as invasive

**Immune deficiency and HIV**

Consider HIV disease 1C60-1C62 as the obvious cause of immune deficiency.
Pneumonia and HIV
Consider HIV disease 1C60-1C62 as an obvious cause of pneumonia CA40.

Cachexia and HIV
Consider HIV disease 1C60-1C62 as an obvious cause of Cachexia, unspecified MG20.

2.21.2.2 Enterocolitis due to Clostridium difficile
Consider enterocolitis due to Clostridium difficile 1A04 as an obvious consequence of PL00 Drugs, medicaments or biological substances associated with injury or harm in therapeutic use, specified as antibiotic therapy.

2.21.2.3 Sepsis
Consider the following as obvious causes of sepsis 1G40-1G41:
- 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
- serious injuries (grade 1–4 according to the injury priority list in the Annex 2.23.10).

2.21.2.4 Complications of diabetes
Consider Diabetes mellitus as the obvious cause of the following conditions:
- Acidosis 5C73.Z
- Polyneuropathy, unspecified 8C0Z
- Certain specified mononeuropathies 8C12
- Other specified primary disorders of muscles 8C7Y, specified as amyotrophy but without specification of etiology
- Disorders of autonomic nervous system, unspecified 8D8Z
- Anterior uveitis, unspecified 9A96.Z
- Cataract, unspecified 9B10.Z
- Chorioretinal inflammation 9B65.2
- Retinal vascular occlusions 9B74
- Background retinopathy and retinal vascular changes 9B78.1
- Other proliferative retinopathy 9B78.2
- Retinal haemorrhage 9B78.5
- Retinal disorders, unspecified 9B7Z
- Lower limb atherosclerosis BD40.0
- Chronic arterial occlusive disease, unspecified BD4Z
- Necrobiosis lipoidica EE80.1
- Ulcer of skin of uncertain nature ME60.2, specified as lower limb
• Inflammatory arthropathies, unspecified FA2Z
• Chronic neuropathic pain, unspecified MG30.5Z
• Nephritic syndrome GB40
• Nephrotic syndrome GB41
• Persistent proteinuria or albuminuria GB42
• Chronic kidney disease GB61
• Unspecified kidney failure GB6Z
• Smooth contracted kidney MF54.0
• Diseases of the urinary system, unspecified GC2Z, specified as kidney conditions
• Gangrene MC85
• Coma MB20.1
• Other specified abnormal findings of blood chemistry MA18.Y specified as acetonemia, azotemia, and related conditions

2.21.2.5 Dehydration

Consider any intestinal infectious disease as an obvious cause of Volume depletion 5C70.

2.21.2.6 Dementia

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

Consider trisomy 21 (Down syndrome) LD40.0 as an obvious cause of Dementia due to Alzheimer disease 6D80 or of unknown or unspecified cause 6D8Z, and Alzheimer disease 8A20.

2.21.2.7 Disorders of intellectual development

Consider the following conditions as disorders of intellectual development 6A00:

• Post haemorrhagic hydrocephalus 8D64.2, specified as neonatal
• Foetus or newborn affected by maternal factors or by complications of pregnancy, labour or delivery KA00-KA0Z
• Disorders of newborn related to slow foetal growth or foetal malnutrition KA20
• Disorders of newborn related to short gestation or low birth weight, not elsewhere classified KA21
• Intracranial laceration or haemorrhage due to birth injury KA40.0
• Cerebral oedema due to birth injury KA40.1
• Birth injury to central nervous system, unspecified KA40.Z
• Birth injury, unspecified KA40.Z
• Other bacterial infections of the newborn KA61
• Viral infection in the foetus or newborn KA62
• Fungal infection of foetus or newborn KA63
• Parasitic diseases in the foetus or newborn KA64
• Other specified infections of the foetus or newborn KA6Y
• Infections of the foetus or newborn, unspecified KA6Z
• Intrauterine hypoxia KB20
• Birth asphyxia KB21
• Intracranial nontraumatic haemorrhage of foetus or newborn KA82
• Neonatal kernicterus KA86
• Neonatal cerebral ischaemia KB00
• Periventricular cysts of newborn KB01
• Neonatal cerebral leukomalacia KB02
• Neonatal encephalopathy []
• Hypoxic ischaemic encephalopathy of newborn []
• Neonatal hydrocephalus KB05
• Neonatal seizures KB06

2.21.2.8 Heart failure and unspecified heart disease

Consider other heart conditions as the obvious cause of Diseases of the myocardium or cardiac chambers, unspecified BC4Z and Heart failure BD10-BD1Z. FROM HERE ####

2.21.2.9 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.

2.21.2.10 Oesophageal varices

Consider the following liver diseases as the obvious cause of Oesophageal varices DA26.0:

• Chronic viral hepatitis 1E51
• Non-alcoholic fatty liver disease DB92
• Hepatic fibrosis or cirrhosis DB93
• Alcoholic liver disease DB94
• Primary biliary cholangitis DB96.1
• Chronic hepatitis, not elsewhere classified DB97.2
• Infarction of liver DB98
• Peliosis hepatitis DB98.1
• Hepatic veno-occlusive disease DB98.6
• Portal hypertension DB98.7
• Passive congestion of liver DB98.8
• Hepatorenal syndrome DB99.2
• Other diseases of liver DB99.Y
• Diseases of liver, unspecified DB9Z
2.21.2.11 Pneumonia

Consider the following as obvious causes of Pneumonia CA40 or Pneumonitis due to solids and liquids CA71 except those due to oils or essences CA71.1:

- 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 that 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 the Annex 2.23.10).

2.21.2.12 Pulmonary oedema

Consider the following conditions as obvious causes of Pulmonary oedema CB01:

- 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:
  - kidney failure
  - hypoalbuminaemia
- congenital anomalies affecting the pulmonary circulation, such as:
  - congenital stenosis of pulmonary veins

2.21.2.13 Nephritic syndrome

Consider any streptococcal infection (scarlet fever, streptococcal sore throat, etc.) as the obvious cause of Nephritic syndrome GB40 or Nephrotic syndrome GB41.

2.21.2.14 Pyelonephritis

Consider any urinary obstruction from conditions such as hyperplasia of prostate or ureteral stenosis as the obvious cause of the following Renal tubulo-interstitial diseases:

- Acute tubulo-interstitial nephritis (GB50) GB50
- Acute pyelonephritis (GB51) GB51
- Tubulo-interstitial nephritis, not specified as acute or chronic (GB54) GB54
- Other specified chronic tubulo-interstitial nephritis (GB55.Y) GB55.Y
- Chronic tubulo-interstitial nephritis, unspecified (GB55.Z) GB55.Z
2.21.2.15 Acute renal failure

Consider a urinary tract infection as the obvious cause of Acute kidney failure GB60, provided there is no indication that the renal failure was present before the urinary tract infection developed.

2.21.2.16 Primary atelectasis of newborn

Consider the following congenital kidney conditions, Foetus or newborn affected by premature rupture of membranes KA01.1 or by oligohydramnios KA01.2 as obvious causes of Primary atelectasis of newborn KB2B:

- Autosomal dominant tubulointerstitial disease, Type 1 GB82
- Other specified cystic or dysplastic kidney disease GB8Y
- Cystic or dysplastic kidney disease, unspecified GB8Z
- Atresia or stenosis of ureter LB31.8
- Agenesis of ureter LB31.9
- Other specified structural developmental anomalies of urinary therapeutic LB31.Y
- Meckel-Gruber syndrome LD2F.13

2.21.2.17 Premature rupture of membranes and oligohydramnios

Consider the following congenital kidney conditions as obvious causes of Foetus or newborn affected by premature rupture of membranes KA01.1 or by oligohydramnios KA01.2:

- Autosomal dominant tubulointerstitial disease, Type 1 GB82
- Other specified cystic or dysplastic kidney disease GB8Y
- Cystic or dysplastic kidney disease, unspecified GB8Z
- Atresia or stenosis of ureter LB31.8
- Agenesis of ureter LB31.9
- Other specified structural developmental anomalies of urinary therapeutic LB31.Y
- Meckel-Gruber syndrome LD2F.13

2.21.2.18 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.

2.21.2.19 Aspiration and inhalation

Consider conditions listed under Section 2.21.2.19, Pneumonia, as obvious causes of aspiration and inhalation.
2.21.2.20 Surgery and other invasive medical procedures

Consider surgery or other invasive medical procedures, carried out within four weeks before death, as the obvious cause of conditions that are considered common postprocedural 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 2.23.7 ‘List of conditions to be considered direct consequences of surgery and other invasive medical procedures’. Consider any surgical condition (such as malignant tumour or injury), reported anywhere on the certificate, as the obvious cause of an operation or other medical procedure performed on the same organ. If a condition that can be treated by surgery or other invasive medical procedures is reported on the certificate and surgery or a procedure of the same site is also reported on the certificate, then assume that this condition was the cause of the surgery or procedure.

2.21.2.21 Common secondary conditions

Consider the following as the obvious cause of the common secondary conditions listed in the table below:

- wasting diseases (such as malignant neoplasms and malnutrition)
- diseases causing paralysis (such as cerebral haemorrhage or thrombosis)
- other disease that limits the ability to care for oneself
- including dementia and degenerative diseases of the nervous system
- serious injuries (grade 1-4 according to the injury priority list in the Annex 2.23.10)

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 paralysing conditions only if they meet the prerequisite for code assignment noted in the final column of the table.

### Common secondary conditions

<table>
<thead>
<tr>
<th>Consequence</th>
<th>Maybe</th>
<th>Qualifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>3A00.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquired iron deficiency anaemia due to blood loss</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3A9Z</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anaemias or other erythrocyte disorders, unspecified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5B51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wasting in infants, children or adolescents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5B52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute malnutrition in infants, children or adolescents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5B71</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein deficiency</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
5B7Z Unspecified undernutrition
5C70 Volume depletion
8B40 Cauda equina syndrome
8E45 Locked-in syndrome
BB00 Pulmonary thromboembolism
BD30.0 Acute upper limb arterial occlusion
BD30.2 Acute lower limb arterial occlusion
BD71.4 Lower limb deep vein thrombosis
BD71.Y Other specified deep vein thrombosis
BD72 Venous thromboembolism
DA91.31 Enterolith of small intestine
DB30.3 Impaction of large intestine
DB30.2 Acute mesenteric venous occlusion
EH90 Pressure ulceration
GB50 Acute tubulo-interstitial nephritis
GB51 Acute pyelonephritis
GB55.Y Other specified chronic tubulo-interstitial nephritis
GB55.Z Chronic tubulo-interstitial nephritis, unspecified
GB54 Tubulo-interstitial nephritis, not specified as acute or chronic
GB60-GB6Z Kidney failure
GB90.3 Ischaemia or infarction of kidney
GC00.1 Infectious cystitis
GC00.3 Interstitial cystitis
GC00.Z Cystitis, unspecified
GC01.4 Neuromuscular dysfunction of bladder, not elsewhere classified

M Diseases causing paralysis or inability to control bladder

The condition in GB90.3 must be specified as an embolism of the renal artery

M Diseases causing paralysis or inability to control bladder
GC02.0 Urethral abscess M Diseases causing paralysis or inability to control bladder

GC02.1 Nonspecific urethritis

GC02.Y Other specified urethritis and urethral syndrome

GC03 Urethral stricture M Diseases causing paralysis or inability to control bladder; Exclude post traumatic urethral strictures

GC08 Urinary tract infection, site not specified M Diseases causing paralysis or inability to control bladder

MB50-MB5Z Paralytic symptoms

ME05.0 Constipation

MG20 Cachexia, unspecified

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

Use the list in this section 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.

**TUC is:**

<table>
<thead>
<tr>
<th>Chapter 1 Certain infectious or parasitic diseases</th>
<th>When reported as cause of:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2A00-2A0Z Neoplasms of brain or central nervous system</td>
</tr>
<tr>
<td></td>
<td>2A20-2B3Z Neoplasms of haematopoietic or lymphoid tissues</td>
</tr>
<tr>
<td></td>
<td>2B50-2E4Z Malignant neoplasms, except of lymphoid, haematopoietic, central nervous system or related tissues</td>
</tr>
</tbody>
</table>
Exception: HIV disease

Malignant neoplasms listed at Section 2.22.1.3 ‘Malignant neoplasms and HIV’

Code to: 1C60 Human immunodeficiency virus disease associated with tuberculosis, 1C61 Human immunodeficiency virus disease associated with malaria or 1C62 Human immunodeficiency virus disease without mention of tuberculosis or malaria, with 5th character 3 HIV disease clinical stage 4 (AIDS)

**TUC is:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A33</td>
<td>Cystoisosporiasis with mention of:</td>
</tr>
<tr>
<td>1D82</td>
<td>Cytomegaloviral disease</td>
</tr>
<tr>
<td>1B21</td>
<td>Infections due to non-tuberculous mycobacteria</td>
</tr>
<tr>
<td>1B2Y</td>
<td>Other specified mycobacterial diseases</td>
</tr>
<tr>
<td>1B2Z</td>
<td>Mycobacterial diseases, unspecified</td>
</tr>
<tr>
<td>1F00</td>
<td>Herpes simplex infections, except 1F00.Z</td>
</tr>
<tr>
<td>1F23.2</td>
<td>Candidosis of gastrointestinal tract</td>
</tr>
<tr>
<td>1F23.31</td>
<td>Pulmonary candidosis</td>
</tr>
<tr>
<td>1F25</td>
<td>Coccidioidomycosis</td>
</tr>
<tr>
<td>1F27</td>
<td>Cryptococcosis</td>
</tr>
<tr>
<td>1F2A</td>
<td>Histoplasmosis</td>
</tr>
<tr>
<td>1F2G</td>
<td>Pneumocystosis</td>
</tr>
<tr>
<td>1F57</td>
<td>Toxoplasmosis</td>
</tr>
<tr>
<td>8C70.40</td>
<td>Dominant limb-girdle muscular dystrophy</td>
</tr>
<tr>
<td>2A60.5</td>
<td>Blastic plasmacytoid dendritic cell neoplasm</td>
</tr>
<tr>
<td>2A80</td>
<td>Follicular lymphoma</td>
</tr>
<tr>
<td>2A81</td>
<td>Diffuse large B-cell lymphomas</td>
</tr>
<tr>
<td>2A85</td>
<td>Other specified mature B-cell neoplasms or lymphoma</td>
</tr>
</tbody>
</table>

Code to: 2A00-2A0Z, 2A20-2B3Z, or 2B50-2E4Z
2A85.6 Burkitt lymphoma including Burkitt leukaemia
2A86 B-cell lymphoma, mixed features
2A90-2B2Z Mature T-cell or NK-cell neoplasms, except 2B03
2B30 Hodgkin lymphoma
2B33 Malignant haematopoietic neoplasms without further specification
2B57 Kaposi sarcoma, primary site
2C77 Malignant neoplasms of cervix uteri
8A45.02 Progressive multifocal leukoencephalopathy
8E47 Encephalopathy, not elsewhere classified
CA40.20 Pneumonia due to pneumocystis
MG20.Z Cachexia, unspecified

**TUC is:**

1A61 Early syphilis with mention of:
   1A62 Late syphilis
   Code to: 1A62

**TUC is:**

1B10-1B1Z Tuberculosis with mention of:
   1C60-1C62.Z Human immunodeficiency virus disease
   MA14.0 Laboratory evidence of human immunodeficiency virus
   Code to:
   1C60 Human immunodeficiency virus disease associated with tuberculosis

**TUC is:**

1B11 Tuberculosis of the nervous system with mention of:
1B12 Tuberculosis of other systems and organs

1B10 Tuberculosis of the respiratory system

Code to: 1B10, unless reported as the cause of and with a specified duration exceeding that of the condition in 1B10

**TUC is:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1C1C.2</td>
<td>Meningococcaemia</td>
</tr>
<tr>
<td></td>
<td>with mention of:</td>
</tr>
<tr>
<td></td>
<td>1C1C.0 Meningococcal meningitis</td>
</tr>
<tr>
<td></td>
<td>Code to: 1C1C.0</td>
</tr>
<tr>
<td></td>
<td>with mention of:</td>
</tr>
<tr>
<td></td>
<td>1C1C.1 Waterhouse-Friderichsen syndrome</td>
</tr>
<tr>
<td></td>
<td>code to: 1C1C.1</td>
</tr>
</tbody>
</table>

**TUC is:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1E50</td>
<td>Acute viral hepatitis 1E50.0</td>
</tr>
<tr>
<td></td>
<td>Acute hepatitis A</td>
</tr>
<tr>
<td></td>
<td>when reported as the cause of:</td>
</tr>
<tr>
<td></td>
<td>DB93 Hepatic fibrosis or cirrhosis</td>
</tr>
<tr>
<td></td>
<td>DB99.8 Chronic hepatic failure</td>
</tr>
<tr>
<td></td>
<td>Code to:</td>
</tr>
<tr>
<td></td>
<td>1E51 Chronic viral hepatitis</td>
</tr>
</tbody>
</table>

**TUC is:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1C60-1C62.Z</td>
<td>Human immunodeficiency virus disease</td>
</tr>
</tbody>
</table>

**Note:**

Modes of dying, ill-defined conditions and conditions unlikely to cause death should not be linked to categories in 1C60-1C62.Z Human immunodeficiency virus disease unless the coding tool guides you.

When there are conditions classifiable to two or more categories, code to the most severe stage. If desired,
postcoordination may be used to specify the individual associated condition reported.

<table>
<thead>
<tr>
<th>TUC is:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chapter 3 Diseases of the blood or blood-forming organs</strong></td>
<td>when reported as the cause of:</td>
</tr>
<tr>
<td>4A00-4A0Z Primary immunodeficiencies</td>
<td>1C60-1C62.Z Human immunodeficiency virus disease, and where the certificate indicates that the HIV disease is a result of a blood transfusion given treatment for the originating condition</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TUC is:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4A20 Acquired immunodeficiencies</td>
<td>code to: 1C60-1C62.Z Human immunodeficiency virus disease</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TUC is:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4B00-4B0Z Immune system disorders involving white cell lineages</td>
<td></td>
</tr>
<tr>
<td>4B20-4B2Y Certain disorders involving the immune system</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TUC is:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5C70 Volume depletion</td>
<td>with mention of:</td>
</tr>
<tr>
<td>1A00-1A40.Z Gastroenteritis or colitis of infectious origin</td>
<td>code to: 1A00-1A40.Z</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TUC is:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8B00-8B2Z Cerebrovascular diseases</td>
<td>when reported as the cause of:</td>
</tr>
<tr>
<td>6D81 Vascular dementia</td>
<td></td>
</tr>
<tr>
<td>6D8Z Dementia, unknown or unspecified cause</td>
<td>code to: 6D81</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TUC is:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BA40 Angina pectoris</td>
<td>with mention of:</td>
</tr>
<tr>
<td>BA4Z Acute ischaemic heart disease, unspecified</td>
<td>BA41 Acute myocardial infarction</td>
</tr>
<tr>
<td>BA50-BA5Z Chronic ischaemic heart disease</td>
<td>BA42 Subsequent myocardial infarction</td>
</tr>
</tbody>
</table>
BA6Z Ischaemic heart diseases, unspecified code to: BA41

2.21.3.1 Codes not to be used for underlying cause of death

**TUC is:**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2D43</td>
<td>Malignant neoplasms of independent, primary multiple sites</td>
</tr>
<tr>
<td>MG20.0</td>
<td>Malignant cachexia</td>
</tr>
<tr>
<td>5D40-5D46</td>
<td>Postprocedural endocrine or metabolic disorders</td>
</tr>
<tr>
<td>8E60-8E66</td>
<td>Postprocedural disorders of the nervous system</td>
</tr>
<tr>
<td>9D20-9D25</td>
<td>Postprocedural disorders of eye or ocular adnexa</td>
</tr>
<tr>
<td>AB90-AB93</td>
<td>Postprocedural disorders of ear or mastoid process</td>
</tr>
<tr>
<td>BE10-BE1F.Z</td>
<td>Postprocedural disorders of circulatory system</td>
</tr>
<tr>
<td>CB60-CB64</td>
<td>Postprocedural disorders of the respiratory system</td>
</tr>
<tr>
<td>DE10-DE12.Y</td>
<td>Postprocedural disorders of digestive system</td>
</tr>
<tr>
<td>FC01</td>
<td>Postprocedural disorders of the musculoskeletal system</td>
</tr>
<tr>
<td>GC70-GC7B</td>
<td>Postprocedural disorders of genitourinary system</td>
</tr>
</tbody>
</table>

Not to be used for the underlying cause of death.

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 2.22.5 Malignant neoplasms.

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<table>
<thead>
<tr>
<th><strong>TUC is:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BA42 Subsequent myocardial infarction</td>
<td>Not to be used for the underlying cause of death.</td>
</tr>
<tr>
<td>BA60 Certain current complications following acute myocardial infarction Code to:</td>
<td>BA41 Acute myocardial infarction</td>
</tr>
<tr>
<td><strong>TUC is:</strong></td>
<td></td>
</tr>
<tr>
<td>BA43 Coronary thrombosis not resulting in myocardial infarction</td>
<td>Not to be used for the underlying cause of death. For mortality, the occurrence of myocardial infarction is assumed. Code to: BA41 Acute myocardial infarction</td>
</tr>
<tr>
<td><strong>TUC is:</strong></td>
<td></td>
</tr>
<tr>
<td>MA15.Y Other specified microbiological findings in blood, blood-forming organs, or the immune system</td>
<td>Not to be used for the underlying cause of death. Code to: The originating infectious disease in Chapter 1 Certain infectious or parasitic diseases, or to 1G40 Sepsis without septic shock-1G41 Sepsis with septic shock.</td>
</tr>
<tr>
<td><strong>TUC is:</strong></td>
<td></td>
</tr>
<tr>
<td>Extension codes (Chapter X)</td>
<td>Not to be used for the underlying cause of death. Code to: MH14</td>
</tr>
</tbody>
</table>

### 2.21.3.2 Codes not to be used if the underlying cause is known

<table>
<thead>
<tr>
<th><strong>TUC is:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6D70-6E0Z Neurocognitive disorders</td>
<td>Not to be used for the underlying cause of death, if the underlying physical condition is known. Code to: the underlying physical condition. The classification indicates common underlying conditions for each category under the ‘Has causing condition (code also)’ instruction.</td>
</tr>
</tbody>
</table>

### 2.21.4 Special instructions on surgery and other medical procedures (Step M4)

#### 2.21.4.1 Reason for the surgery or procedure stated

If the tentative underlying cause selected by applying Steps SP1 to SP8 and M1 to M3 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
procedure as the new tentative underlying cause of death. Next, reapply the instructions in Steps SP7 and M1 to M4.

### 2.21.4.2 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 described next.

a) Surgery indicates specific organ: First, if the type of surgery or procedure indicates a specific organ or site, then use the code for the residual category for the organ or site operated on as the new tentative underlying cause of death. Next, reapply the instructions in Steps SP7 and M1 to M4.

b) If above does not apply, then use the appropriate code from:

- JB0C Complications of anaesthesia during labour or delivery
- JB0D.3 Other complications of obstetric surgery or procedures or
- PK80-PK8Z Surgical or other medical procedures associated with injury or harm in diagnostic or therapeutic use
- PL11 Mode of injury or harm associated with a surgical or other medical procedure

When both PK80-PK8Z and PL11 applies, then code the mode of injury or harm (PL11) first and add the type of surgery or procedure PK80 Medical or surgical procedure associated with injury or harm in therapeutic use to the cluster.

### 2.21.4.3 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 described next:

a) Surgery indicates specific organ: If the type of surgery or procedure indicates a specific organ or site, then use the code for the residual category for the organ or site operated on as the new starting point. Next, reapply the instructions in Steps SP7 and M1 to M4.

b) Lastly, if above does not apply, code to MH14 Other ill-defined and unspecified causes of mortality.

#### Example 1

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 1 | (a) Pulmonary embolism  
(b) Appendectomy  
(c) |
| 2 |   |

The certificate does not specify the reason for the surgery, but the term appendectomy indicates appendix as the organ operated on. Code DB1Z Diseases of appendix, unspecified as the underlying cause of death.

#### Example 2

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Accidental puncture of aorta</td>
</tr>
</tbody>
</table>
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 mode of injury at the time of the surgery. Code the mode of injury, accidental puncture during laparotomy as the underlying cause of death PL11.0 Cut, puncture or tear as mode of injury or harm.

Example 3

1 (a) Postoperative haemorrhage
   (b) Caesarean section
   (c) Prolonged labour

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 JB03.Z Long labour, unspecified.

Example 4

1 (a) Laparotomy
   (b)
   (c)

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 MH14 Other ill-defined and unspecified causes of mortality, as the underlying cause of death.

2.21.4.4 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.

If the external cause of the incident is not specifically classified, code to PB6Z Unspecified unintentional cause of morbidity or mortality (See example 3).

Example 1

1 (a) Inhalation pneumonia
   (b) Haemorrhage of trachea
   (c) Fell from bed while attached to respirator

2 Respiratory treatment following liver transplant

There is no mention of breakdown or malfunctioning of the respirator or the tracheal tube. Code PL14.E Fall in health care, the accident that caused the haemorrhage, as the underlying cause of death, and additional code, if desired, for XE8PK Bed, bedding or bedding accessories.

Example 2
1 (a) Pulmonary oedema  
   (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, PJ06.

Example 3

1 (a) Cardiac and respiratory failure  
   (b) Stopped administration of inotropic drugs  
   (c) Accidental removal of subclavian line  
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 PB6Z Unspecified unintentional cause of morbidity or mortality.

2.21.5 Special instructions on main injury in deaths from external causes (Step M4)

If the underlying cause selected by applying the selection and modification rules in Steps SP1 to SP8 and M1 to M3 is an external cause, code the external cause of the injury as the underlying cause of death. For definitions and coding instructions on transport injury events, see also Section 2.28.6.1.

In addition to the underlying cause from Chapter 23 ‘External causes of morbidity and mortality’, also code a main injury. This applies to both body injuries and poisoning. For special instructions on how to identify the underlying cause and main injury in poisoning deaths, see Section 2.21.6.

If more than one injury is reported on the death certificate, apply the following instructions:

(a) When the injuries reported include trivial injuries (those listed in Annex 2.23.10 'List of conditions unlikely to cause death'), whether in Part 1 or Part 2, select the main injury as if the injuries in the list of Annex 2.23.10 had not been reported.

Example 1

1 (a) Contusion of arm and fracture of skull  
   (b) Fall from scaffolding  
   (c)  
2  
Fall from scaffolding is the underlying cause of death. Code underlying cause to PA61 Unintentional fall from a height of 1 metre or more and use additional code, if desired, for the XE7RK Scaffolding. As main injury, code NA02.Z Fracture of skull and facial bones, part unspecified. Disregard contusion of arm (Superficial injury of upper limb, level unspecified), as it is in the Annex 2.23.10 ’List of conditions unlikely to cause death’.
(b) When 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 2.23.10, Priority ranking of ICD–11 nature-of-injury codes, than the injuries mentioned in Part 1.

Example 2

1  (a) Multiple intrathoracic injuries
   (b) Car driver, collision with bus
   (c) 
2  Brain injuries

Code to PA04 Unintentional land transport traffic event injuring a car occupant, and use additional code, if desired, for XE5LJ Bus or coach as counterpart in land transport crash. As main injury, code NB35 Multiple injuries of thorax. Unspecified brain injury has a higher rank in Annex 2.23.10 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.

(c) When non-trivial injuries are reported only in Part 2, select a main injury from Part 2.

(d) When more than one serious injury is reported in the relevant part of the certificate, select the main injury according to Annex 2.23.11 ‘Priority ranking of ICD–11 nature-of-injury codes’. Note that 1 is the highest priority rank and that 6 the lowest.

Example 3

1  (a) Multiple intrathoracic injuries and brain injuries
   (b) Car driver, collision with bus
   (c) 
2  

Code to PA04 Unintentional land transport traffic event injuring a car occupant as underlying cause of death. As main injury, code brain injury NA07.Z Intracranial injury, unspecified, which has a higher rank on the priority list than NB35 Multiple injuries of thorax.

(e) 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, select a specific injury over an injury from the group ND30-ND37 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) 
2  

Code to PA04 Unintentional land transport traffic event injuring a car occupant as underlying cause of death. As main injury, code NB30.01 Major laceration of thoracic aorta. Multiple injuries and rupture of aorta have the same rank on the priority list, but a specific injury takes precedence over injury from the group Injuries involving multiple body regions.
2.21.6 Special instructions on poisoning by drugs, medicaments and biological substances (Step M4)

If poisoning is the tentative underlying cause in Step M4 and multiple substances are reported, follow the instructions in this section.

2.21.6.1 The drug most likely to have caused the death is specified

If one of the substances is specified as the substance most likely to have caused the death, code the external cause code for that substance as the underlying cause of death. Use additional code from Chapter X, if applicable, to identify the specific substance reported, and add the main injury from Chapter 22 to the cluster.

Example 1

1. (a) Accidental heroin overdose
   (b)
   (c)
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 substance most likely to have caused the death. Select PB20 Unintentional exposure to or harmful effects of opioids or related analgesics as underlying cause. Use additional code XM05B3 Heroin to identify the specific substance reported. And as main injury add NE60 Harmful effects of drugs, medicaments or biological substances, not elsewhere classified, NEC to the cluster. The cluster is PB20&XM05B3/NE60.

Example 2

1. (a) Poisoning by amphetamine
   (b)
   (c)
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 substance most likely to have caused the death. Select PB22 Unintentional exposure to or harmful effects of psychostimulants as underlying cause. Use additional code XM48Z9 Amfetamine to identify the specific substance reported. And add NE60 Harmful effects of drugs, medicaments or biological substances, not elsewhere classified to the cluster. The cluster is &/.
exposure to noxious substances, chiefly nonmedicinal as to source, not elsewhere classified to the cluster. The cluster is /

<table>
<thead>
<tr>
<th>Example</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Alcohol poisoning</td>
</tr>
<tr>
<td></td>
<td>(b)</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
</tr>
<tr>
<td>2</td>
<td>Diazepam and amitriptyline present</td>
</tr>
</tbody>
</table>

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 PB30 Unintentional exposure to or harmful effects of alcohols as underlying cause. And add NE61 Harmful effects of or exposure to noxious substances, chiefly nonmedicinal as to source, not elsewhere classified to the cluster.

2.21.6.2 The drug most likely to have caused the death is not specified

If none of the substance is specified as the substance most likely to have caused the death, follow the instructions next:

(a) Code combinations of alcohol with a drug to the drug

<table>
<thead>
<tr>
<th>Example</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Toxic levels of alcohol and flunitrazepam</td>
</tr>
<tr>
<td></td>
<td>(b)</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
</tr>
<tr>
<td>2</td>
<td>Diazepam and amitriptyline present</td>
</tr>
</tbody>
</table>

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 PB27 Unintentional exposure to or harmful effects of antiepileptics or antiparkinsonism drugs as underlying cause. Use additional code XM9W71 Flunitrazepam to identify the specific substance reported. And add NE61 Harmful effects of or exposure to noxious substances, chiefly nonmedicinal as to source, not elsewhere classified, NEC.

(b) Code combinations of multiple drugs, as follows:

- If the external cause of the multiple drugs reported is the same select that as the underlying cause of death.
- If the external cause of the multiple drugs reported is not the same, code PB29 Unintentional exposure to or harmful effects of multiple drugs, medicaments or biological substances as the underlying cause of death.

Use additional code from Chapter X, if applicable, to identify the substance most likely to have caused the death by referring to Section 2.21.6.3.

Note that when adding more than one drugs in optional use cases, the substance most likely to have caused the death identified as above must be coded first.
Neither heroin nor amphetamine are identified as the substance most likely to have caused the death and the external cause of these drugs are not the same. Code to PB29 Unintentional exposure to or harmful effects of multiple drugs, medicaments or biological substances as the underlying cause of death. Go to section 2.21.6.3 to identify the drug most likely to have caused the death.

Neither of the substances is identified as the substance most likely to have caused the death. Poisoning by combinations of alcohol and drugs are coded to the drugs. Because neither of the drugs is identified as most important, and the external cause code is different, code to PB29 Unintentional exposure to or harmful effects of multiple drugs, medicaments or biological substances as the underlying cause of death. And go to Section 2.21.6.3 to identify the substance most likely to have caused the death.

**2.21.6.3 Identification of the drug most likely to have caused the death**

Use the priority order below to identify the substance most likely to have caused the death (1 = highest priority):

1. Opioid agonists and partial agonists and other and unspecified narcotics. Deaths that include multiple opioids classifiable should be prioritised as:
   - 1a. Heroin
   - 1b. Methadone
   - 1c. Opium
   - 1d. Other opioids
   - 1e. Other synthetic narcotics
   - 1f. Other and unspecified narcotics
2. Inhaled and intravenous anaesthetic agents, Includes: Propofol
3. Tricyclic and tetracyclic antidepressants
4. Barbiturates
5. 4-Aminophenolderivatives Includes: APAP, acetaminophen, paracetamol
6. Antipsychotics and neuroleptics Includes: Phenothiazine antipsychotics and neuroleptics, Butyrophenone and thioxanthene neuroleptics, Other and unspecified antipsychotics and neuroleptics
7. Antiepileptic drugs, antiparkinsonism drugs and unspecified sedatives
8. Cocaine
9. Psychostimulants with abuse potential Includes: Amphetamines and derivatives
10. Monoamine oxidase inhibitor (MAO) antidepressants and other and unspecified antidepressants Includes: Selective serotonin reuptake inhibitors (SSRIs), venlafaxine
11. Benzodiazepines
12. Drugs and substances not listed above

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

Example | Example 8
--- | ---
1 | (a) Toxic levels of cocaine, heroin, diazepam, and amitriptyline
   | (b)
   | (c)
2
Neither of the drugs is identified as the substance most likely to have caused the death, and the external cause code is not the same for these substances. Code to PB29 Unintentional exposure to or harmful effects of multiple drugs, medicaments or biological substances as the underlying cause of death. On the priority list above, cocaine is in group 8, heroin is in group 1a, diazepam is in group 11 and amitriptyline is in group 3. Use additional code XM05B3 Heroin for the drug identified (PB29 Unintentional exposure to or harmful effects of multiple drugs, medicaments or biological substances&XM05B3). Add codes, if desired, from Chapter X to list other drugs reported. Finally, add NE61 Harmful effects of or exposure to noxious substances, chiefly nonmedicinal as to source, not elsewhere classified to the cluster.

Example 9
1 | (a) Heroin, cocaine, diazepam and amitriptyline overdose
   | (b)
   | (c)
2
Neither of the drugs is identified as the substance most likely to have caused the death, and the external cause code is not the same for these substances. Code to PB29 Unintentional exposure to or harmful effects of multiple drugs, medicaments or biological substances as the underlying cause of death. On the priority list above, heroin is in group 1a, cocaine is in group 8, diazepam is in group 11 and amitriptyline is in group 10. Use additional code XM05B3 Heroin for the drug identified. Add codes, if desired, from Chapter X to list other drugs reported. Finally, add NE61 Harmful effects of or exposure to noxious substances, chiefly nonmedicinal as to source, not elsewhere classified to the cluster.

Example 10
1 | (a) Accidental poisoning by alcohol, heroin and diazepam
   | (b)
   | (c)
2
Poisoning by combinations of alcohol and drug(s) is coded to the drug(s), see instruction in Section 2.21.6.2 subsection (a), above. Neither of the drugs reported in Part 1 is identified as the substance most likely to have caused the death, and the external cause code is not the same for these substances. Code to PB29 Unintentional exposure to or harmful effects of multiple drugs, medicaments or biological substances as the underlying cause of death. On the priority list above, heroin is in group 1a and diazepam is in group 11. Use additional code XM05B3
Heroin identified as most likely to have caused death. Add code XM8P99 Diazepam, if desired. Finally, add NE61 Harmful effects of or exposure to noxious substances, chiefly nonmedicinal as to source, not elsewhere classified to the cluster. PB29&XM05B3&XM8P99/NE61.

2.21.7 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 18, Pregnancy, childbirth or the puerperium. This is either because the underlying cause selected by applying Steps SP1 to SP8 and M1 to M3 is classified to Chapter 18 according to the coding tool, or because there is a special code in Chapter 18 for the condition if it appears during pregnancy, childbirth or the puerperium.

Apply the following instructions to determine whether an underlying cause that is indexed to other parts of the ICD should be classified to Chapter 18. Note that these instructions do not apply to conditions that are indexed to Chapter 18.

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 further information.

- If the certifier states that the death was a complication of pregnancy, childbirth or puerperium, code the underlying cause to Chapter 18, Pregnancy, childbirth or 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 18.
- 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 18.

If the underlying cause you selected is classifiable to ‘Maternal infectious and parasitic diseases, classifiable elsewhere but complicating pregnancy, childbirth or the puerperium and Other maternal diseases classifiable elsewhere but complicating pregnancy, childbirth or the puerperium’, then add to the cluster the corresponding code from Chapter 01-19 as a multiple cause of death. This is important because otherwise relevant information on the death will not be retrievable.

Note that some conditions are not coded to Chapter 18, even if they occurred during pregnancy, childbirth or puerperium, see the ‘Excludes’ note at the beginning of Chapter 18.

Example 1

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a)</td>
<td>Amniotic fluid embolism</td>
</tr>
<tr>
<td></td>
<td>(b)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(c)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The underlying cause, Amniotic fluid embolism, is indexed to Chapter 18 JB42.1.
Example 2

1  (a) Pulmonary oedema
    (b) Mitral regurgitation, pregnancy
    (c)

2
The underlying cause, mitral regurgitation, is coded to Chapter 18 because pregnancy is mentioned in Part 1. Code the underlying cause to JB64.4 Diseases of the circulatory system complicating pregnancy, childbirth or the puerperium. For greater specificity, also add the code for BB61.Z Mitral valve insufficiency, unspecified to the cluster.

Example 3

1  (a) Haemorrhage
    (b) Cervical cancer
    (c)

2  Treatment delayed because of pregnancy

The underlying cause, cervical cancer, is coded to Chapter 18 because pregnancy is mentioned in Part 2. Code the underlying cause to JB64.Y Other specified maternal diseases classifiable elsewhere but complicating pregnancy, childbirth or the puerperium. For greater specificity, also add the code 2C77.Z Malignant neoplasms of cervix uteri, unspecified to the cluster.

Example 4

1  (a) Hepatic failure
    (b) Dengue haemorrhagic fever 5 days
    (c)

2  Additional information: 40 days postpartum

Code the underlying cause to JB63.5 Other viral diseases complicating pregnancy, childbirth or the puerperium. For greater specificity, also add the code for 1D20 Dengue without warning signs to the cluster.

2.22 Coding instructions for mortality: multiple cause coding and other specific instructions

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 coexisting 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 (see Sections 2.19 – 2.21).

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. In particular:

• 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 may 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:
  1. 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
  2. one format that takes the stated or implied relationships between the reported conditions into consideration, and where the codes have been harmonised according to the instructions in the ICD volumes.

Note that the syntax of a code string to retain ICD codes provided in a death certificate should be distinguishable from the syntax used for cluster coding in ICD (i.e. forward slash (/), ampersand (&)), while the specific syntax may differ according to different settings. Such code string could be for example, BD10Z|BA5Z*5A11/9B710Z, where a vertical bar (|) expresses the separator between lines in Part 1, and an asterisk expresses the separator between Part 1 and Part 2, and the forward-slash (/) shows the cluster as a separator between stems following the convention of ICD.

2.22.1 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.

2.22.1.1 Either ... or

The certifier might report alternative diagnoses, ‘either diagnosis A or diagnosis B’. In such cases, proceed as follows.

2.22.1.2 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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Cancer of kidney or bladder</td>
</tr>
<tr>
<td></td>
<td>(b)</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Code as 2C9Z Malignant neoplasms of urinary tract, unspecified.

(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) 

2

Code as 2D42 Malignant neoplasms of ill-defined sites, since adrenal gland and kidney are in different anatomical systems.

2.22.1.3 One site or system, either one condition or another condition

(a) If the reported conditions are classifiable to different subcategories, and ICD provides a group or category for the disease in general, code to the residual category of this group/category.

Example 1

1. (a) Sigmoid volvulus DB30.1 or adhesions of large intestine with obstruction DB30.2
   (b) 
   (c) 

2

Code as DB30.Z Obstruction of large intestine, unspecified.

Example 2

1. (a) Dissection of cerebral arteries 8B22.0 or cerebral infarction 8B11.5Z
   (b) 
   (c) 

2

Code as 8B2Z Cerebrovascular diseases, unspecified.

(b) If there is no group or category for the disease in general, code to the residual category of the disease of the anatomical site/system common to the reported conditions.

Example 3

1. (a) Tuberculosis or cancer of lung
   (b) 
   (c) 

2

Code as CB40.Y Other specified diseases of the respiratory system. Both conditions involve the lung.

Example 4

1. (a) Stroke or heart attack
Code as BE2Z Diseases of the circulatory system, unspecified. Although stroke is classified to the nervous system chapter, both conditions are diseases of the circulatory system.

2.22.1.4 Either one condition or another, different anatomical systems

When different diseases of different anatomical systems are reported as ‘either ... or’, code to MG9Y Other specified general symptoms, signs or clinical findings.

Example 1

1  (a)  Gallbladder colic or coronary thrombosis
      (b)
      (c)

2

Code as MG9Y Other specified general symptoms, signs or clinical findings.

2.22.1.5 Either disease or injury

When death is reported as due to either a disease or an injury, code to MH14 Other ill-defined and unspecified causes of mortality.

Example 1

1  (a)  Coronary occlusion or war injuries
      (b)
      (c)

2

Code as MH14 Other ill-defined and unspecified causes of mortality.

2.22.2 Effect of connecting terms

When the certifier uses a connecting term, the codes assigned must be arranged to reflect the certifier 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.

2.22.2.1 Connecting terms implying a causal relationship

A causal relationship can be expressed in two ways: ‘due to’ written or implied by a similar term; or ‘resulting in’ written or implied by a similar term.
‘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 ischaemic heart disease
       (b)  Diabetes
       (c)  
2

Heart failure is the first cause on line (a), so 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 due to hepatocellular carcinoma
       (b)  Ischaemic heart disease
       (c)  Diabetes
2

Heart failure is the first cause on line (a), so 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.

‘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 1

1  (a)  Ischaemic heart disease resulting in heart failure
       (b)  Diabetes
       (c)  
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 2

1  (a)  Hepatocellular carcinoma causing heart failure
       (b)  Ischaemic heart disease
(c) Diabetes

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 ischaemic 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.

2.22.2.2 Connecting terms not implying a causal relationship

‘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 should be counted. Therefore, when a line ends with ‘and’, code the cause(s) mentioned on the line immediately below for this 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 1

1 (a) Heart failure and
   (b) Ischaemic heart disease
   (c) Diabetes

2

Line 1(a) ends with ‘and’, so consider ‘ischaemic 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 on line (b).

Example 2

1 (a) Heart failure
   (b) Ischaemic heart disease
   (c) and diabetes

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).

‘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 on a line but not first or last, then treat it as a comma. Do not reformat the text and do not move any part of the causes to another line.
**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 1**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Ischaemic</td>
</tr>
<tr>
<td></td>
<td>(b) Heart disease</td>
</tr>
<tr>
<td></td>
<td>(c) Diabetes type 2</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

‘Ischaemic 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 2**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Pneumonia</td>
</tr>
<tr>
<td></td>
<td>(b) Chronic kidney</td>
</tr>
<tr>
<td></td>
<td>(c) disease, diabetes type 2</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

‘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’ has been written.

**2.22.3 Duration**

**2.22.3.1 Single duration for multiple conditions**

When more than one condition is reported in the same line with only one duration, consider that each condition reported had the same duration.

**2.22.3.2 Modifying temporality of conditions by duration**

Duration should not usually be used to qualify a condition as acute or chronic unless the Indexed Term provides specific duration or it is otherwise instructed in the reference guide (e.g. Section 2.22.8.1 ‘Acute or chronic rheumatic heart diseases’). Note that the Description in the classification is not to be used for coding (Section 2.1.14.1).

**2.22.4 ‘Code also’ instructions in mortality use case**

Generally, the ‘code also’ instruction (see also Section 2.3 ‘Code also’ and ‘Use additional code, if desired’ instructions’) is not used in multiple cause coding since the information on aetiology is provided as a stand-alone expression separately on the death certificate and will be coded on its own, or is not provided at all.

Apply the ‘Code also’ instruction when both information on the manifestation and the aetiology appear in a single diagnostic term reported by the certifier, and information on
the aetiology is not reported separately. Whenever applying the ‘code also’ instruction, put
the code for the aetiology at the beginning of the cluster and add the code for the
manifestation.

**Example 1: Heart failure** > BD10-BD1Z Heart failure has an instruction to ‘Code also’ the
causing condition. However, in the diagnostic term reported by the certifier no information
is given on such causing condition. Do not apply the ‘Code also’ instruction.

**Example 2: Type 1 diabetic acidosis** > 5A22 Diabetic acidosis has an instruction to ‘Code
also’ the causing condition. The causing condition is reported, which in this case is 5A10
Type 1 diabetes mellitus. The aetiological condition Type 1 diabetes mellitus is considered
the code for primary tabulation and is coded first (5A10 Type 1 diabetes mellitus/5A22
Diabetic acidosis).

**Example 3: Salmonella Sepsis** > Salmonella sepsis is an index term of 1G40 Sepsis
without septic shock which has an instruction to ‘Code also’ the causing condition
supplemented by a coding note to code the type of infection first. The type of infection in
this case is 1A09 Infections due to other Salmonella and is coded first (1A09/1G40).

### 2.22.5 Malignant neoplasms

The broad structure of Chapter 02 Neoplasms is as followings:

- Neoplasms of brain or central nervous system (2A00-2A0Z)
- Neoplasms of haematopoietic or lymphoid tissues (2A20-)
- Neoplasms, except of lymphoid, haematopoietic, central nervous system or related
tissues (2B50-2F9Z)

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 that
follow.

In the examples in 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.

#### 2.22.5.1 Behaviour: malignant, in situ, benign or uncertain or unknown behaviour

The behavior of conditions indexed to Neoplasms of brain or central nervous system
(2A00-2A0Z) except for 2A02.3 Benign neoplasm of cranial nerves and 2A02.4 Benign
neoplasm of spinal cord, and 2A20-2B3Z Neoplasms of haematopoietic or lymphoid tissues
is presumed to be malignant.
Neoplasms, except of 2B50-2F9Z Neoplasms of unknown behaviour of unspecified site) is classified by the following types of behavior:

- **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 behaviour** - A neoplasm displaying morphologic, phenotypic, or genotypic characteristics that are clearly not benign but do not permit the establishment of a definitive diagnosis of malignancy
- **Unknown behaviour** - it is unknown whether the neoplasm is benign or malignant.

Determine which code group to use as follows:

**The term itself indicates behaviour**

Look in the ICD coding tool for the term used on the certificate to describe the neoplasm. If both morphology and location are stated, enter both into the coding tool. If the morphology is not stated code by site and behaviour.

Note that ‘neoplasms nos’ and ‘tumour nos’ should initially be considered as unknown behavior in order to retain the information of behavior as reported, even if the coding tool guides you to malignant or other behavior. Decide the behavior following the instructions in this Section.

**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’ or growths that are not indexed to Chapter II (for example, certain polyps), as malignant if:

- it is reported as the cause of secondary spread (terms such as infiltration, metastases, secondaries or similar) or of cachexia
- it is reported on the same line as and next to a mention of secondary spread
- all other neoplasms are specified as secondary spread
- 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)
- it is reported as due to a malignant neoplasm. To decide whether it is primary or secondary, see the instructions in Section 2.22.5.2, ‘Malignant neoplasms: primary or secondary?’

Example 1
1  (a) Colon tumour 2F90 with liver metastases 2B90.Z, 2D80.0
   (b)
   (c)

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 2F90.

If a tumour is indexed to the Chapter 02 section for benign neoplasm but is reported as the cause of metastases or infiltration, check in the coding tool and in the tabular list whether 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 unknown behaviour.

**2.22.5.2 Malignant neoplasms: primary or secondary?**

If the neoplasm is coded to malignant neoplasms, next decide whether 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 that follow should be applied only when clarification cannot be obtained. The ICD provides the following blocks for primary malignant neoplasms:

- Malignant neoplasms in Neoplasms of brain or central nervous system (2A00-2A0Z)
- Neoplasms of haematopoietic or lymphoid tissues (2A20-2B3Z)
- Malignant neoplasms, stated or presumed to be primary, of specified sites, except of lymphoid, haematopoietic, central nervous system or related tissues (2B50-2D3Z)
- Malignant neoplasms of ill-defined or unspecified primary sites (2D40-2D4Z)

For secondary malignant neoplasms, the ICD provides the block:

- 2D50 Malignant neoplasm metastasis in brain-2D50-2E2Z Malignant neoplasm metastases

For malignant neoplasms of unspecified site not stated or presumed to be primary or secondary, the ICD code is 2D4Z.

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 2.22.5.6 (‘Metastatic’ cancer).
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 site
- liver
- lung
- lymph nodes
- mediastinum
- meninges
- peritoneum
- pleura
- retroperitoneum
- spinal cord

See below for further instructions on how to code neoplasms of sites on this list.

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 (listed above in the beginning of Section 2.22.5.2). Use the coding tool to find the appropriate code.

Other indication of primary malignant neoplasm

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 1 below.
- it is in the code range 2A20 Non mast cell myeloproliferative neoplasms-2B3Z Neoplasms of haematopoietic or lymphoid tissues, unspecified:
  - A primary neoplasm of haematopoietic and lymphoid tissues may occur simultaneously together with another primary neoplasm in the same range. Code all malignant neoplasms classifiable to Neoplasms of haematopoietic and lymphoid tissues as primary, unless the certifier specifies them as secondary;
- the site is not on the list of common sites of metastases.

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;
it is described as caused by a known risk factor for malignant neoplasms of the stated site (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);

it is the only malignant neoplasm mentioned on the death certificate, and it is not described as 'metastatic':
  - 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; 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 2C12.02, 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 of frame A) and this other malignant neoplasm is coded as a primary malignant neoplasm. – it is malignant neoplasm of lung specified as bronchogenic or of bronchus.

Code a neoplasm that is not indexed as malignant 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 2.22.5.1 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 coding tool. Do not assume malignancy or metastatic spread.

**Example 1**

1. (a) Brain metastasis 2D50
   (b) Lung tumour 2F91.1 2C25.Z
   (c) 

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 2C25.Z.

**Example 2**

1. (a) Cancer of pancreas 2C10.Z
   (b) Cancer of stomach 2B72.Z
Pancreas and stomach are not on the list of common sites of metastases. Code both cancers as primary - pancreas 2C10.Z, stomach 2B72.Z.

Example 3

1  (a)  Cancer of liver 2C12.02 2D70 and lung 2C25.Z  
      (b)  Chronic hepatitis DB97.2  
      (c)  

2  

Chronic hepatitis increases the risk of primary liver cancer. Therefore, consider the liver cancer primary and code to 2C12.02. Do not use the code for Secondary malignancy of liver. Code the lung cancer as Secondary 2D70, because the only other malignant neoplasm on the certificate is primary.

Example 4

1  (a)  Kidney cancer 2C90 and lung cancer 2C25.Z  
      (b)  
      (c)  

2  

Code the kidney cancer as primary 2C90.Z since it is not on the list of common sites of metastases. Code lung cancer as secondary 2D70 since it is reported in the same part of the certificate as the kidney cancer and the kidney cancer is considered primary.

Example 5

1  (a)  Lung cancer 2C25.Z  
      (b)  
      (c)  

2  Kidney cancer 2C90.Z  

Code the lung cancer as primary 2C25.Z. 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 2C90, since it is not on the list of common sites of metastases.

Example 6

1  (a)  Liver tumour 2F90.Y 2C12.02  
      (b)  
      (c)  

2  Lung tumour 2D70, probably secondary  

Consider both tumours as malignant, since the certifier described one of the two as secondary, which is evidence of malignant behaviour. See Section 2.22.5.1 Other information on the certificate indicates behaviour. Code the liver tumour as primary, since the other malignant neoplasm on the certificate is described as secondary. The qualification ‘probably’ is ignored; see Section 2.22.1, Uncertain diagnosis.
Example 7
1 (a) Metastatic involvement of chest wall 2E0Y
   (b) Carcinoma in situ of breast 2E65.Z 2C6Z
   (c)
2
Code the carcinoma in situ of breast as primary malignant neoplasm of breast (2C6Z). Since the breast tumour has spread to the chest wall it is no longer in situ.

Example 8
1 (a) Secondary malignant neoplasm of lung 2D70 and brain 2D50
   (b) Polyp of stomach DA44.Z
   (c)
2
Code the polyp as primary malignant neoplasm of stomach 2B72.Z. Since the polyp is reported as the cause of secondary spread, it is considered malignant.

Example 9
1 (a) Brain cancer 2A00.5
   (b)
   (c)
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 2A00.5.

Example 10
1 (a) Cancer of cervical lymph nodes 2D60.0
   (b)
   (c)
2
Code the cancer of cervical lymph nodes as secondary 2D60.0. It is considered secondary to an unspecified primary malignant neoplasm unless it is specified as primary.

Example 11
1 (a) Cancer primary in prostate 2C82.Z
   (b)
   (c)
2
The cancer is described as primary in prostate. Code it to the group of primary malignant neoplasms 2C82.Z.

Example 12
1 (a) Bladder tumour 2F98
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 uncertain or unknown behaviour, 2F98 (bladder) and 2F91.1 (trachea, bronchus and lung).

**Malignant neoplasm reported as secondary**

If the certifier describes a neoplasm as secondary, then code to the appropriate subcategory in ‘Malignant neoplasms metastases’.

**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 extension codes using the coding tool. 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.

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 2.22.5.2, 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 6
  - **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. (To determine if a stated morphology is compatible with the site, refer to textbooks or other reliable sources);
• 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: – 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 2.22.5.3 ‘More than one primary malignant neoplasm’;

• unspecified whether malignant, in situ or benign, and it is reported as due to a malignant neoplasm:
  – 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. 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 whether 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.

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.

Example 1

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Carcinoma of adrenal glands 2D11.Z 2E07</td>
</tr>
<tr>
<td></td>
<td>(b)</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
</tr>
<tr>
<td>2</td>
<td>Primary in kidney 2C90.Z</td>
</tr>
</tbody>
</table>

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 2E07 and the primary in kidney as primary 2C90.Z.

Example 2

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Prostate cancers 2C82.Z 2E06</td>
</tr>
<tr>
<td></td>
<td>(b) Primary site unknown</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
The primary site is described as unknown - code to 2D4Z Unspecified malignant neoplasms of ill-defined or unspecified sites. Code prostate cancer as secondary 2E06 since the primary malignant neoplasm clearly was in another site.

Example 3

1 (a) Brain tumour 2F9Y 2D50
    (b) Breast cancer
    (c)

2 The brain tumour is considered malignant, since it is reported as due to breast cancer. Also, it is considered secondary, since it is on the list of common sites of metastases. Code the brain tumour as secondary malignant 2D50. Code the breast cancer as Primary 2C6Z.

Example 4

1 (a) Brain tumour 2D50 2F9Y
    (b) Lung cancer 2C25.Z
    (c)

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 2D50. Code the lung cancer as primary 2C25.Z, since the only other reported neoplasm is on the list of common sites of metastases.

Example 5

1 (a) Cancer growth in liver 2C12.02 and lymph nodes 2D80.0 2D6Z
    (b)
    (c)

2 Malignant neoplasm of stomach 2B72.Z

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 2D80.0 and lymph node 2D6Z, and as primary the stomach 2B72.Z.

Example 6

1 (a) Cancer of lung, pleura 2C26.Z and chest wall 2D4Z 2C25.Z 2D72 2E0Y
    (b)
    (c)

2 Code the cancer of lung as primary 2C25.Z, 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 2D72 and chest wall as secondary 2E0Y.

Example 7

1 (a) Mesothelioma of pleura 2C26.0 and lymph nodes 2D60.Z
Mesothelioma of pleura is indexed to 2C26.0, 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 2C26.0 Mesothelioma of pleura. The malignant neoplasm of lymph nodes is considered secondary, since lymph nodes is on the list of common sites of metastases.

Example 8

1. (a) Lung cancer 2C25.Z
   (b)
   (c)
2. Stomach cancer 2B72.Z

Code both lung cancer 2C25.Z and stomach cancer 2B72.Z as primary. 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 9

1. (a) Cancer of bladder 2C94.Z
   (b) Cancer of kidney 2C90.Z
   (c)
2

Code both cancer of bladder 2C94.Z and cancer of kidney 2C90.Z as primary, since neither is on the list of common sites of metastases, and neither is described as primary.

Example 10

1. (a) Osteosarcoma of sacrum 2B51.Y
   (b) Clear cell cancer of kidney 2C90.Y
   (c)
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 2B51.Y. Also, it is of different morphology than clear cell cancer of kidney.

Example 11

1. (a) Osteosarcoma of lung 2B51.Z 2D70
   (b)
   (c)
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 2B51.Z, also add a code for malignant neoplasm metastasis in lung 2D70.
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. Code 2D4Z Unspecified malignant neoplasms of ill-defined or unspecified sites, if no morphology is stated. If the morphology is stated, then code to the ‘unspecified site’ code for the morphology involved.

*Exception:* If all sites are on the list of common sites of metastases but one of them is lung, then code lung as primary.

### 2.22.5.3 More than one primary malignant neoplasm

If more than one primary malignant neoplasm is reported on the same certificate, code each primary malignant neoplasm. Indications of several primary malignant neoplasms are:

- different morphologies;
- a site-specific morphology reported with a malignant neoplasm of another site that is not on the list of common sites of metastases;
- the sites are not on the list of common sites of metastases:
  - 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;
  - do not consider ‘cancer’ or ‘carcinoma’ as morphologic terms, but as synonyms to ‘malignant neoplasm’.

**Example 1**

1. (a) Transitional cell carcinoma of bladder 2C94.2 Urothelial carcinoma of bladder
2. (b)
3. (c)

**Example 2**

1. (a) Hepatoma 2C12.02
2. (b) Cancer of breast 2C6Z
3. (c)

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 2C94.2 Urothelial carcinoma of bladder and 2B51.1 Osteosarcoma of bone or articular cartilage of limbs and an additional code for the anatomy of the knee if desired XA8RL1.

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. The coding tool leads to hepatocellular carcinoma for a malignant hepatoma. Code as 2C12.02 and 2C6Z.
Example 3

1. (a) Glioblastoma 2A00.00
   (b) Cancer of breast 2C6Z
   (c)

2. The morphology 'glioblastoma' is primary in the central nervous system, usually in brain. Therefore, the instruction in section above does not apply, even though brain is on the list of common sites of metastases. Code the glioblastoma as primary in brain 2A00.00, which is the code for glioblastoma given by the coding tool 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 2C6Z.

2.22.5.4 Site not clearly indicated

If a malignant neoplasm 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 whether this compound term is included in the coding tool.

If the compound term is not in the coding tool, then code morphologies to the appropriate morphology of the site unspecified. 2D4Y Other specified malignant neoplasms of ill-defined or unspecified primary sites is used for morphologies specified but not classifiable elsewhere.

If the above two does not apply, or the morphology is not stated, then code to 2D42 Malignant neoplasms of ill-defined sites.

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 (See example 3). 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 1

1. (a) Fibrosarcoma in the region of the pancreas 2B53.Z
   (b)
   (c)

2

Code as 2B53.Z Fibroblastic or myofibroblastic tumour, primary site, unspecified

Example 2

1. (a) Carcinoma in the lung area 2C29.Z
   (b)
   (c)

2
Code as 2C29.Z Malignant neoplasms of other or ill-defined sites in the respiratory system or intrathoracic organs, unspecified

Example 3

1   (a) Obstruction of intestines DB30.Z
    (b) Carcinoma 2D4Z
    (c)  

2  

Code the carcinoma as 2D4Z Unspecified malignant neoplasms of ill-defined or unspecified sites

2.22.5.5 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 2D40, fibrosarcoma to 2B53.Z and osteosarcoma to 2B51.Z.

If the certificate mentions a probable or possible primary site, disregard the expression indicating doubt and code to that site. See also Section 2.22.1 Uncertain diagnosis. (See Example 3)

If the certificate mentions several possible primary sites, select a code according to the instructions in Section 2.22.1.2, (One condition, either one site or another) above. (See Example 4)

Example 1

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Secondary carcinoma of liver 2D80.0</td>
</tr>
<tr>
<td></td>
<td>(b) Primary site unknown 2D41 Unspecified carcinoma of unspecified site</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

The certificate states that the primary site is unknown. For line 1(b), use the code 2D41 Unspecified carcinoma of unspecified site.

Example 2

<p>| | |</p>
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Generalised metastases 2E2Z</td>
</tr>
<tr>
<td></td>
<td>(b) Melanoma 2C30.Z Melanoma of skin, unspecified</td>
</tr>
<tr>
<td></td>
<td>(c) Primary site unknown 2D4Z</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

The certificate states that the primary site is unknown. Code as 2C30.Z Melanoma of skin, unspecified.

Example 3

<p>| | |</p>
<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(a) Secondary carcinoma of liver 2D80.0</td>
</tr>
</tbody>
</table>
(b)  Primary site unknown, possibly stomach 2B72.Z Malignant neoplasms of stomach, unspecified

(c)  

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 2B72.Z Malignant neoplasms of stomach, unspecified.

Example

1  

(a)  Secondary carcinoma of liver 2D80.0

(b)  Primary site unknown, probably stomach 2B72.Z Malignant neoplasms of stomach, unspecified or colon 2B90.Z 2C11.Z

(c)  

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 2C11.Z.

2.22.5.6 ‘Metastatic’ cancer

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

For multiple cause mortality coding, always follow the instructions in this section. This applies even if the coding tool indicates an ICD code for a ‘metastatic’ neoplasm or ‘metastatic’ disease other than the code you would arrive at by following these instructions. For example, the search might lead to a code in the section for ‘malignant neoplasm metastases’, 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.

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, code to primary of this site. This also applies to sites on the list of common sites of metastases. See Section 2.22.5.2 for the blocks used for primary malignant neoplasms.

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, code to secondary of this site, whether the site is on the list of common sites of metastases or not. Use a code in 2D50-2E2Z ‘Malignant
neoplasm metastases’ for this secondary site. However, if a morphology classifiable to [ ] is reported, code to the ‘unspecified site’ subcategory of that morphological type.

*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.

*‘Metastatic’ neoplasm of a specific morphology*

If the certificate reports a malignant neoplasm specified as ‘metastatic’ of a morphological type classifiable to a cancer category that mentions a specific histopathology only, 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 or site.

If the ‘metastatic’ cancer 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. Also add a code for a primary malignant neoplasm of unspecified site for the stated morphological type.

When applying the remaining instructions on ‘metastatic’, do not change codes in [ ] assigned according to the instructions in this Section to codes for secondary malignant neoplasms (2D50-2E2Z).

**Example 1**

1. (a) Osteosarcoma of sacrum, metastatic 2B51.2 Osteosarcoma of bone or articular cartilage of pelvis
   
   (b)  
   
   (c)  

2. The site sacrum is consistent with a primary cancer of bone. Code as 2B51.2 Osteosarcoma of bone or articular cartilage of pelvis.

**Example 2**

1. (a) Osteosarcoma of kidney, metastatic 2E00 2B51.Z  
   
   (b)  
   
   (c)  

2. The specified site (kidney) is not consistent with osteosarcoma, which is primary in bone. Code osteosarcoma of kidney as a secondary malignant neoplasm 2E00, because the specified site (kidney) is not consistent with osteosarcoma, which is a primary in bone. Since no primary site is reported, code 2B51.Z Osteosarcoma of bone and articular cartilage of unspecified sites.
‘Metastatic’ malignant 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, even if no other neoplasm is mentioned on the certificate. Also add a code for unspecified primary malignant neoplasm 2D4Z.

• 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 2C25.Z Malignant neoplasms of bronchus or lung, unspecified. 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 2D70 Malignant neoplasm metastasis in lung. 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 2.22.5.6 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 2.22.5.2 ‘Other indication of primary malignant neoplasm’.

Example 1

1  (a) Metastatic cancer of lung (adenocarcinoma) 2C25.0
   (b)
   (c)

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 2C25.0.

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. Also add a code for unspecified primary malignant neoplasm 2D4Z.

• exception: Code a ‘metastatic neoplasm of lung’ as primary malignant neoplasm of the lung 2C25.Z Malignant neoplasms of bronchus or lung, unspecified 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 2.22.5.6 above.
‘Metastatic’ malignant neoplasm not on the list of common sites of metastases

If the certificate mentions a single malignant neoplasm, this neoplasm is not on the list of common sites of metastases and it is specified as ‘metastatic’, then code as primary malignant neoplasm of that particular site.

If the certificate mentions several malignant neoplasms that are not on the list of common sites of metastases and all of them are specified as ‘metastatic’, then code all neoplasms as primary.

If the certificate mentions several malignant neoplasms, and none of them is on the list of common sites of metastases and some but not all are specified as ‘metastatic’, then code a neoplasm not specified as ‘metastatic’ as primary and a neoplasm specified as ‘metastatic’ as secondary.

See Section 2.22.5.2 for blocks used for primary or secondary.

‘Metastatic’ malignant neoplasm, some on the list of common sites of metastases and some not

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 (2D50-2E2Z). 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 (See Section 2.22.5.2 for the blocks used for primary malignant neoplasms).

• 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 is on the list of common sites of metastases or not.

Example 1

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Bladder cancer 2C94</td>
</tr>
<tr>
<td></td>
<td>(b) Metastatic prostate cancer 2E06</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Code as Secondary prostate cancer 2E06 and Primary bladder cancer 2C94. The order of entry does not impact on the coding.

Example 2

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(a) Liver cancer 2D80.0</td>
</tr>
<tr>
<td></td>
<td>(b) Metastatic colon cancer 2B90</td>
</tr>
<tr>
<td></td>
<td>(c)</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

Code as Secondary malignant neoplasm of liver 2D80.0 and Primary malignant neoplasm of colon 2B90. Liver is on the list of common sites of metastases but colon is not.
Example 3

1  (a) Liver cancer 2D80.0  
    (b) Metastatic colon cancer 2B90  
    (c) Cancer of gallbladder 2C13.Z  

2 Code as 2D80.0 Malignant neoplasm metastasis in liver, 2D85 Malignant neoplasm metastasis in large intestine and 2C13.Z Malignant neoplasms of gallbladder, unspecified. 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 4

1  (a) Metastatic gallbladder cancer 2C13.Z  
    (b) Metastatic colon cancer 2B90  
    (c)  

2 Code as Primary malignant neoplasm of gallbladder 2C13.Z and Primary malignant neoplasm of colon 2B90. The order of entry does not impact on the coding.

2.22.6 Sequelae

A sequela is a chronic condition resulting from an acute condition and begins during that acute condition. The acute condition is no longer present.

The classification provides certain categories to be used when a condition is reported as sequelae, late effects, or other conditions specified in this section (e.g. 1G80-1G8Y Sequelae of infectious diseases). Where no specific category is provided for the sequelae condition (e.g. late effects of injuries are coded to the residual category of the chapter that may also include acute conditions), use additional code XT9C Cause of late effect, if desired, to identify that the first condition was reported as a cause of a sequelae condition (e.g. Head injury sequelae: NA0Z/XT9C Injuries to the head, unspecified/Cause of late effect).

2.22.6.1 Conditions considered to be a late effect

Consider the previous condition of the following categories present one year or more after onset of the condition as a late effect:

- Sequelea of viral encephalitis (1G84)
- Sequelea of other specified infectious diseases (1G82, 1G83, 1G85, 1G8Y)
- Sequelea of rickets (5B63)
- Late effects of cerebrovascular disease (8B25)
- Late effects of injuries, of poisoning or of certain other consequences of external causes
- Late effects of external causes of morbidity or mortality
2.22.6.2 Sequelae of tuberculosis

Sequelae of tuberculosis 1G80 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.

2.22.6.3 Sequelae of trachoma

Sequelae of trachoma 1G81 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.

2.22.6.4 Sequelae of other specified infectious diseases

Sequelae of other infectious 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, unless there is evidence of active disease. It does not include chronic infectious diseases, which should be coded as active infectious disease.

2.22.6.5 Sequelae of rickets

Sequelae of rickets 5B63 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.

2.22.7 Consistency between sex of patient and diagnosis

Most categories of ICD–11 apply to persons of both sexes. However, some diseases are more likely to occur in one sex than in the other. A list of those conditions is given in the Annex 2.23.11 – 2.23.12.

The general recommendation for handling this situation follows; however, legal requirements may vary for countries. That a code appears in Annex 2.23.11 – 2.23.12 does not mean that it cannot be used for both sexes. However, if there might be an inconsistency between the sex of the deceased and the code, check the information and make sure that no reporting error occurred.

Follow any further 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 code MH14 Other ill-defined and unspecified causes of mortality. Consider adding a note to the statistics, specifying the number of cases recoded to MH14 because of apparent inconsistencies between sex and cause.
2.22.8 Specific instructions on other ICD categories

2.22.8.1 Acute or chronic rheumatic heart diseases

Rheumatic heart diseases are classified to 1B41 Acute rheumatic fever with heart involvement or to chronic conditions at fifth character 0 of BB60-BC0Z Heart valve diseases, or BC20 Chronic rheumatic heart diseases, not elsewhere classified, 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 (1B41 Acute rheumatic fever with heart involvement):

- 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.

2.22.8.2 Pneumonia and immobility

Code pneumonia, organism unspecified reported with immobility or reduced mobility to Hypostatic pneumonia, unspecified.

2.22.8.3 Obstetric death of unspecified cause, Obstetric deaths 42 days–1 year after delivery, sequelae of direct obstetric causes

Categories JB60, JB61 and JB62 classify obstetric deaths according to the time elapsed between the obstetric event and the death of the woman. Category JB60 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 JB60 but code to the appropriate category. Category JB61 is used to classify deaths from any direct or indirect obstetric causes that occur more than 42 days but less than a year after termination of the pregnancy. Category JB62 is used to classify deaths from any direct obstetric cause that occur one year or more after termination of the pregnancy.

2.22.8.4 Perinatal deaths

Use a code from Chapter 19, Certain conditions originating in the perinatal period, if:

- the condition is indexed to a code in Chapter 19;
- 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, ‘Developmental anomalies’.

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 19, such as:

- Tetanus neonatorum
- Congenital gonococcal infection
- Congenital syphilis
- HIV disease
- Infectious diseases acquired after birth
- Intestinal infectious diseases
- Neoplasms
- Hereditary haemolytic anaemia
- Transient hypogammaglobulinaemia of infancy
- Endocrine, nutritional and metabolic diseases
- Certain congenital diseases of the nervous system
- Congenital cardiomyopathy
- Intestinal obstruction or paralytic ileus
- Pemphigus neonatorum and Staphylococcal scalded skin syndrome
- Cradle cap
- Diaper (napkin) dermatitis
- Developmental anomalies
- Injury, poisoning and certain other consequences of external causes

2.22.8.5 Developmental anomalies

Conditions classified as Developmental anomalies should be coded as such 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 20. Refer to the coding tool for the appropriate code of the condition with the modifier ‘congenital’.

Further, the following conditions should be coded as congenital at the ages stated, provided there is no indication that they were acquired after birth:

- Under 1 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

2.22.8.6 Multiple injuries in the same body region and Injuries involving multiple body regions

In multiple cause coding, do not use codes for multiple injuries of the same body region ('Multiple injuries of specific sites' in NA00-ND1Z) or codes for ND30-ND37 'Injuries involving multiple body regions', if specific information on the injuries involved is available. Code each injury separately and use specific injury codes as possible. The information of multiple injuries is to be obtained in the multiple cause code string as a set of specific injury codes.

2.22.8.7 Complications of surgical and medical care

Early complications and conditions arising from devices, implants or grafts are coded from the appropriate system chapter. There is a short list of specific complications not elsewhere classified found in Chapter 22, 'Injury or harm arising from surgical and medical care, not elsewhere classified in the category NE8Z'. Code late complications and longstanding complications of organ function to the postprocedural section in the appropriate system chapter.

2.22.8.8 Intent of external causes

Undetermined intent

This section covers events where available information is insufficient to enable a medical or legal authority to make a distinction between unintentional causes, intentional self-harm and assault (PF40-PH8Z). Following cases are included:

- When external causes are reported as the intent could not be determined
- When self-inflicted injuries are reported without specification of intent

Note that self-inflicted poisonings reported without specification of intent is assumed to be unintentional and is coded to PB20-PB36 Unintentional exposure to or harmful effects of substances.
Note that reporting of the intent may be affected by legal provisions in each country or region - assignment of codes should follow such provisions as appropriate.

2.22.8.9 Factors influencing health status or contact with health services

This chapter should not be used for international comparison or for primary mortality coding.

2.22.8.10 Special instructions on foetal deaths

Some international agencies require data on both live births and foetal deaths, but others do not include foetal deaths in their mortality statistics. Therefore, if foetal deaths are included in the national mortality register they must be easy to identify, so that data include or do not include foetal deaths as requested by the agency to which the data will be delivered.

If it is not clear whether the certificate relates to a foetal death or a child born alive, refer back to the certifier if possible. If the certifier confirms that it was a foetal death, or if other evidence points to a foetal death, then flag the death as a foetal death in the mortality statistics. If no cause of death is stated, code to KD3B.Z ‘Unspecified time of fetal death, cause not specified’.

If the certifier states that the child was born alive but does not report the cause of death, then code to MH14 ‘Other ill-defined and unspecified causes of mortality’.
2.23 Annexes for Mortality Coding

2.23.1 International form of medical death certificate
Figure 1: International Death Certificate
Additional data that might be necessary for the reporting system of countries can be added to the certificate. The form has a Frame A that serves to report the cause of death, the sequence of causes, the duration of diseases until death, and other conditions contributing to death, such as obvious information, like ‘cardiac arrest’ or ‘respiratory arrest’. Causes of death should be reported with the best available detail. For example, ‘birth depression’ for a newborn child that died, should be complemented by the reason for birth depression, as intrapartal asphyxia, or prepartal hypoxaemia.

The Frame B helps to report detail that is relevant to coding and epidemiology analyses for deaths due to external causes, maternal deaths, perinatal deaths, and deaths due to postprocedural conditions. It complements the information of Frame A. The complete reporting of the causes of death is based on an accurate examination of the dead body, the assessment of local circumstances and insight in available health records. Correct establishment of a cause of death and filling in the death certificate requires training that should start at the medical school and is refreshed in continuous education programmes. Also important is the practical experience that is gained under the supervision of more experienced colleagues. It is noted that medical certifiers that establish the cause of death may not always be available. Replacement by non-physicians may result in a changed pattern of the reported causes of death.

Where the dead body is no longer available for examination, for example due to low coverage with medical staff or traditional rapid burial procedures, a verbal autopsy may provide some limited information on the cause of death. In such case, a sequence of causes that led to death will rarely be identified, and causes identified with verbal autopsy should be reported separately.

2.23.2 Death certificate Quick reference guide

Additional data that might be necessary for the reporting system of countries can be added to the certificate. The form has a Frame A that serves to report the cause of death, the sequence of causes, the duration of diseases until death, and other conditions contributing to death, such as obvious information, like ‘cardiac arrest’ or ‘respiratory arrest’. Causes of death should be reported with the best available detail. For example, ‘birth depression’ for a newborn child that died, should be complemented by the reason for birth depression, as intrapartal asphyxia, or prepartal hypoxaemia.

Frame B helps to report detail that is relevant to coding and epidemiology analyses for deaths due to external causes, maternal deaths, perinatal deaths, and deaths due to postprocedural conditions. It complements the information of Frame A. The complete reporting of the causes of death is based on an accurate examination of the dead body, the assessment of local circumstances and insight in available health records. Correct establishment of a cause of death and filling in the death certificate requires training that should start at the medical school and is refreshed in continuous education programmes. Also important is the practical experience that is gained under the supervision of more experienced colleagues. It is noted that medical certifiers that establish the cause of death may not always be available. Replacement by non-physicians may result in a changed pattern of the reported causes of death.
Where the dead body is no longer available for examination, for example due to low coverage with medical staff or traditional rapid burial procedures, a verbal autopsy may provide some limited information on the cause of death. In such case, a sequence of causes that led to death will rarely be identified, and causes identified with verbal autopsy should be reported separately.

2.23.3 Suggested additional detail of perinatal deaths

![Figure 1: Suggested detail for perinatal deaths.](image)
2.23.4 Workflow diagram for mortality coding

---

**Steps:**

1. **SP1:** Only one condition (mentioned in the death certificate)
   - Yes: Go to Step 2
   - No: Go to Step 3

2. **SP2:** Only one line used in Part 2
   - Yes: Go to Step 3
   - No: Go to Step 4

3. **SP3:** Can the first condition on the intended line cause all others alone?
   - Yes: Go to Step 5
   - No: Identify the first mentioned sequence, and choose the starting point of the sequence as the TSP (Go to Step 6)

4. **SP4:** Is there a sequence ending with the direct cause of death?
   - Yes: Choose the direct cause of death as the TSP, Go to Step 6
   - No: Identify the first mentioned sequence, and choose the starting point of the sequence as the TSP (Go to Step 6)

5. **SP5:** Choose the direct cause of death as the TSP, Go to Step 6

6. **SP6:** Search for an underlying cause that is a new TSP in Part 2
   - Yes: Go to Step 7
   - No: Identify the first mentioned sequence, and choose the starting point of the sequence as the TSP (Go to Step 6)

---

**Notes:**

1. **M1:** Special instructions - For each special coding instruction, follow the instructions in text and refer to 2.23.3. Special instructions are found in sections 2.23.4 and 2.23.5.

2. **M2:** Specificity - Assign a new TUC and check again.

3. **M3:** Further instructions - If the TUC is not further changed after Step 4 or 5, refer to the following table:

<table>
<thead>
<tr>
<th>TUCs</th>
<th>Special instructions</th>
<th>Refer to section...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery or medical procedure</td>
<td>2.23.6 Surgery and other medical procedures</td>
<td></td>
</tr>
<tr>
<td>Chapter 22 Injury or poisoning</td>
<td>Code the external cause as the injury and add the main injury</td>
<td></td>
</tr>
<tr>
<td>Chapter 24 External cause</td>
<td>Add the main injury as the external cause</td>
<td></td>
</tr>
<tr>
<td>External cause</td>
<td>2.23.5 Main injury is death from external cause</td>
<td></td>
</tr>
<tr>
<td>Other cause of death</td>
<td>Identify the most important drug involved</td>
<td></td>
</tr>
</tbody>
</table>

---

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2.23.5 Causes of HIV

Under review by Mortality Reference Group

2.23.6 List of conditions that can cause diabetes

Under review by Mortality Reference Group

2.23.7 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 a 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 a surgery or an invasive procedure if there is evidence that the condition was present before the surgery 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 should be 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.

List of conditions to be considered direct consequences of surgery and other invasive medical procedures

<table>
<thead>
<tr>
<th>Infections</th>
<th>Flag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abscess</td>
<td>OCPR</td>
</tr>
<tr>
<td>Bacteraemia</td>
<td>OCPR, and for a procedure of the same site or region only</td>
</tr>
<tr>
<td>Fistula</td>
<td></td>
</tr>
<tr>
<td>Gas gangrene</td>
<td></td>
</tr>
<tr>
<td>Infection, haemolytic</td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>---</td>
</tr>
<tr>
<td>Infection NOS</td>
<td>DSAP</td>
</tr>
<tr>
<td>Infection in surgical wound</td>
<td></td>
</tr>
<tr>
<td>Sepsis</td>
<td></td>
</tr>
<tr>
<td>Septic</td>
<td></td>
</tr>
<tr>
<td><strong>Haemorrhage, haemolysis</strong></td>
<td>Flag</td>
</tr>
<tr>
<td>Coagulopathy, consumption</td>
<td></td>
</tr>
<tr>
<td>Disseminated intravascular coagulation (DIC)</td>
<td></td>
</tr>
<tr>
<td>Haemorrhage NOS</td>
<td></td>
</tr>
<tr>
<td>Haemorrhage, gastrointestinal</td>
<td>OCPR</td>
</tr>
<tr>
<td>Haemorrhage, intra-abdominal</td>
<td>OCPR</td>
</tr>
<tr>
<td>Haemorrhage, rectal</td>
<td>OCPR</td>
</tr>
<tr>
<td>Haemorrhage, surgical wound</td>
<td></td>
</tr>
<tr>
<td>haemorrhage, specified site</td>
<td>For a procedure of the same site or region only</td>
</tr>
<tr>
<td>Haematemesis</td>
<td>OCPR</td>
</tr>
<tr>
<td>Haematoma</td>
<td>OCPR</td>
</tr>
<tr>
<td>Haemothorax</td>
<td>OCPR</td>
</tr>
<tr>
<td>Haemolysis</td>
<td></td>
</tr>
<tr>
<td>Melaena</td>
<td>OCPR</td>
</tr>
<tr>
<td><strong>Cardiac complications</strong></td>
<td>Flag</td>
</tr>
<tr>
<td>Arrest, cardiac</td>
<td></td>
</tr>
<tr>
<td>Arrhythmia NOS</td>
<td>DSAP</td>
</tr>
<tr>
<td>Asystole</td>
<td></td>
</tr>
<tr>
<td>Block, cardiac</td>
<td>DSAP</td>
</tr>
<tr>
<td>Failure/insufficiency, cardiac</td>
<td></td>
</tr>
<tr>
<td>Fibrillation, atrial</td>
<td>DSAP</td>
</tr>
<tr>
<td>Fibrillation, ventricular</td>
<td></td>
</tr>
<tr>
<td>Infarction (myocardial)</td>
<td></td>
</tr>
<tr>
<td>Ischaemia, myocardial (acute)</td>
<td></td>
</tr>
<tr>
<td>Rupture, myocardial</td>
<td></td>
</tr>
<tr>
<td><strong>Cerebrovascular and other cerebral complications</strong></td>
<td>Flag</td>
</tr>
<tr>
<td>Apoplexy</td>
<td>DSAP</td>
</tr>
<tr>
<td>Damage, brain (anoxic)</td>
<td>DSAP</td>
</tr>
<tr>
<td>Embolism, cerebral</td>
<td>DSAP</td>
</tr>
<tr>
<td>Condition</td>
<td>Code</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Haemorrhage, cerebral/intracranial</td>
<td>DSAP</td>
</tr>
<tr>
<td>Infarction, cerebral</td>
<td>DSAP</td>
</tr>
<tr>
<td>Ischaemia, cerebral/cerebrovascular</td>
<td>DSAP</td>
</tr>
<tr>
<td>Lesion, cerebral/cerebrovascular</td>
<td>DSAP</td>
</tr>
<tr>
<td>Meningitis</td>
<td>DSAP</td>
</tr>
<tr>
<td>Oedema, cerebral</td>
<td>DSAP</td>
</tr>
<tr>
<td>Stroke</td>
<td>DSAP</td>
</tr>
</tbody>
</table>

**Other vascular complications**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrest, circulatory</td>
<td>Flag</td>
</tr>
<tr>
<td>Embolism (arterial)</td>
<td></td>
</tr>
<tr>
<td>Embolism, fat/air</td>
<td></td>
</tr>
<tr>
<td>Embolism, air</td>
<td></td>
</tr>
<tr>
<td>Embolism, pulmonary</td>
<td></td>
</tr>
<tr>
<td>Embolism, venous</td>
<td></td>
</tr>
<tr>
<td>Failure/insufficiency, circulatory</td>
<td></td>
</tr>
<tr>
<td>Hypotension</td>
<td></td>
</tr>
<tr>
<td>Infarction, pulmonary</td>
<td></td>
</tr>
<tr>
<td>Infarction (any site)</td>
<td></td>
</tr>
<tr>
<td>Occlusion (any site)</td>
<td></td>
</tr>
<tr>
<td>Phlebitis (any site)</td>
<td></td>
</tr>
<tr>
<td>Phlebothrombosis (any site)</td>
<td></td>
</tr>
<tr>
<td>Thrombophlebitis (any site)</td>
<td></td>
</tr>
<tr>
<td>Thrombosis, arterial</td>
<td></td>
</tr>
<tr>
<td>Thrombosis, venous</td>
<td></td>
</tr>
<tr>
<td>Thrombosis NOS (any site)</td>
<td></td>
</tr>
</tbody>
</table>

**Respiratory complications**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult respiratory distress syndrome (ARDS)</td>
<td></td>
</tr>
<tr>
<td>Alkalosis and acidosis, respiratory</td>
<td></td>
</tr>
<tr>
<td>Arrest, respiratory</td>
<td></td>
</tr>
<tr>
<td>Aspiration</td>
<td></td>
</tr>
<tr>
<td>Atelectasis</td>
<td></td>
</tr>
<tr>
<td>Bronchitis</td>
<td>DSAP</td>
</tr>
<tr>
<td>Effusion, pleura</td>
<td></td>
</tr>
</tbody>
</table>
Empyema
Fistula, bronchopleural or oesophageal
Failure/insufficiency, pulmonary
Failure/insufficiency, respiratory
Mediastinitis
Obstruction, upper airway
Oedema, laryngeal
Oedema/hypostasis, pulmonary
Pneumonia
Pneumothorax

**Gastrointestinal complications**

Abscess, intra-abdominal
Constipation
Dilatation, gastric
Disorder, circulatory, gastrointestinal
Embolism, mesenterial
Failure, hepatic
Fistula, biliary/bowel/rectovaginal
Ileus
Ischaemia, intestinal
Necrosis, gastrointestinal
Obstruction, bowel (mechanical)
Peritonitis
Ulcer, gastrointestinal (stress)
Volvulus

**Renal and urinary complications**

Anuria
Failure/insufficiency, renal
Fistula, urinary
Infection, urinary
Pyelonephritis
Retention, urine
Stricture, urethra
Uraemia
2.23.8 List of ill-defined conditions

Use this table in Step SP7. Conditions in this table are considered ill-defined and are not for use as underlying cause of death.

<table>
<thead>
<tr>
<th>Code or Chapter</th>
<th>Category title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC82</td>
<td>Cardiac arrest</td>
</tr>
<tr>
<td>BD10-BD1Z</td>
<td>Heart failure in BD10-; specified as acute (XT5R)</td>
</tr>
<tr>
<td>BA2Z</td>
<td>Hypotension, unspecified</td>
</tr>
<tr>
<td>BE2Y</td>
<td>Other specified diseases of the circulatory system</td>
</tr>
<tr>
<td>BE2Z</td>
<td>Diseases of the circulatory system, unspecified</td>
</tr>
<tr>
<td>CB41.0</td>
<td>Acute respiratory failure</td>
</tr>
<tr>
<td>CB41.2</td>
<td>Respiratory failure, unspecified as acute or chronic</td>
</tr>
<tr>
<td>KB2D</td>
<td>Respiratory failure of newborn</td>
</tr>
<tr>
<td>KB2E</td>
<td>Respiratory arrest of newborn</td>
</tr>
<tr>
<td>Chapter 21</td>
<td>Symptoms, signs or clinical findings, not elsewhere classified; except conditions listed below:</td>
</tr>
<tr>
<td></td>
<td>MA15 Microbiological findings in blood, blood-forming organs, or the immune system</td>
</tr>
<tr>
<td></td>
<td>MG43 Symptoms and signs concerning food and fluid intake</td>
</tr>
<tr>
<td></td>
<td>MG44.1 Lack of expected normal physiological development</td>
</tr>
</tbody>
</table>
2.23.9 List of conditions unlikely to cause death
Under review by Mortality Reference Group

2.23.10 Priority ranking of Nature-of-Injury codes
Under review by Mortality Reference Group

2.23.11 List of categories limited to, or more likely to occur in, female persons
Under review by Mortality Reference Group

2.23.12 List of categories limited to, or more likely to occur in, male persons
Under review by Mortality Reference Group

2.24 Main Uses of the ICD: Morbidity

Morbidity data are used for statistical reporting mostly at national or local levels. While some of this statistical reporting is conducted within an academic research context, it is commonly conducted in applied settings to inform health system and public health agency decision-making. ICD coded data also forms the basis of different casemix systems such as different varieties of Diagnosis Related Groups (DRGs). Coded morbidity data can also be used to inform a variety of clinical guidelines through provision of foundational information on burden of disease. The rules given here are primarily for international reporting and analysing purposes, but are also recommended for standard national use.

2.24.1 What is coded: Conditions of patient

The health care practitioner responsible for the patient’s treatment is also responsible for documenting the patient’s health conditions. This information should be organised systematically by using standard recording methods. A properly completed record is essential for good patient management. It is also an essential prerequisite to the creation of a valid coded record of patient diagnoses, derived through a coding process from written information describing a patient’s medical condition. When a good written record of patient conditions is available, successful coding of this information in ICD and associated classifications produces a valuable source of epidemiological and other statistical data on morbidity and other health care problems.

The person transforming the information on the stated condition to codes (the ‘coder’) may be the health care practitioner or a clinical coder who is not responsible for the patient’s treatment. In the latter situation, which is quite common among member countries, the coder depends on the adequacy of clinical documentation of patient condition by health care practitioners in the medical record. The primary importance of clinical documentation by health care practitioners as the starting point for coded health data cannot be overstated and needs to be underlined as being a matter of key importance within countries and internationally – with implications for health information and clinical documentation teaching within health care practitioner training programs.
For clinical and resource allocation purposes, in many instances, the manifestation of a disease (kind and severity, e.g. ulcer grade 3) may be more relevant during a specific treatment episode than the underlying disease (e.g. Diabetes mellitus). For prevention programs at national levels, knowledge about the underlying aetiology may be more important. Quality and safety will require reporting additional detail related to the stay. For comprehensive analysis and use of morbidity data, it is crucial to have a dataset with multiple fields covering all the aspects above.

2.24.1.1 Health care practitioner documentation guidelines for morbidity coding

Morbidity data are increasingly being used in the formulation of health policies and programs, 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).

In the context of these morbidity coding rules, the term practitioner is used throughout the morbidity rules to mean physician or any qualified health care practitioner who is legally accountable for establishing the patient’s diagnosis. This information should be organised 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.

The term episode is used for all settings, including hospital admissions. It is acknowledged that the definition may be different in each country, though it is most often considered to be a continuous hospital care period, which begins on the first day of a patient’s admission to a health care facility and ends on the day upon which they are discharged from that facility. Some countries consider sequential care periods on different wards within the same hospital to be distinct episodes of care.

2.24.1.2 Health care practitioner documentation principles related to morbidity coding

The health care practitioner responsible for the patient’s treatment is also responsible for documenting the patient’s health conditions during an episode of health care. Good clinical documentation is critical to continuity and quality of patient care, patient safety and is the legal record of a patient’s episode of care. When a sound written record of patient condition(s) is available, successful coding of this information using the International Classification of Diseases (ICD) and associated classifications produces a valuable source of morbidity data to support:

- Health care planning, management, monitoring and evaluation
- Epidemiology
- Identification of risk populations
- Clinical research
- Reimbursement and health care funding.

The health care practitioner responsible for the patient’s treatment should select and document the main condition, as well as any other conditions, for each episode of health
care. It is recommended, where practicable, to document all conditions to support multiple condition coding and analysis to supplement routine data collection and reporting.

**Main condition**

The definition of main condition relates to describing an episode of hospital-based care.

Record/identify as the main condition the one condition that is determined to be the reason for admission, established at the end of the episode of health care.

**Multiple conditions contributing to need for admission**

Where an episode of health care concerns more than one condition contributing to the need for admission (e.g. congestive heart failure and pneumonia; acute cerebral haemorrhage and hip fracture; multiple injuries - concussion, rib fracture, right femur fracture after MVA; or influenza A and Type 1 diabetic ketoacidosis), the health care practitioner should record/identify the main condition to be the one condition that is deemed to be most clinically significant reason for admission.

**Documenting Guidelines involving the term 'Multiple'-For Single condition reporting**

In cases involving, for example, ‘multiple fractures’, ‘multiple head injuries’ or ‘multiple valvular disease’, it is acceptable documentation practice to record the diagnoses using the term ‘multiple’ and then list separately the specific conditions or injuries. For example: Multiple fractures of pelvis: fracture of os pubis, sacrum, ilium.

**Other conditions**

In addition to the main condition, the health care practitioner should, whenever possible, also list separately all 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 as other conditions. It is recommended, where practicable, to carry out multiple-condition coding and analysis to supplement the routine data.

**Specificity and detail**

Each diagnostic statement should be as informative as possible in order for the clinical coder 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 localized peritonitis
- meningococcal pericarditis
- pregnancy-induced hypertension
- diplopia due to 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
• full thickness burn of palm of left hand due to grilling accident
• accidental puncture of the sigmoid colon during colonoscopy

Unconfirmed diagnoses

If no definite diagnosis has been established at the end of an episode of health care, then the health care practitioner should document the information that permits the greatest degree of specificity and knowledge about the reason for admission. This could be a symptom, abnormal finding or problem.

Contact with health services for reasons other than illness

Episodes of health care or contact with health services are not restricted to identification, 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 health care practitioner should document the details of the relevant circumstances 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
• donors
• circumstances related to drugs, procedures, or devices without documented injury or harm to patient

Chapter 24 Factors influencing health status and contact with health services provides a broad range of categories for classifying these circumstances. Reference to this chapter will give an indication of the detail required to permit classification to the most relevant category.

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 document 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 pavement’
• ‘cerebral contusion caused when patient lost control of car, which hit a tree’
• ‘accidental poisoning, patient drank disinfectant in mistake for soft drink’
• ‘severe hypothermia, patient fell in her garden in cold weather’
See also Section 2.25.5.1 ‘Causation in the context of quality and safety’.

**Documentation 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 health care practitioner should document the residual condition (sequela) and its origin, 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’
- ‘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 documented statement such as ‘sequelae of cerebrovascular accident’ or ‘sequelae of multiple fractures’ is acceptable.

**2.24.1.3 Coder guidelines for selecting ‘main condition’ and ‘other conditions’ for coding purposes**

The main condition and other condition(s) relevant to an episode of health care should have been recorded/identified by the responsible health-care practitioner, and coding is therefore usually straightforward. The main condition recorded should be accepted for coding and reporting unless it is obvious that the health-care practitioner did not follow the guidelines for recording diagnostic information for morbidity data analysis. Whenever possible, a record with an obviously inconsistent or incorrectly recorded main condition should be returned to the health care practitioner for clarification.

If clarification of potential erroneous documentation is not possible, one of the following rules can be applied by the clinical coder and the main condition reselected for reporting purposes. The rules are for use when the coder may be unclear as to which recorded condition should be selected as the main condition for reporting purposes.

- MB1 Several conditions recorded as ‘main condition’; or
- MB2 Presenting symptom of diagnosed condition recorded as ‘main condition’; or
- MB3 Signs and symptoms recorded as ‘main condition’ with alternative conditions recorded as the cause

**2.24.1.4 Coder rules for reselection when the main condition is incorrectly recorded**

Certain circumstances, or the availability of other information, may indicate that the health care practitioner has not followed the correct procedure for recording the ‘main condition’. In this instance, clarification from the responsible health care practitioner should be the first step by the clinical coder. When this is not possible, the clinical coder can use one of the following rules to support reselecting the ‘main condition’ for reporting purposes.

**Coder rules for reselection of main condition**
**Rule MB1. Several conditions recorded as ‘main condition’**

If several different conditions (that cannot be classified to a single stem code) are recorded as the ‘main condition’, and other details on the record point to one of them being the ‘main condition’ (one condition determined to be the reason for admission established at the end of the episode of care), select that condition; otherwise, select the condition first recorded.

If there is the desire to also report other discharge diagnosis types i.e. main resource condition or initial reason for encounter or admission, then the applicable extension code(s) from Chapter X ‘Extension codes’, should be assigned to indicate the different types of discharge diagnosis types that are reported.

**Example 1:**

A patient was admitted with complaints of fever, chills, severe headache and stiff neck. Following investigation, a diagnosis of staphylococcal meningitis was confirmed. While in hospital the patient developed pneumonia.

Main condition: Staphylococcal meningitis. Pneumonia

Two conditions have been recorded as the main condition and querying the health care practitioner is not possible. The details in the example point to staphylococcal meningitis as the one condition being the reason for admission established at the end of the episode of care; therefore, the coder should code staphylococcal meningitis as the ‘main condition’. Pneumonia is coded as an ‘other condition’.

**Example 2:**

A patient who has a history of COPD was admitted for a biopsy of the prostate. Patient was evaluated for COPD. Biopsy was performed and the final diagnosis from pathology results was benign prostatic hypertrophy.

Main condition: Chronic obstructive pulmonary disease (COPD). Hypertrophy of prostate.

Two conditions have been recorded as the main condition and querying the health care practitioner is not possible. The details in the example point to benign prostatic hypertrophy as the one condition being the reason for admission established at the end of the episode of care; therefore, the coder should code hypertrophy of prostate as the ‘main condition’. COPD is coded as an ‘other condition’ as the physician documented it and it affected the management of the patient.

**Example 3:**

A patient presents to hospital at 35 weeks gestation with spontaneous premature rupture of membranes. She is not having any contractions. Examination reveals the baby is in breech presentation; therefore, delivery by caesarean section is recommended. Mother delivers healthy preterm infant by caesarean section.

Main condition: Premature rupture of membranes. Breech presentation.

Procedure: Delivery by caesarean section
Two conditions have been recorded as the main condition and querying the health care practitioner is not possible. The details in the example point to premature rupture of membranes as the one condition being the reason for admission established at the end of the episode of care; therefore, the coder should code premature rupture of membranes as the ‘main condition’ and breech presentation and preterm delivery as an ‘other condition’.

**Example 4:**

A patient is admitted to the hospital with pneumonia and congestive heart failure.

Main condition: Pneumonia and Congestive Heart Failure.

Two conditions have been recorded as the main condition and querying the health care practitioner is not possible. There are no other details on the record to point to one of the conditions as being the main condition, therefore, in this instance, the coder should report the first listed condition as the main condition. Pneumonia is coded as the ‘main condition’ and congestive heart failure is coded as an ‘other condition’.

*Rule MB2. Condition recorded as ‘main condition’ is presenting symptom of diagnosed, treated condition*

If a symptom or sign (usually classifiable to Chapter 21 Symptoms, signs or clinical findings, not elsewhere classified), or a problem classifiable to Chapter 24 Factors influencing health status or contact with health services, 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 1:**

The patient presents to hospital with complaint of haematuria. Investigations reveal a papilloma in the posterior wall of the bladder as the cause of the haematuria. The papilloma was excised by diathermy.

Main condition: Haematuria

Other conditions: Papillomata of posterior wall of bladder

Haematuria (symptom) is recorded as the main condition; however, it was determined to be caused by the papillomata of the bladder (diagnosed and treated condition). Therefore, the coder should reselect and code papillomata of posterior wall of bladder as the ‘main condition’.

**Example 2:**

The patient presents to hospital with abdominal pain. Investigations reveal acute appendicitis and the patient undergoes an appendectomy.

Main condition: Abdominal pain

Other conditions: Acute appendicitis
The symptom ‘abdominal pain’ was recorded as the main condition; however, it was determined to be caused by appendicitis. Therefore, the coder should reselect and code acute appendicitis as the ‘main condition’.

**Rule MB3. Signs and symptoms recorded as ‘main condition’ with alternative conditions recorded as the cause**

Where a symptom or sign is recorded as the ‘main condition’ with documentation that it may be due to either one condition or another, select the symptom as the ‘main condition’.

**Example 1:**

Main condition: Headache due to tension or acute sinusitis

The symptom ‘headache’ is recorded as the main condition with possibly two causes; therefore, the coder should code headache as the ‘main condition’.

**Adding detail to Stem codes using Extension Codes**

Type 2 extension codes (a new section of codes in ICD–11) will provide distinct codes that serve as concept modifying flags for marking how the diagnosis is to be used and/or interpreted. Examples of these extension code modifiers include:

- Discharge diagnosis types (main condition; main resource condition; initial reason for encounter or admission);
- Diagnosis certainty (Provisional diagnosis; Differential diagnosis)
- Diagnosis Timing (Present on admission; Developed after admission; Uncertain timing of onset relative to admission)

For more detail about the use of all available extension codes, see Section 2.14 ‘Extension codes and additional sub-classification’ and Section X ‘Extension codes’.

**Example 1:**

A patient is admitted to hospital with chest pain and after investigation is diagnosed with a myocardial infarction and then develops a stroke that leads to a one-month hospitalisation. Myocardial infarction is coded as the main condition because it was the reason for admission established at the end of the stay. The stroke is coded separately and can be postcoordinated with a diagnosis-type extension code flag indicating that the stroke diagnosis arose after admission.

Such a system with diagnosis flags meets the objectives of countries that want a reason-for-admission coding rule, while also meeting the objectives of countries that want to be able to make inferences regarding complications of care and resource consumption (of relevance to casemix systems).

**2.24.2 Coding using postcoordination/cluster coding**

A significant new feature in ICD–11 is an embedded functionality for postcoordinating diagnostic concepts to better capture the clinical narrative surrounding an episode of care.
This postcoordination of diagnostic concepts is now possible in ICD–11. For more detail about coding of conditions using postcoordination, see Section 2.4.1 'Combining stem codes and extension codes', and how to order these in a complex code cluster and Section 2.14 'Adding Detail – Postcoordination and cluster coding with multiple stem codes and extension codes'.

The postcoordinated coding of diagnostic concepts described by the health care practitioner are shown in the following examples:

**Example 1**
A patient is admitted to the hospital for laser treatment of their diabetic retinopathy due to Type 2 diabetes mellitus. During the admission the patient’s medication for arterial hypertension required adjustment on a number of occasions before discharge. Code as main condition the diabetic retinopathy, unspecified postcoordinated with the stem code type 2 diabetes mellitus 9B71.0Z/5A11. Code the other condition the essential hypertension BA00.Z

For morbidity coding, the order of the codes in the first cluster in Example 1 has the diabetic retinopathy ordered first as it is the diabetic retinopathy that meets the definition of main condition followed by the causing condition Type 2 diabetes. (Note: The classification instructs to code also the type of diabetes.)

Where an established causal relationship is not documented or cannot be inferred, the two stem codes cannot be part of the same cluster.

**Example 2**
Patient admitted for right cataract extraction. The patient also has Type 2 diabetes mellitus and was reviewed by the endocrinologist and dietitian for their long-term diet and insulin plan. Code the main condition as Cataract, unspecified, right 9B10&XK9K. Code the other condition as Type 2 diabetes mellitus 5A11.

Example 2 demonstrates postcoordination/cluster coding where a causal relationship between the cataract and the Type 2 diabetes has not been documented and cannot be inferred; therefore, the two stem codes for each condition are reported separately.

2.24.2.1 Coding from health care practitioner documentation of ‘causal relationships’

Sometimes conditions that have a causal relationship are clearly documented by the health care practitioner using terms such as ‘due to’, ‘caused by’, or ‘arising from’. These connecting terms indicate the health care practitioner has made a causal link between, for example, condition A due to condition B. However, sometimes conditions are documented with connecting terms that are ambiguous for the coder such as ‘with’, ‘after’, ‘in’, and ‘following’. When ambiguous terms are documented, and it is not clear whether the health care practitioner means a causal inference or not, the clinical coder should code each condition separately and not link the conditions in a cluster.

The clustering (postcoordination) is a particularly notable new feature in ICD-11 that has permitted the introduction of powerful new clinical coding mechanisms for capturing clinical information in dimensions such as:

- quality and safety coding for health care related injury and harms (see 3 part model described in Section 2.25.5)
• the addition of clinical detail using extension codes
• the specification of diagnosis type and diagnosis timing using extension codes
• the comprehensive description of late effects (sequelae) arising from prior conditions
  (See Section 2.22.6)
• the description of inter related stem code diagnoses where there is a clear causal relationship

For more information on causal inference in the context of quality and safety, refer to
Section 2.25.5.1 ‘Causation in the context of quality and safety’).

2.24.2.2 Coding of suspected conditions or symptoms, abnormal findings and non-illness situations

If the episode of health care was for an inpatient, the coder should be cautious about
classifying the main condition to Chapters 21 Symptoms, signs or clinical findings, not
elsewhere classified and Chapter 24 Factors influencing health status or contact with
health services. 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). 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 recorded as ‘suspected’,
‘questionable’, etc., and there is no further information or clarification, the suspected
diagnosis must be coded as if established.

Example 1

Main condition: Suspected acute cholecystitis Code to acute cholecystitis, unspecified DC12.0Z as ‘main condition’.

Example 2

Main condition: Severe epistaxis. Patient in hospital one day. No procedures or investigations reported. Code to
epistaxis MD20. Although epistaxis is a sign/symptom, it is acceptable since the patient was obviously admitted to
deal with the immediate emergency only.

2.24.2.3 Coding of documented suspected conditions, ruled out

The category for QA02 ‘Medical observation or evaluation for suspected diseases or
conditions, ruled out’ applies to diagnoses that were ruled out after investigation.

Example 1

A child is found playing with an empty acetaminophen bottle. The mother is uncertain if
there were any tablets in the bottle. The child is brought to the hospital and following
investigation, it is determined that the child did not ingest any pills.

Main condition: Accidental ingestion of acetaminophen – Ruled out.

Code to QA02.5 Observation for suspected toxic effect from ingested substance, ruled out
2.24.2.4 Coding using 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 (i.e. precoordinated concept). Such combination categories should be used where appropriate information is recorded.

Example 1:

Main condition: Chronic Kidney Disease (CKD), Stage 4 Other conditions: Hypertensive renal disease documented as cause of CKD. Code to Chronic Kidney disease, stage 4 GB61.4 and add the Hypertensive renal disease BA02 in a cluster. Main condition Cluster: GB61.4/BA02

Example 2:

Main condition: Glaucoma secondary to eye inflammation Code to 9C61.24 Glaucoma due to eye inflammation. This is a precoordinated code in ICD-11.

Example 3:

Main condition: Diabetic cataract. Type 1 diabetes mellitus Other conditions: Hypertension Code Diabetic cataract, unspecified 9B10.21 and ‘code also’ the type of diabetes mellitus 5A10. Postcoordinate the stem code for diabetic cataract and stem code for Type 1 diabetes mellitus. Main condition Cluster: 9B10.21/5A10. The hypertension is not linked to the cataract or diabetes, so it is not part of the cluster.

Example 4:

Main condition: Rheumatoid arthritis Other conditions: Hypertension, Type 2 diabetes mellitus, Cataract Code to Rheumatoid arthritis, serology unspecified FA20.Z as ‘main condition’. Code the other conditions (hypertension BA00.Z, type 2 diabetes mellitus 5A11, cataract 9B10.Z) separately. If any optional extension codes are added to any one of the conditions, then a cluster(s) is created as applicable because extension codes cannot be reported alone. Note that in this example, the linkage (through clustering) of cataract with diabetes must not be made as the cataract has not been documented as a diabetic cataract. In this case there is no combination indicating clustering should be used.


2.24.2.5 Coding using 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 often, but not always, be classifiable to Chapter 22 Injury, poisoning or certain other consequences of external causes. The code from Chapter 23 External causes of morbidity or mortality indicating the external cause is assigned as an additional code and postcoordinated with the nature of the condition as it may be regarded as a modifier. See also Section 2.25.5 ‘Overview of code-set in ICD-11 for quality and patient safety’.

Example 1:

Main condition: Fracture of neck of femur caused by fall due to tripping on sidewalk Other conditions: Contusions to elbow and upper arm The health care practitioner has identified the fracture as the main condition and since there is no other information to make the coder question the main condition recorded, the coder should code
fracture of neck of femur NC72 as the ‘main condition’. The external cause code for unintentional fall from unspecified height PA6Z is used as an additional code linked to the fracture code through postcoordination. The contusion elbow NC30.1 and NC10.1 is coded as another condition cluster and the external cause code for unintentional fall PA6Z is linked to the contusion code through postcoordination.

Main condition cluster: NC72/PA6Z Other condition cluster: NC30.1/NC10.1/PA6Z

Example 2:

Main condition: Severe hypothermia resulting from falling in her garden and being left in the cold weather Code to hypothermia NF02 as ‘main condition’ and postcoordinate the external cause code for Unintentional fall from unspecified height PA6Z and Unintentional exposure to excessive cold PB16.

Main condition: NF02/PA6Z/PB16

Example 3:

Main condition: Diplopia due to reaction to antihistamine taken as prescribed Code to diplopia 9D46 as the ‘main condition’ and postcoordinate the external cause code for PL00 Drugs, medicaments or biological substances associated with injury or harm in therapeutic use and PL13.2 Drug-related injury or harm in context of correct administration or dosage, as mode of injury or harm. An optional extension code may be added to identify the specific drug was an antihistamine XM5PK9.

Main condition cluster: 9D46/PL00 Drugs, medicaments or biological substances associated with injury or harm in therapeutic use & XM5PK9/PL13.2 Drug-related injury or harm in context of correct administration or dosage, as mode of injury or harm

Example 4:

Main condition: Haemoglobinuria from exertion caused by training for marathon run (training on outdoor track at stadium) Code to haemoglobinuria from exertion 3A21.Y which is a precoordinated concept; therefore an external cause is not assigned.

2.24.2.6 Coding of acute and chronic conditions recorded as main condition

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 code for the acute condition should be reported as the main condition (one condition determined to be the reason for admission established at the end of the episode). When an appropriate combination code is provided for both the acute and chronic condition, assign only the combination code as the main condition.

Example 1:

Main condition: Acute on chronic cholecystitis Code DC12.00 Acute on chronic cholecystitis as the ‘main condition’. This is an example of combination code for both the acute and chronic condition in ICD-11.

Example 2:

Main condition: Acute exacerbation of chronic obstructive pulmonary disease Code to CA22.0 Chronic obstructive pulmonary disease with acute exacerbation, unspecified as the ‘main condition’ since the ICD provides an appropriate single precoordinated code for the combination.
2.24.2.7 Coding of injuries or harm arising from surgical or medical care

Refer to Section 2.25.5 ‘Overview of code-set in ICD-11 for quality and patient safety’.

2.24.2.8 Coding of adverse events and circumstances in health care that do not cause actual injury or harm

Refer to Section 2.25.5 ‘Overview of code-set in ICD-11 for quality and patient safety’.

2.24.2.9 Coding of chronic postprocedural conditions

Most body-system chapters also contain categories for permanent (chronic) 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. Immediate or acute conditions that occur as a consequence of a procedure may require coding with the 3-part quality and safety model. See also Section 2.25.5 ‘Overview of code-set in ICD-11 for quality and patient safety’. The categories of postprocedural conditions do not have residual codes (i.e., other and unspecified). This is intentional as to prevent users inadvertently classifying conditions to these categories that should, in fact, be classified elsewhere.

2.24.2.10 Coding ‘History of’ and ‘Family history of’

Chapter 24 ‘Factors influencing health status or contact with health services’ of the classification includes a number of codes that describe both a personal history of various conditions, and a family history of various conditions. The classification of this documented concept may be coded in one of two ways.

Option 1: Assign the applicable stem code from Chapter 24 ‘history of’ (or ‘family history of’) by itself.

Option 2: Assign the applicable stem code from Chapter 24 clustered with a code from another chapter to add specificity as to what was the previous ‘disease’. The order of stem codes in the cluster is always the ‘history of’ stem code first, followed by any other codes that may be added for detail.

Example 1:

A patient has history of sigmoid colon cancer that was curatively resected. Code: QC40.0 Personal history of malignant neoplasm of digestive organs/ 2B90.3 Malignant neoplasm of sigmoid colon

In example 1, the code simply captures the notion that the patient has a personal history of cancer of the digestive organs. The documented clinical concept is fully described through use of the clustering mechanism and linking of stem codes.

Example 2:

A patient has a family history of macular degeneration. Code: QC66 Family history of eye or ear disorders/9B78.3Z Degeneration of macula or posterior pole, unspecified
2.24.2.11 Coding of conditions documented as sequela (late effect)

‘Sequelae’ include residual effects of diseases or disorders, injuries or poisonings specified as such, or as late effect of, arrested, cured, healed, inactive, old or quiescent condition unless there is evidence of active disease. Conditions documented as a sequelae (late effect) will typically be classified using postcoordination depending on the case.

The cluster should contain:

- first, a stem code identifying the specific manifestation (i.e. nature of the effect), and
- second, a stem code designating ‘late effect of’ (either a code from the body system chapters or a code from Chapter 24 Factors influencing health status or contact with health services)
- third, a stem code representing the prior condition causing the sequelae

Example 1:

Joint contracture present as a late effect of a prior burn. Code cluster: FA34.3 Contracture of joint QC50 Late effect of prior health problem, not elsewhere classified NE11 Burn of unspecified body region

Example 2:

Hemiplegia present as a late effect of old cerebral ischemic stroke. Code cluster: MB53.Z Hemiplegia, unspecified 8B25.0 Late effects of cerebral ischemic stroke (Note: In Example 2, the concept of late effect and underlying cause is already precoordinated in the stem code 8B25.0.)

2.24.3 Chapter-specific notes

Coder 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.

2.24.4 Chapter 1: Infectious and parasitic diseases

*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. Only subcategories for HIV disease associated with, tuberculosis, and malaria are pre-coordinated in this block for HIV disease. When another specified HIV-caused disease is documented by the health care practitioner, post-coordinate the HIV-caused disease with the appropriate subcategory for HIV disease as recorded by the health-care practitioner.

Example 1:

The patient has HIV disease and is admitted for treatment of Kaposi’s sarcoma of the soft palate. Main condition: Kaposi sarcoma due to HIV disease Kaposi sarcoma is documented as an HIV-caused disease. Therefore, the stem code for Kaposi sarcoma is postcoordinated with the applicable stem code for HIV.
Main condition: 2B57.Y Kaposi sarcoma of other specified primary site/1C62.3 HIV disease clinical stage 4 without mention of tuberculosis or malaria.

**Example 2:**

The patient has HIV disease and is admitted for treatment of toxoplasmosis. Main condition: Toxoplasmosis due to HIV. Toxoplasmosis is documented as HIV-caused diseases; therefore, the stem codes for the HIV-caused disease is postcoordinated with the applicable stem code for HIV. Main condition: 1F57.Z Toxoplasmosis, unspecified/1C62.3 HIV disease clinical stage 4 without mention of tuberculosis or malaria

*Sepsis with or without septic shock*

The concept of sepsis has undergone major changes during the last decades and the current definition established and widely accepted internationally in 2016 is that sepsis is a life-threatening organ dysfunction caused by a dysregulated host response to infection.

Sepsis is not considered to be a disease in itself, but a reaction to an infectious disease which may be of bacterial, viral, fungal or protozoal aetiology. Septic shock is defined as a subset of sepsis in which circulatory, cellular and metabolic abnormalities are profound enough to substantially increase mortality.

A cluster involving a case of documented sepsis should include:

- First, a stem code representing the causing infection (specified or unspecified) and as applicable, an optional extension code for the infectious agent if it is known.
- Second, a stem code for sepsis with or without septic shock depending on the documentation.

*Note:* If the causing infection is documented as generalised or a specific infection is not documented, assign a stem code for greatest level of specificity documented in relationship to the infection.

**Example 1:**

Patient admitted for treatment of pneumococcal pneumonia causing sepsis

Main condition: Pneumococcal pneumonia causing sepsis

Code first the causing infection, CA40.07 Pneumonia due to Streptococcus pneumoniae and postcoordinate with the stem code for 1G40 Sepsis without septic shock

Main condition cluster: CA40.07/1G40

**Example 2:**

Patient admitted for treatment of severe influenza A H1N1 causing sepsis. Code first the causing infection, Influenza 1E30 Influenza due to seasonal identified influenza virus with optional extension code for A H1N1 XN297 and postcoordinate with the stem code for sepsis without septic shock 1G40 Main condition cluster: 1E30 &XN297/1G40

**Example 3:**

Patient admitted for treatment of sepsis due to E.coli. Main condition: Sepsis due to E Coli. Code first the causing infection. In this example, a specific infection is not documented; therefore a code for bacterial infection of
Example 4:

Patient presented with septic shock and died shortly after admission. Main condition: Septic shock, unknown infection Code first the causing infection. In this example, a specific infection is unknown; therefore, a code for infection, unspecified 1G7Z and then sepsis with septic shock 1G41

Main condition cluster: 1G7Z/1G41

2.24.5 Chapter 2: Neoplasms

When coding neoplasms, refer to the instructions at the level of the individual categories regarding code assignment, and the use of additional morphological or site descriptions from the extension codes. A neoplasm, whether primary or metastatic, that is the focus of care during a relevant episode of health care, should be recorded.

When the ‘main condition’ recorded by the health-care practitioner is a primary neoplasm and the ‘other condition’ is a secondary neoplasm (metastasis), code each neoplasm separately. Do not post-coordinate the stem code for primary neoplasm with the stem code for secondary neoplasm.

When the main condition recorded by the health care practitioner is a secondary neoplasm (metastasis) and the primary neoplasm is no longer present (having been removed during a previous episode of care/personal history of), code the secondary neoplasm (metastasis) as the main condition and separately code as an other condition the stem code for ‘personal history of’. Do not postcoordinate the stem code for secondary neoplasm with the stem code for ‘personal history of’. (See example below). Also, refer to Section 2.24.2.10 ‘Coding ’History of’ and ‘Family history of’” for further coding direction.

When the main condition recorded by the health care practitioner is ‘Follow-up examination’ (a circumstance codable to Chapter 24 Factors influencing health status or contact with health services) and the ‘other condition’ recorded is a ‘personal history of’, code the applicable ‘follow-up examination’ code as the main condition and separately code the stem code for ‘personal history of’ as the other condition. Do not postcoordinate the ‘follow-up examination’ stem code with the stem code for ‘personal history of’. Refer to Section 2.24.2.10 ‘Coding ’History of’ and ‘Family history of’” for coding direction.

Example 1:

A patient is admitted for investigation of a lump in the breast. Investigation concludes a malignancy in the left breast. Mastectomy is performed and histopathology shows a spread to regional lymph nodes (left axilla). Chemotherapy is planned. Main condition: Carcinoma of breast Other condition: Metastases to regional lymph nodes Procedure: Mastectomy Code the main condition as malignant neoplasm in breast with optional extension code ‘left’ 2C6Z&XK8G. Cluster code secondary malignancy in lymph nodes 2D60&XK8G with optional extension code ‘left’ as other condition. Main condition cluster: 2C6Z&XK8G

Example 2:

Patient who has a history of carcinoma of breast resected two years ago is admitted for a bronchoscopy with biopsy. Investigation revealed secondary carcinoma in lung. Main condition: Secondary carcinoma in lung Other
conditions: Carcinoma of breast resected two years ago Procedure: Bronchoscopy with biopsy Code the main condition as ‘Malignant neoplasm metastasis in lung’ 2D70. Code ‘Personal history of malignant neoplasm of breast’ QC40.3 as an other condition and it is acceptable to post-coordinate the stem code Malignant neoplasm of breast, unspecified 2C6Z to specify the personal history is related to malignant primary breast cancer. Refer to Section 2.24.2.10 ‘Coding ‘History of’ and ‘Family history of’. Main condition: 2D70 Other condition: Option 1: QC40.3; Option 2: QC40.3/2C6Z

Example 3:

Patient is admitted for bladder cancer recheck by cystoscopy. The patient has a history of previously excised bladder cancer. No evidence of recurrence seen. Main condition: Follow-up examination by cystoscopy Other conditions: History of bladder cancer Procedure: Cystoscopy Code the main condition as ‘Follow-up examination after treatment for malignant neoplasm’ QA06. Option 1: Code ‘Personal history of malignant neoplasm of urinary tract’ QC40.5. Option 2: Code ‘Personal history of malignant neoplasm of urinary tract’ QC40.5 as an other condition and post-coordinate the stem code ‘Malignant neoplasm of bladder, unspecified’ 2C94.Z to specify the personal history is related to bladder cancer. Refer to Section 2.24.2.10 ‘Coding ‘History of’ and ‘Family history of’. Main condition: QA06 Other condition cluster: Option 1: QC40.5; Option 2: QC40.5/2C94.Z

Malignant neoplasm metastases, unspecified

This code should be used as the main condition only when the malignancy is described as ‘disseminated metastases’ or ‘metastatic carcinoma’ (or other similar terms as described in the inclusion list of the code) and the specific sites are not documented.

Unspecified malignant neoplasms of ill-defined or unspecified sites

This code should be used only when the health care practitioner has clearly recorded the neoplasm as an unknown primary site or as an unspecified malignancy, assumed primary.

Malignant neoplasms of independent, primary multiple sites

The stem code for Malignant neoplasms of independent (primary) multiple sites should be coded as the main condition when the health care practitioner records as the main condition two or more independent primary malignant neoplasms, none of which predominates. Then, optionally, additional codes to identify the individual neoplasms may be coded as other conditions to identify the individual primary malignant neoplasms recorded by the health care practitioner. Extension codes may be added to each primary malignant neoplasm stem code to identify additional detail of the histopathology and the site.

Example 1:

The documentation states that the patient has carcinomatosis from an unknown primary neoplasm. Main condition: Carcinomatosis Code the main condition as ‘Malignant neoplasm metastases, unspecified’ 2E2Z. Code as an other condition Unspecified malignant neoplasms of ill-defined or unspecified sites 2D4Z. Main condition: 2E2Z Other condition: 2D4Z

Example 2:

Main condition: Multiple myeloma Other conditions: Primary adenocarcinoma of prostate Code the main condition as ‘Plasma cell myeloma’ 2A83.1. Code as an other condition ‘Adenocarcinoma of prostate’ 2C82.0. Main condition: 2A83.1 Other condition: 2C82.0
2.24.6 Chapter 3: Diseases of the blood or blood-forming organs

Certain conditions classifiable to this chapter may result from drugs or other external causes. Codes from Chapter 23 ‘External causes of morbidity and mortality’ may be used as optional additional codes.

Example 1:

Patient who is on long-term treatment with the drug trimethoprim is admitted and treated for trimethoprim-induced folate deficiency anaemia. Main condition: Trimethoprim-induced folate deficiency anaemia Code the main condition as ‘Drug-induced folate deficiency anaemia’ 3A02.4 and postcoordinate with the external cause code ‘Drugs medicaments and biological substances associated with injury or harm in therapeutic use’ PL00 and the external cause code ‘Drug-related injury or harm in context of correct administration or dosage, as mode of injury or harm’ PL13.2. The extension code XM7NY9 Trimethoprim, may be added optionally to identify the drug. Main condition cluster: 3A02.4/PL00 &XM7NY9/PL13.2

2.24.7 Chapter 5: Endocrine, nutritional or metabolic diseases

Certain conditions classifiable to this chapter may result from drugs or other external causes. Codes from Chapter 23 ‘External causes of morbidity and mortality’ may be used as optional additional codes.

Diabetes mellitus

When the health care practitioner has documented a condition due to diabetes mellitus, postcoordinate the condition and the diabetes mellitus stem codes. If more than one condition is documented as being due to diabetes mellitus, each distinct clinical concept (each diabetes caused condition) is coded on its own and postcoordinated with the diabetes mellitus stem code even though it means repeating the diabetes code in each cluster. (Refer to Example 2 below).

Example 1:

Main condition: Kidney failure due to Type 2 diabetes mellitus. Kidney failure is documented as due to diabetes mellitus; therefore, code to ‘Kidney failure, unspecified’ GB6Z and postcoordinate with the stem code 5A11 Type 2 diabetes mellitus. Main condition cluster: GB6Z/5A11

Example 2:

Main condition: Type 1 diabetes with diabetic nephropathy Other condition: Diabetic cataract Code the main condition as ‘Type 1 diabetes mellitus’ 5A10 postcoordinated with the stem code ‘Chronic kidney disease, stage unspecified’ GB61.Z. Code as an other condition ‘Diabetic cataract’ 9B10.21 postcoordinated with the stem code Type 1 diabetes mellitus 5A10. Main condition cluster: 5A10/GB61.Z Other condition cluster: 9B10.21/5A10

Carcinoid syndrome

This code is not to be used as the preferred code for main condition if a carcinoid neoplasm is recorded, unless the episode of care was directed predominantly at the endocrine syndrome itself and the tumour is not reported.
2.24.8 Chapter 6: Mental, behavioural or neurodevelopmental disorders

Dementia

Always code the underlying aetiology, if documented.

2.24.9 Chapter 8: 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 23 ‘External causes of morbidity and mortality’ may be used as optional additional codes.

Late effect of cerebrovascular disease

These codes are not to be used as the preferred code for the ‘main condition’ if the nature of the residual condition is recorded. Refer to Section 2.24.2.11 ‘Coding of conditions documented as a sequelae (late effect)’.

Paralytic symptoms

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 and the cause is not recorded.

Example 1:

Patient is admitted with left side hemiplegia and following investigation determined to be due to acute ischaemic stroke. Main condition: Acute ischaemic stroke with hemiplegia. Code the main condition as 8B11.5 Cerebral ischaemic stroke of unknown cause and postcoordinate the stem code Hemiplegia, unspecified MB53.Z. An optional extension code to specify XK8G Left may be added. Main condition cluster: 8B11.5/MB53.Z&XK8G

Example 2:

Patient is admitted for rehabilitation training for paralysis of left leg resulting from cerebral infarction three years ago. Main condition: Paralysis of left leg Code the main condition as MB55.Z Monoplegia of lower extremity, unspecified and an optional extension code to specify XK8G Left may be added. Post-coordinate the stem code 8B25.0 Late effects of cerebral ischemic stroke Main condition cluster: MB55.Z&XK8G/8B25.0

2.24.10 Chapter 9: Diseases of the visual system

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 blindness itself and the cause of blindness is not recorded.

2.24.11 Chapter 10: Diseases of the ear or mastoid process

Acquired hearing impairment

These codes are not to be used alone if the cause is recorded, unless the episode of care was mainly for the hearing loss itself and the cause was not recorded.
2.24.12 Chapter 11: Diseases of the circulatory system

Secondary hypertension

This code is not to be used as the preferred code for the main condition if the cause is recorded. When coding to the cause, secondary hypertension is used as additional code to indicate that this manifestation has been relevant in the context of a treatment.

2.24.13 Chapter 15: Diseases of the musculoskeletal system or connective tissue

Many musculoskeletal conditions are treated without knowing the underlying disease. In such cases only the musculoskeletal condition is coded.

2.24.14 Chapter 18: Pregnancy, childbirth or the puerperium

JA05 Complications following abortion, ectopic or molar pregnancy

These codes are 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. These codes may be used as an optional additional code with ‘Abortive outcome of pregnancy’ codes to identify associated complications and to give fuller details of the complication.

**Example 1:**

Main condition: Ruptured tubal pregnancy causing shock Other conditions: - Specialty: Gynaecology Code the main condition as ‘Tubal pregnancy’ JA01.1 and since the shock is documented as a complication of the tubal pregnancy, post-coordinate ‘Shock following abortion and ectopic and molar pregnancy’ JA05.3. Main condition cluster: JA01.1/JA05.3

**Example 2:**

Patient is diagnosed with endometritis following a spontaneous abortion that was diagnosed and treated at a previous episode of care. Main condition: Endometritis following spontaneous abortion Specialty: Gynaecology This example represents a new episode of care solely for treatment of a current complication of a previous spontaneous abortion; therefore, code the main condition as ‘Genital tract or pelvic infection following abortion, ectopic or molar pregnancy’ JA05.0. No other code is required since the abortion was performed during a previous episode of care. Main condition: JA05.0

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. These codes may be used as 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 3:**

Example 4:

Patient who has a history of previous caesarean section is admitted for in labour. A trial of labour is unsuccessful for vaginal delivery due to arrested active phase and mom is delivered by unplanned repeat Caesarean section. Main condition: Pregnancy delivered Other conditions: Failed trial of labour due to arrested active phase Procedure: Caesarean section Code ’Failed trial of labour, unspecified’ JB0D.8 as the ’main condition’ and post-coordinate ’Secondary uterine inertia’ JB02.1 because the health care practitioner has documented the cause of the failed trial of labour. Code ’Single delivery by Caesarean section, unspecified’ JB22.Z as an other condition to indicate the method of delivery. Main condition cluster: JB0D.8/JB02.1 Other condition: JB22.Z

Example 5:

Patient who is known to have a twin pregnancy is admitted in labour and delivers two healthy newborns. Main condition: Twin pregnancy delivered Other conditions: - Procedure: Spontaneous delivery Code ’Twin pregnancy’ JA80.0 as the ’main condition’. Code ’Multiple delivery, all spontaneous’JB24.0 as an other condition to indicate the method of delivery. Main condition: JA80.0 Other condition: JB24.0

Example 6:


Certain maternal diseases classifiable elsewhere but complicating pregnancy, childbirth or the puerperium

The subcategories provided should be used as ‘main condition’ codes in preference to categories outside Chapter 18 ‘Pregnancy, childbirth or the puerperium’ 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. Post-coordination applies when the additional code to specify the condition is coded.

Example 7:

Patient is admitted at 28 weeks gestation with toxoplasmosis. Main condition: Toxoplasmosis Other conditions: Pregnancy undelivered Code ’Protozoal diseases complicating pregnancy, childbirth or the puerperium, unspecified’ JB63.6Z as the main condition and optionally, code ’Toxoplasmosis, unspecified’ 1F57.Z to identify the specific protozoal disease that is complicating the pregnancy. When the additional code to identify the specific complication is coded, then postcoordination applies because 1F57.Z is adding additional detail/specificity to the stem code JB63.6Z. Main condition cluster: JB63.6Z/1F57.Z

2.24.15 Chapter 21: Symptoms, signs or clinical findings, not elsewhere classified

Categories from this chapter should not be used as ‘main condition’ codes unless the symptom, sign or clinical 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 Section 2.24.1.4 ‘Rule MB3 Signs and symptoms recorded as ‘main condition’ with alternative conditions recorded as the cause’.
2.24.16 Chapter 22: Injury, poisoning or 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;
- different types to the same body region; and
- same type to different body regions

and postcoordinate the stem codes that describe each individual injury.

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’;
- 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 are used as additional codes in the same cluster.

Example 1:

Patient suffered injuries to the bladder and urethra following an assault. Main condition: Injury to bladder and urethra Other conditions: - Code as main condition NB92.8 Injury of multiple pelvic organs and postcoordinate the stem codes for NB92.2Z Injury of bladder, unspecified and NB92.3Z Injury of urethra, unspecified as these codes are adding additional detail/specificity to NB92.8. Main condition cluster: NB92.8/NB92.2Z/NB92.2Z

Example 2:

Patient, who was the driver of a motorcycle, lost control on the highway and crashed. Investigations revealed open intracranial wound with cerebellar haemorrhage. Main condition: Open intracranial wound with cerebellar haemorrhage Other conditions: - Code the main condition NA0A.3Y Other specified multiple injuries of head and postcoordinate the stem codes for NA07.1 Traumatic intracerebral haemorrhage and NA07.Y Other specified intracranial injury. Main condition cluster: NA0A.3Y/NA07.1/NA07.Y Other specified intracranial injury

2.24.17 Chapter 23: External causes of morbidity or 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 22 and may also be used as optional additional codes with conditions classified in any other chapter but having an external cause.
2.24.18 Chapter 24: Factors influencing health status or contact with health services

There are some health care episodes that are not related to the treatment of or investigation of current illness or injury (e.g., monitoring of previously-treated conditions, immunization visits, seeking of health-related advice). In such situations, a code for the main condition can potentially be found in Chapter 24 ‘Factors influencing health status and contact with health services’.

2.25 Special cases: Morbidity

The morbidity special tabulation list is intended as a basis for national lists and for international 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 – notable aggregation of some items and expansion of items relating to Chapter 21 ‘Symptoms, signs or clinical findings, not elsewhere classified’ and Chapter 24 ‘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 four (or five) character codes of the core classification. The list has been designed for international comparisons of hospital morbidity statistics. This concise list allows for comparison of hospital activity, independent of health systems, and based on the version of the ICD in use. The conditions have been selected in a way that they can always be treated in an admission of at least 24 hours. If, after examination of the frequencies of the ICD four-character rubrics, it is necessary to expand the list, some of the items within ICD categories can be subdivided according to the core classification or even to the five-character level. If the recommended list is 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.

2.25.1 Morbidity classification in clinical care

Clinical care comprises different levels of treatment, all of which mean a level of diagnostic capacity that is higher than in primary care. The ICD addresses this level of detail primarily through multidimensional coding. Secondary care refers to the health care services provided by medical specialists and other health professionals who generally do not have first contact with patients, for example, cardiologists, urologists, or dermatologists. It includes acute care, necessary treatment for a short period of time for a brief but serious illness, injury or other health condition, such as in a hospital emergency department. It also includes skilled attendants during childbirth, intensive care, and medical imaging services. ‘Secondary care’ is sometimes used synonymously with ‘hospital care’. However, many secondary care providers do not necessarily work in hospitals, such as psychiatrists, clinical psychologists, or physiotherapists, and some primary care services are delivered within hospitals. Depending on the organisation and policies of the national health system, patients may be required to see a primary care provider for a referral before they can access secondary care. Tertiary care refers to specialised consultative health care, usually
for inpatients and following a referral from a primary or secondary health professional, in a facility that has personnel and facilities for advanced medical investigation and treatment, such as a tertiary referral hospital.

2.25.2 Morbidity for epidemiology

Epidemiology is the study of the distribution and determinants of health-related states or events (including disease) and the application of this study to the control of diseases and other health problems. Various methods can be used to carry out epidemiological investigations - surveillance and descriptive studies are used to study distribution and analytical studies are used to study determinants. ICD coded data, either from morbidity or mortality sources, contribute to the understanding of the health of a population.

2.25.3 Morbidity for quality and patient safety

Coded health information is used to measure and report on various aspects of quality of care and patient safety (e.g. reporting on in-hospital mortality or adverse event rates for various conditions or reporting on patient safety indicators). Users of this kind of health information are health system payers (e.g. ministries of health, or in privately-funded health care systems, health insurance companies) and other stakeholders, such as health quality councils, hospital administrators, clinical leaders/groups, or public advocacy organisations.

2.25.3.1 The quality and safety use case for ICD–11

The quality and safety use case of the ICD is based on the availability of large numbers of methodological tools that are originally based on ICD–10. Specific examples include the Charlson and Elixhauser co-morbidity indices, AHRQ (Agency for Healthcare Research and Quality) Patient Safety Indicators, the Hospital Standardised Mortality Ratio, and various other administrative data quality indicators. WHO recommendations on coding rules for hospital separation episodes improve comparability of records across hospitals and jurisdictions. Specific examples of coding rules include: a) rules for specifying the main condition, b) numbers of codes per record, c) code clustering mechanisms, and d) use of a status display system that distinguishes diagnoses arising during a hospital stay from those present at admission. Quality and patient safety reporting is often focused not only on diagnostic information available in the International Classification of Diseases, but also on procedure information, that is currently coded in various country-specific procedure coding systems. The harmonisation of ontological concepts in international procedure coding systems will be important going forward. The available medical and surgical complication codes of ICD–11 are in line with current knowledge in the domain of safety and adverse events.

2.25.3.2 Reporting on indicators of quality of care and patient safety

This use case relates to the use of coded health information to measure and report on various aspects of quality of care and patient safety (e.g., reporting on in-hospital mortality or adverse event rates for various conditions, or reporting on patient safety indicators). The initiating actor may be a health quality council, hospital administrators, clinical
leaders/groups, a health system payer (e.g., ministries of health, or in privately-funded health care systems, health insurance companies) or a public advocacy ‘watch-dog’ organisations. The participating actors are hospital administrators, clinicians, health system decision makers, public representatives, patients and their families, and sometimes even the media. Preconditions are:

- Availability of person-level data on episodes of health care delivery (e.g., hospitalisations, physician visits)
- Identifiers that permit attribution of the health care delivery episode to a provider, provider group, or a given health facility/hospital.
- Clinical information on diagnoses present and procedures performed during a health care delivery episode.
- Clinical information on relevant outcomes such as mortality, length of stay, and specific adverse events.
- Analytical expertise among initiating actors so that attention is paid to data validity considerations, knowledge of ‘best’ indicators (e.g., the most valid patient safety indicators), risk adjustment methodology, etc.

The outputs are reports containing information on dimensions of system quality. These can either provide global information on system performance, or comparative information stratified by provider unit (e.g. physician-level, hospital-level, or regional reporting).

**2.25.3.3 Functionality:**

An ideal course of events for such use would include:

- The initiating actor communicates desire to conduct quality/safety measurement and reporting to relevant stakeholders.
- Appropriate applications are made to secure access to the data needed to conduct the planned reporting.
- Appropriate methodological and clinical expertise is enlisted to ensure that best methodological practices are incorporated into the planned reporting, and that clinical face validity and acceptability are considered.
- Data analysis and reporting are undertaken.
- Broad dissemination and knowledge translation to stakeholders is undertaken. A continuous quality improvement process is undertaken in response to reports (with consideration given to quality improvement interventions, and repeat measurement after intervention).

- **Exceptions:** Quality/safety reporting that does not follow the sequence of steps described above can be compromised. Indeed, there are many historical instances of failed or suboptimal quality/safety reporting from administrative data because of skipped steps. (e.g., 1. quality reporting without valid indicators, or appropriate methodologies for risk adjustment, 2. quality reporting without good clinical face validity, 3. quality reporting without a Continuous Quality Improvement (CQI) mind set, etc.).
• Examples of sub-use cases (addressing the quality dimensions of effectiveness, efficiency, safety, access)
  - reporting on global mortality by facility (e.g., the hospital standardised mortality ratio - HSMR)
  - reporting on condition-specific mortality
  - reporting on patient safety indicators
  - reporting on global or condition-specific length of stay
  - reporting on readmission rates after hospitalisation
  - reporting on global or condition-specific costs of care (e.g., cost per hospitalisation)
  - reporting on waiting times
  - reporting on small area variability in utilisation

2.25.3.4 Additional information:

Requirements:

See ‘Preconditions’ section above. There needs to be ongoing development and refinement of quality reporting methodologies (in essence, ongoing research around the development of new administrative data quality indicators and new methodologies for risk adjustment in outcome/quality reporting).

Assumptions:

An underlying assumption in quality or patient safety reporting from administrative data is uniformity of data format and data validity across comparator units (i.e., across provides, hospitals, or jurisdictions). Uniformity in data format and validity is not always present and has been a common reason for criticism of quality or patient safety reports derived from administrative data. In this regard, all ongoing WHO efforts towards achieving directive coding rules help to facilitate comparative reporting by reducing data variability across comparator units (e.g., rules on factors such as the definition of the ‘main condition’, numbers of possible codes per record, and the implementation of diagnosis-timing codes). See also the separate use case description for international comparative reporting.

2.25.4 Conceptual model for quality and patient safety

Exposure to health care events sometimes has unintended and undesired consequences. Health care, the people to whom it is provided, and the complications that can arise in the course of care are highly diverse and complex. Representing them comprehensively in an information system is challenging and is presently beyond the bounds of practicality for routine administrative information systems of the types that are intended to make use of the ICD. The conceptual model has three components:

1. **Harm** to the patient: What was the main consequence for the patient’s health?
2. **Cause** or source of harm: What caused the harm?
3. **Mode** or mechanism: In what way? How did the source of harm actually produce harm?
2.25.5 Overview of code-set in ICD–11 for quality and patient safety

A key feature of the quality and patient safety code-set in ICD–11 is that a cluster of codes is required to represent a case. Use of the term ‘cluster’ is novel in ICD–11 and so is the extent and formalisation of the requirement for postcoordination. The quality and safety use case of the ICD is based on the availability of large numbers of methodological tools that are originally based on ICD–10. Specific examples include the Charlson and Elixhauser comorbidity indices, AHRQ (Agency for Healthcare Research and Quality) Patient Safety Indicators, the Hospital Standardised Mortality Ratio, and various other administrative data quality indicators. WHO recommendations on coding rules for hospital separation episodes improve comparability of records across hospitals and jurisdictions. Specific examples of coding rules include: a) rules for specifying the main condition, b) numbers of codes per record, c) code clustering mechanisms, and d) use of a status display system that distinguishes diagnoses arising during a hospital stay from those present at admission. Quality and patient safety reporting is often focused not only on diagnostic information available in the International Classification of Diseases, but also on procedure information, that is currently coded in various country-specific procedure coding systems. The harmonisation of ontological concepts in international procedure coding systems will be important going forward. The available medical and surgical complication codes of ICD–11 are in line with current knowledge in the domain of safety and adverse events.

The first component, quality and patient safety Harm, is usually represented by a standard ICD–11 diagnosis code, from (almost) any chapter of the classification. Some forms of harm that can result from quality and safety events are not adequately represented by a standard ICD–11 diagnosis code. A special set of categories to represent these forms of harm are provided in the injury chapter of ICD–11 (Chapter 22 ‘Injury, poisoning or certain other consequences of external causes’), under the category titled ‘Injury or harm arising from surgical or medical care, not elsewhere classified’. Quality and patient safety causes (sources of harm) fall into four types of causes at the top level that capture events caused by:

1. substances (drugs and medicaments, etc.),
2. procedures,
3. devices, and
4. a mix of other types of causes (e.g. problems associated with transfusions, or problems associated with diagnosis, including missed diagnosis, incorrect diagnosis, etc.).

The full quality and safety external cause codes are found in Chapter 23 ‘External causes of morbidity or mortality’ within category titled ‘Causes of health care related harm or injury’.

Quality and safety Mode or Mechanism ('Mode' is the term used in ICD-11 external cause codes) refers to the main way in which the Quality and safety Cause leads to the Harm represented in the third concept, Quality and safety Harm. Quality and safety Modes are specific to the types of Quality and safety Cause. Examples are:

Table 1: Examples of corresponding quality and safety mode or mechanism

**Cause or Source of Harm** | **Mode or Mechanism**
---|---
Substance | Overdose, underdose, wrong substance
Procedure | Accidental perforation of an organ during a procedure
Device | Dislodgement, malfunction
Other cause | Mismatched blood; Patient dropped during transfer from OR table

**Examples for the ICD–11 Quality and safety coding model**

The ICD–11 quality and safety coding model is demonstrated by the examples in the following table.

**Table 2: Demonstration of the quality and safety model using examples**

<table>
<thead>
<tr>
<th>Example</th>
<th>Criterion</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Case</td>
<td>A woman has been admitted to hospital for stabilisation of diabetes. She is erroneously prescribed three times the usual dose of an antidiabetic medication. The abnormally high dose is given, and the patient has a hypoglycaemic episode</td>
<td>Hypoglycaemia in the context of diabetes, unspecified 5A21 Drugs, medicaments or biologic substances associated with injury or harm in therapeutic use PL00; Medication (use additional code, if desired) - Antidiabetic XM8S35 Mode Overdose of substance as mode of injury or harm PL13.0 Cluster 5A21/PL00&amp;XM8S35/PL13.0</td>
</tr>
<tr>
<td>2 Case</td>
<td>Patient presented to hospital with subdural haematoma. INR found to be supratherapeutic while on correct dosage of warfarin.</td>
<td>Non-traumatic subdural haemorrhage 8B02 Drugs, medicaments or biological substances associated with injury or harm in therapeutic use PL00; Medication (use additional code, if desired) - Warfarin XM86W0 Mode Drug-related injury or harm in context of correct administration or dosage, as mode of injury or harm PL13.2 Cluster 8B02/PL00&amp;XM86W0/PL13.2</td>
</tr>
<tr>
<td>3 Case</td>
<td>A man visits a primary care physician for removal of a skin lump, mainly to exclude the possibility of malignancy. The lesion is excised and the wound is sutured. It later becomes known that the physician had Hepatitis C and the patient has now contracted this disease.</td>
<td>Acute hepatitis C 1E50.2</td>
</tr>
<tr>
<td>Case</td>
<td>An elderly woman is admitted due to a fractured neck of femur. Surgical fixation is undertaken. The operative site bleeds heavily the day after surgery, requiring return to theatre.</td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Harm</td>
<td>Haemorrhage not elsewhere classified MG27</td>
<td></td>
</tr>
<tr>
<td>Cause</td>
<td>Musculoskeletal procedure associated with injury or harm, open approach PK80.80 (Orthopaedic surgical procedures are included here)</td>
<td></td>
</tr>
<tr>
<td>Mode</td>
<td>Unspecified mode of injury or harm associated with a surgical or other medical procedure PL11.Z (Note: Select PL11.Z because case documentation does not mention any specific mode or mechanism by which haemorrhage occurred)</td>
<td></td>
</tr>
<tr>
<td>Cluster</td>
<td>MG27/PK80.80/PL11.Z</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case</th>
<th>A 63 year old man had a left knee-replacement less than a year ago, because of arthritis. The implanted device has come loose, resulting in pain and reduced function.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harm</td>
<td>Pain in joint ME82; Specific Anatomy (use additional code, if desired) Knee joint XA8RL1; Laterality (use additional code, if desired) – Left XK8G</td>
</tr>
<tr>
<td>Cause</td>
<td>Orthopaedic devices associated with adverse incidents, prosthetic or other implants, materials or accessory devices PK99.2</td>
</tr>
<tr>
<td>Mode</td>
<td>Dislodgement, misconnection or de-attachment, as mode of injury or harm PL12.4 (Note: Select PL11 because case documentation does not mention any specific mode or mechanism by which the anastomotic leak occurred)</td>
</tr>
<tr>
<td>Cluster</td>
<td>ME82&amp;XA8RL1&amp;XK8G/PK99.2/PL12.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case</th>
<th>A man has bowel cancer. Abdominal surgery was done several days ago to resect the affected part of the colon and re-join the preserved part of the colon. The anastomosis has leaked, and required surgical revision.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harm</td>
<td>Postsurgical leak NE81.3 (anastomosis leak is an index term)</td>
</tr>
<tr>
<td>Cause</td>
<td>Gastrointestinal, abdominal, or abdominal wall procedure associated with injury or harm in therapeutic use PK80.3</td>
</tr>
<tr>
<td>Mode</td>
<td>Other specified mode of injury or harm associated with surgical or medical procedure PL11.Y. (Note: Select PL11 because case documentation does not mention any specific mode or mechanism by which the anastomotic leak occurred)</td>
</tr>
<tr>
<td>Cluster</td>
<td>NE81.3/PK80.3/PL11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Case</th>
<th>Refractory urinary tract infection due to chronic indwelling catheter.</th>
</tr>
</thead>
</table>
Harm Urinary tract infection, site and agent not specified GC08.Z
Cause Gastroenterology or urology devices associated with adverse incidents, urinary catheter PK93.10
Mode Other specified mode of injury or harm associated with a surgical or other medical device, implant or graft PL12.Y (Note: Select PL12.Y because none of the more specific mode types appears to lead to infection of device)
Cluster GC08.Z/PK93.10/PL12.Y

**Case**
Elderly patient falls out of bed in a hospital and suffers a left hip fracture. The documentation describes that the nurse forgot to put the bedrails in place which lead to the patients fall.

Harm Fracture of neck of femur, unspecified NC72.2; Laterality (use additional code, if desired) - Left XK8G
Cause Other health care related causes of injury or harm PL10
Mode Fall in health care PL14.E
Cluster NC72.2&XK8G/PL10/PL14.E

**Case**
Patient received an infusion of red blood cells and develops severe rigors that subside after an hour. It was discovered that there was a blood mismatch (not ABO or Rh incompatibility).

Harm Other serum reactions NE80.3
Cause Other health care related causes of injury or harm PL10
Mode Mismatched blood used in transfusion PL14.3
Cluster NE80.3/PL10/PL14.3

**Case**
Right sided pneumothorax caused by mechanical ventilation in an intensive case setting

Harm Pneumothorax, unspecified CB21.Z; Laterality (use additional code, if desired)-Right XK9K
Cause Ventilation associated with injury or harm in therapeutic use PK81.0
Mode Unspecified mode of injury or harm associated with a surgical or other medical procedure PL11.Z

Note that in each of these examples, a mode/mechanism of harm is coded alongside the cause of harm code for all cases. This is true, even when a mode of harm is not apparent. In the latter situations, a code for ‘mode or mechanism of injury unspecified’ should be selected, for any of substance-related harm, procedure-related harm, or device-related harm. For the ‘other health care related causes’ one needs to code the harm (from anywhere in the classification) followed by code PL10 Other health care related causes of injury or harm followed by the appropriate code from category PL14 Mode of injury or
harm associated with other health care related causes (where there are several mode options).

**Considerations around distinguishing poisoning versus overdose of drugs, medicaments or biologic substances in the clinical context**

It is important to make a distinction between an overdose in the context of clinical care and a poisoning that is not in a clinical context. The former would be coded using codes in the ‘Causes of health care related harm or injury’ section of Chapter 23, whereas poisonings would be coded in the ‘Unintentional causes’ or ‘Intentional self-harm’ sections of Chapter 23.

The following scenarios will help to illustrate the distinction:

1. An adult medical inpatient receives an overdose of a prescribed medication, because an excess dose is inadvertently injected by a nurse.
2. An adult inadvertently takes an overdose of their own prescribed medication, because the physician wrote the prescription incorrectly.
3. An adult inadvertently takes an overdose of their own prescribed medication, because they were given incorrect instructions by the pharmacist.
4. An adult inadvertently takes an overdose of their own prescribed medication, because they misunderstood instructions on the pill bottle and verbal instructions given to them by both the pharmacist and their doctor.
5. An adult inadvertently takes an overdose of their own prescribed medication, and it is unclear from documentation or case investigation as to why a mistake was made.
6. An adult intentionally takes an overdose of their own prescribed medication with intent for self-harm.
7. A child ingests a number of pills from his mother’s prescribed pill bottle and becomes somnolent.

Scenario 1 is clearly an overdose arising from an error in a health care context, while scenario 7 is clearly a poisoning of a child who is not in a therapeutic health care context.

Scenario 6 should also be coded as an episode of poisoning, because the pills were not taken with a therapeutic intent, but with intent for self-harm (the ‘Intentional self-harm’ concept overrides other considerations).

Scenarios 2 and 3 are overdoses arising from problems in a health care context (and are coded using the ‘Causes of health care related harm or injury’ codes). In both scenarios, the context is one of medication treatment, and the actions of health care providers.

Scenarios 4 & 5 are less straightforward, though rather common in patient care. The context of the medication use is still clearly that of treating a medical condition and the fact that the medication was prescribed to the patients makes it a context of therapeutic use (provided there is no mention of intentional self-harm). Because of the therapeutic context, these scenarios should be coded using the ‘Causes of health care related harm or injury’ codes, rather than poisoning codes.
Instructions on when the three-part quality and safety model applies, and when it does not

The above sections and examples describe scenarios in which an aspect of care (a drug, procedure, device, or other aspect of care) has been causally linked to a condition that a patient has developed. In many instances, however, conditions arise in the health care setting without explicit documentation suggesting a causal link to an aspect of care. Specific examples include:

- pulmonary embolism arising 2 days after a surgical procedure
• atrial fibrillation after surgery
• low blood pressure 1 day after administration of a drug
• pneumonia developing on day 4 of a hospital stay
• urinary tract infection arising in hospital without any mention of catheters

In each of these examples, the three-part model for quality and safety would NOT apply if there is no explicit documentation asserting a causal link to another aspect of care, whether that is a drug, procedure, device, or other aspect of care. Importantly, the mere mention of a surgical procedure or a drug administration in the above examples, does NOT mean that those factors played a causal role, because the clinical statements merely declare timing of the diagnosis, with descriptive words like ‘after’, ‘following’, ‘occurring on day XX’. In such cases, the correct coding of the conditions would be to code the medical condition from any chapter from ICD-11 along with an extension code for timing (in particular, the extension codes for diagnoses arising during a hospital stay, plus or minus if desired the extension codes for intraoperative or postoperative timing of a diagnosis).

The above examples would be coded in the following way:

• BB00.0 Acute pulmonary thromboembolism &XY69 Developed after admission &XY7V Postoperative
• BC81.3 Atrial fibrillation &XT5R Acute &XY69 Developed after admission &XY7V Postoperative
• BA2Z Hypotension, unspecified &XY69 Developed after admission
• CA40.Z Pneumonia, organism unspecified &XY69 Developed after admission
• GC08.Z Urinary tract infection, site and agent not specified &XY69 Developed after admission

2.25.5.1 Causation in the context of quality and safety

There are nuances of language in documentation that will indicate whether there is a causal link between a cause and harm.

**Connecting terms implying a causal relationship**

A causal relationship is strongly suggested by the following terms:

<table>
<thead>
<tr>
<th>Terms</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>as (a) complication of, complicated by, complicating, complication(s) of</td>
<td>-</td>
</tr>
<tr>
<td>as a cause of, cause of, caused, caused by, causing</td>
<td>-</td>
</tr>
<tr>
<td>as a result of, resulted in, resulting in, with resultant, with resulting</td>
<td>-</td>
</tr>
<tr>
<td>because of</td>
<td>-</td>
</tr>
<tr>
<td>due to</td>
<td>-</td>
</tr>
<tr>
<td>from</td>
<td>-</td>
</tr>
</tbody>
</table>
induced, induced by -
leading to, led to -
related to, -
precipitated by -
producing -
secondary to -
likely related to Coding judgment call. However, the clinician is making a causal inference with this term
possibly secondary to, probably secondary to Coding judgment call. However, the clinician is making a causal inference with this term
may be the reason for Coding judgment call. However, the clinician is making a causal inference with this term

**Connecting terms where the causal relationship is unclear**

Occasionally there may be connecting terms that perhaps hint at causation, but without explicit assertion of a causal link. Examples are shown below. In these circumstances coders need to look for supplementary wording or ancillary information that implies causation.

**Terms**

Associated with
Accompanied by
Incidental to

**Connecting terms NOT implying a causal relationship**

In clinical documentation, terms are often used to describe a temporal association. The many terms listed in the preceding table (from 'connecting terms implying a causal relationship') are connecting terms that do suggest a causal association that is typically also a temporal association. In contrast, there are a number of terms that describe only temporal associations. Examples of such terms are listed below:

**Terms**

after
also
and
during
with
arising in or during
consistent with
followed by, following
incurred after/during/in/when
occurred after/during/in/when/while
postoperatively, postoperative, occurred post-op

If connecting terms of this sort appear in clinical documentation without any of the causal connectors discussed earlier, it would be best to avoid using the three-part quality and safety model.

Terms like ‘postoperative’, ‘post-op’, ‘postprocedural’, etc., are a special situation because these have historically been considered, in some coding systems to be indicative of a causal link. Yet, we have shown specific examples above where conditions such as urinary tract infection, pneumonia, and atrial fibrillation may temporally arise after surgery, without necessarily being caused by surgery. It is for this reason that the guidelines presented here are instructing coders to look for explicit causal connections. (Importantly, postoperative conditions such as pneumonia, urinary tract infection, and atrial fibrillation can still be coded with informative extension codes that speak to timing – i.e. ‘arising during hospital stay’ and/or ‘postoperative’–and permit the derivation of adverse events in indicators in data analysis).

Other specific situations where the clinical context implies a causal relationship

There are some clinical situations where there may not be connecting terms that explicitly point to causation, but where the clinical circumstances nevertheless are clearly pointing to causation. Some examples appear below:

Specific situations
failed device
infected device
loose screws
postprocedural bleeding
post-op wound infection
dehiscence
wound hematoma

In each of these, it is clear that the situation would not have occurred in the absence of a procedure or a device problem. Accordingly, the three-part quality and safety model should be applied.

In contrast, conditions such as postoperative pneumonia or postoperative pulmonary embolism, or postoperative atrial fibrillation are different than the specific situations listed in the table above. This is because problems such as pneumonia, pulmonary embolism, or atrial fibrillation can be triggered by factors beyond the surgical procedure (i.e., different from a ‘wound’ that is without question caused by surgery).
2.25.5.2 Chronic postprocedural conditions

There are many chronic clinical 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 lymphedema syndrome, post-irradiation hypothyroidism. In many instances, codes for such chronic post procedural conditions are located in ICD-11 within various body system chapters.

Examples include:

- BE10 Postcardiotomy syndrome
- 5D40.Z Postprocedural hypothyroidism, unspecified
- GC72 Postprocedural urethral stricture
- GC70 Postoperative adhesions of vagina

These are, by their very nature, somewhat precoordinated codes that capture both the notion of a clinical condition and the notion of it being caused by a procedure. Some may wish to simply use such codes on alone without any clustering. However, we recommend that coders still use the 3 part model with such codes when possible, because the model allows one to add more specificity of clinical detail around the specific type of surgical procedure that caused the condition, and also potentially the mode through which the procedure caused the condition.

Example 1: Urethral stricture due to previous radiation for treatment of prostate cancer. Code to GC72 Postprocedural urethral stricture Further detail can be added to the code GC72 with the addition of: PK81.C Radiation therapy associated with injury or harm in therapeutic use PL11.Y Other specified mode of injury or harm associated with a surgical or other medical procedure Cluster: GC72/PK81.C/PL11.Y

Adverse events and circumstances in health care that do not cause actual injury or harm

There are many instances in the context of health care where things happen to patients, and where problems arise, but where there is no actual adverse consequence to the patient as a recorded medical condition. Specific examples include:

- A fall in the health care setting without injury or fracture
- An incorrect drug administered without harm to patient
- A drug given to the wrong patient without harm to patient
- A delay in drug administration without negative effect on clinical course
- Documented failure of sterile precautions in a surgical procedure without ensuing infection
- Dislodged orthopaedic device without symptoms or problems
- Inadvertent needle stick without documented injury or harm

In these circumstances, codes should be chosen from Chapter 24 Factors influencing health status or contact with health services in the section of codes entitled 'Health care related circumstances influencing the episode of care, without documented injury or harm'. These
codes are organised using the four categories of health care related harm that appear in Chapter 23 External causes of morbidity or mortality (drugs, devices, procedures and other health care related causes), but with the important distinction that the circumstances being described through coding did NOT cause actual harm to the patient.

The above examples would be coded in the following way:

- QA8E Fall in health care without documented injury or harm
- QA72 Incorrect substance without documented injury or harm
- QA8D Patient received diagnostic test or treatment intended for another patient without documented injury or harm
- QA8B Delayed treatment without documented injury or harm
- QA52 Failure of sterile precautions without documented injury or harm
- QA62 Dislodgement, misconnection or de-attachment without documented injury or harm
- QA8F Needle stick without documented injury or harm
Figure 1: Summary algorithm for coding events and conditions that arise in the context of health care

2.25.5.3 Recommendations for data capture and organisation

Information systems must be capable of capturing the three components, and marking the three codes as belonging to the same cluster (see also instructions for postcoordination and cluster coding).
2.25.5.4 Recommendations for use and interpretation of coded data

These recommendations apply to the use of records in which data were captured and organised as recommended in the previous section:

- Select records involving a quality or patient safety event: these are all records with any quality or patient safety harm code.
- Summarise types of quality or patient safety harm represented in a set of records: select records with any quality or patient safety harm code.
- Summarise the distribution of quality or patient safety Harm codes present in the selected set.
- Summarise quality or patient safety causes of harm in a set of records.
- Summarise quality or patient safety mechanisms in a set of records.
- Summarise quality or patient safety harm in a set of records.

2.26 Morbidity for research purposes

The morbidity use case for ICD–11 includes a number of situations where the primary goal is to work in an academic research paradigm to extract information from ICD–11 coded data to study burden of disease, clusters of disease, geographic distribution of diseases, and health impacts associated with various diseases. The research paradigm is of course most relevant when it has translational relevance to either health system policy or public health policy, in which case the research paradigm, labelled as such, becomes indistinguishable from applied morbidity analyses conducted for the purposed of health planning. Nevertheless, explicit mention is made here of the widespread use of ICD–11 coded data in a research paradigm, recognising that this is one of the significant drivers for developing a clinically rich and detailed classification system, with novel features and coding rules that enhance the classification’s potential as a research tool.

2.26.1 Morbidity in primary care

Primary care has been defined as essential front line health care based on practical, scientifically sound, and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and the country can afford to maintain. Of relevance to primary care, ICD–11 includes many diagnostic and disease entities that are common reasons for care at the first level of health services.

ICD–11 has various primary care tabular lists depending on the resource level. A primary care tabular list for low resource settings enables simple reporting of broader concepts. An International Classification of Disease for Primary Care (ICD-PCI) has been developed by the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA), through its WONCA International Classification Committee (WICC). WONCA and the WHO have collaborated in the development of the ICD-11-PCL, a tabulation from the ICD-11 JLMS classification, by filling in previous gaps in the ICD for primary care use and selecting the classes from the JLMS
important for primary care The new version of WONCA’s International Classification of Primary Care and the ICD–11 will share as good as possible a common subset of categories.

The ICD–11 has a simplified version shaped for low resource primary care settings. For high resource settings, the tabular list for mortality and morbidity statistics contains elements relevant to primary care and is thus able to be used in high resource environments for primary care, as well as for secondary and tertiary care.

2.26.2 Casemix groupings

In casemix grouping systems such as the Diagnosis Related Group (DRG) system, ICD based data are used for reimbursement or resource allocation. Such systems are used in systematic fashion (nationwide) in over 22 countries for reimbursement or resource allocation.

The assignment of patient cases to groups is based on an algorithm using, in addition to coded diagnosis information, coded procedures, and a number of other variables. The scientific basis of the casemix systems is grounded in health care economics and in the theory of medicine. Since casemix systems are an essential part of administration in countries that use them, smooth transfer to the new revision of the ICD in these systems is essential for the approval and implementation of the new revision.

ICD–11 has been developed to accommodate the different levels of detail that are required in diagnosis-related casemix groupings, in close collaboration with the custodians of the diverse casemix systems. Joint use in a specific casemix system is driven by the relevant grouper algorithms, and partly also by national legislation. For matters of international comparability of hospital activity, it is recommended that countries adopt the new WHO definition of main diagnosis and country implementations of ICD–11 apply the new extension codes for the type of diagnosis that are provided with ICD–11. For international tabulations, the resulting diagnoses are listed with the aid of the International Shortlist for Hospital Morbidity Tabulation.

2.26.3 Traditional Medicine conditions - Module 1 (TM1)

Traditional Medicine (TM) is an integral part of health services provided in many countries. International standardisation by including Traditional Medicine within the ICD allows for measuring, counting, comparing, formulating questions and monitoring over time. ICD-11’s chapter on Traditional Medicine disorders and patterns (TM1) is designed to be used in conjunction with the Western Medicine concepts of ICD Chapters 1-25 or on its own.

As with other ICD chapters, the TM1 chapter is not judging TM practice or the efficacy of any TM intervention. As a tool for classifying, diagnosing, counting, communicating and comparing TM conditions, it will also assist research and evaluation to assess the safety and efficacy of TM.

2.26.4 Use in Traditional Medicine

Reporting at regional, national and international levels:
• Counting episodes of care for Traditional Medicine disorders and/or patterns in the same way as for Western Medicine diseases for morbidity data reporting purposes
• Counting episodes of care by Traditional Medicine practitioners who may use a combination of Western Medicine and Traditional Medicine terminology
• Describing and quantifying utilisation of Traditional Medicine services and reasons for encounter
• Monitoring use of resources for Traditional Medicine services
• Standardising definitions of disorders and patterns among TM clinicians, practitioners and coders

Research:
• On safety and efficacy of Traditional Medicine interventions - evidence based research
• Clinical research within TM framework and integrating WM with TM
• On interrelationships between WM diseases, TM disorders and patterns
• To study treatment patterns and outcomes for specific disorders and patterns using ICD-11 in conjunction with country specific procedure classifications and the TM component of the intended International Classification of Health Interventions (ICHI)

Casemix reimbursement and insurance:
• There are precedents in China, Japan, and Korea for use of existing TM classifications (with or without WM concepts) for reimbursement of hospitals and for insurance claims.
• Incorporating TM as a chapter of ICD-11 allows much greater scope for describing patient condition (diseases, disorders (TM1) and patterns (TM1) across the WM and TM1 chapters) as well as complications and comorbidities and for clinical costing measures.

Quality and safety of care:
• Standardising use of codes reflecting quality and safety of care between WM diseases and TM1 disorders will allow TM practitioners to interpret data from ICD-11 on quality, safety, and efficacy of care.

Education:
• Educating TM practitioners in regard to standardisation of diagnosis
• Educating TM clinicians and coders in application and interpretation of ICD-11 data.

Standardising terminology for use in electronic health records:
• To enable more consistent and efficient recording and extraction of data
• To allow computer assisted coding of TM1 disorders and patterns

2.26.5 Traditional Medicine section of ICD-11 update and maintenance:
• Through user feedback, use of TM1 and WM codes and need for coding guidelines will be monitored. This will bring Traditional Medicine practitioners and users into the
WHO-FIC mechanisms to update ICD-11 and ensure its clinical and technological currency.

2.26.6 Coding instructions for Traditional Medicine conditions - Module 1 (TM1)

2.26.6.1 General principles & rules for coding Traditional Medicines

Codes from the Traditional Medicine chapter can be used across settings (hospital inpatient or ambulatory care in hospital or community) but must not be used for reporting cause of death. When coding in primary care, disorders and patterns may not be fully developed so that it may be more feasible to identify reason for encounter rather than main condition and associated conditions.

General principles:

- Consult all parts of the patient record including discharge summary, history, physical examination, investigations, laboratory data, treatments and final diagnoses
- Coding should relate to reasons for treatment during this episode and need not describe the whole patient’s lifetime history unless a past condition affects current care
- Be as specific and explicit as possible, using codes to represent aetiology, pathology and manifestations of TM condition
- Use codes from relevant chapters of the ICD to match the clinical disorders noted on the patient record
- Code threatened TM conditions (i.e. those not well defined or not manifest)

2.26.6.2 Choice of integrated coding with other chapters of ICD-11 or stand-alone coding from TM1 chapter

Traditional medicine practitioners or clinical coders may use the codes in the TM1 chapter in two ways:

- in conjunction with other chapters of ICD-11 (integrated coding)
- as a stand-alone chapter choosing codes from within the TM Chapter 26

This choice depends on the legitimate coding practice of each country and the educational background of TM practitioners and TM coders (i.e. WM education is needed for WM coding and TM education for TM). It may also be influenced by the setting and regulatory context in which TM1 codes are being applied. Wherever possible, it is recommended that TM1 codes should be combined with those from the WM chapters to enable international comparison.

2.26.7 Using the TM1 chapter with other chapters of ICD-11

This option takes into account the country and practice variations of using a code for WM disease or TM1 disorder and/or a TM1 pattern code for a given clinical picture. In this case, codes should be applied for WM diseases and/or TM1 disorder from Chapters 01-26 plus pattern(s) (TM1) from Chapter 26.
Coding

1. Read the patient summary and medical record.
2. Select WM diagnosis/diagnoses, TM1 disorder(s) (TM1), and/or pattern(s) (TM1) to be coded.

<table>
<thead>
<tr>
<th>Options</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. WM diagnosis alone</td>
<td>Asthma</td>
</tr>
<tr>
<td>b. WM diagnosis with TM1 pattern</td>
<td>Asthma</td>
</tr>
<tr>
<td>c. WM diagnosis with TM1 disorder</td>
<td>Asthma</td>
</tr>
<tr>
<td>d. WM diagnosis with TM1 disorder and TM1 pattern</td>
<td>Asthma</td>
</tr>
<tr>
<td>e. TM1 disorder with TM1 pattern</td>
<td>Wheezing disorder (TM1)</td>
</tr>
<tr>
<td>f. TM1 disorder alone</td>
<td>Wheezing disorder (TM1)</td>
</tr>
<tr>
<td>g. TM1 pattern alone</td>
<td>Turbid phlegm accumulation in the lung pattern (TM1)</td>
</tr>
</tbody>
</table>

You may choose more than one disorder (TM1) and more than one pattern (TM1) from the TM chapter.

3. Consult the electronic Coding Tool or relevant Alphabetic Indexes for WM and TM1 entries
4. Go to tabular list for the relevant code. Take note of inclusions and exclusion notes and textual definitions.
5. Assign the appropriate code and follow any specific guidelines for that code.
6. A possible scenario may be either for choice of disorders (TM1) or WM diseases as main condition and/or for associated disorders (TM1) or WM diseases. In this scenario, codes may be chosen for disease or diseases from Chapters 1-25 of ICD-11 plus disorder(s) (TM1) from Chapter 26. In either case, pattern(s) (TM1) from Chapter 26 may be used in association with the codes for disease or disorder (TM1). To code from Chapters 1-25, consult the Coding Tool or Alphabetic Index for Western Medicine chapters to assign code. To code from Chapter 26, consult the Coding Tool or Alphabetic Index for Traditional Medicine.

This use of the entire ICD-11 (Chapters 01-26) for Traditional Medicine may be especially relevant for neoplasms and injury, chronic and complicated conditions, sub-clinical or
constitutional complaints, external cause of injury and adverse reaction. The electronic Coding Tool has a feature of switching on or off the combined use of WM and TM1 codes so that there is only one place to search for WM diseases or TM1 disorders and patterns.

**Example:**

<table>
<thead>
<tr>
<th>Options</th>
<th>Examples</th>
<th>ICD-11 Coding Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. WM diagnosis alone</td>
<td>Asthma</td>
<td>CA23.32</td>
</tr>
<tr>
<td>b. WM diagnosis with TM1 pattern</td>
<td>Asthma</td>
<td>CA23.32</td>
</tr>
<tr>
<td>c. WM diagnosis with TM1 disorder</td>
<td>Asthma</td>
<td>CA23.32</td>
</tr>
<tr>
<td>d. WM diagnosis with TM1 disorder and TM1 pattern</td>
<td>Wheezing disorder (TM1)</td>
<td>SF81</td>
</tr>
<tr>
<td>e. TM1 disorder with TM1 pattern</td>
<td>Wheezing disorder (TM1)</td>
<td>SF81</td>
</tr>
<tr>
<td>f. TM1 disorder alone</td>
<td>Wheezing disorder (TM1)</td>
<td>SF81</td>
</tr>
<tr>
<td>g. TM1 pattern alone</td>
<td>Turbid phlegm accumulation in the lung pattern (TM1)</td>
<td>SF86</td>
</tr>
</tbody>
</table>

**Sequencing**

If there are both Western Medicine diseases and Traditional Medicine disorders (TM1), use either as main condition, depending on whichever meets the definition of main condition. Also, consult this section for details on allocation of main condition in different scenarios.

‘The definition of main condition is to be applied for both inpatients and outpatients. (Importantly, and as mentioned earlier, this is a change in the WHO’s main condition definition that existed in ICD-10). Record/identify as the main condition the one condition that is determined to be the reason for admission, established at the end of the episode of health care.’

Where both WM disease and TM1 disorder qualify equally as main condition, code the WM disease first. Pattern(s) (TM1) should follow either the Western Medicine disease or disorder (TM1).

**How to code for Traditional Medicine with WM and TM1 codes**
National and international coding

There may be some variation between countries in the use of WM diseases together with disorders (TM1) and patterns (TM1). Some countries may wish to use WM diseases from Chapters 1-25 with patterns (TM1) from Chapter 26, or to use disorders (TM1) from Chapter 26 with secondary diagnoses from Chapters 1-25 plus pattern(s) (TM1) from Chapter 26. Traditional Medicine practitioners can work with colleagues in other countries and with Western Medicine practitioners in their own country to make ICD-11 a positive tool in understanding their own practice and contributing to information not currently available about Traditional Medicine utilisation and outcomes.

Use of Extension Codes and Cluster Codes for Traditional Medicine

TM practitioners are encouraged to use codes from Section X ‘Extension codes’ to describe additional features of a disorder or pattern and its characteristics. Also, the new feature in ICD-11 of clustering related diagnoses will be helpful in linking disorders and patterns.

Examples

A. Injuries using Chapters 1-26:
   - **Main condition**: from Chapter 26. SC5Z Joint impediment disorders (TM1), unspecified, or condition from the injury chapter should be used together with codes from the External Cause chapter
   - a pattern (TM1) code, if appropriate.

B. Disorders such as migraine are coded (using Chapters 1-26) as:
   - **Main condition** SD10 Migraine disorder (TM1), in conjunction with a
     - Disorder (TM1) from Chapter 26 SD1Z Headache disorders (TM1), unspecified
     - and/or
     - pattern (TM1) such as SH71 Small yin type yang depletion pattern (TM1)

C. Diseases such as diabetes mellitus are coded using Chapters 1-26 as:
   - **Main condition** Type 2 diabetes mellitus, 5A11
   - Wasting thirst disorder (TM1), SH71
   - Large Yin type Dryness Heat pattern (TM1), SH63

or from Chapter 26 alone as:
   - Main condition Wasting thirst disorder (TM1), SD71
   - Large Yin type Dryness Heat pattern (TM1), SH63
2.26.8 Using the TM1 chapter as a stand-alone choosing codes from within the TM1 Chapter

In this case, codes may be applied for disorder(s) (TM1) from the TM1 chapter plus pattern(s) (TM1) from the TM1 chapter. However, there may be circumstances where a disorder (TM1) code may be applied alone or where a pattern (TM1) code may be applied alone.

Coding

1. Read the patient summary or medical record.
2. Select disorder(s) (TM1) and/or pattern(s) (TM1) to be coded.
   
   Options:
   
   a. TM1 disorder with TM1 pattern
   
   b. TM1 disorder alone
   
   c. TM1 pattern alone
   
   d. You may choose more than one disorder or pattern.

3. Consult keyword in electronic Coding Tool or Alphabetic Index for TM and choose appropriate entry and code (take note of lead terms and sub-lead terms plus ‘see’ and ‘see also’ references). Using the hierarchical order of the key word or index is critical in finding the relevant code.

4. Go to tabular list for that code. Take note of inclusion and exclusion notes and textual definitions or diagnostic criteria.

5. Assign clinically appropriate code and follow any specific guidelines for that code.

Sequencing

In the first place, a ‘main condition’ code is selected using the definition quoted above.

As well as main condition, it is important to code all additional current disorders (TM1) or patterns (TM1) documented in the patient record to ensure that they reflect a complete picture of the patient’s condition for the episode of care. In most Traditional Medicine cases there will be a disorder (TM1) and a pattern (TM1). However, it may be necessary to code disorder (TM1) alone or pattern (TM1) alone. However, when combined disorder (TM1) and pattern (TM1) are both coded, choose disorder (TM1) as the main condition.

The most usual scenario is to have both disorder and pattern, with codes listed in order so that the first (disorder (TM1)) complies with the definition of main condition. If it is not relevant to code both a disorder (TM1) and a pattern (TM1), either may be coded alone. If it is not possible to code a disorder (TM1), pattern (TM1) may be sequenced as the main condition.

How to code for traditional medicine using TM1 chapter alone
National versus international rules

There may be some variation within and between countries in the way in which sections of the TM1 chapter are used. Setting may influence the stage at which a condition presents or there may be historical or local practices affecting choice and precision of coding.

Examples

- **TM1 disorder and/or TM1 pattern**
  - Precoordination examples
    - One code for two disorders
    - One code for two patterns (No codes for combination of disorder and pattern)
  - Postcoordination examples
    - 2 or more codes for one disorder
    - 2 or more codes for one pattern

2.27 General statistical recommendations

2.27.1 Data quality

To ensure high quality of data, processes for monitoring the data quality need to be implemented. This is referred to as Quality Assurance. On the following pages you will find some suggestions on how to apply Quality Assurance for mortality and morbidity statistics. As a basic principle, those responsible for the collection and analysis of data should be involved in the development of the protocol for processing and coding diagnostic data, and other items to be cross-tabulated with them. Collecting quality data requires a clearly designed workflow (from reporting to coding to analysis), and adequate training of all involved parties. In particular, all parties need to understand the process and their part in it. The basic stages of the process include:

1. **Reporting** – This is where the information starts. Identifying a condition and reporting it on a death certificate or on other medical forms needs to be carried out with accuracy and using the best possible evidence. For this reason, this part should always be carried out by a well-trained and experienced physician.

2. **Verification or reports** – Feedback loops and queries to the reporters help to further specify unclear information and illogical statements. Grouping and analysis – Both serve to aggregate data in ways that are determined by the diverse use cases. Rules and constraints should be clearly understood and communicated when carrying out the task and presenting this task.

2.27.2 Specificity versus ill-defined codes

Reported information should be coded to the highest level of detail possible. In some instances, not much information or only trivial information is available. Though the ICD
also provides categories for these cases, such information does neither really allow treatment nor prevention of disease.

2.27.3 Problems of a small population

Population size is one of the factors that need 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 will be very small and may fluctuate from year to year. For example, especially when separated for age and sex. The problems can be alleviated through 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 of data together with those for the current year and produce a ‘moving average’ figure
- using the broadest possible age groupings is recommended

The recommendations that apply for small national populations also hold 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 recognised when dealing with sample surveys, but often overlooked when the investigation concerns the health problems of special groups in a national population.

2.27.4 ‘Empty cells’ and cells with low frequencies

Regardless of the list of causes being used, it may be found that no cases for one or more listed cause 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 statistical 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.

2.27.5 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. These items may include titles of blocks and titles of three-character categories (in the four-character list of ICD–11) or 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 may be counted more than once.

2.27.6 Ethical Aspects

Confidentiality refers to the obligation of not disclosing information (data) about information delivered in confidence to third parties. This duty was codified in the
Hippocratic Oath in the 4th century BCE and is still one of the core principles of medical ethics. Any information that might allow the identification of a specific person should only be viewed by people who are authorised to do so. Authorisation means that a person is legally permitted to look at the information. E.g. medical staff, coroners, and coders are all people who can be authorised to see sensitive information.

Generally, the only way for confidential information to become publicly accessible is through legislation, statutes, and regulations. Sometimes confidential information can become public record after a certain period of time. For instance, in some regions of the world only the passage of time can render death certificates as a matter of public record and, therefore, no longer remain confidential.

The authorised supplier of confidential information must verify that the requesting person is an authorised user and determine their level of authorisation. The supplier must be aware of the level of information that can be made available to the authorised user and take appropriate steps to guard against unauthorised disclosure. The authorised user must not attempt to gain access to information which they are not authorised to view. Additionally, the user must also guard against unauthorised access to the information. This means that users must secure the confidential information and any recordings of that information in a way that prevents unauthorised viewing. They must only use the information for appropriate purposes and they must return the information as required. National legal frameworks, state and local regulations, and institutional guidelines provide specific rules and information regarding how to maintain confidentiality.

**2.27.7 Avoidance of Potential Harm**

Direct and serious harm can result from a breach of confidentiality. For example, the disclosure of sensitive information can potentially lead to stigma and discrimination against an individual. Conversely, greater harm can result from maintaining confidentiality than from not doing so. Some circumstances may require a judgement that involves balancing the harms to, against the interests of, the patient, deceased person and other relevant parties. A person may suffer ‘harm’ physically, socially, or psychologically as a result of a breach of confidentiality. A confidential diagnosis that is breached makes the patient lose faith or trust in the clinician, and the patient may then suffer abuse from another person or suffer the stigma associated with certain conditions. In other circumstances the nondisclosure of one person’s confidential information may result in another individual or a community being at risk of developing a harmful condition or being exposed to a harmful situation.

This is a difficult concept and one that must be approached in a thoughtful way. As previously mentioned, there are times when it is justifiable to give others confidential information, such as when reporting communicable disease incidence. In such cases the reporting of confidential information is usually allowed. This is an example of where the nondisclosure of a disease could result in major harm to others.

If it is necessary to disclose information, it is preferable to speak with the relevant person and let them know about the need to do so. In some cases, this may not be possible or
appropriate, and users should be guided by legal and institutional guidelines. We must seriously consider the harms that can be caused by disclosure of certain information. Some information that can be particularly sensitive includes tests for genetic disorders and diseases, incidence of communicable diseases, and HIV test results. Sometimes there are special requests for confidentiality that may require increased levels of confidentiality assurances. These special requests cannot supersede legal requirements for disclosure but should be respected when possible.

2.27.8 Security of Privacy – Confidentiality

Privacy relates to protecting an individual’s control over what personal information and decisions may or may not be shared with others. For instance, when a physician examines or speaks with a patient it is usually done in a non-public area so that the information given to the physician by the patient cannot be heard by anyone else. It also enables the physician to give a patient their diagnosis in private. Data are forwarded with consent by the patient. Security of privacy and confidentiality of health (and other) data are usually addressed by national laws and regulations.

2.28 Recommendations in relation to statistical tables for international comparison

Recommendations standardise the presentation of the data which allows international comparison of the different countries or regions.

2.28.1 The recommended special tabulation lists

There are standard ways of listing causes coded according to the ICD, and there are formal recommendations concerning lists for tabulation that allow for international comparison. In other tabulations, the hierarchical structure of the ICD allows considerable flexibility for possible groupings. For mortality the ICD includes special tabulation lists in which are intended for circumstances in which the four-character list is too detailed, and are designed so that international comparison of significant diseases and groups of diseases is not compromised by different groupings having been used in different countries.

The special tabulation lists are:

- List 1 General mortality condensed list (103 causes)
- List 2 General mortality selected list (80 causes)
- List 3 Infant and child mortality condensed list (67 causes)
- List 4 Infant and child mortality selected list (51 causes)
- List 5 General morbidity (298 causes)
- List 6 International Shortlist for Hospital Morbidity Tabulation (ISHMT) (148 groups)
- List 7 Infectious diseases by agent condensed list
- List 8 SDG
- List 9 WHO Verbal autopsy list
Use of prefixes to identify the mortality lists

Use of the numerical prefixes prevents confusion between the special tabulation lists, as the ICD four-character codes have a letter in the second position. Where an adapted list is used for national or sub-national purposes, an alternative identifying prefix should be used.

The condensed lists for mortality

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...'. Together, these lists complete the coverage of the respective chapter. They condense the full range of ICD four-character codes into a manageable number of items for numerous publication purposes.

The selected lists for mortality

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.

Locally designed lists for mortality

For most countries, the four special tabulation lists from List 1 to 4 provide enough information on the most important diseases and external causes of death. They also facilitate comparison over time and observation of shifts in the relative frequencies as health programmes take effect, of e.g. infectious diseases and degenerative diseases. They permit comparison between sub-national areas and population sub-groups. In addition, they make meaningful international comparisons of causes of death possible.

When there is no need for international comparison, lists similar to the special tabulation lists can be designed for local use. The ICD rubrics in such lists can be selected and grouped in any way. Special lists would be needed, for example, for monitoring 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, a trial run is helpful by counting the number of cases for each four-character category. In such way, it can be determined which conditions are appropriate for broad grouping, and where subcategories would be necessary.

Where a local list is constructed, the key to the condensed categories should contain the same four- (or five-) character codes of the core classification.

The general list for morbidity

The morbidity special tabulation list is intended as a basis for national lists and for inter-country 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 – notable aggregation of some items and expansion of items relating to Chapter 21 'Symptoms, signs or clinical findings, not elsewhere classified' and
Chapter 24 ‘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 four (or five) character codes of the core classification. The list has been designed for international comparisons of hospital morbidity statistics. This concise list allows for comparison of hospital activity, independent of health systems, and based on the version of the ICD in use. The conditions have been selected in a way that they can always be treated in an admission of at least 24 hours. If, after examination of the frequencies of the ICD four-character rubrics, it is necessary to expand the list, some of the items within ICD categories can be subdivided according to the core classification or even to the five-character level. If the recommended list is 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.

2.28.2 International morbidity reporting

International morbidity reporting and comparison of data among different countries requires internationally agreed definitions of:

- inpatient, recoding of day-patients, outpatient
- hospital
- treatment episode
- reason for encounter used instead of diagnosis

2.28.2.1 Minimum data set and markup for cluster coding

A minimum data set suitable for international comparison would include age, sex, main diagnosis, (reason for admission after assessment at the end of the stay), and health sector (hospital, practitioner, other), and is ideally accompanied by the definitions in place for the variables mentioned above. The markup for international reporting of postcoordinated codes in clusters will follow the specifications below:

- a slash ‘/’ separates 2 stem codes
- an ‘&’ links stem codes with extension codes
- a cluster may consist of a single code or One condition with additional detail in one cluster
- stem code&extension code&extension code

Two unrelated conditions will have two clusters:

- stem code - stem code

Two clusters with multiple codes:

- stem code&extension code/stem code&extension code&extension code

Example 1:
Diabetes mellitus / Diabetic retinopathy

Example 2:

Multiple fractures of forearm / fracture of shaft of ulna & compound fracture / fracture of shaft of radius & compound fracture / external cause code

### 2.28.3 Presentation of 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:

- the detailed list of four-character categories, with or without five-character subcategories;
- one of the special tabulation lists for mortality;
- the special tabulation list for morbidity.

(b) Age classification for general purposes:

- under 1 year, single year to 4 years, 5-year groups from 5 to 84 years, 85 years and over;
- 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.
- 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:

- each major civil division;
- each town or conurbation of 1,000,000 population and over, otherwise the largest town with a population of at least 100,000;
- a national aggregate of urban areas of 100,000 population and over;
- a national aggregate of urban areas of less than 100,000 population;
- a national aggregate of rural areas.

**Note 1.** Statistics relating to (c) should include the definitions used of urban and rural.

**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.
2.28.3.1 Tabulation of causes of death

Statistics of causes of death for a defined area should be in accordance with recommendation 'Statistical tables' (a)(1) above, or, if this is not possible, with recommendation 'Statistical tables' (a)(2). Deaths should preferably be classified by sex and age group as in recommendation 'Statistical tables' (b)(3). Statistics of causes of deaths for the areas in recommendation ‘Statistical tables’ (c) should comply with recommendation 'Statistical tables' (a)(2), or if this is not possible, with recommendation ‘Statistical tables’ (a)(3). They should preferably be tabulated by sex and age group as in recommendation 'Statistical tables’ (b)(2).

2.28.3.2 Injury mortality

Injury mortality traditionally distinguishes between injuries that are caused by:

- Interpersonal violence and sexual abuse
- Collective violence including wars, civil insurrections and riots
- Traffic collisions
- Incidents at home, at work, and while participating in sports and other recreational activities
- In the context of mortality, the WHO recommends the retention of both codes for injury and external causes. In places where this is not feasible, the external cause code should be retained. For injury-related deaths, the external cause code is the single underlying cause of death code, and the ICD–11 external cause code incorporates the intent, mechanism, and object of the deceased in a single code. Pace of occurrence and activity are coded separately.

2.28.4 Standards and reporting requirements for mortality in perinatal and related periods

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.

2.28.4.1 Foetal death and live birth

Foetal 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 foetus 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.

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.

Refer to Section 2.22.8.10 for special instructions on coding of foetal death and live birth.

**Birth weight**

Birth weight is the first weight of the foetus 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 and related periods**

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 to 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.
2.28.4.2 Child mortality

Child mortality (Under-5 mortality rate – probability of dying by age of 5 years) is a leading indicator of the level of child health, quality of life, health infrastructure, and overall development in countries. It is also the SDG indicator 3.2.1.

2.28.4.3 Infant mortality

Infant mortality (infant mortality rate – probability of dying by age of 1 year) refers to death of children under the age of 1 year and older than 28 days. It is an indicator for quality of life and health infrastructure.

2.28.4.4 Neonatal mortality

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 7 days of life, and late neonatal deaths, occurring after the 7th day but before 28 completed days of life. Neonatal mortality rate (probability of dying by the first 28 completed days of life, expressed per 1000 live births) is also the SDG indicator 3.2.2

2.28.4.5 Certification and recording of perinatal mortality

The reliability of the mortality estimates related to children depends on accuracy and completeness of reporting and recording of births and deaths. Under-reporting and misclassification are common, especially for deaths occurring in newborns. Countries should arrange registration and reporting procedures so that the events and the criteria for their inclusion in the statistics can be easily identified.

With the update of the International form of medical certificate of cause of death in 2016, just one certificate is used for all cases (see Annex 2.23.1). Care needs to be taken to correctly fill in the specific section for perinatal deaths on the certificate. The previously recommended perinatal death certificate should be replaced by the form in Annex 2.23.3, and perinatal deaths should be coded according to the general mortality coding instructions described above.

Additional information mentioned in Annex 2.23.3 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-11.

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. 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.

2.28.4.6 Reporting criteria: Birth weight, gestational age, crown-heel length

The legal requirements for the registration of foetal deaths and live births vary from country to country and between countries. If possible, all foetal deaths and live births
weighing at least 500 g at birth, whether alive or dead, should be included in the statistics. The inclusion of foetal deaths and live births weighing between 500 g and 1000 g as stated in national statistics is recommended both because of its inherent value and because it improves the coverage of reporting at 1000 g and over.

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. 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.

In statistics for international comparison, inclusion of the extremely low birth weight group disrupts the validity of comparisons and is not recommended. Less mature foetal deaths and live births not corresponding to the criteria above 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.

### 2.28.4.7 Statistical presentation of perinatal mortality

For perinatal mortality statistics, full-scale multiple-cause analysis of all conditions reported will be of the greatest value.

Countries should also present statistics in which both the numerator and the denominator of all ratios and rates are restricted to fetal deaths and live births 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.

In reporting foetal, perinatal, neonatal and infant mortality statistics the number of deaths due to malformations should whenever possible be identified for foetal deaths and live births in relation to birth weights of 500 to 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 foetal deaths). Countries are encouraged to provide the ratios and rates listed below, or as many of them as their data collection systems permit. For example:

- Foetal death ratio = \((\text{foetal deaths/live births}) \times 1000\)
- Foetal death rate = \((\text{foetal deaths/total births}) \times 1000\)
- Foetal death rate, weight-specific = \((\text{foetal death weighting 1000 g and over/total births weighing 1000 g and over}) \times 1000\)
- Early neonatal mortality rate = \((\text{early neonatal deaths/live births}) \times 1000\)
- Early neonatal mortality rate, weight-specific = (early neonatal deaths of infants weighing 1000 g and over at birth/live births weighing 1000 g and over) x 1000
- Perinatal mortality ratio = (foetal deaths and early neonatal deaths/live births) x 1000
- Perinatal mortality rate = (foetal deaths and early neonatal deaths/total births) x 1000

The perinatal mortality rate is the number of deaths of foetuses 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 centimetres 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 foetal death rate and the early neonatal mortality rate.

**Perinatal mortality age classifications**

Age classification for special statistics of infant mortality

- 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 2 months, by single months of life from 2 months to 1 year (2, 3, 4 ... -11 months).
- 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.
- Under 7 days, 7-27 days, 28 days but under 1 year.

Age classification for early neonatal deaths:

1. Under 1 hour, 1–11 hours, 12–23 hours, 24–47 hours, 48–71 hours, 72–167 hours
2. Under 1 hour, 1-23 hours, 24-167 hours.

**Birth weight classification for perinatal mortality statistics**

By weight intervals of 500 grams, i.e. 1000-1499 grams, 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)

**2.28.5 Standards and reporting requirements related for maternal mortality**

Maternal mortality is part of the Sustainable Development Goals (SDG) that serve to monitor the impact of the joint work of the international community in this field.

**2.28.5.1 Maternal death**

A maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any
cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

2.28.5.2 Late Maternal death

A late maternal death is defined as: the death of a woman from direct or indirect obstetric causes, more than 42 days but less than one year after termination of pregnancy.

2.28.5.3 Comprehensive maternal death

A grouping that combines early maternal death (maternal death) and late maternal death.

2.28.5.4 Direct and indirect obstetric deaths

Maternal deaths, late maternal deaths, and comprehensive maternal deaths are subdivided into two groups:

- Direct obstetric deaths: those resulting from obstetric complications of the pregnant state (pregnancy, labour, and puerperium), and from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above.
- Indirect obstetric deaths: those resulting from previous existing disease or disease that developed during pregnancy and not due to direct obstetric causes but were aggravated by the physiologic effects of pregnancy.

2.28.5.5 Death occurring during pregnancy, childbirth and puerperium

A death occurring during pregnancy, childbirth, and puerperium is defined as: 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).

2.28.5.6 Recording requirements of maternal mortality

In order to improve the quality of maternal mortality data and provide alternative methods of collecting data on deaths during pregnancy or anything related to pregnancy, 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 including questions regarding current pregnancy and pregnancy within one year preceding death on death certificates.

The classification also allows to record deaths that occur one year or more after termination of the pregnancy (JB62 Death from sequelae of obstetric causes).

2.28.5.7 International reporting of maternal mortality

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.
2.28.5.8 Numerator, denominator, and ratios of published maternal mortality

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). Note that cases not coded to Chapter 18 (J codes) should be included in the numerator. These include those categories presented in the ‘Exclusion Note’ at the beginning of Chapter 18, provided that they have been aggravated by pregnancy or conversely aggravated the pregnancy.

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 foetal deaths). Where both denominators are available, a calculation should be published for each.

Results should be expressed as a ratio of the numerator over 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:

1. Maternal mortality rate: \( \frac{\text{Maternal deaths}}{\text{Live births}} \times k \)
2. Direct obstetric mortality ratio: \( \frac{\text{Direct obstetric death only}}{\text{Live births}} \times k \)
3. Ratio for death occurring during pregnancy, childbirth and puerperium: \( \frac{\text{Pregnancy-related death}}{\text{Live births}} \times k \)

2.28.6 Standards and coding instructions for injury events

The WHO definition of an ‘injury’ is: ‘Injuries are caused by acute exposure to physical agents such as mechanical energy, heat, electricity, chemicals, and ionizing radiation interacting with the body in amounts or at rates that exceed the threshold of human tolerance. In some cases, (for example, drowning and frostbite), injuries result from the sudden lack of essential agents such as oxygen or heat’. Injuries may be categorised in a number of ways. However, for most analytical purposes and for identifying intervention opportunities, it is especially useful to categorise injuries according to whether or not they were deliberately inflicted and by whom. Commonly used categories are:

- unintentional (i.e. accidental)
- intentional (i.e. deliberate)
- interpersonal (e.g. assault and homicide)
- self-harm (e.g. abuse of drugs and alcohol, self-mutilation, suicide)
- legal intervention (e.g. action by police or other law enforcement personnel)
- war, civil insurrection and disturbances (e.g. demonstrations and riots)
- undetermined intent

Regarding the collection of events that cause injuries, a set of definitions apply. See Section 2.28.6.1 ‘Definition related to transport injury events’ below.
2.28.6.1 Definitions related to transport injury events

(a) A ‘transport injury event’ is any accident involving a device designed primarily for, or being used at the time primarily for, conveying persons or goods from one place to another.

(b) A public highway (trafficway) or street is the entire width between property lines (or other boundary lines). It includes the space of open public land used for purposes of moving persons or property from one place to another. A roadway is that part of the public highway designed, improved and customarily used for vehicular traffic.

(c) A road traffic injury event is any vehicle accident occurring on the public highway [i.e. originating on, terminating on, or involving a vehicle partially on the highway]. A vehicle accident is assumed to have occurred on the public highway unless another place is specified, except in the case of accidents involving only off-road motor vehicles, which are classified as nontraffic accidents unless the contrary is stated.

(d) An off-road, nontraffic road injury event is any vehicle accident that occurs entirely in any place other than a public highway.

(e) A pedestrian is any person involved in an accident who was not at the time of the accident riding in or on a motor vehicle, railway train, streetcar or animal-drawn or other vehicle, or on a pedal cycle or animal.

- Pedestrians include:
  - changing tire of vehicle
  - making adjustment to motor of vehicle
  - on foot

- Items which assist with pedestrian conveyance, including:
  - baby carriage
  - ice-skates
  - perambulator
  - push-chair
  - roller-skates
  - scooter
  - skateboard
  - skis
  - sled
  - wheelchair (powered)

(f) A driver is an occupant of a transport vehicle who is operating or intending to operate it.

(g) A passenger is any occupant of a transport vehicle other than the driver.

Excludes: person traveling on outside of vehicle - see definition (h) below
(h) A person ‘traveling on’ a transport vehicle includes any person being transported by a vehicle but not occupying the space normally reserved for the driver or passengers, or the space intended for the transport of property.

- ‘Traveling on’ includes:
  - bodywork
  - bumper [fender]
  - hanging on outside
  - roof (rack)
  - running-board
  - step

(i) A pedal cycle is any land transport vehicle operated solely by pedals.

  Includes: bicycle tricycle
  Excludes: motorised bicycle - see definition (k)

(j) A pedal cyclist is any person riding on a pedal cycle or in a sidecar or trailer attached to such a vehicle.

(k) A motorcycle is a two-wheeled motor vehicle with one or two riding saddles and sometimes with a third wheel for the support of a sidecar. The sidecar is considered part of the motorcycle.

  - Includes:
    - moped motor scooter motorcycle:
      - NOS
      - combination
      - with sidecar
      - motorised bicycle
      - speed-limited motor-driven cycle
  - Excludes: motor-driven tricycle - see definition (m)

(l) A motorcycle rider is any person riding on a motorcycle or in a sidecar or trailer attached to such a vehicle.

(m) A three-wheeled motor vehicle is a motorised tricycle designed primarily for on-road use.

  - Includes:
    - motor-driven tricycle
    - motorised rickshaw
    - three-wheeled motor car
  - Excludes:
    - motorcycle with sidecar - see definition (k)
    - special all-terrain vehicle - see definition (x)
(n) A car (automobile) is a light transport vehicle with four or more wheels designed primarily for carrying up to 10 persons. A trailer or caravan being towed by a car is considered a part of the car.

Includes: minibus

(o) A motor vehicle or vehicle may refer to various transport vehicles. The local usage of the terms should be established to determine the appropriate code. If the terms are used ambiguously, use the code for ‘unspecified’. A trailer or caravan being towed by a vehicle is considered a part of the vehicle.

(p) A light goods vehicle (pick-up truck or van) is a motor vehicle with four or more wheels designed primarily for carrying property on roads, weighing less than the local limit for classification as a heavy goods vehicle (usually less than 3500 kg), and not requiring a special driver’s licence. A trailer or caravan being towed by a light goods vehicle is considered a part of the vehicle.

(q) A heavy goods vehicle is a motor vehicle designed primarily for carrying property on roads, meeting local criteria for classification as a heavy goods vehicle in terms of curbside weight (usually above 3500 kg), and requiring a special driver’s licence.

(r) A bus is a motor vehicle designed or adapted primarily for carrying more than 10 persons and requiring a special driver’s licence to operate.

(s) A railway train or railway vehicle is any device, with or without cars coupled to it, designed for traffic on a railway.

• Includes:
  • interurban:
    • electric car
    • street car (operated chiefly on its own right-of-way, not open to other traffic) railway train, any power [diesel] [electric] [steam]
    • funicular
    • monorail or two-rail subterranean or elevated other vehicle designed to run on a railway track
  • Excludes:
    • interurban electric cars (streetcars) specified to be operating on a right-of-way that forms part of the public street or highway - see definition (t)

(t) A streetcar is a vehicle designed and used primarily for transporting persons within a municipality, running on rails, usually subject to normal traffic control signals, and operated principally on a right-of-way that forms part of the roadway. A trailer being towed by a streetcar is considered a part of the streetcar.

• Includes:
– interurban electric car or streetcar, when specified to be operating on a street or public highway
– tram (car)
– trolley (car)

(u) A special vehicle mainly used on industrial premises is a motor vehicle designed primarily for use within the buildings and premises of industrial or commercial establishments.
• Includes:
  – battery-powered:
    • airport passenger vehicle
    • truck (baggage)(mail)
    • coal-car in mine
    • forklift (truck)
    • logging car
    • self-propelled truck, industrial
    • station baggage truck (powered)
    • tram, truck or tub (powered) in mine or quarry

(v) A special vehicle mainly used in agriculture is a motor vehicle designed specifically for use in farming and agriculture (horticulture), for example to work the land, tend and harvest crops and transport materials on the farm.
• Includes:
  – combine harvester
  – self-propelled farm machinery
  – tractor (and trailer)

(w) A special construction vehicle is a motor vehicle designed specifically for use in the construction (and demolition) of roads, buildings and other structures.
• Includes:
  – bulldozer
  – digger
  – dumper truck
  – earth-leveller
  – mechanical shovel
  – road-roller

(x) A special all-terrain vehicle is a motor vehicle of special design to enable it to negotiate rough or soft terrain or snow. Examples of special design are high construction, special wheels and tyres, tracks, and support on a cushion of air.
• Includes: - hovercraft on land or swamp - snowmobile
• Excludes: hovercraft on open water - see definition (y)
(y) A watercraft is any device for transporting passengers or goods on water.
Includes: hovercraft NOS

(z) An aircraft is any device for transporting passengers or goods in the air.

2.28.6.2 Classification and coding instructions for transport accidents

Transport injury events are counted for official statistics where they are unintentional.

1. If an event is unspecified as to whether it was a traffic or a nontraffic-injury event, the following classifications will help to decipher:
   a) Classify as a traffic injury event occurs when the event is classifiable to the traffic accident categories.
   b) Classify as a nontraffic injury event occurs when the event is classifiable to nontraffic categories.

   For these categories the victim is either a pedestrian, or an occupant of a vehicle designed primarily for off-road use.

2. When accidents involving more than one kind of transport are reported, the following order of precedence should be used:
   - aircraft and spacecraft
   - watercraft
   - other modes of transport

3. Where transport injury event descriptions do not specify the victim as being a vehicle occupant and the victim is described as crushed, dragged, hit, injured, killed, knocked down, run over by any vehicle including:
   - animal being ridden
   - animal-drawn vehicle
   - bicycle
   - bulldozer
   - bus
   - car
   - motorcycle
   - motorised tricycle
   - pick-up (truck)
   - recreational vehicle
   - streetcar
   - tractor
   - train
   - tram
   - truck
Classify the victim as a pedestrian.

4. Where transport injury event descriptions do not indicate the victim’s role, classify the victim as an occupant or rider of the vehicle if there is mention of vehicles such as:

- airplane
- bicycle
- boat
- bulldozer
- bus
- car
- motorcycle
- motorised tricycle
- pick-up (truck)
- recreational vehicle
- spacecraft
- tractor
- train
- tram
- truck
- van
- watercraft
- accident
- collision
- crash
- wreck
- NOS

Classify the victim as an occupant or rider of the vehicle mentioned. If more than one vehicle is mentioned, do not make any assumption as to which vehicle was occupied by the victim unless the vehicles are the same. Instead, code to the appropriate categories, taking into account the order of precedence given in note 2 above.

5. Where a transport injury event, such as:
   - vehicle (motor) (non-motor): – going out of control (due to):
   - burst tyre (blowout)
   - driver falling asleep
   - driver inattention
   - excessive speed
   - failure of mechanical part resulted in a subsequent collision
Classify the accident as a collision. If an accident other than a collision resulted, classify it as a noncollision accident according to the vehicle type involved.

6. Where a transport accident involving a vehicle in motion, such as:
   • accidental poisoning from exhaust gas generated by
   • breakage of any part of
   • explosion of any part of
   • fall, jump or being accidentally pushed from
   • fire starting in
   • hit by object thrown into or onto
   • injured by being thrown against some part of, or object in
   • injury from moving part of
   • object falling in or on
   • vehicle in motion
   • resulted in a subsequent collision
   
Classify the accident as a collision.

If an accident other than a collision resulted, classify it as a noncollision accident according to the vehicle type involved.

Land transport accidents described as:
   • collision (due to loss of control) (on highway) between vehicle and:
   • abutment (bridge)(overpass)
   • fallen stone
   • guard rail or boundary fence
   • inter-highway divider
   • landslide (not moving)
   • object thrown in front of motor vehicle
   • safety island
   • tree
   • traffic sign or marker (temporary)
   • utility pole
   • wall of cut made for road
   • other object, fixed, movable or moving
   • overturning (without collision)
   • collision with animal (herded)(unattended)
   • collision with animal-drawn vehicle or animal being ridden are included.

\section*{2.29 ICD maintenance and application}

The ICD maintenance process allows the continuous adaptation of the ICD following the evolution in the understanding of diseases, treatments, and prevention. A proposal and
review mechanism on an online platform makes the process transparent. Workflows ensure that proposed changes are considered both from a medical and scientific perspective and from their value and place in a particular use case. As a result, the Foundation Component and the related tabular list(s) will be released in updated versions.

2.29.1 Proposals and Review Mechanisms and workflow

Any individual can submit a proposal for an update to the ICD. Such updates can refer to one or more entities of the ICD. They may address the position of entities in a tabular list, in the foundation, and any element of the content model. Suggestions shall be provided in the format of a short (approximately 500-word) explanation with references to underpinning literature and evidence. The proposal shall also visualise the changes in the position and address potential impact on entities outside the proposal.

The proposals will be reviewed by scientific experts and classification experts. Decision on taking into account a particular proposal will be based on the recommendations by these experts. A workflow between a mortality and a morbidity reference group, a medical scientific advisory group and a classification and statistics advisory group will ensure that all aspect concerning a proposal are taken into account. Reviews of the synthesis by classification experts ensure suitability of the proposed changes to the diverse use cases of the ICD. The process has two rounds of mutual editing between content and classification experts to achieve consensus about a proposed change. All rounds of editing will be handled through electronic platforms. Where consensus cannot be achieved, the proposal can either be deferred to subsequent cycles of editing pending arbitration by the WHO or be solved in a face to face meeting of classification and content experts. In all other cases, a consensus recommendation is given to the WHO for final decision.

2.29.2 Official releases

The ICD-11 will be released in five-yearly ‘stable’ versions for international use (updates that impact on the four and five digit structure), unless urgent public health needs require otherwise. The releases are supplemented with version identifiers that are used for reporting in conjunction with the codes. Transition tables and materials showing the differences are provided with every version. Updates at a more detailed level than four and five digits can be published at annual rates. Additions to the index can be done on an ongoing basis. Mortality and morbidity rules will be updated in long term cycle.

All countries that have implemented the ICD-11 are encouraged to adopt the updates in order to ensure greatest possible standardisation of coding results. If a country for whatever reason cannot implement a certain year of updates it shall ensure that at least the reported data is in line with the most recent version of ICD-11. Small error corrections that serve to clarify meaning, indexing or errors, may be communicated at a yearly rate.

The WHO has taken all reasonable precautions to verify the information contained in the ICD and its different versions and editions. However, the ICD is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of ICD lies with the user. In no event shall the WHO be liable for damages arising from its use. The publisher of ICD-coded information is liable to ensure proper use of the
ICD and present clearly the methodology for data collection and mechanisms that were used to modify the original data in order to indicate the comparability of the presented outcomes. For mortality data, no deviation from the methodology indicated in the ICD is permitted.

2.29.3 Update platform

All proposals are entered on an online update platform, for verification of completeness, discussion and editing. The platform provides the infrastructure for routing proposals to reviewers and experts, and for providing feedback to the original authors. The update platform also shows the final outcome of the proposal that has been entered in the authoring platform and become part of the ICD.

2.30 Mortality Rules – Knowledgebase

The Mortality Knowledge Database will be a collection of rules that are used for determining the underlying Cause of Death from the death certificates. These rules will be based upon the Mortality coding guidelines of the ICD. The rules will cover permitted sequences, such as disease ‘a’ due to disease ‘b’, and cases where the selected cause may be modified to provide more relevant information for public health. Short summaries will describe the scope of a rule, and decision tables will specify explicitly and independent of language the use of the rule with the codes of the mortality tabular list. ‘Code sets’ of the decision tables will group ICD codes that often occur together in the knowledge base or are handled similarly by the selection and modification rules; for example as causes or consequences of diseases with some common characteristic. The information on the rules will be maintained in a database, so that the data in the rules code table can be easily validated against changes in the classification, and vice versa.

The decision tables can be used for manual coding and selection of the underlying cause of death, or for programming of software that assists in this task. In the past such Rule bases have been developed by users of ICD-10 mortality coding in an international approach, relying for decision to change relationship in the tables on decisions of internationally accredited by WHO.

2.31 Automated coding tools for mortality

Automated coding tools for mortality are interactive computer-based systems for coding multiple causes of death and for selecting the underlying cause of death. Systems require a dictionary that matches the language that is used for reporting causes of death. Use of the software requires training. Specialist coders need to assist in cases that cannot be coded by the software. This is the case in 10-20% of cases, depending on language and dictionary. Iris is the only internationally maintained automated coding software. Besides this there are several other national systems in place.
2.32 List of rehabilitation-relevant health conditions for which a tailored set of functioning properties is available

- Acute myocardial infarction BA41
- Alzheimer and other dementias 6D85
- Amputation (traumatic amputations involving multiple body regions) ND35
- Amyotrophic diseases (amyotrophic lateral sclerosis) 8B60.0
- Ankylosing spondylitis and other spondylopathies FA92.0
- Asthma CA23
- Benign prostatic hypertrophy GA90
- Bipolar affective disorder 6A60.9
- Birth asphyxia and birth trauma KB21.Y KA4Z
- Bladder cancer 2C94
- Brain injury (traumatic brain injury or acquired brain injury) NA07
- Breast cancer 2C6Z
- Cerebral palsy 8D2Z
- Cerebrovascular disease incl. stroke 8B2Z
- Cervix uteri cancer 2C77
- Chagas disease 1F53
- Chronic obstructive pulmonary disease CA22
- Cleft lip LA40
- Cleft palate LA42
- Colon and rectum cancers 2B92
- Complex regional pain syndrome 8D8A.0
- Congenital heart anomalies LA8Z
- Corpus uteri cancer 2C76
- Depression 6A7Z
- Diabetes mellitus 5A14
- Down syndrome LD40.0
- Drug use disorders 6C4Z
- Endocrine disorders 5B3Z
- Epilepsy 8A6Z
- Fracture of femur NC72
- Fracture of lower leg, including ankle NC92
- Fracture of lumbar spine and pelvis NB52
- Gout FA25
- Haemophilia 3B10
- Hand conditions
- Hearing loss, adult onset AB54
- Heart failure BD1Z
- HIV/AIDS 1C62
• Hypertensive heart disease BA01
• Impingement syndrome FB53.1
• Inflammatory Bowel Disease DD7Z
• Ischaemic heart diseases BA6Z
• Japanese Encephalitis 1C85
• Leishmaniasis 1F54
• Leprosy and sequelae of leprosy 1B20
• Leukaemia 2B33.Y
• Liver cancer 2C12
• Low back pain (dorsalgia) ME84.2
• Low birth weight KA21
• Lower limbs fractures ND54
• Lower respiratory infections CA2Z
• Lymphatic filariasis 1F66.3
• Lymphomas and multiple myeloma 2B33.5
• Macular degeneration and other sense disorders 9B75
• Malaria 1F40-1F4Z
• Melanoma and other skin cancers 2C30.Z 2C3Y
• Meningitis 1D01
• Mental and behavioural disorders due to use of alcohol 6C40
• Mild mental retardation attributable to lead exposure (unspecified mental retardation) 6A00.0
• Mouth and oropharynx cancers 2B6Z
• Movement disorders (e.g. ataxia, , hemiplegia, dysdiadochokinesia) 8A0Z
• Multiple sclerosis 8A40
• Muscle dystrophy 8C70
• Musculoskeletal pain syndrome (fibromyalgia, entrapment/ mononeuropathies) MG30.01
• Myopathies 8C7Z
• Nephritis and nephrosis GB41
• Neuropathies 8C4Z
• Obesity 5B81
• Oesophageal atresia LB12.1
• Oesophagus cancer 2B70
• Onchocerciasis 1F6A
• Osteoarthritis FA0Z
• Osteoporosis FB83.1
• Other joint disorder, not elsewhere classified
• Other neurotic conditions
• Ovary cancer 2C73
• Pancreas cancer 2C10
- Parkinson disease 8A00.0
- Poliomyelitis and sequelae of poliomyelitis 1C81
- Post-traumatic stress disorder 6B40
- Prostate cancer 2C82
- Protein-energy malnutrition 5B51
- Pulmonary hypertension BB01
- Renal failure GB6Z
- Rheumatic heart disease BC20.1
- Rheumatoid arthritis FA20
- Schizophrenia 6A20
- Scleroderma, dermatomyositis 4A41.0
- Skin diseases e.g. psoriasis, decubitus ulcer and pressure area, other disorders of skin & subcutaneous tissue not elsewhere classified (Chapter 14 MMS)
- Sleep disorders (obstructive sleep apnoea, narcolepsy, insomnia, circadian rhythm sleep-wake disorder, restless legs) (Chapter 7 MMS)
- Spina bifida LA02
- Spinal cord injury ND51
- Stomach cancer 2B72
- Syphilis 1A6Z
- Tetanus 1C13
- Trachea, bronchus and lung cancers 2C25
- Tuberculosis and sequelae of tuberculosis 1B1Z
- Upper limbs fractures ND52
- Vertebral fractures ND50
- Vertigo MB48.0

2.33 Chapter Structure of the ICD-11 MMS

The international core reference linearisation is the ICD-11 for Mortality and Morbidity Statistics (ICD-11MMS). It is used for coding and reporting illnesses or causes of death for international comparison. The naming of this linearisation highlights its two main use cases. This core linearisation is divided into 28 chapters, of which 25 refer to health conditions similar to past ICD versions, while one serves to identify external causes of morbidity and mortality, and another includes concepts of traditional medicine. Lastly, there are two additional sections for optional additional use, one for extension codes to add more detail for different dimensions of a disease, such as anatomy, mark a condition to be present on admission, or a disease having been relevant in the family history (see Section 2.32.27 ‘Extension Codes’) and the other for functioning assessment to provide a set of codes for assessment and scoring in the ICD using ICF functioning domains of high explanatory power (see Section 2.33.26.1 ‘Supplementary section for functioning assessment Chapter’).

ICD–11 has five new chapters. As a result, the numbering of the chapters has changed. The new chapters are:
• Chapter 03 Diseases of the blood or blood-forming organs and Chapter 04 – Disorders of the immune system. Conditions affecting the immune system and conditions affecting the blood are now in two separate chapters.
• Chapter 07 Sleep-Wake disorders. Sleep wake disorders have been regrouped in this new chapter.
• Chapter 17 Conditions related to sexual health. Sexual conditions have been grouped in this new chapter.
• Chapter 27 Traditional Medicine. A chapter for traditional medicine has been added.

The following is an overview of the organisational principles and classification structure (hierarchy) for each of the 26 chapters. The structure and new sets of functionalities in ICD-11 were a result of incorporating scientific updates and making the classifications more relevant for computerisation.

2.33.1 Chapter 01 – Certain infectious or parasitic diseases

Structure of Chapter 01

2.33.1.1 Chapter 01 – Structure of chapter 01

Chapter 01 is divided into two major sections:

The chapter lists the infectious diseases in the structure grouping by some clinical syndromes, then mode of transmission, followed by groups by agents. Some conditions of major public health concern are listed at the same level. Variants to the conditions in the chapter that occasionally spread as localised infections are primarily coded to this chapter. Infections that are localised, and where the agent usually is unknown, not relevant, or there is a mixed aetiology reside in the organ chapters. Frequent infectious agents may be listed as individual child categories under the localised infection. In some instances, infections could equally be located in the infectious disease chapter and in an organ system chapter. In such cases, the decision that creates least change (ICD-10 legacy) has been chosen. Also, the fact that some detail may not usually be reported and that requires a broader ‘unspecified’ may be a reason to group some conditions that would be expected to be coded elsewhere, as is the case for meningitis and encephalitis and respiratory infections.

A special tabulation list groups the infections by agents and is intended for special tabulation, only.

2.33.1.2 Chapter 01 – Rationale for chapter 01

The purpose of the structure of chapter 01 is to minimise the impact on longitudinal statistics of major infections, to allow reporting of main infection syndromes without mention of a specific agent, while allowing for special tabulation by infectious agent using the information in segment 2. Influenza, though visibly affecting the respiratory tract, affects multiple parts of the body and is also of important public health concern. For that reason, it has been moved into the infectious chapter. Prion diseases can be transmissible, genetic or arise spontaneously. They are rare conditions that only affect the nervous system. Many are inherited. The presence of a specific gene is a prerequisite to developing
a prion disease. In view of these facts, it was decided to keep the prion diseases grouped together and move the whole group to the neurology chapter.

2.33.1.3 Antimicrobial resistance

The ICD parts relating to Antimicrobial Resistance (AMR) have been designed to support the Global Antimicrobial Resistance Surveillance System. Priority pathogens are identified in combinations with currently (2016) relevant antimicrobial substances. The section is designed to allow postcoordination of other substance and agent combinations in a cluster. The section on AMR is located in the Chapter 21 ‘Symptoms, signs or clinical findings, not elsewhere classified’, so that the underlying disease or agent is always coded in conjunction with the AMR category. ICD and the surveillance system focus on specific tracer pathogen-substance combinations. However, ICD design allows one to code the full antibiotic susceptibility pattern if desired. For tabulation, the AMR codes should be reported in combination with the infectious disease. Where only one condition can be reported, the infectious disease should be retained. However, at national level, the set of infectious diseases and the number of AMR cases among the infections cases should be tabulated.

2.33.2 Chapter 02 – Neoplasms

2.33.2.1 Chapter 02 – Structure of chapter 02

The general hierarchy of Chapter 02 consists of the following:

1st level - Behaviour
2nd level - Broad sites or systems
3rd level - Specific site
4th level - Morphological (histology) type

There are three groups that are an exception to the above hierarchy. They are:

1. Neoplasms of brain and central nervous system
   1st level - Broad sites
   2nd level - Behaviour - morphological (histology) type

2. Neoplasms of haematopoietic and lymphoid tissues
   1st level - Broad morphological (histology) type
   2nd level - Specific morphological (histology) type

3. Malignant mesenchymal neoplasms
   1st level - Specific morphological (histology) type
   2nd level - Site
2.33.2.2 Chapter 02 - Rationale for Chapter 02

The progress in oncology has clearly demonstrated that a site-only based categorisation of malignant and benign tumours provides limited information for prevention, treatment, and prognosis for persons that are affected by a tumour. ICD–10 had already included some categories based on histopathology (e.g. some lymphoid neoplasms).

In ICD–11, main tumour sites have subdivisions of histopathology first. The groups chosen were based on an analysis of international mortality and morbidity reporting, cancer registries, and clinical reporting. The redesigned sections were reviewed for missing details in relation to the ICD use cases.

Keeping the main anatomical axes intact allows backwards compatibility. However, the structure was adjusted in a few places to match anatomical subdivisions of the TNM classification (https://www.uicc.org/resources/tnm).

For tumours of the central nervous system, the histological and behavioural distinction between benign and malignant is a grey area. As such, it was decided to move all central nervous system tumours outside the basic framework of behaviour and group them together.

The field of genetic markers is rapidly changing. Whereas for some tumours, such markers have been used for many years, for others, this is not the case. As such, with the exception of haematological tumours, genetic markers were not included, and have not been used for the classification. They are, however, included in section 'Extension codes', and can be added as postcoordination to the relevant code from the neoplasms chapter to fully describe the relevant tumour entity.

2.33.3 Chapter 03 – Diseases of the blood or blood-forming organs

2.33.3.1 Chapter 03 – Structure of chapter 03

This new chapter (previously part of Chapter III in ICD-10) has three main sections:

- Anaemias or other erythrocyte disorders
- Coagulation defects, purpura or other haemorrhagic or related conditions
- Diseases of spleen

Neoplasms of haematopoietic and lymphoid tissues are primarily located in Chapter 02 (Neoplasms) while Symptoms, signs or clinical findings of blood or blood-forming organs or the immune system are primarily located in Chapter 21.

The first two major sections comprise of the following hierarchy:

1st level - Anaemias and coagulation disorders
2nd level - Broad category of disease/disorder type
3rd level - Congenital vs acquired
4th level - Further specificity of disease/disorder type

The third major section comprises of the following hierarchy:
2.33.3.2 Chapter 03 – Rationale for chapter 03

For Chapter 03, there has been a reorganisation of the chapter into a clinical view of
diseases of the blood, an aetiological view of diseases of the blood and diseases of the
spleen. Anaemias are now all under one group with a separate group for ‘Coagulation
defects, purpura or other haemorrhagic correlated conditions’.

2.33.4 Chapter 04 – Diseases of the immune system

2.33.4.1 Chapter 04 – Structure of chapter 04

This new chapter (previously part of Chapter III in ICD-10) has the following sections:

Immunodeficiencies

Non-organic specific systemic disorders

1st level - Being the main groupings above
2nd level - Broad category of disease/disorder type
3rd level - Specific disease/disorder type
4th level - Further specificity of disease/disorder type

1st level - Autoinflammatory disorders
2nd level - Specific syndrome

1st level - Allergic or hypersensitivity conditions
2nd level - Broad category for body systems

1st level - Certain diseases involving the immune system
2nd level - Specific disease/disorder type
3rd level - Further specificity of disease/disorder type

Diseases of thymus

2nd level - Specific disease/disorder type

2.33.4.2 Chapter 04 – Rationale for chapter 04

For Chapter 04, there are new sections for immune disorders that differ from the section
previously located in Chapter III of ICD–10. For the immune system they are classified
mainly by clinical syndrome, and in an alternate view the immune system conditions are
shown by cell line. A section for Allergic or hypersensitivity conditions has been included in
this chapter. Overall, more detail has been added to the chapter.
2.33.5 Chapter 05 – Endocrine, nutritional or metabolic diseases

2.33.5.1 Chapter 05 – Structure of Chapter 05

Chapter 05 has four major sections:

1. Endocrine diseases
   2nd level - Specific gland or hormone system
   3rd level - Specific diseases/disorder

2. Nutritional disorders
   2nd level - Broad categories of diseases/disorder
   3rd level - Specific disease/disorder

3. Metabolic disorders
   2nd level – Broad categories of diseases/disorder
   3rd level - Specific disease/disorder

4. Postprocedural endocrine or metabolic disorders
   2nd level - Specific disease/disorder

Neoplasms of the endocrine system are primarily located in Chapter 02 Neoplasms and Symptoms, Symptoms, signs or clinical findings of endocrine, nutritional or metabolic diseases are primarily located in Chapter 21.

2.33.5.2 Chapter 05 – Rationale for Chapter 05

There is increased international standardisation of endocrine disease terminology being used to describe the complex nature of endocrine conditions. The intent is to include all dysfunctions that lead to a specific endocrine disorder.

Diabetes mellitus and Intermediate hyperglycaemia has been expanded to reflect current international terminology. The complications often associated with diabetes have continued to be included in the classification in the appropriate body system chapter in line with the various clinical modifications. ‘Code also’ and ‘Use additional code’ notes have been included to link the types of diabetes and the various complications to enable the addition of codes for further specificity.

Sources of change for this section were based on the current WHO Classification of Diabetes Mellitus and Intermediate Hyperglycaemia 2011 and the Department of Chronic Diseases, Health Promotion, WHO.

The WHO Department of Nutrition for Health and Development proposed changes to the section on Nutritional Disorders with advice from the Nutrition Guidance Expert Advisory
Group (NUGAG) for updates to this section of the classification. Metabolic disorders are now aetiologically based and have been classified into three distinct areas; ‘Inborn errors of metabolism’, ‘Disorders of metabolite absorption and transport’ and ‘Disorders of fluid, electrolyte and acid-base balance’ following clinical advice received from the relevant international societies for metabolic diseases.

2.33.6 Chapter 06 – Mental, behavioural or neurodevelopmental disorders

2.33.6.1 Chapter 06 – Structure of Chapter 06

The hierarchy of Chapter 06 consists of:

1st level - Broad category of disease/disorder type
2nd level - Specific disease/disorder type
3rd level - Further specificity of disease/disorder type

2.33.6.2 Chapter 06 – Rationale for Chapter 06

The overall linear structure of the proposed Mental, behavioural or neurodevelopmental disorders chapter for ICD–11 has been a topic of substantive and comprehensive discussions by the Topic Disorders Advisory Group for Mental Health, as well as extensive interactions with the American Psychiatric Association in relation to the just-published Fifth Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) (1), from the time of the Advisory Group’s initial appointment in 2007.

The appropriate architecture of a diagnostic classification of mental and behavioural disorders is an issue that has received substantial attention over the course of the revision (e.g. 2-4). One of the guiding principles of the ICD–11 is that it should reflect current scientific evidence regarding the relationships among disorders (5) rather than antiquated concepts such as ‘neurosis’, which have poor construct and predictive validity. In addition, a major goal of the WHO Department of Mental Health and Substance Abuse for the current revision is to improve the clinical utility of this part of the ICD–11 (6, 7). Because the ICD–11 uses a different coding structure that is not based on a decimal numbering system, such that a larger number of blocks or groupings can be accommodated within the chapter, an important opportunity was presented to bring the classification more in line with current research and clinical practice in terms of how groupings of disorders are represented.

Three streams of work provide the rationale and evidence for the linear structure of Mental and Behavioural Disorders in the ICD–11.

Evidence Reviews by Working Groups for ICD–11 Mental, behavioural or neurodevelopmental disorders

The first stream of work relates to the outcome of evidence reviews by the 14 Working Groups reporting to the Advisory Group, each of which had multiple face-to-face meetings over at least a 2-year period. The Working Groups were asked to review the available scientific evidence and other information about clinical application of classifications in various settings throughout the world, and to provide evidence and a rationale for its groupings as well as the content and arrangement of categories within them. This work
resulted in manuscripts describing the rationale for most groupings of disorders that have been published in or submitted to peer-reviewed journals (e.g. 8-15). Space does not permit detailing the rationale and evidence base for each structural change here, but this information as it relates to any specific decision can be provided on request based on the material generated by the Working Groups.

**Formative Field Studies on Clinical Utility of the Linear Structure**

The second stream of work relevant to the linear structure of Mental and Behavioural Disorders focused on clinical utility and is represented by two formative field studies undertaken by the WHO and the Field Studies Coordination Group reporting to the Advisory Group (16, 17). The purpose of these studies was to examine the conceptualizations held by mental health professionals around the world of the relationships among mental disorders in order to inform decisions about the structure of the classification. From a clinical utility perspective, particularly in terms of improving the interface between health information and clinical practice, the most important and desirable features of a classification's organisation is that (a) it helps clinicians find the categories that most accurately describe the patients they encounter as quickly, easily, and intuitively as possible and (b) the diagnostic categories so obtained would provide them with clinically useful information about treatment and management. A mental disorders classification that is difficult and cumbersome to implement in clinical practice and does not provide information that is of immediate value to the clinician has no hope of being implemented accurately at the encounter level in real-world health care settings. In that event, clinical practice will not be guided by the standardisation and operationalization of concepts and categories that are inherent in the classification, and important opportunities for practice improvement and outcomes assessment will be lost. In turn, a diagnostic system that is characterized by poor clinical utility at the encounter level cannot generate data based on those encounters that will be a valid basis for health programs and policies, or for global health statistics. The rationale behind these two studies was that if the ways in which clinicians conceptualized the organisation of mental disorders as encountered in their day-to-day clinical practice was found to be (a) consistent across countries, languages, and disciplines, and (b) distinct from the organisation of ICD–10, then this information could be used to create a classification of mental disorders that corresponds more closely to clinicians’ cognitive organisation of categories and would therefore be more intuitive and efficient for use in real-world health care settings.

The first formative field study (17) was an internet-based study administered in both English and Spanish, in which 1,371 psychiatrists and psychologists from 64 countries participated. The second formative field study (16) involved the face-to-face administration of a standardised sorting and hierarchy-formation task to 517 mental health professionals in eight countries and five languages. Both studies found that clinicians’ conceptual map of mental disorders was rational and highly stable across profession, language, and country income level. Moreover, both studies found that the proposed structure for mental and behavioural disorders in ICD–11 was more consistent with clinicians’ conceptual models than the structure of either ICD–10 or DSM-IV. The second study also clearly demonstrated that clinicians preferred a ‘flatter’ structure with a larger number of groupings as compared with a more hierarchical structure with fewer groupings as found in ICD–10.
Harmonisation with DSM-5

The third stream of work relates to efforts to harmonise the structure of the ICD–11 chapter on Mental and Behavioural Disorders with the structure of the DSM-5, where possible. Overall, the high degree of similarity between the overall structure of DSM-5 (1) and the proposed linear structure for ICD–11 Mental and Behavioural Disorders represents a major success of the ICD – DSM harmonisation effort. Relatively minor differences relate primarily to:

1. proposals to combine the classifications of ‘organic’ and ‘non-organic’ aspects of conditions such as sleep disorders and sexual dysfunctions in ICD–11 in separate chapters in ways that are more consistent with current evidence and clinical practice, which was not an option for DSM-5 given that it is by definition a classification of mental disorders; and

2. differences in conventions related to residual categories and mental disorders associated with other underlying disease under ICD–11 from decisions about the organisation of such categories in DSM-5. Additional information about the rationale for the few remaining substantive differences in overall structure between the two classifications is available upon request. It must be emphasized that the resulting similarity in organisation between the two systems is the product of several years of complex negotiations. Given that DSM-5 has already been published, further changes to the ICD–11 structure would almost certainly move ICD–11 in the direction of reduced similarity and harmonisation with DSM-5.

References


2.33.7 Chapter 07 – Sleep–wake disorders

2.33.7.1 Chapter 07 – Structure of Chapter 07

Chapter 07 is a new chapter in ICD–11. It contains Sleep–wake disorders that were previously located within the respiratory, neurology, or mental health chapters. By combining these disorders into one chapter, more detail can be included for many of the sleep related disorders. The hierarchy consists of:

1st level - Broad category of disease/disorder type
2nd level - Specific disease/disorder type
3rd level - Further specificity of disease/disorder type
2.33.7.2 Chapter 07 – Rationale for Chapter 07

As Sleep-wake disorders pertain to an area of overlap between mental health, neurological disorders and pulmonary conditions, the decision was made to place them together in one chapter.

2.33.8 Chapter 08 – Diseases of the nervous system

2.33.8.1 Chapter 08 – Structure of Chapter 08

1st level - Mixture of diseases, disorders and sites and combinations of both.

2nd level - Subcategory mixture of specific disease or disorder type and sometimes site.

2.33.8.2 Chapter 08 – Rationale for Chapter 08

ICD–11 sees a major overhaul in the organisation of the blocks which make up the neurology chapter. The restrictive decimal coding system of the ICD–10, with its capacity to contain only 11 blocks of disorders per chapter, resulted in blocks containing miscellaneous neurological entities which did not logically fit together, such as the episodic and paroxysmal disorders block, containing headache disorders, epilepsy, transient ischaemic attacks and sleep disorders. The ICD–11 now positions headache disorders, epilepsy and cerebrovascular disorders at a block level, and sleep disorders at chapter level (Chapter 07).

Not only has the structure of the neurological chapter changed, but the approach to classification also integrates current clinical practice and advancements in the understanding of neurological diseases. In the time since the ICD–10 was published, enormous progress in the fields of genetics, molecular biology and medical technologies have been made. An increase in the number of codes is inevitable when one reflects on the recent knowledge gain in neurology, so a balance between comprehensiveness, clinical utility and maintaining a public health approach is the aim. The working groups tackled this issue by considering the more common disorders to appear in the chapter, with less common aetiological variations of these disorders being subject to a ‘double coding’ technique. One major change which illustrates the advancement of knowledge is the addition of a block entitled ‘Paraneoplastic and autoimmune disorders of the nervous system’. This block contains immune-mediated neurological diseases, a field in which knowledge has exploded in recent years. A second example of how the new version reflects molecular biological advancement is through awarding Prion diseases block status despite their rarity. Previously, they featured as part of the infections of the central nervous system block, but research interest after the major public health issue in Europe in the 1990s has led to new variants of prion diseases being discovered.

The world has seen a large rise in the elderly population since the 1990s. Neurocognitive disorders have been declared as a major public health concern and research into its aetiology and neuropharmacology has boomed. The ICD–11 block on Neurocognitive disorders reflects the better understanding in this area.
One final particularly noteworthy change can be found in the 'Other disorders of the nervous system' block. This block is employed to capture the ‘spill over’ from other neurology blocks and those disorders which are deemed unclassifiable elsewhere. In the ICD-10, due to the aforementioned decimal coding system, this block was an incongruent collection of diseases. This block has now reduced significantly in size due to the new, streamlined neurology chapter structure which includes new blocks of disorders previously contained in the ‘other disorders of the nervous system’ section of ICD–10. These include ‘disorders of consciousness’, ‘disorders of cerebrospinal fluid pressure and flow’, ‘disorders of the autonomic nervous system’, ‘nutritional and toxic disorders of the nervous system’ and ‘spinal cord disorders excluding trauma’. Their promotion to block status will hopefully have a positive effect on coding practices.

One complicating issue facing the Neurology Topic Advisory has been the need to cross-link disorders which have a neurological presentation or phenotype to their aetiological roots within other chapters or blocks within the neurology chapter. One of the countless examples of this kind of relationship would be mitochondrial disorders of neuromuscular junction. They must be cross-linked both in the neurology chapter, and in the Endocrine, nutritional or metabolic diseases chapter.

2.33.9 Chapter 09 – Diseases of the visual system

2.33.9.1 Chapter 09 – Structure of Chapter 09

The general hierarchy of Chapter 09 consists of the following:

1st level - Broad category of anatomy
2nd level - Specific anatomy category
3rd level - Broad category of disease/disorder type
4th level - Further specificity of disease/disorder type

2.33.10 Chapter 10 - Diseases of the ear or mastoid process

2.33.10.1 Chapter 10 – Structure of Chapter 10

The general hierarchy of Chapter 10 consists of the following:

1st level - Broad category of anatomy
2nd level - Specific disease/disorder type
3rd level - Further specificity of disease/disorder type

2.33.11 Chapter 11 – Diseases of the circulatory system

2.33.11.1 Chapter 11 – Structure of Chapter 11

There are two main hierarchies in Chapter 11.

1st level - Broad category of disease/disorder type
2nd level - Specific disease/disorder type
3rd level - Further specificity of disease/disorder type
There have been large scale changes in clinical practice in cardiovascular diseases and their management since ICD-10 was published over 20 years ago. Changes introduced for ICD-11 in this chapter reflect these changes and the shift in disease profiles and increased survival following procedures. As a consequence, there has been a major expansion in the number of disease entities within ICD-11, with new classification hierarchies and updated nomenclature. For instance, the incidence of heart valve disease is no longer dominated by rheumatic fever in developed societies, although it remains important in developing nations, and consequently there has been a shift in diagnostic paradigms to that of valve type, then valve pathology followed by aetiology.

Many items previously classified in ICD-10 as ‘Other forms of heart disease’ (I30-I52) have become major clinical issues in today’s cardiology, warranting the creation of new distinct higher-level categories. Two examples are:

- Diseases of the myocardium, including extensive subsections on Myocarditis and Cardiomyopathy.
- Cardiac arrhythmia, including a large new subsection on ‘Cardiac arrhythmia associated with genetic disorder’ and ‘Pacemaker or implantable cardioverter or defibrillator or lead dysfunction’, both of which are increasingly important areas of clinical practice. The changes in this section have had major input and endorsement from the Paediatric & Congenital Electrophysiology Society and the International Society for Nomenclature of Paediatric and Congenital Heart Disease.

The change in the ICD revision process to be clinically driven has meant that areas primarily managed by non-cardiologists have been relocated to more suitable chapters. Thus, Cerebrovascular diseases (I60-I69) have been reclassified to Chapter 08, ‘Diseases of the nervous system’ and oesophageal varices (I85) have been relocated to ‘Diseases of the digestive system (Chapter 13).

A new subsection on Pulmonary Hypertension in the Pulmonary heart disease and diseases of pulmonary circulation section, is based on the resulting paper Updated Clinical Classification of Pulmonary Hypertension, following the 5th World Symposium held in Nice, France, in 2013.

The postprocedural disorders section has been markedly enlarged reflecting increased survival after cardiovascular procedures over the last two decades with recognition of an increasing number of patients with postprocedural morbidities and disease specific complications.

The section on Congenital anomaly of heart and great vessels and related acquired abnormalities classified to Chapter 20 Developmental anomalies has been based on the
International Paediatric and Congenital Cardiac Code (IPCCC), which has been created over the last decade by the International Society for Nomenclature of Paediatric and Congenital Heart Disease (ISNPCHD, http://www.ipccc.net). As a consequence, the 73 congenital cardiology ICD-10 entities in Q20-Q29 have been expanded to 316 diagnoses, as an accurate summation of the heterogeneity of cardiac malformations seen in clinical practice. Reference was also made to the Anatomic and clinical classification of congenital heart defects (ACC-CHD) with the corresponding IPCCC and ICD-10 codes.

2.33.12 Chapter 12 – Diseases of the respiratory system

2.33.12.1 Chapter 12 – Structure of Chapter 12

There are two main hierarchies in Chapter 12:

1st level - Broad category of disease/disorder type
2nd level - Specific disease/disorder type with some anatomy included
3rd level - Further specificity of disease/disorder type

OR

1st level - Broad category of anatomy
2nd level - Specific disease/disorder type
3rd level - Further specificity of disease/disorder type

2.33.12.2 Chapter 12 – Rationale for Chapter 12

The changes to Chapter 12 have been made principally to provide current clinical terminology and classification of conditions primarily affecting the respiratory system and have been based on input from international societies and stakeholders. Infectious lung diseases have been moved to Chapter 01 to better reflect the infectious nature of these conditions. Neoplasms of the respiratory system are in Chapter 02 Neoplasms, and Developmental respiratory diseases are now located in Chapter 20 Developmental anomalies.

The grouping ‘Upper respiratory tract disorders’ contains upper respiratory tract diseases except for conditions that moved to the Infectious disease chapter.

The Lower respiratory tract diseases shifted from the Chronic lower respiratory diseases of the ICD-10, but Chronic obstructive pulmonary disease (COPD) was made an independent category based on an international concept.

Cystic fibrosis has been moved to Certain lower respiratory tract diseases and multi-parented to metabolic disorders in the Endocrine chapter because: ‘The representative clinical conditions of cystic fibrosis are intractable respiratory infection, end stage respiratory failure, exocrine pancreatic insufficiency and digestive organ lesions such as the meconium ileus. Cystic fibrosis is a disease due to an abnormality of the Cl ion channel which is CFTR, symptoms of the respiratory symptom is recognised in nearly all cases of patients. The cause of death is mainly respiratory abnormality, and this disease is the target disease of lung transplantation.’ This description of cystic fibrosis is found in
representative textbooks (‘Diseases of the Airways’ in the textbook ‘Fraser and Pare’s Disease of the Chest’).

- ‘OBSTRUCTIVE DISEASES’ in the textbook ‘Murray and Nadel’s Textbook of Respiratory Medicine’
- ‘OBSTRUCTIVE LUNG DISEASES’ in the textbook ‘Fishman’s pulmonary diseases and disorders’
- ‘Disease of the Airways’ in the textbook ‘Fraser and Pare’s Disease of the Chest’

The section pertaining to Inhalation, occupational and environmental lung disease has been based on input from the WHO Occupational Health Division.

The Certain specified respiratory diseases principally affecting the lung interstitium shifted from the Other respiratory diseases principally affecting the interstitium. The Idiopathic interstitial pneumonitis was made an independent category based on an international concept and the category of the Primary interstitial lung diseases specific to infancy and childhood was created independently based on the proposal of paediatric Topic Advisory Group (TAG).

The section of the Certain diseases of the respiratory system and the section of the Postprocedural respiratory disorders were shifted from Other diseases of the respiratory system of ICD-10 except the Mediastinal and diaphragm disorders that moved to the section of Pleural, diaphragm and mediastinal disorders.

2.33.13 Chapter 13 – Diseases of the digestive system

2.33.13.1 Chapter 13 – Structure of Chapter 13

The general hierarchy of Chapter 13 consists of the following:

1st level - Detailed anatomy
2nd level - Specific disease/disorder type
3rd level - Further specificity of disease/disorder type

2.33.13.2 Chapter 13 – Rationale for Chapter 13

ICD-11 has been improved in structure and content to include diseases and disorders of the orofacial complex. There are several other tissues which as essential components of the orofacial complex, have an important function, and their impairment will have a direct impact on oral health status. It is important to recognise that oral health is more than having healthy teeth; having oral health is being free of chronic oral-facial pain conditions, oral and pharyngeal cancers, oral soft tissue lesions, periodontal (gum) disease, tooth decay and tooth loss and tooth surface loss, birth defects such as cleft lip and palate, and scores of other diseases and disorders that affect the oral, dental, and craniofacial tissues (orofacial complex) as well as associations with systemic health and disease. This underlines the importance of providing a coherent system for coding and classifying data on orofacial complex diseases and disorders so that the oral health professional can record
and collect data from each patient at their clinics, regardless of whether such facility may be part of large hospitals, or small clinics. It is anticipated that being able to record and interpret such data will enable health professionals to contribute to the improvement of oral health as an essential component of general health and will stimulate the use of ICD-11 by oral health personnel.

Major changes have been made to this chapter with very detailed anatomical groups being added to the hierarchy for the digestive tract, according to rostral-caudal order, with the exception of categories for hernia, functional gastrointestinal disorders, and inflammatory bowel diseases.

Functional gastrointestinal disorders are independently described because their pathophysiology is considered from the standpoint of ‘Brain-Gut axis’, and not only from their impact on the gastrointestinal tract. Inflammatory bowel diseases are also independently described mainly because Crohn’s disease involves several organs. In each anatomical group (organ group), aetiology based classifications are used to sub-classify disorders. Particularly, GI disorders are arranged in the following categories:

A. Acquired anatomical or morphological alterations

B. Motor disorders

C. Inflammation including ulcer

D. Vascular disorders

E. Non-neoplastic polyps

In addition, there are two other categories listed, although Chapter 13 is not the primary place for these disorders.

F. Structural developmental anomalies (located in Chapter 20 Developmental anomalies)

G. Neoplasms (located in Chapter 02 Neoplasms)

Important or common digestive diseases have been allocated their own category, for example gastro-oesophageal reflux disease, columnar metaplastic epithelium, intestinal malabsorption and protein-losing enteropathy, ulcerative colitis, non-alcoholic fatty liver disease and diverticular disease. Polyps are now classified independently, and not in the ‘other diseases’ section of anatomical site.

Common digestive diseases extending over several organs are classified principally into the disease category of rostral organ. For example, ‘Gastroenteritis’ is classified in ‘Gastritis’, and ‘Gastroduodenal ulcer’ is classified in ‘Gastric ulcer’. The item ‘Peptic ulcer, site unspecified’ should not be used due to advances in medical technology. It should be classified into either the ‘Oesophageal ulcer, Gastric ulcer, Duodenal ulcer or Anastomotic ulcer’ category, depending on the disease site.
Vascular disorders of GI organs have been allocated their own category. Oesophageal varices, gastric varices and haemorrhoids are now classified in Chapter 13. In 'Diseases of liver', there are new independent categories including Metabolic and transporter liver disease, Autoimmune liver diseases, Non-alcoholic fatty liver disease and Vascular disorders of the liver.

For the classification of Chronic liver disease with cirrhosis, 'Liver cirrhosis', an item in ‘Hepatic fibrosis and cirrhosis’, is used. For example, ‘Chronic hepatitis B’ and ‘Liver cirrhosis’, ‘Chronic hepatitis C’ and ‘Liver cirrhosis’, ‘Autoimmune hepatitis’ and ‘Liver cirrhosis’, ‘Primary biliary cholangiopathy’ and ‘Liver cirrhosis’, etc. There are new independent sections for ‘Diseases of gallbladder and biliary duct’ and ‘Diseases of pancreas’. Within these new sections, there are new independent categories including Structural developmental anomalies, Congenital anomalies, Acquired anatomical alterations, Cholangitis, Cystic diseases of the pancreas, Chronic pancreatitis and Autoimmune pancreatitis.

2.33.14 Chapter 14 – Diseases of the skin

2.33.14.1 Chapter 14 – Structure of Chapter 14

The general hierarchy of Chapter 14 consists of the following:

1st level - Broad category of disease/disorder type
2nd level - Specific disease/disorder type with some anatomical site
3rd level - Further specificity of disease/disorder type

2.33.14.2 Chapter 14 – Rationale for Chapter 14

Major changes including a restructure have been made to this chapter adding detail coming from the fusion of the American, British, and German dermatological terminologies.

2.33.15 Chapter 15 – Diseases of the musculoskeletal system or connective tissue

2.33.15.1 Chapter 15 – Structure of Chapter 15

The general hierarchy of Chapter 15 consists of the following:

1st level - Broad category of disease/disorder type
2nd level - Specific disease/disorder type with some anatomical site
3rd level - Further specificity of disease/disorder type

2.33.15.2 Chapter 15 – Rationale for Chapter 15

The American College of Rheumatology and European League Against Rheumatism (ACR/EULAR) Diagnostic Criteria for Rheumatoid Arthritis (under development) was used to inform the code hierarchy and content model attributes for Rheumatoid arthritis. Current literature informed the change of title of ‘systemic connective tissue disorders’ to ‘non-organ specific systemic autoimmune disorders’. The changes to vasculitis were based
on the classification of the Chapel Hill International Consensus Conference on the Nomenclature of Systemic Vasculitis.

The category 'Dermatopolymyositis' was changed to 'Idiopathic inflammatory myopathies' with a change of axes and introduction of further granularity.

The revisions to the classification of spondyloarthritis reflect current expert opinion with comments from Dr Robert Landewé, with a separation of axial and peripheral. Together, the axial and peripheral spondyloarthritis criteria cover the entire spectrum of what was formerly called (undifferentiated) spondyloarthritis and (ankylosing) spondylitis. There is re-arrangement of infective spondyloarthritis, with a secondary axis for the major types of infective process, i.e. bacterial, fungal etc., and supplementary codes to be used for the specific infection.

The new category for Auto-inflammatory syndromes is based on the work of the International Society of Systemic Auto-inflammatory Disease (ISSAID).

**2.33.16 Chapter 16 – Diseases of the genitourinary system**

**2.33.16.1 Chapter 16 – Structure of Chapter 16**

Chapter 16 has specific sections for Diseases of the female genitourinary system, Diseases of the male genitourinary system, Disorders of breast, Diseases of the urinary system and Postprocedural disorders of the genitourinary system.

The general hierarchy of Chapter 16 consists of the following:

1st level - Broad category of body system
2nd level - Broad disease/disorder type (with some anatomy)
3rd level - Specific disease/disorder type (with some anatomy)

**2.33.16.2 Chapter 16 – Rationale for chapter 16**

The changes to Chapter 16 are aimed at increasing the clinical utility of the classification by providing a more user-friendly hierarchical structure, increased international comparability and standardisation of genitourinary conditions. This is accomplished by including the most scientifically accurate and internationally agreed-upon terms and definitions provided by various international stakeholders, including the WHO department of Reproductive Health and Research, the International Federation of Gynaecology and Obstetrics (FIGO), National Kidney Foundation and the Kidney Disease International Global Outcomes (KDIGO).

The chapter hierarchy is subdivided into Diseases of the Female Genital System, Diseases of the Male Genital System and Diseases of the Urinary system. This architecture of the female genital system and male genital system was designed to improve the end-user experience. The female genital system hierarchy is broken down into non-inflammatory and inflammatory disorders, and then further divided by anatomical grouping in the order of gynaecologic (and obstetric) examination (from external to internal genitalia), where applicable. (Vulva, Vagina, Cervix, Uterus, Fallopian Tube, Ovary, Pelvic Cavity).
These groupings have further subdivisions for congenital and acquired abnormalities, as appropriate.

To reflect the current scientific understanding for certain genitourinary conditions, additional detail has been included for the following areas:

Amenorrhea

Ovarian dysfunction

Female pelvic pain

Endometriosis

Adenomyosis

Female infertility

Male infertility

Early pregnancy loss

Pregnancy outcomes

The Kidney failure section of the classification has been revised to reflect the current evidence-based definitions of acute kidney versus chronic kidney disease and the new Kidney Disease ('Improving Global Outcomes (KDIGO) definitions and staging system for acute kidney failure').

2.33.17 Chapter 17 – Conditions related to sexual health

2.33.17.1 Chapter 17 – Structure of Chapter 17

New chapter in ICD-11 divided into major sections for:

Sexual dysfunctions

Sexual pain disorders

Gender incongruence

1st level - Broad category of condition
2nd level - Specific type of condition
3rd level - Specific disease/disorder

2.33.17.2 Chapter 17 – Rationale for Chapter 17

The chapter has been formulated to group sexually related conditions. This also allows categorisation of gender identity related conditions without stigmatisation, while maintaining recognition of these entities as real conditions so that related health interventions can be accommodated within the health system.
2.33.18 Chapter 18 – Pregnancy, childbirth or the puerperium

2.33.18.1 Chapter 18 – Structure of Chapter 18

The general hierarchy of Chapter 18 consists of the following:

1st level - Broad category related to the stages of pregnancy, childbirth or the puerperium
2nd level - Specific disease/disorder type
3rd level - Further specificity of disease/disorder type

2.33.18.2 Chapter 18 – Rationale for Chapter 18

The changes to this chapter are intended to increase clinical utility of the classification by providing a more user-friendly hierarchical structure. Increasing the international comparability and standardisation of conditions related to pregnancy, childbirth and the puerperium by including the most scientifically accurate and internationally agreed-upon terms and definitions provided by various international stakeholders, such as the WHO department of RHR, International Federation of Gynaecology and Obstetrics (FIGO), was also a highly important aspect of the modifications. Particular attention was given to correct integration of concepts and definitions of the International Committee Monitoring Assisted Reproductive Technologies (ICMART).

The changes reflect the current understanding for certain conditions related to pregnancy, childbirth and the puerperium. Additional specifications have been included for Early pregnancy loss.

2.33.19 Chapter 19 – Certain conditions originating in the perinatal period

2.33.19.1 Chapter 19 – Structure of Chapter 19

The general hierarchy of Chapter 19 consists of the following:

1st level - Broad category disease/disorder type and some anatomy
2nd level - Specific disease/disorder type
3rd level - Further specificity of disease/disorder type

2.33.20 Chapter 20 – Developmental anomalies

2.33.20.1 Chapter 20 – Structure of Chapter 20

Chapter 20 has undergone a major restructure with it now having four major sections

Structural developmental anomalies primarily affecting one body system

1st level - Broad category of anatomy
2nd level - Specific disease/disorder type
3rd level - Further specificity of disease/disorder type

Multiple developmental anomalies or syndromes
2.33.20.2 Chapter 20 – Rationale for Chapter 20

The ICD–10 classification of developmental anomalies is covered by chapter XVII: Q00-Q99 Congenital malformations, deformations and chromosomal abnormalities.

It is a very heterogeneous chapter, including malformations, genetic syndromes (with or without malformations) and chromosomal anomalies. This leads to confusion between genetic origin of a disease and malformation. Therefore, all genetic syndromes without structural developmental anomalies are excluded from this chapter and are reallocated to appropriate chapters of the ICD-11, according to the affected body system(s).

The new chapter 20 has three main divisions:

- Structural developmental anomalies/malformations
- Multiple developmental anomalies and syndromes
- Chromosomal anomalies and genetic defects

The first division ‘Structural developmental anomalies/malformations’ includes isolated conditions affecting only one body system. It is organised in sections corresponding to those body systems, which are also classified in the other relevant chapters of ICD–11.

The second division ‘Multiple developmental anomalies and syndromes’ includes conditions affecting several locations within one body system, or several body systems simultaneously. Syndromes which can be said to predominantly affect one body system are assigned to corresponding sections within this division. Syndromes which affect several body systems, without one clearly predominating, are put together in a specific section at the end of the division. There is also a section for Dysplasia syndromes due to inborn errors of metabolism, all of them primarily classified in the chapter for metabolic diseases.

The third division ‘Chromosomal anomalies and genetic defects’ departs from the clinical approach generally followed in the ICD and classifies developmental anomalies defined genetically or cytogenetically, since there is no clear-cut distinction between genetics and cytogenetics. We have started to include specific deletions and duplications corresponding to a clear phenotype, knowing that many more will be described in the coming years.
Future ones will be added whenever necessary, during the post-publication revisions of the ICD–11.

A special problem is how to deal with diseases historically defined clinically but including a chromosomal/genetic anomaly as aetiology. In some cases, there are several aetiologies for the clinical entity, and not all of them are chromosomal anomalies: for instance, Silver-Russell syndrome can be caused by a 11p15 duplication, a 7p11.2p13 duplication, but also by maternal uniparental disomy of chromosome 7 or 11 and imprinting defects of 11p15. In other cases, there is an overwhelming correspondence between the clinical entity and a cytogenetic aetiology: for instance, Williams-Beuren syndrome corresponds to the 7q11.23 deletion.

Polyhierarchy is used in a restricted way within the frame of this chapter: once a disease is assigned to a section, it is generally not secondarily classified elsewhere in the chapter. The structure would otherwise become too intricate. On the other hand, all entities in this chapter are to be classified in other chapters of ICD–11, when appropriate.

2.33.21 Chapter 21 – Symptoms, signs or clinical findings, not elsewhere classified

2.33.21.1 Chapter 21 – Structure of Chapter 21

Chapter 21 is divided into major sections based on body systems. Each of these sections has the following categories, as appropriate:

- Symptoms and signs
- Clinical findings

An additional section is located at the end of this chapter for ill-defined and unknown causes of mortality.

2.33.21.2 Chapter 21 – Rationale for Chapter 21

The different chapters of ICD–10 included several clinical manifestation categories, some of them as asterisk codes. In order to simplify the structure, improve the use of postcoordination, and also to remove ‘ill-defined’ conditions from organ chapters, several former asterisk codes, additional detail for diverse conditions, and the said ill-defined conditions have been moved here. All follow the main organisation by anatomy, and the anatomical groupings have a secondary parent to the relevant organ chapter, improving the user guidance.

2.33.22 Chapter 22 – Injury, poisoning or certain other consequences of external causes

2.33.22.1 Chapter 22 – Structure of Chapter 22

The general hierarchy of Chapter 22 consists of the following:
2.33.22.2 Chapter 22 – Rationale for Chapter 22

The principles of the revision were:

- Maintain good back-compatibility with ICD–10, particularly by minimising change at the former three-character level. Change at the former four-character level is more extensive but has also been done with this principle in mind.

- Take account of the extensions to this chapter in clinical modifications of ICD–10 because:
  - They are evidence of extensions required to serve clinical purposes in identified situations.
  - It is preferable to minimise incompatibilities with these classifications.

- Take account of classifications other than ICD that are in wide clinical use for conditions in scope for this chapter.

- Take account of advice, solicited and proffered.
  - Increased attention to distinctions pertinent to treatment choices and to outcomes, including disability.

These include allowing identification of clinically and prognostically important aspects of fractures (notably whether they extend into a joint) and organ/vessel injuries (degree). Some conditions are much more important when bilateral, and in such instances side has been proposed as precoordinated entities (e.g. injury of the eyes). The United States' clinical modification of ICD-10 (ICD-10-CM) was particularly valuable in this regard, as its injury chapter makes many distinctions, beyond ICD–10, which follow or are consistent with credible and widely used clinical classifications relevant to injury treatment and outcome.

Increased attention has been given to injury conditions specific to childhood (e.g. greenstick and epiphyseal fractures) and to injury conditions that are indicative of possible intentional injury (e.g. posterior rib fractures, ‘bucket-handle’ and ‘corner’ fractures).

The work was done with awareness that this chapter is not used to code Underlying Cause of Death.

The morbidity use case is particularly important for this chapter.
2.33.23 Chapter 23 – External causes of morbidity or mortality

2.33.23.1 Chapter 23 – Structure of Chapter 23

The general hierarchy of Chapter 23 consists of the following sections:

1st level - Intent of external cause (unintentional, intentional self-harm, assault, undetermined intent and intent pending.)
2nd level - Broad category of mechanism of external cause
3rd level - More specific mechanism and objects/substances involved in causing injury
4th level - Further characterisation of the external cause

Other sections include Exposure to extreme forces, Maltreatment, Legal intervention, Armed conflict and Causes of health care related harm.

2.33.23.2 Chapter 23 – Rationale for Chapter 23

The main aim of the changes was to provide a more uniform coding structure while still maintaining high compatibility with ICD–10. The changes to the traffic accident categories are aimed at simplifying code selection, while the section on Operations of war and armed conflicts has been revised to capture the more current situations of armed conflicts. Another enhancement has been to produce a single, hierarchical list of noxious substances to serve the Injury and External Causes chapters. This list has been drawn from appropriate external systems (e.g. SNOMED-CT) for reference information.

All mechanisms/objects codable for all intents:

- More uniform code structure
- Revised ‘Intent’ dimension (N.B. Intent pending: ISH: suicidal/non-suicidal)
- Retain transport codes, but expand vehicle types
- Expanded Place of Occurrence codes
- Expanded and revised Activity dimension (N.B. work-relatedness)
- Revision of Complications of Medical & Surgical Care
- Expanded Legal/War Codes
- Improved provision for maltreatment syndromes
- Introduction of additional dimensions (optional)
- Revision of External Cause index, rules and guidelines
- Provide for Mortality, Morbidity, Lower Resource Settings, Research

Progress has been made on all of these points, though constrained in some respects, particularly for the mortality use-case (due to the tight constraints on code-space combined with the lack of provision for postcoordination/cluster-coding). A section on limitations is at the end of these notes.

Notes provided here focus on several of these points; additional material will be provided on other aspects on request. Comments are also provided here on the two main issues that
involve both the External Causes chapter and the Injury chapter (both also involve Chapter X Extension codes): substances; complications of care (Safety & Quality).

**Transport**

Four dimensions are implicit in the ICD–10 range V01-V89: injured person’s mode of transport (e.g. motorcycle), whether the injurious event occurred in road traffic (if so, the resulting injury is a road injury), the injured person’s role (e.g. passenger), and what other type of vehicle was involved, if any (counterpart). All four dimensions are required for a revised structure that is conceptually equivalent to the ICD–10 ‘transport accidents’ module at four-character level.

All four dimensions have been precoordinated in the Unintentional transport injury module. This produces a structure with high back-compatibility with ICD–10 V– at four-character level. It preserves all top-level modes of transport categories (some now split) and the four conceptual dimensions (mode; and for land transport modes: whether in traffic, transport user role and counterpart).

In recognition of code-space limitations, and of the fact that most transport injury cases are unintentional, precoordination of transport cases in the other main intent blocks (intentional self-harm, assault, undetermined intent, and intent pending) is limited to intent by mode of transportation. However, the other dimensions are available for optional use.

The revised transport block includes changes made to resolve problems identified with the ICD–10 transport section.

- Split several modes of transport to enable identification of important and emerging types that cannot be identified in ICD–10.
- Refined and revised terms and definitions (for clarity, to fill gaps in the set provided in ICD–10 and to improve comparability with terms used internationally for road safety).
- Various other revisions (e.g. of types of vessel in water transport section). Note that the coordination order has been altered from the equivalent in ICD–10, from: mode, counterpart, then user role and traffic status combined to: mode, traffic status, user role, counterpart.

The main reason for this change was to simplify the selection of ‘traffic accident’ categories, which are frequently required when reporting road injury.

**War and armed conflict**

A revised classification is provided for inclusion as the expansion of intent category Armed conflict (Operations of war in ICD–10). The classification largely follows the expansion of Y36 in the United States’ clinical modification of ICD–10 (ICD–10-CM). This follows the 4-character categories in ICD–10 and provides subdivisions, which follow inclusion notes given in ICD–10. In addition, sub-categories are provided to distinguish whether the injured person was military or civilian.
The rubric has been altered by the addition of ‘...and armed conflict’ to ‘Operations of war’, and the inclusion term has been altered accordingly. ‘War’ and ‘civil insurrection’ (which also formed part of the inclusion term) were not defined in ICD–10. The use of a term broader than ‘war’ is considered desirable because war, in the sense of formally declared armed conflicts between nation states (or subnational entities) has become uncommon. Armed conflicts of a range of types and intensities, while tending to become less common, remain much more numerous than wars. Restriction of use of this category to declared wars, and/or to armed conflicts that meet a commonly used criterion of intensity (1,000 or more battle-related deaths in a calendar year = war) was thought to be unduly restrictive. The alternative proposed here is to also include injuries due to ‘Minor’ armed conflicts, defined as those resulting in 25 to < 1,000 battle-related deaths in a calendar year. Application of the definition is aided by the existence of a publicly accessible database listing conflicts found to satisfy it.

Crossover issues

These are matters that affect both the injury and the external causes chapters, and other parts of the ICD.

Toxic effects of substances

Toxic effects of noxious substances appear in ICD–10 at several points, in the Injury and External Causes chapters, and in other chapters. Code lists at those points differ in specificity and are not completely consistent. A design aim for ICD–11 is to produce a single, hierarchical list of noxious substances to serve all of the purposes required for the Injury and External Causes chapters. It is also intended to draw and link with appropriate external systems (N.B. SNOMED-CT) to provide reference information. The benefits of this are: external source(s) can define-by-example the inclusions of the ICD–11 list; and if the external source(s) are actively updated, then this provides a way for the ICD–11 coverage of substances to remain current.

The term ‘Harmful effects’ is used for all types of harm resulting from harmful chemical effects of substances of all types. It is recognised that other terms, such as ‘toxic effect’, ‘poisoning’, ‘chemical corrosion’ and ‘envenomation’ are sometimes used in the context of particular substances. These terms will be included as synonyms and subordinate terms where in common use. A number of sources were consulted, including ICECI Objects & Substances dimension; Anatomical Therapeutic Chemical (ATC) classification; TAG-IEG advisory groups on drugs and poisons; Quality and safety TAG; SNOMED; IPCS INTOX.

The list has two main hierarchical levels.

The first, with 16 categories, is conceptually related to the code-list that is present in ICD–10 at X40-X49 (Accidental poisoning by and exposure to noxious substances) and the equivalent points in the Intentional Self-harm and Undetermined intent code-blocks. The list results from application of these principles:
• It should have few categories. This is necessary for practicability, especially in the context of cause of death coding and because the block structure of the external causes chapter has the effect that each additional category adds several rows.
• The categories should refer to substances or classes of substances that are important causes of mortality or morbidity.
• As many as possible of the categories should be sufficiently specific to be meaningful as reporting groups. (By comparison, several categories in the ICD–10 blocks such as X40-X49 are so broad as to be difficult to interpret).
• The several main contexts of exposure were kept in mind when specifying categories (i.e. recreational/street use; clinical use; self-harm; industrial and other exposures).

The 16 categories, either alone or combined with others, allow backwards comparability with eight of the ten categories in ICD–10 X40-X49 (and the equivalent groups in the ISH and Undetermined intent blocks). The only exceptions are two residual groups: ‘...other gases and vapours’ and ‘...other and unspecified chemicals and noxious substances’. The second level provides categories (n=381), with about the same number and specificity of substances that are provided for in the injury and external causes chapters of ICD–10. It includes all of the categories of substances that are specified in the ‘Cause of harm’ component of the Quality and Safety TAG classification.

Some categories have been added: to allow for pharmacological innovation and changes in drug use (e.g. synthetic cannabinoids); to reflect additions to ICD–10 made in its clinical modifications (e.g. more specificity concerning anticoagulants); to allow more specific identification of prominent drugs (e.g. paracetamol); to provide for additional widely-used recreational drugs (e.g. Cathinone, the main active agent in khat); and on advice from other TAGs (e.g. types of substance added by the Safety and Quality TAG). We anticipate that more categories will be added in future updates, to reflect changes in drug availability and use.

A more comprehensive list of substances (a superset of the hierarchical list), with synonyms for many of the entries, will be provided in the Section 2.33.26.1 ‘Extension codes’. That list shares the same hierarchical structure as the pre-coordinated codes. It also takes account of the ICD–11 Supplementary Classification of Contact Allergens prepared by the Dermatology TAG. Entries in the Extension codes substances list will be specified in terms of equivalent terms in SNOMED-CT.

Complications of care (Quality and Safety)

This section briefly describes the model for coding complications of care that has been developed by the Quality and Safety Topic Advisory Group (TAG).

The model has three parts, each of which must be coded. The postcoordinated codes for all the parts must be designated as belonging to a cluster. The three concepts are:

1. The resultant injury or harm;
2. The cause of harm; and
3. The ‘Mode/Mechanism’ of harm. Classifications and code-sets have been developed for (2) and (3) by the Quality and safety TAG. The categories have been entered into the External Causes chapter. The resultant harm (1) is to be coded by using the most appropriate disease or injury code from any part of ICD–11.

The construct would, in principle, fit well into ICD–11 as follows:

1. Resultant injury or harm. Code selected from anywhere in ICD–11.

2. The cause or ‘Mode’ of harm: Code selected from the relevant block in External Causes chapter

3. ‘Mode/Mechanism’ of harm

Sanctioning rules lead coders to the subset of ‘Mode’ codes that are relevant, given the selected ‘Cause’ (e.g. if ‘Cause’ is a drug, then the relevant ‘Modes’ are categories such as overdose and underdose).

2.33.24 Chapter 24 – Factors influencing health status or contact with health services

2.33.24.1 Chapter 24 – Structure of Chapter 24

This chapter has two major sections:

Reasons for contact with the health service

Factors influencing health status

The general hierarchy of Chapter 24 consists of the following axis:

1st level - Broad category of a particular health status or service

2nd level - Specific condition

2.33.24.2 Chapter 24 – Rationale for Chapter 24

Initially, the Functioning Topic Advisory Group for ICD–11 (fTAG) was tasked with the review of the Factors Chapter. They were to evaluate the necessity of each of the 801 codes and propose a revised hierarchical structure for the essential content that would remain. This content was to be both clinically relevant and use-friendly as well as allowing the necessary space for expansion using the extension codes, as necessary. fTAG organised a review that identified the major ‘types’ of codes as ‘diagnostic’, ‘interventional’, ‘contextual factors’ and ‘other/debatable’. This review was combined with the general structure of the ICPC2 classification section on ‘social problems’ and a new organisation was designed that combined the ICPC2 hierarchy with the ICD–11 codes. For the JLMMS, a shoreline exercise was then undertaken on the new structure to decrease granularity seen as unnecessary.
2.33.25 Chapter 25 – Codes for Special purposes

2.33.25.1 Chapter 25 – Structure of Chapter 25

This chapter consists of two blocks:

International provisional assignment of new diseases of uncertain aetiology, containing the international emergency codes,

AND

National provisional assignment of new diseases of uncertain aetiology, containing codes for use by individual countries

2.33.26 Chapter 26 - Traditional medicine

This Traditional Medicine Module 1 (TM1) chapter is a new chapter for ICD, hence labelled 'Module 1,' and as such is referred to as the 'TM1 chapter'. The rationale for its inclusion in ICD-11 is to enable Traditional Medicine health services and encounters to count and be counted nationally and internationally. The Module in this chapter in its current form refers to disorders and patterns which originated in ancient Chinese Medicine and developed throughout history to incorporate contemporary science and technology. These disorders and patterns are commonly used in China, Japan, Korea, United States of America, Australia, Europe and elsewhere around the world. The classification rubrics represent a unified set of harmonised Traditional Medicine disorders and patterns from national classifications from China, Japan and Korea. Future Modules may be developed for other forms of Traditional Medicine practices.

Scope:

This chapter has currently been designed for morbidity recording and reporting. It must not be used for mortality coding and reporting.

Content and structure:

The content and structure of the TM1 Chapter represent a common language developed jointly through the international cooperation of Traditional Medicine clinicians, researchers, academics and classification experts to enable international comparability of practice and reporting of morbidity in Traditional Medicine. Standardisation of this TM1 classification will allow clinical documentation in different countries to incorporate the same concepts and enable coders and users to extract comparable morbidity data from that documentation. Coders must also be guided by rules which reflect the clinical diagnostic decision-making process. However, the rules are relatively flexible to allow for national adaptations and research questions concerning relationships between diseases, disorders and patterns to be framed from a number of different angles.

The English terms do not necessarily represent the most common translation of the TM terms in Chinese, Korean or Japanese. Where the best fit English TM translation resulted in the same term as used in Western Medicine, it was necessary to indicate a difference
between the Western Medicine (WM) concept and TM concept where the same term had different definitions in TM and WM. This difference in definition is indicated by the use of (TM1) for disorders and patterns throughout the TM chapter.

**Terminology:**

The Traditional Medicine Module 1 chapter uses the terms disorder and pattern to describe concepts. This is different from the concept descriptions in the Western Medicine chapters which refer to diseases (clinical pictures) and syndromes (clinical presentations). The TM1 chapter is divided into separate sections for disorder and pattern to emphasise the independence of these concepts.

**Definitions**

**A disorder** in traditional medicine (disorder (TM1)) refers to a set of dysfunctions in any body system which is judged from associated signs, symptoms or findings. Each disorder (TM1) may be defined by its symptomatology, aetiological explanation based on traditional medicine, course and outcome, treatment response or linkage to interacting environmental factors. A disorder (TM1) is a clinical picture that is relatively stable and reflects the local pathology and related specific manifestations commonly found in the anatomy and function of the affected individuals.

**A pattern** in traditional medicine (pattern (TM1)) refers to the manifestation of the patient’s health condition at a given moment in time including all findings which may include:

- **Symptomatology:** pattern of specific and non-specific signs, symptoms or unique findings by traditional medicine diagnostic methods, including the taking of the pulse, examination of the tongue, abdominal examination and other methods that reflect the systemic response of the patient in a dysfunctional condition.
- **Constitution:** the characteristics of an individual, including structural and functional characteristics, temperament, ability to adapt to environmental changes, or susceptibility to various health conditions.

A pattern (TM1) is a clinical picture that is relatively temporary, reflects on the systemic response of the patient and combined pattern of specific and non-specific manifestations that usually hold a multifactorial relationship with the local pathology and the constitutional traits of the patient. A pattern may show individual difference even in the individuals affected by the same pathology that may be further analysed by the theoretical frame of Traditional Medicine.

Traditional Medicine disorder and pattern are named after the body structures, causal explanations, properties and severity which present for clinical investigation and diagnosis. TM1 pattern may denote an individually different pattern (TM1) of systemic responses to the WM disease or TM1 disorder. Pattern is a concept unique to TM1 and may be different from TM1 disorder in the following ways:

**Table 1: Characteristics of Traditional Medicine Disorders and Patterns**
<table>
<thead>
<tr>
<th>Distinguishing Feature</th>
<th>Disorder in Traditional Medicine</th>
<th>Pattern in Traditional Medicine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant/Temporary</td>
<td>A clinical picture that is relatively constant throughout the duration of that disorder</td>
<td>A clinical picture that is relatively temporary</td>
</tr>
<tr>
<td>Constant Pathology/Temporary</td>
<td>Usually delivers information reflecting the constant pathology</td>
<td>Usually delivers information reflecting the temporary overall manifestation or response of the patient</td>
</tr>
<tr>
<td>Specific/ Non-specific</td>
<td>A concept that summarises findings that are specific to the pathologic process under investigation</td>
<td>The combination of the manifestations that encompasses both specific symptoms/signs and non-specific findings</td>
</tr>
<tr>
<td>Linear/ Multifactorial</td>
<td>May be applied for a time span. A disorder coding may be based on the main pathologic process which may show a causal relationship with the main manifestations in the patient</td>
<td>A pattern may be applied for a specific time span, too. However, a pattern code is based on the summarised whole picture that may be observed in the patient based on the perspectives of traditional medicine theories. A pattern is recognized based on the analysis of the systemic findings in the patient's body and mind which reflect the pathologic processes, responses to the pathologic processes, other concomitant findings, and innate or acquired constitutional traits of the patient</td>
</tr>
<tr>
<td>Commonality/ Individuality</td>
<td>Used to describe the general characteristics considered to be relatively common to the population suffering from one particular disorder</td>
<td>Used to describe the individual characteristics considered to be relatively specific to the patient at that time</td>
</tr>
<tr>
<td>General/ Theoretical</td>
<td>Usually described with general terms of anatomy and physiology together with terms of signs and symptoms</td>
<td>Usually described with terms of the traditional medicine theories that are used to summarise the underlying mechanism in the patient such as yin and yang balance, cold and heat, meridian, or constitution</td>
</tr>
</tbody>
</table>
2.33.26.1 Section V – Supplementary section for functioning assessment

This chapter is new. The list of 47 entities in this chapter is intended for assessment and scoring in the context of ICD. It is using ICF functioning domains of high explanatory power (ICF Annex 9). The categories are intended to be used as a set. The set has been defined in a way that general and domain specific summary scores can be calculated using the WHO Disability Assessment Schedule 2.0 (WHO DAS 2.0) or the WHO Model Disability Survey (MDS) be accommodated.

2.33.27 Section X - Extension Codes

This chapter is new. Extension codes are envisaged as providing the basis for postcoordination of ICD–11 codes, being the repository for all codes in a linearization that are not eligible for use as stem codes. This mechanism is clearly envisaged for use with the morbidity linearization, and in that context mandatory (i.e. required) postcoordination can be accommodated. The role of Extension codes and postcoordination in the context of the mortality linearization is less clear, and the provision for mandatory postcoordination of Extension codes dimensions in the mortality linearization has been judged to be unlikely.
3 Part 3 - New in ICD-11
### 3.1 ICD maintenance and application

The ICD maintenance process allows the continuous adaptation of the ICD following the evolution in the understanding of diseases, treatments, and prevention. A proposal and review mechanism on an online platform makes the process transparent. Workflows ensure that proposed changes are considered both from a medical and scientific perspective and from their value and place in a particular use case.

**Table 1: Major changes from ICD-10 to ICD-11, including rationale**

<table>
<thead>
<tr>
<th>Coding Scheme</th>
<th>ICD-10</th>
<th>ICD-11</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chapter numbering is roman numerals</td>
<td>Chapter numbering is Arabic</td>
</tr>
<tr>
<td></td>
<td>3-character categories, each of which can be further divided into up to 10 four-character subcategories.</td>
<td>Stem code (category) is 4 characters and there are 2 levels of subcategories</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>An alphanumeric code with a letter in the second position and number in the third character position to differentiate from the codes of ICD-10. The inclusion of a forced number at the 3rd character position prevents spelling ‘undesirable words’. A letter in the 2nd character position allows for clear distinction between a code from ICD-11 and one from ICD-10. Alphanumeric codes cover the range from 1A00.00 to ZZ9Z.ZZ. Codes starting with an ‘X’ indicate an extension code (see Extension code chapter). The letters ‘O’ and ‘I’ are omitted to prevent confusion with the numbers ‘0’ and ‘1’.</td>
</tr>
<tr>
<td></td>
<td>The first character of a code is a letter and does not relate to the chapter number. The letter may have been the same for two short chapters (e.g. Chapter VII (H00-H5) and Chapter VIII (H60-H95), or two letters may have been used for one long chapter (e.g. Chapter XIX S00-T98). Residual category identified by numeric character .8 and unspecified category identified by numeric character .9.</td>
<td>The first character of the code always relates to the chapter. A first character of 1-9 is used for chapters 1 through 9 and for chapters 10 through 27, the first character is a letter. The code range of a single chapter always has the same character in the first position. For example, 1A00 is a code in chapter 1, and BA00 is a code in chapter 11. The terminal letter ‘Y’ is reserved for the residual category ‘other specified’ and the terminal letter ‘Z’ is reserved for the residual category ‘unspecified’.</td>
</tr>
<tr>
<td></td>
<td>Code cluster concept does not exist in ICD-10.</td>
<td>ICD-11 supports postcoordination and the linking codes within a code cluster.</td>
</tr>
</tbody>
</table>
**Terminology**

a range of expressions are used to describe a causal relationship between conditions in a code title

The preferred term is ‘due to’ for categories where two conditions are mentioned and causal sequence exists. Other terms, such as ‘caused by’; or ‘attributed to’ may be allowed synonyms. The phrase ‘secondary to’ is equivalent and may also be included as a synonym.

a range of expressions indicating the concurrence of two conditions in a code title (e.g. ‘in’ or ‘with’).

The preferred term is ‘associated with’ for categories where two conditions are mentioned and there is no causal sequence implied.

**Dagger-Asterisk system and additional sub-classifications**

<table>
<thead>
<tr>
<th>ICD-10</th>
<th>ICD-11</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dagger asterisk system</strong></td>
<td>ICD-10 (and ICD-9) used the dagger asterisk system to describe the aetiological condition for primary tabulation (dagger code) and the clinical manifestation, relevant site and or other aspects (asterisk code). In addition, there were sets of codes to be used to add more detail (e.g. B95-B97) or lists of sub-classifications to add anatomical detail to categories.</td>
</tr>
<tr>
<td><strong>Use of multiple codes for one condition/additional sub-classifications</strong></td>
<td>More than one category could be used to specify more detail for another category. For example, infectious agents (B95-B97) or the asterisk codes.</td>
</tr>
<tr>
<td><strong>‘Code also’ instruction</strong></td>
<td>N/A</td>
</tr>
</tbody>
</table>
The dagger and asterisk system has been removed in ICD-11, but the functionality of coding the aetiology and manifestation remains. A number of former asterisk codes that were previously used to identify manifestations of diseases are now listed in Chapter 21 Symptoms, signs, or clinical findings, not elsewhere classified. A portion of former asterisk codes also reside in the corresponding body system chapter. Asterisk codes that were repetitions of the dagger code were removed. Lists for coding optional anatomical detail have been grouped into one section - ‘Extension codes’.

Other general differences

| ICD-11 |
|-----------------|----------------------------------|
| Category description | All ICD-11 categories have a short and a long description. The short description describes the meaning of the category in 100 words or less and appears in the printed version of the classification. The long description is without length restriction, including detailed information that appears in the content model. |
| Content model | All ICD-11 categories include separate information on anatomy, aetiology and other aspects that can be accessed for search purposes, or when browsing in the tabular list of the MMS. |

Special tabulation lists of ICD-10 continue to exist, but there are two additional ones, the Startup Mortality List (SMoL) and the list for verbal autopsy. Additional special tabulations can be derived from the new multiple parenting technique, e.g. all WHO notifiable diseases, listing all conditions that are assigned to the relevant section of the infectious diseases chapter.

For morbidity, the definition of main diagnosis has changed to be the reason for admission after assessment at the end of the stay. This definition is less prone to interpretation, and countries that had switched from the ‘most resource intensive’ definition to the ‘reason for admission at the end of the stay’ using ICD-10, noticed only small changes in their activity statistics.

3.1.1 Description

The description is a short characterization (maximum of 100 words) of the entity that states things that are always true about a disease or condition and necessary to understand the scope of the rubric. Descriptions do not contain elements intended for in level 3 (common epidemiology) or things that may be true for level 4 (clinical criteria). Descriptions were formerly called ‘short definitions’.

3.1.2 Additional Information

This is a text field that is not mandatory, but that may contain any additional information about, or characteristics of, the diseases or conditions included in the entity. This text field
provides more context for the entity. For example, the most common epidemiologic circumstances, putative or highly suspected aetiologic agents, or other information that may not always be true but may be common, typical, or expected. Additional information was formally called ‘long definition’.

3.1.3 Code Structure

The codes of the ICD–11 are alphanumeric and cover the range from 1A00.00 to ZZ9Z.ZZ. Codes starting with ‘X’ indicate an extension code (see Extension codes). The inclusion of a forced number at the 3rd character position prevents spelling ‘undesirable words’. A letter in the 2nd character position allows for clear distinction between a code from ICD–11 and one from ICD–10.

3.1.4 ‘Present on Admission’

The inclusion of the new Extension codes in ICD–11 provides capacity for coding qualifying information of linked stem codes. Among the new qualifying features is the particularly important status display feature that allows for distinction of diagnoses present at admission from diagnoses arising after hospital stay began.

3.2 Mortality coding in ICD-11

Mortality coding instructions of ICD has matured over time and basically has been maintained for ICD-11, while the text has been formatted using more easy wordings to enhance common understandings and standardized implementation. Major changes in the classification has been incorporated in the mortality coding instructions.

Several new concepts or terminologies of ICD-11, for instance postcoordination or cluster coding, ‘code also’ and ‘use additional code if desired’ instructions will function to capture further information reported on the death certificate. In ICD-10 mortality coding, multiple cause coding, several modification rules in Step M4, or certain flags used in automated coding systems has been used to capture details reported on the death certificate and to facilitate accurate selection of underlying cause. And in this sense, it is considered that the function of postcoordination etc. has been embedded in ICD-10 mortality coding practice, while in ICD-11 the concepts more evident and several new instruction was added to inform how to apply these new concepts (see Part 2 of this Reference Guide).

The following table used in Step M1 for coding complications of diabetes mellitus is provided for optional use. This list is not a complete list of possible complications of diabetes mellitus, and is intended not to be updated but kept for users who are interested in consistency between ICD-10 coding.

<table>
<thead>
<tr>
<th>TUC is:</th>
<th>5A10-5A2Y Diabetes mellitus If desired, postcoordination may be used to specify complications of diabetes mellitus. with mention of: (coma) MB20.1 Coma</th>
</tr>
</thead>
</table>
(ketoacidosis) 5C73 Acidosis
5C50.G Trimethylaminuria
MA18.Y Other specified abnormal findings of blood chemistry

(renal complications) GB40-GB4Z Glomerular diseases
GB61 Chronic kidney disease
GB6Z Kidney failure, unspecified
MF54.0 Smooth contracted kidney
GB90.4Z Renal tubular function disorders, unspecified

(ophthalmic complications) 9A96.Z Anterior uveitis, unspecified
9B10.Z Cataract, unspecified
9B65.2 Chorioretinal inflammation
9B78.1 Background retinopathy and retinal vascular changes
9B78.2 Other proliferative retinopathy
9B7Z Disorders of the retina, unspecified

(neurological complications) 8C12 Certain specified mononeuropathies
8C1Z Mononeuropathy, unspecified
8C0Z Polyneuropathy, unspecified
8C4Y Other specified disorders of nerve root, plexus or peripheral nerves
8C7Y Other specified primary disorders of muscles
8D8Z Disorders of autonomic nervous system, unspecified

(peripheral circulatory complications) BD40.0 Lower limb atherosclerosis
BD4Z Chronic arterial occlusive disease, unspecified
EE80.1 Necrobiosis lipoidica
MC85 Gangrene

(other specified complications) ME60.2 Ulcer of skin of uncertain nature, specified as lower limb
FA2Z Inflammatory arthropathies, unspecified
MG30.5Z Chronic neuropathic pain, unspecified

(coma) 5A41 Hypoglycaemia without associated diabetes

(ophthalmic complications) 9C81.Z Ocular motor nerve palsies, unspecified
9D90 Vision impairment including blindness
| (neurological complications) | 8E7Y Other specified diseases of the nervous system |
|                            | DA7Y Other specified diseases of the stomach or the duodenum |
| (peripheral circulatory complications) | 1A40 Gastroenteritis or colitis without specification of infectious agent |
| (other specified complications) | 1G40-1G41 Sepsis |
|                              | 1C41 Bacterial infection of unspecified site |
|                              | 1F28 Dermatophytosis |
|                              | 1F2D Non-dermatophyte superficial dermatomycoses |
|                              | 1F23 Candidosis |
|                              | 3B20 Disseminated intravascular coagulation |
|                              | 5A41 Hypoglycaemia without associated diabetes |
|                              | 5C80.00 Primary hypercholesterolaemia |
|                              | 5C80.1 Hypertriglyceridaemia |
|                              | 5C80.2 Mixed hyperlipidaemia |
|                              | 5C80.Z Hyperlipoproteinaemia, unspecified |
|                              | 5C76 Hyperkalaemia |
|                              | 5D2Z Metabolic disorders, unspecified |
|                              | 8A42.Y Other specified acute disseminated encephalomyelitis |
|                              | 8A42.Z Acute disseminated encephalomyelitis, unspecified |
|                              | BA00.Z Essential hypertension, unspecified |
|                              | BA01 Hypertensive heart disease |
|                              | BA40-BA6Z Ischaemic heart diseases |
|                              | BB40-BB4Z Acute or subacute endocarditis |
|                              | BC0Z Heart valve diseases, unspecified |
|                              | BC43.0Z Dilated cardiomyopathy, unspecified |
|                              | BC43.Z Cardiomyopathy, unspecified |
|                              | BC81.3 Atrial fibrillation |
|                              | BC81.20 Cavotricuspid isthmus dependent macroreentry tachycardia |
|                              | BC81.2Z Macro re-entrant atrial tachycardia, unspecified |
|                              | BC60 Atrial premature depolarization |
|                              | BC61 Junctional premature depolarization |
BC70 Ventricular premature depolarization
BC71.1 Ventricular fibrillation
BC80.20 Sick sinus syndrome
BC9Y Other specified cardiac arrhythmia
BC9Z Cardiac arrhythmia, unspecified
BD10-BD1Z Heart failure
BE2Z Diseases of the circulatory system, unspecified
8B00 Intracerebral haemorrhage
8B02 Nontraumatic subdural haemorrhage
8B03 Nontraumatic epidural haemorrhage
8B0Z Intracranial haemorrhage, unspecified
8B11 Cerebral ischaemic stroke
8B20 Stroke not known if ischaemic or haemorrhagic
8B22.Y Other specified cerebrovascular disease
8B2Z Cerebrovascular diseases, unspecified
8B25.1 Late effects of intracerebral haemorrhage
8B25.3 Late effects of other nontraumatic intracranial haemorrhage
8B25.0 Late effects of cerebral ischemic stroke
8B25.4 Late effects of stroke not known if ischaemic or haemorrhagic
8B25 Late effects of cerebrovascular disease
8D40.1 Neuropathy due to nutritional deficiency
8D40.2 Myopathy due to nutritional deficiency
8D40.Y Other specified neurological disorders due to nutrient deficiency
8D40.Z Neurological disorders due to nutrient deficiency, unspecified
BD30.0 Acute upper limb arterial occlusion
BD30.20 Acute thromboembolic lower limb arterial occlusion
BD30.0 Acute upper limb arterial occlusion
BD30.2 Acute lower limb arterial occlusion
BD70 Superficial thrombophlebitis
BD72 Venous thromboembolism
CA40.1 Viral pneumonia
CA40 Pneumonia
3.3 Functioning in ICD and joint use with ICF

Historically, the ICD has used certain disability concepts as common disease or disorder entities, such as: Blindness, Deafness, Mental Retardation, Learning Disability, or Paraplegia, as well as certain disability concepts for other purposes, such as ‘disability as a sequela of injury’, and ‘limitation of activities due to disability’. The ICF was developed after the publication of ICD–10. The ICD–11 has been created both to share concepts and be used jointly with the ICF. This partnership may assist with the following tasks:

- evaluation for general medical practice (e.g. fitness for work)
- evaluation for social benefits (e.g. disability, pension)
- payment or reimbursement purposes
- needs assessment (e.g. for rehabilitation, occupational assistance, long term care.)
- outcome evaluation of interventions

Signs and symptoms in the ICD are aligned with body functions in the ICF, and ‘factors influencing health status’ in the ICD with contextual factors in the ICF. The items of the functioning section of ICD are a subset of the entities contained in ICF.

3.4 Revision major steps

The revision of ICD-11 has taken place in several phases.

First, a list of issues that were known from the use of ICD-10 and that could not be solved in its classification structure was compiled and possible solutions were formulated.
Second, input was received from many scientific groups in the key subject areas with a focus on the clinical perspective.

Finally, centralised editing occurred, aimed to adjust imbalances in content generated by multiple independently operating expert groups in the previous phase of the revision, and to ensure the overall structure is consistent and practicable for users in mortality and morbidity statistics. The ‘guiding principles’ were an essential tool particularly in the last phase. The content, terminology and suggestions for specific groupings by the scientific groups has been preserved, though the proposed structure and location of the entities in the classification has undergone changes necessary to the main uses of ICD. The multiple parenting preserved the visibility of the conditions in the preferred location of the scientific groups. The final version also received input from field testing, Member State comments, and ongoing submission and processing of proposals.

3.5 General features of ICD–11

The main structural innovation of ICD–11 is that it is built on a Foundation Component from which the tabular list can be derived. The international reference tabular list is the statistical classification for morbidity and mortality. Due to the addition of a Foundation Component, and the electronic design of ICD-11, some new terminology had to be introduced that had not been used in prior versions of ICD. The table below provides examples of this new terminology. You will find more detail about individual aspects in other parts of this guide.

For more detail on the terminology of ICD-11, see Section 1.1.6.1.

3.6 Traditional Medicine conditions - Module 1 (TM1)

Traditional Medicine (TM) is an integral part of health services provided in many countries. National authorities have not had proper methods, nationally or internationally, to monitor its health impact over time and allocate proper resources. International standardisation by including Traditional Medicine within the ICD allows for measuring, counting, comparing, formulating questions and monitoring over time.

The development of the Traditional Medicine (TM1) Chapter is a result of requests to WHO from several member states to include TM concepts in an international classification such as the ICD. Although countries such as China, Japan and Korea have developed their own country specific classifications, there was no agreed international standard to allow collection of comparable data or as a starting point for testing efficacy of interventions and monitoring their safety. TM clinicians have been working since 2005 to integrate and standardise their terminology, resulting in the current TM chapter.

A large percentage of the world’s population uses some form of Traditional Medicine. However, standardised data and information on health status of these users remain largely absent from national and international health data collections. The use of Complementary and Alternative Medicine (CAM) therapies has become a huge industry and is expected to grow. As a result of this gap in information about TM and the size of the industry, resources
have been invested in the creation of a classification tool to allow data to be collected and analysed.

ICD-11’s chapter on Traditional Medicine disorders and patterns is designed to be integrated with coding of cases in conjunction with the Western Medicine concepts of ICD Chapters 1-25 or to be used alone. The TM1 chapter within ICD enables continuity and coordination of care and promotes integrated people centred care for those accessing traditional, complementary and integrative medicine as a means of primary health care. Primary health care is the foundation of integrated service delivery, and the TM1 chapter within ICD-11 allows for coordinating with other levels of services and provides better measurement towards achieving universal health coverage.

The chapter will be used in ways appropriate to health care systems, clinical practice and regulations in different countries, but always using standard terminology. It is important to expose TM practitioners to the rigour of coding and collecting data for reporting and for clinical exchange, as well as for research topics. Another vital consideration is to allow collection of data relating to patient safety, so that complications and interactions of TM with WM can be monitored. A standard terminology is also necessary for reimbursement and casemix systems, for education of TM practitioners, for inclusion in electronic record systems and last but not least, for providing currently inaccessible morbidity information to national and international organisations from countries where TM is practised and is an important part of health service delivery.

As with other ICD chapters, the TM1 chapter is not judging TM practice or the efficacy of any TM intervention. As a tool for classifying, diagnosing, counting, communicating and comparing TM1 conditions, it will also assist research and evaluation to assess the efficacy of TM.

3.7 Preparations for the Eleventh Revision

By 2003, it was becoming clear to the WHO and the Collaborating Centres that a further revision of the ICD could not be long delayed. The extent to which ICD updating could encapsulate emerging developments was limited by the structure of ICD–10, and some issues needed extended development and discussion with expert groups. A special meeting of Collaborating Centres in Helsinki in 2004 discussed the need for a revision and issues to be addressed as part of the revision process. The 2004 WHO-FIC meeting subsequently adopted a revision process work-plan which was progressively developed at ensuing meetings.

In 2007, the WHO formally launched the revision process. Oversight has been provided through a broad-based Revision Steering Group. Technical work has been undertaken by a series of Technical Advisory Groups, with cross-cutting groups examining mortality, morbidity and quality and safety issues. For the first time, a chapter on description of diseases and patterns of diseases from a Traditional medicine standpoint has been included.

A Content Model, including a range of components for each ICD entity has been developed, giving a rich Foundation for the ICD. Other classifications and terminologies are linked or
included where possible to ensure ICD is aligned with them, and items used in other members of the WHO Family of Classifications have been aligned wherever possible. The more traditional statistical classification for mortality and morbidity is obtained from the Foundation component of ICD–11 as a tabular list. Extension codes are used to limit content volume but still allow detailed classification of disease entities.

**3.7.1 Chapter 01 – Differences between ICD–10 and ICD–11 in Chapter 01**

The chapter includes more infectious items than in the past. Also, influenza has been moved from the respiratory to the infectious diseases chapter. Tuberculosis, Leprosy have been grouped under ‘mycoplasms’, because identification, course, and treatment are similar. Prion diseases have been moved to the Nervous system.

**Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure**

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>A00-A09 Intestinal infectious diseases</td>
<td>Gastroenteritis or colitis of infectious origin</td>
</tr>
<tr>
<td>A15-A19 Tuberculosis</td>
<td>Part of the grouping - Mycobacterial diseases</td>
</tr>
<tr>
<td>A20-28 Certain zoonotic bacterial diseases</td>
<td>Certain zoonotic bacterial diseases</td>
</tr>
<tr>
<td>A30-A49 Other bacterial diseases</td>
<td>Other bacterial diseases</td>
</tr>
<tr>
<td>A50-A64 Infections with a predominantly sexual mode of transmission</td>
<td>Predominantly sexually transmitted infections</td>
</tr>
<tr>
<td>A65-A69 Other spirochaetal diseases</td>
<td>Part of the grouping - Other specified bacterial diseases</td>
</tr>
<tr>
<td>A70-A74 Other diseases caused by chlamydiae</td>
<td>Part of the grouping – Other bacterial diseases</td>
</tr>
<tr>
<td>A75-A79 Rickettsioses</td>
<td>Part of the grouping – Other bacterial diseases</td>
</tr>
<tr>
<td>A80-A89 Viral infections of the central nervous system</td>
<td>Viral infections of the central nervous system</td>
</tr>
<tr>
<td>A92-A99 Arthropod-borne viral fevers and viral haemorrhagic fevers</td>
<td>Split into two groups - Other arthropod-borne viral fevers and Certain zoonotic viral diseases</td>
</tr>
<tr>
<td>B00-B09 Viral infections characterized by skin and mucous membrane lesions</td>
<td>Viral infections characterised by skin or mucous membrane lesions</td>
</tr>
<tr>
<td>B15-B19 Viral hepatitis</td>
<td>Viral hepatitis</td>
</tr>
<tr>
<td>B20-B24 Human immunodeficiency virus [HIV] disease</td>
<td>Human immunodeficiency virus disease</td>
</tr>
<tr>
<td>B25-B34 Other viral diseases</td>
<td>Certain other viral diseases</td>
</tr>
<tr>
<td>B35-B49 Mycoses</td>
<td>Mycoses</td>
</tr>
<tr>
<td>B50-B64 Protozoal diseases</td>
<td>Part of the grouping - Parasitic diseases</td>
</tr>
</tbody>
</table>
3.7.2 Differences between ICD–10 and ICD–11 in Chapter 02

The most significant change to the hierarchy of Chapter 02 is the inclusion of certain morphology types within the chapter (previously found in ICD–10, Appendix A). There are now pre-coordinated codes consisting of both morphology and site. Other types of morphology and greater site specificity not included in Chapter 02 are found in the Chapter X, Extension codes, and can be used for postcoordination.

Other changes include: grouping together all neoplasms of brain and central nervous system regardless of behaviour; grouping together all haematopoietic and lymphoid tissues; and the addition of the new group Malignant mesenchymal neoplasms. The previous ICD–10 group Neoplasms of uncertain or unknown behaviour has been split into two separate groups - Neoplasms of uncertain behaviour and Neoplasms of unknown behaviour.

### Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>C00-C97 Malignant neoplasms</td>
<td>Neoplasms of brain or central nervous system</td>
</tr>
<tr>
<td></td>
<td>Neoplasms of haematopoietic or lymphoid tissues</td>
</tr>
<tr>
<td></td>
<td>Malignant neoplasms, except of lymphoid, haematopoietic, central nervous system or related</td>
</tr>
<tr>
<td>D00-D09 In situ neoplasms</td>
<td>In situ neoplasms, except of lymphoid, haematopoietic, central nervous system or related</td>
</tr>
<tr>
<td>D10-D36 Benign neoplasms</td>
<td>Benign neoplasms, except of lymphoid, haematopoietic, central nervous system or related</td>
</tr>
<tr>
<td>D37-D48 Neoplasms of uncertain or unknown behaviour</td>
<td>Neoplasms of uncertain behaviour, except of lymphoid, haematopoietic, central nervous system or related</td>
</tr>
<tr>
<td></td>
<td>Neoplasms of unknown behaviour, except of lymphoid, haematopoietic, central nervous system or related</td>
</tr>
</tbody>
</table>

3B5-B83 Helminthiases                          | Part of the grouping - Parasitic diseases                                                  |
| B85-B89 Pediculosis, acarisis and other infestations | Part of the grouping - Parasitic diseases                                                  |
| B90-B94 Sequelae of infectious and parasitic diseases | Sequelae of infectious diseases                                                            |
| B95-B98 Bacterial, viral and other infectious agents | Now part of extension codes for organisms                                                 |
| B99-B99 Other infectious diseases              | Certain other disorders of infectious origin                                                |
3.7.3 Differences between ICD–10 and ICD–11 in Chapter 03

ICD–10, Chapter 03 Disease of the blood and blood-forming organs and certain disorders involving the immune mechanism has been split into two chapters: one for diseases of blood or blood-forming organs (Ch. 03) and the other for disorders of the immune system (Ch. 04). In ICD-10 there were five major sections for blood disorders which have now been reclassified into three sections in ICD-11.

A broad grouping Anaemias and other erythrocyte disorders now contains, Nutritional anaemias, Haemolytic anaemias and Aplastic and other anaemias with subdivisions for acquired and congenital.

Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>D50-D53 Nutritional anaemias</td>
<td>Part of the grouping - Anaemias and other erythrocyte disorders</td>
</tr>
<tr>
<td>D55-D59 Haemolytic anaemias</td>
<td>Part of the grouping - Anaemias and other erythrocyte disorders</td>
</tr>
<tr>
<td>D60-D64 Aplastic and other anaemias</td>
<td>Part of the grouping - Anaemias and other erythrocyte disorders</td>
</tr>
<tr>
<td>D65-D69 Coagulation defects, purpura and other haemorrhagic conditions</td>
<td>Coagulation defects, purpura and other haemorrhagic and related conditions</td>
</tr>
<tr>
<td>D70-D77 Other diseases of blood and blood-forming organs</td>
<td>Concepts redistributed to one of the following groupings: Anaemias and other erythrocyte disorders Coagulation defects, purpura and other haemorrhagic and related conditions or Diseases of spleen</td>
</tr>
<tr>
<td>D80-D89 Certain disorders involving the immune mechanism</td>
<td>Move to Chapter 04 ‘Diseases of the immune system’</td>
</tr>
</tbody>
</table>

3.7.4 Differences between ICD–10 and ICD–11 in Chapter 04

ICD–10, Chapter 03 Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism has been split into two chapters: one for diseases of blood or blood-forming organs (Ch. 03) and the other for disorders of the immune system (Ch. 04). This new chapter (Ch 04) was created to better capture the complexity of the disease processes of the immune system.

Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>D80-D89 Certain disorders involving the immune mechanism</td>
<td>Primary immunodeficiencies</td>
</tr>
</tbody>
</table>
### 3.7.5 Differences between ICD–10 and ICD–11 in Chapter 05

Changes and additions have been made to Diabetes mellitus with the inclusion of categories for Intermediate hyperglycaemia (including Impaired glucose regulation) and Insulin-resistance syndromes. Nutritional disorders section incorporates current terminology and contains a detailed classification for vitamin and mineral deficiencies as well as for obesity. The Metabolic disorders section also includes more detail and the organisation of the various types of metabolic disorders has been improved.

#### Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure in Chapter 5

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>E00-E07 Disorders of thyroid gland</td>
<td>Disorders of the thyroid gland or thyroid hormones system. The structure for this section has not changed but has been revised to better reflect current disease processes.</td>
</tr>
<tr>
<td>E10-E14 Diabetes mellitus</td>
<td>Diabetes mellitus (Specifies the ‘type’ of diabetes mellitus i.e. Type 1, Type 2, other and unspecified. ‘Diabetic’ complications are primarily parented to their respective body system chapter).</td>
</tr>
<tr>
<td>E15-E16 Other disorders of glucose regulation and pancreatic internal secretion</td>
<td>Other disorders of glucose regulation or pancreatic internal secretion – has remained unchanged.</td>
</tr>
<tr>
<td>E20-E35 Disorders of other endocrine glands</td>
<td>This block has been unbundled and the sections renamed to better reflect the conditions classified within each entity: Disorders of the parathyroid and parathyroid hormone system Disorders of the pituitary hormone system Disorders of the adrenal glands and adrenal hormone system Disorders of the gonadal hormone system</td>
</tr>
</tbody>
</table>
Certain disorders of puberty
Polyglandular dysfunction
Disorders of lipoprotein metabolism and certain specified lipidaemias

E40-E46 Malnutrition
Undernutrition - Two new subsections have been added for Undernutrition based on anthropometric or clinical criteria and Undernutrition due to specific nutrient deficiencies

E50-E64 Other nutritional deficiencies
Part of the grouping - Undernutrition

E65-E68 Obesity and other hyperalimentation
Overweight, obesity or specific nutrient excesses

E70-E90 Metabolic disorders
Metabolic disorders with subsections based on aetiology

3.7.6 Differences between ICD–10 and ICD–11 in Chapter 06

Changes to this chapter include restructuring of the hierarchy, the inclusion of more current terminology, and specific groupings for single episodes of harmful use, harmful pattern of use, dependence, intoxication, and withdrawal by substance type.

In the ICD–10, the numbers of large groupings, or 'blocks', of disorders was artificially constrained by the decimal coding system used in the classification, such that it was only possible to have a maximum of ten major groupings of disorders within the mental and behavioural disorder chapter (corresponding to the digits 0 to 9). This meant that some groupings were created that were not based on clinical utility or scientific evidence. In the ICD–10, for example, one block (F30-F39) is devoted to Mood (affective) disorders, while Anxiety disorders represent only a portion of a broad and heterogeneous block (F40- F49) called 'Neurotic, stress-related, and somatoform disorders'. Another block 'Behavioural syndromes associated with physiological disturbances and physical factors' unites disorders that are unrelated in terms of clinical symptoms and symptomatology except that they have something to do with the body.

Given the constrained structural parameters of the ICD–10, the developers of the classification provided a reasonable set of diagnostic groupings. However, the more flexible structural characteristics of ICD–11 make it possible to incorporate key features based on available scientific evidence and current practice for more optimal nosology.

Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>F00-F09 Organic, including symptomatic, mental disorders</td>
<td>Neurocognitive disorders</td>
</tr>
</tbody>
</table>
3.7.7 Chapter 07 is a new addition to ICD–11 and was not found in past editions

**Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure**

<table>
<thead>
<tr>
<th>ICD-10 previous location</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Codes from Mental Health and Nervous system chapters</td>
<td>Insomnia disorders</td>
</tr>
<tr>
<td>Concept not in ICD-10</td>
<td>Sleep-related movement disorders</td>
</tr>
<tr>
<td>Codes from Mental Health and Nervous system chapters</td>
<td>Hypersomniaence disorders</td>
</tr>
<tr>
<td>Codes from Neurology and Endocrine chapters</td>
<td>Sleep-related breathing disorders</td>
</tr>
<tr>
<td>Codes from Mental health chapter</td>
<td>Parasomnia disorders</td>
</tr>
<tr>
<td>Codes from Neurology chapter</td>
<td>Disorders of the sleep-wake schedule</td>
</tr>
<tr>
<td>Codes from Neurology chapter</td>
<td>Certain specified sleep disorders</td>
</tr>
</tbody>
</table>
3.7.8 Differences between ICD–10 and ICD–11 in Chapter 08

There has been a major restructuring and movement of previous ICD–10 concepts in this chapter. A number of new concepts have also been added. Cerebrovascular diseases have been moved to the Neurology chapter and multiply parented to the Circulatory chapter. Transient Ischaemic attack (TIA) is now also located under Cerebrovascular diseases and appears in Diseases of the nervous system.

ICD–11 sees a major overhaul in the organisation of the blocks which make up the neurology chapter. The restrictive decimal coding system of the ICD–10, with its capacity to contain only 11 blocks of disorders per chapter, resulted in blocks containing miscellaneous neurological entities which did not logically fit together, such as the episodic and paroxysmal disorders block, containing headache disorders, epilepsy, transient ischaemic attacks and sleep disorders. The ICD–11 now positions headache disorders, epilepsy and cerebrovascular disorders at block level, and sleep disorders at chapter level (Chapter 07).

Not only has the structure of the neurological chapter changed, but the approach to classification also integrates current clinical practice and advancements in the understanding of neurological diseases. In the time since the ICD–10 was published, enormous progress in the fields of genetics, molecular biology and medical technologies have been made. An increase in the number of codes is inevitable when one reflects on the recent knowledge gain in neurology, so a balance between comprehensiveness, clinical utility and maintaining a public health approach is the aim. The working groups tackled this issue by considering the more common disorders to appear in the chapter, with less common aetiological variations of these disorders being subject to a ‘double coding’ technique. One major change which illustrates the advancement of knowledge is the addition of a block entitled ‘Paraneoplastic and autoimmune disorders of the nervous system’. This block contains immune-mediated neurological diseases, a field in which knowledge has exploded in recent years. A second example of how the new version reflects molecular biological advancement is through awarding Prion diseases block status despite their rarity. Previously, they featured as part of the infections of the central nervous system block, but research interest after the major public health issue in Europe in the 1990s has led to new variants of prion diseases being discovered.

Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>G00-G09 Inflammatory diseases of the nervous system</td>
<td>This section is now located in Chapter 1 in a new block called Non-viral infections of the central nervous system</td>
</tr>
<tr>
<td>G10-G14 Systemic atrophies primarily affecting the central nervous system</td>
<td>Split between the Movement disorders and Motor neuron disease and related disorders</td>
</tr>
</tbody>
</table>
### Differences between ICD–10 and ICD–11 in Chapter 09

There have been major changes to the structure and hierarchy of this chapter for ICD–11. The aetiology/manifestation convention (dagger/asterisk) of ICD–10 has not been kept in ICD–11.

#### Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>H00-H06 Disorders of eyelid, lacrimal system and orbit</td>
<td>Disorders of the ocular adnexa or orbit</td>
</tr>
<tr>
<td>H10-H13 Disorders of conjunctiva</td>
<td>Disorders of conjunctiva</td>
</tr>
<tr>
<td>H15-H22 Disorders of sclera, cornea, iris and ciliary body</td>
<td>Redistributed between the groupings Disorders of the eyeball – anterior segment and Disorders of the eyeball – posterior segment</td>
</tr>
<tr>
<td>H25-H28 Disorders of lens</td>
<td>Disorders of lens</td>
</tr>
<tr>
<td>H30-H36 Disorders of choroid and retina</td>
<td>Separate categories under Disorders of the eyeball – posterior segment</td>
</tr>
<tr>
<td>H40-H42 Glaucoma</td>
<td>Glaucoma or glaucoma suspect</td>
</tr>
<tr>
<td>H43-H45 Disorders of vitreous body and globe</td>
<td>Redistributed between the groupings Disorders of the eyeball – posterior segment and Disorders of the</td>
</tr>
</tbody>
</table>
3.7.10 Differences between ICD–10 and ICD–11 in Chapter 10

This chapter has retained a similar structure as in ICD–10, with only minor changes.

Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>H60-H62 Diseases of external ear</td>
<td>Diseases of external ear</td>
</tr>
<tr>
<td>H65-H75 Diseases of middle ear and mastoid</td>
<td>Diseases of middle ear or mastoid</td>
</tr>
<tr>
<td>H80-H83 Diseases of inner ear</td>
<td>Diseases of inner ear</td>
</tr>
<tr>
<td>H90-H95 Other disorders of ear</td>
<td>Redistributed into the groupings Disorders with hearing impairment, Disorders of ear, not elsewhere classified and Postprocedural disorders of ear or mastoid process</td>
</tr>
</tbody>
</table>

3.7.11 Differences between ICD–10 and ICD–11 in Chapter 11

There has been some restructuring and regrouping throughout this chapter, with new concepts based on medical advancements over the last 20 years added. Medical terminology has been updated. The sections on Hypertension and Heart valve diseases have been expanded. Heart valve diseases have moved from a classification based on aetiology (rheumatic/non-rheumatic) followed by valve type and disease physiology; to a hierarchy led by valve type, then disease physiology, followed by aetiology, in keeping with current clinical practice. Non-rheumatic valve disease has therefore been moved from ‘Other forms of heart disease’ to the heart valve disease section. Acute rheumatic fever has been moved to Chapter 1.
Cerebrovascular diseases have been moved to the Neurology Chapter (08) as their primary parent with the Circulatory Chapter being a secondary parent.

**Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure in Chapter 11**

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>I00-I02 Acute rheumatic fever</td>
<td>Moved to Chapter 01 Infectious diseases</td>
</tr>
<tr>
<td>I05-I09 Chronic rheumatic heart diseases</td>
<td>Heart valve diseases - Change in hierarchy for the classification of heart valve disorders to heart valve type and then by aetiology</td>
</tr>
<tr>
<td>I10-I15 Hypertensive diseases</td>
<td>Hypertensive diseases - Remains relatively the same with expansion of some categories, essential hypertension now includes subcategories for diastolic/systolic hypertension</td>
</tr>
<tr>
<td>I20-I25 Ischaemic heart diseases</td>
<td>Ischaemic heart diseases - Change in terminology for AMI to reflect STEMI/NSTEMI only. Inclusion of timeframe for old AMI. Expansion of complications following and AMI. New section for 'Diseases of coronary artery' to include coronary atherosclerosis, coronary artery aneurysm, dissection, fistula</td>
</tr>
<tr>
<td>I26-I28 Pulmonary heart disease and diseases of pulmonary circulation</td>
<td>Pulmonary heart disease or diseases of pulmonary circulation - Expansion of some categories (e.g. pulmonary hypertension) to include new concepts, particularly pulmonary hypertension.</td>
</tr>
<tr>
<td>I30-I52 Other forms of heart disease</td>
<td>This block category title no longer exists in ICD-11 and the concepts within have been made distinct entities and expanded to include new terminology and disease processes</td>
</tr>
<tr>
<td>I60-I69 Cerebrovascular diseases</td>
<td>Reclassified to Chapter 08 Diseases of the nervous system</td>
</tr>
<tr>
<td>I70-I79 Diseases of arteries, arterioles and capillaries</td>
<td>Diseases of capillaries has been moved into Diseases of skin</td>
</tr>
<tr>
<td>I80-I89 Diseases of veins, lymphatic vessels and lymph nodes, not elsewhere classified</td>
<td>This section has been separated into two main blocks: Diseases of veins and Disorders of lymphatic vessels and lymph nodes. Oesophageal varices and Haemorrhoids have been reclassified to Chapter 13 Diseases of the digestive system - Vascular disorders of the oesophagus and Vascular disease of anus and anal canal, respectively</td>
</tr>
<tr>
<td>I95-I99 Other and unspecified disorders of the circulatory system</td>
<td>Marked expansion of the postprocedural disorders section with new codes for postprocedural disorders following repair of congenital anomalies.</td>
</tr>
</tbody>
</table>
3.7.12 Differences between ICD–10 and ICD–11 in Chapter 12

There has been some restructuring and regrouping of this chapter, with new concepts added and the inclusion of updated and current terminology.

- A new section, Inhalational, occupational and environmental lung disease has been added to improve the classification of respiratory disorders according to their aetiology.
- Sleep disorders of breathing and respiratory control have been moved into the new chapter of Sleep disorders (Chapter 7) and secondarily parented to the Respiratory Chapter.
- Cystic fibrosis has been moved to the Respiratory Chapter and secondarily parented to Chapter 05 Endocrine, nutritional or metabolic diseases.

**Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure in Chapter 12**

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>J00-J06 Acute upper respiratory infections</td>
<td>Upper respiratory tract disorders section, Infectious diseases by infectious agent</td>
</tr>
<tr>
<td>J09-J18 Influenza and pneumonia</td>
<td>Lung infections</td>
</tr>
<tr>
<td>J20-J22 Other acute lower respiratory infections</td>
<td>Combined into the grouping - Lung infections</td>
</tr>
<tr>
<td>J30-J39 Other diseases of upper respiratory tract</td>
<td>Combined into the grouping - Upper respiratory tract disorders</td>
</tr>
<tr>
<td>J40-J47 Chronic lower respiratory diseases</td>
<td>Certain lower respiratory tract diseases</td>
</tr>
<tr>
<td>J60-J70 Lung diseases due to external agents</td>
<td>Lung diseases due to external agents</td>
</tr>
<tr>
<td>J80-J84 Other respiratory diseases principally affecting the interstitium</td>
<td>Respiratory diseases principally affecting the lung interstitium</td>
</tr>
<tr>
<td>J85-J86 Suppurative and necrotic conditions of lower respiratory tract</td>
<td>Combined into the grouping - Lung infections</td>
</tr>
<tr>
<td>J90-J94 Other diseases of pleura</td>
<td>Pleural, diaphragm and mediastinal disorders</td>
</tr>
<tr>
<td>J95-J99 Other diseases of the respiratory system</td>
<td>Certain diseases of the respiratory system Postprocedural respiratory disorders have been moved to a grouping of their</td>
</tr>
</tbody>
</table>
3.7.13 Differences between ICD–10 and ICD–11 in Chapter 13

There has been a major restructuring and change of the previous ICD-10 concepts in this chapter. Detailed anatomical groups were added to the hierarchy, such as 'Diseases of duodenum', 'Diseases of the anal canal' or 'Diseases of the pancreas'. Independent categories for functional gastrointestinal disorders and inflammatory bowel diseases have also been included to cover broad anatomical sites. Additional dimensions are available from the clinical findings section in Chapter 21 and Chapter X Extension Codes for use in postcoordination. For example, with and without haemorrhage, with and without obstruction, with and without ascites, laterality and greater site specificity, etc.

Although ICD-10 included diseases of the oral cavity, salivary glands and jaws, the corresponding section of Chapter 13 in ICD-11 has been improved in structure and content to include diseases and disorders of the orofacial complex.

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>K00-K14 Diseases of oral cavity, salivary glands</td>
<td>Diseases or disorders of orofacial complex</td>
</tr>
<tr>
<td>and jaws</td>
<td></td>
</tr>
<tr>
<td>K20-K31 Diseases of oesophagus, stomach and</td>
<td>Now in two groups – Diseases of oesophagus and Diseases of the</td>
</tr>
<tr>
<td>duodenum</td>
<td>stomach or the duodenum</td>
</tr>
<tr>
<td>K35-K38 Diseases of appendix</td>
<td>Diseases of appendix</td>
</tr>
<tr>
<td>K40-K46 Hernia</td>
<td>Hernia</td>
</tr>
<tr>
<td>K50-K52 Noninfective enteritis and colitis</td>
<td>Now in two groups – Gastritis, under Diseases of stomach and</td>
</tr>
<tr>
<td></td>
<td>Certain noninfectious colitis or proctitis</td>
</tr>
<tr>
<td>K55-K64 Other diseases of intestines</td>
<td>Redistributed to various new groups based on anatomical sites</td>
</tr>
<tr>
<td>K65-K67 Diseases of peritoneum</td>
<td>Diseases of peritoneum</td>
</tr>
<tr>
<td>K70-K77 Diseases of liver</td>
<td>Diseases of liver</td>
</tr>
<tr>
<td>K80-K87 Disorders of gallbladder, biliary tract</td>
<td>Now in two groups – Diseases of gallbladder or biliary tract and</td>
</tr>
<tr>
<td>and pancreas</td>
<td>Diseases of pancreas</td>
</tr>
<tr>
<td>K90-K93 Other diseases of the digestive system</td>
<td>Redistributed to various groups including Postprocedural</td>
</tr>
<tr>
<td></td>
<td>disorders of digestive system and Clinical findings in the</td>
</tr>
<tr>
<td></td>
<td>digestive system</td>
</tr>
</tbody>
</table>
### 3.7.14 Differences between ICD–10 and ICD–11 in Chapter 14

Chapter 14 has undergone major restructuring, with the addition of more detailed entities. The terminology has been updated to be more current. Detail has come from the fusion of the American, British and German dermatological terminologies.

**Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure**

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>L00-L08 Infections of the skin and subcutaneous tissue</td>
<td>Certain skin disorders attributable to infection or infestation</td>
</tr>
<tr>
<td>L10-L14 Bullous disorders</td>
<td>Renamed Immunobullous diseases of the skin and included under inflammatory dermatoses</td>
</tr>
<tr>
<td>L20-L30 Dermatitis and eczema</td>
<td>Dermatitis and eczema</td>
</tr>
<tr>
<td>L40-L45 Papulosquamous disorders</td>
<td>Papulosquamous dermatoses (included under inflammatory dermatoses)</td>
</tr>
<tr>
<td>L50-L54 Urticaria and erythema</td>
<td>Part of groupings – Urticaria, angioedema and other urticarial disorders and inflammatory erythemas and other reactive inflammatory dermatoses</td>
</tr>
<tr>
<td>L55-L69 Radiation-related disorders of the skin and subcutaneous tissue</td>
<td>Dermatoses provoked by light or UV radiation</td>
</tr>
<tr>
<td>L60-L75 Disorders of skin appendages</td>
<td>Disorders of the epidermis and epidermal appendages</td>
</tr>
<tr>
<td>L80-L99 Other disorders of the skin and subcutaneous tissue</td>
<td>Redistributed to various groups throughout the restructured Skin chapter</td>
</tr>
</tbody>
</table>

### 3.7.15 Differences between ICD–10 and ICD–11 in Chapter 15

The blocks in this chapter have been reordered, and a new block Auto-inflammatory syndromes has been added to the Immune Chapter and secondarily parented to here. The area of spinal conditions has been restructured and renamed to Conditions associated with the spine.

**Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure**

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>M00-M25 Arthropathies</td>
<td>Arthropathies</td>
</tr>
<tr>
<td>M30-M36 Systemic connective tissue disorders</td>
<td>Moved to Chapter 4 ‘Diseases of the immune system’</td>
</tr>
<tr>
<td>M40-M54 Dorsopathies</td>
<td>Conditions associated with the spine</td>
</tr>
<tr>
<td>M60-M79 Soft tissue disorders</td>
<td>Soft tissue disorders</td>
</tr>
</tbody>
</table>
3.7.16 Differences between ICD–10 and ICD–11 in Chapter 16

Chapter 16 has been reordered to distinguish diseases of the female genital system, the male genital system, and the urinary system. There is more specificity within the section on the female genital system reflecting current scientific understanding. The hierarchy is now divided into non-inflammatory disorders and inflammatory disorders, which are further divided by anatomical groupings. These groupings are in an order followed by gynaecological and obstetric examinations i.e. from external to internal genitalia. Neoplasms of the urinary system are primarily located in Chapter 02 Neoplasms, Structural developmental anomalies of the urinary system are primarily located in Chapter 20 and Symptoms, signs or clinical findings involving the urinary system are primarily located in Chapter 21.

All diseases relating to the kidney are now classified under the main category for ‘Diseases of the urinary system’. Acute kidney failure and chronic kidney disease now incorporates the currently used staging classification as proposed by Kidney Disease | Improving Global Outcomes (KDIGO).

The classification of Glomerular diseases has been restructured and is now divided into clinical features/syndromes. A new block has been added for Cystic and dysplastic kidney disease, originally, classified in ICD-10 to Chapter 17 Congenital malformations, deformations and chromosomal abnormalities, with relevant entities grouped together and based on the 2015 KDIGO guidelines.

<p>| Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure |
|-------------------------------|-----------------------------------------------|
| <strong>ICD-10 block heading</strong>      | <strong>ICD-11 equivalent structure</strong>               |
| N00-N08 Glomerular diseases   | Glomerular diseases - Classified to Diseases of the urinary system. This section is now classified according to clinical features or syndromes. Still includes: Nephritic syndrome Nephrotic syndrome Isolated proteinuria and albuminuria. The subdivisions describing morphology typically determined by biopsy have been moved to Chapter 21 under Clinical findings of the urinary system. Electron microscopy and immunofluorescence findings subdivisions have been removed from proteinuria with morphological lesion. This is now classified to Isolated proteinuria and albuminuria. |</p>
<table>
<thead>
<tr>
<th>Code Range</th>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>N10-N16</td>
<td>Renal-tubulo-interstitial diseases</td>
<td>Renal-tubulo-interstitial diseases - Classified to Diseases of the urinary system. Section remains relatively the same. Tubular and cortical necrosis has been unbundled from acute renal failure to be a distinct codable entity classified to this section.</td>
</tr>
<tr>
<td>N17-N19</td>
<td>Renal failure</td>
<td>Kidney failure - Classified to Diseases of the urinary system. Acute renal failure is no longer a bundled concept which previously identified the acute kidney damage i.e. acute tubular necrosis.</td>
</tr>
<tr>
<td>N20-N23</td>
<td>Urolithiasis</td>
<td>Urolithiasis - Classified to Diseases of the urinary system. Subdivided into upper urinary tract (includes kidney and ureter) and lower urinary tract (includes bladder and urethra). Renal colic has been reclassified to Chapter 20 Symptoms, signs and clinical findings involving the urinary system.</td>
</tr>
<tr>
<td>N25-N29</td>
<td>Other disorders of kidney and ureter</td>
<td>Certain specified disorders of kidney or ureter - Classified to Diseases of the urinary system. Reclassification of disorders relating to the size of the kidney to Chapter 21 Symptoms, signs or clinical findings involving the urinary system - Macroscopic changes of size of the kidney.</td>
</tr>
<tr>
<td>N30-N39</td>
<td>Other diseases of urinary system</td>
<td>Certain specified diseases of urinary system – remains similar to ICD-10</td>
</tr>
<tr>
<td>N40-N51</td>
<td>Diseases of male genital organs</td>
<td>Diseases of male genital organs – remains similar to ICD-10</td>
</tr>
<tr>
<td>N60-N64</td>
<td>Disorders of breast</td>
<td>Disorders of breast– remains similar to ICD-10</td>
</tr>
<tr>
<td>N70-N77</td>
<td>Inflammatory diseases of female pelvic organs</td>
<td>Inflammatory disorders of the female genital tract - Classified to Diseases of the female genital system.</td>
</tr>
<tr>
<td>N80-N98</td>
<td>Noninflammatory disorders of female genital tract</td>
<td>Noninflammatory disorders of female genital tract – Classified to Diseases of the female genital system</td>
</tr>
<tr>
<td>N99</td>
<td>Other disorders of the genitourinary system</td>
<td>Other disorders of the genitourinary system – Postprocedural disorders of the genitourinary system has been moved out of this section to be a grouping of its own</td>
</tr>
</tbody>
</table>

**3.7.17 Chapter 17 is a new addition to ICD–11 and was not found in past editions**

Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure
3.7.18 Differences between ICD–10 and ICD–11 in Chapter 18

The chapter has been reordered but content remains similar to that in ICD–10. There have been some changes and additions made to the sections Maternal care related to the foetus and amniotic cavity and possible delivery problems and Complications of labour and delivery. A new section Obstetric haemorrhage has been added to enable all types of haemorrhage to be grouped together.

Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>O00-O08 Pregnancy with abortive outcome</td>
<td>Abortive outcome of pregnancy</td>
</tr>
<tr>
<td>010-016 Oedema, proteinuria and hypertensive disorders in pregnancy, childbirth and the puerperium</td>
<td>Oedema, proteinuria, or hypertensive disorders in pregnancy, childbirth, or the puerperium</td>
</tr>
<tr>
<td>020-029 Other maternal disorders predominantly related to pregnancy</td>
<td>Certain specified maternal disorders predominantly related to pregnancy</td>
</tr>
<tr>
<td>030-048 Maternal care related to the foetus and amniotic cavity and possible delivery problems</td>
<td>Maternal care related to the foetus, amniotic cavity or possible delivery problems</td>
</tr>
<tr>
<td>060-075 Complications of labour and delivery</td>
<td>Complications of labour or delivery</td>
</tr>
<tr>
<td>080-084 Delivery</td>
<td>Delivery</td>
</tr>
<tr>
<td>085-092 Complications predominantly related to the puerperium</td>
<td>Complications predominantly related to the puerperium</td>
</tr>
<tr>
<td>094-099 Other obstetric conditions, not elsewhere classified</td>
<td>Certain obstetric conditions, not elsewhere classified</td>
</tr>
</tbody>
</table>
3.7.19 Differences between ICD–10 and ICD–11 in Chapter 19

There has been some reordering of this chapter but it remains similar to that in ICD–10. There is new grouping for Neurological disorders specific to the perinatal or neonatal period and an expansion of codes for gestational age of the newborn.

Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>P00-P04 Foetus and newborn affected by maternal factors and by complications of pregnancy, labour and delivery</td>
<td>Foetus or newborn affected by maternal factors or by complications of pregnancy, labour or delivery</td>
</tr>
<tr>
<td>P05-P08 Disorders related to length of gestation and fetal growth</td>
<td>Disorders of newborn related to length of gestation or fetal growth</td>
</tr>
<tr>
<td>P10-P15 Birth trauma</td>
<td>Birth injury</td>
</tr>
<tr>
<td>P20-P29 Respiratory and cardiovascular disorders specific to the perinatal period</td>
<td>Split into two groups: Respiratory disorders specific to the perinatal or neonatal period; Cardiovascular disorders present in the perinatal or neonatal period</td>
</tr>
<tr>
<td>P35-P39 Infections specific to the perinatal period</td>
<td>Infections of the foetus or newborn</td>
</tr>
<tr>
<td>P50-P61 Haemorrhagic and haematological disorders of foetus and newborn</td>
<td>Haemorrhagic or haematological disorders of foetus or newborn</td>
</tr>
<tr>
<td>P70-P74 Transitory endocrine and metabolic disorders specific to foetus and newborn</td>
<td>Transitory endocrine or metabolic disorders specific to foetus or newborn</td>
</tr>
<tr>
<td>P75-P78 Digestive system disorders of foetus and newborn</td>
<td>Digestive system disorders of foetus or newborn</td>
</tr>
<tr>
<td>P80-P83 Conditions involving the integument and temperature regulation of foetus and newborn</td>
<td>Split into two groups: Disorders involving the integument of foetus or newborn; Disturbances of temperature regulation of newborn</td>
</tr>
<tr>
<td>P90-P96 other disorders originating in the perinatal period</td>
<td>Certain disorders originating in the perinatal period – Block 91 other disturbances of cerebral status of newborn has been moved into a new grouping Neurological disorders specific to the perinatal or neonatal period</td>
</tr>
</tbody>
</table>

3.7.20 Differences between ICD–10 and ICD–11 in Chapter 20

This chapter has undergone major restructuring including a title change from Congenital malformations, deformations and chromosomal abnormalities to Developmental
anomalies. All genetic syndromes without structural developmental anomalies have been reallocated to appropriate chapters of the ICD, according to the affected body system(s).

**Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure**

<table>
<thead>
<tr>
<th>ICD-10 previous location</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q00-Q07 Congenital malformations of the nervous system</td>
<td>Structural developmental anomalies of the nervous system - A grouping under Structural development anomalies primarily affecting one body system</td>
</tr>
<tr>
<td>Q10-Q18 Congenital malformations of eye, ear, face and neck</td>
<td>Split into four separate groups under Structural developmental anomalies primarily affecting one body system: Structural developmental anomalies of the eye, eyelid or lacrimal apparatus Structural developmental anomalies of the ear Structural developmental anomalies of the face, mouth or teeth Structural developmental anomalies of the neck</td>
</tr>
<tr>
<td>Q20-Q28 Congenital malformations of the circulatory system</td>
<td>Structural developmental anomalies of the circulatory system - A grouping under Structural developmental anomalies primarily affecting one body system</td>
</tr>
<tr>
<td>Q30-Q34 Congenital malformations of the respiratory system</td>
<td>Structural developmental anomalies of the respiratory system - A grouping under Structural developmental anomalies primarily affecting one body system</td>
</tr>
<tr>
<td>Q35-Q37 Cleft lip and cleft palate</td>
<td>Clefts of lip, alveolus or palate is a subsection in the grouping Structural developmental anomalies of the face, mouth or teeth</td>
</tr>
<tr>
<td>Q38-Q45 Other congenital malformations of the digestive system</td>
<td>Structural developmental anomalies of the digestive tract - A grouping under Structural developmental anomalies primarily affecting one body system</td>
</tr>
<tr>
<td>Q50-Q56 Congenital malformations of genital organs</td>
<td>Split into two separate groups under Structural developmental anomalies primarily affecting one body system: Structural developmental anomalies of the female genital system; Structural developmental anomalies of the male genital system</td>
</tr>
<tr>
<td>Q60-Q64 Congenital malformations of the urinary system</td>
<td>Structural developmental anomalies of the urinary system - A grouping under Structural developmental anomalies primarily affecting one body system</td>
</tr>
<tr>
<td>Q65-Q79 Congenital malformations and deformations of the musculoskeletal system</td>
<td>Structural developmental anomalies of the skeleton</td>
</tr>
</tbody>
</table>
Q80-Q89 Other congenital malformations
Q90-Q99 Chromosomal abnormalities, not elsewhere classified

Redistributed to various groupings within the new structure of the chapter
Chromosomal anomalies, excluding gene mutations

3.7.21 Differences between ICD–10 and ICD–11 in Chapter 21

This chapter has undergone major restructuring with the high level hierarchy now in line with the ICD chapters. Certain clinical forms previously located in other chapters as asterisk codes are now located here. A new category has been added for Findings of microorganism resistant to antimicrobial drugs.

Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>R00-R09 Symptoms and signs involving the circulatory and respiratory systems</td>
<td>Split into two groupings: Symptoms, signs or clinical findings of the circulatory system; Symptoms, signs or clinical findings of the respiratory system</td>
</tr>
<tr>
<td>R10-R19 Symptoms and signs involving the digestive system and abdomen</td>
<td>Symptoms, signs or clinical findings of the digestive system or abdomen</td>
</tr>
<tr>
<td>R20-R23 Symptoms and signs involving the skin and subcutaneous tissue</td>
<td>Split into two groupings: Symptoms, signs or clinical findings of the nervous system; Symptoms, signs or clinical findings of the musculoskeletal system</td>
</tr>
<tr>
<td>R30-R39 Symptoms and signs involving the urinary system</td>
<td>Symptoms, signs or clinical findings of the genitourinary system - part of the grouping Symptoms, signs or clinical findings of the genitourinary system</td>
</tr>
<tr>
<td>R40-R46 Symptoms and signs involving cognition, perception, emotional state and behaviour</td>
<td>Reorganised into various subsections under Mental or behavioural symptoms, signs or clinical findings</td>
</tr>
<tr>
<td>R47-R49 Symptoms and signs involving speech and voice</td>
<td>Symptoms, signs or clinical findings of speech or voice</td>
</tr>
<tr>
<td>R50-R69 General symptoms and signs</td>
<td>General symptoms, signs or clinical findings</td>
</tr>
<tr>
<td>R70-R79 Abnormal findings on examination of blood, without diagnosis</td>
<td>Included in the grouping Symptoms, signs or clinical findings of blood, blood-forming organs or the immune system</td>
</tr>
<tr>
<td>R80-R82 Abnormal findings on examination of urine, without diagnosis</td>
<td>Clinical findings on examination of urine, without diagnosis under the grouping Symptoms, signs or clinical findings involving the urinary system</td>
</tr>
</tbody>
</table>
R83-R89 Abnormal findings on examination of other body fluids, substances and tissues, without diagnosis Clinical findings in specimens from other specified organs, systems and tissues under the grouping General symptoms, signs or clinical findings

R90-R94 Abnormal findings on diagnostic imaging and in function studies, without diagnosis Split into two subsections: Abnormal diagnostic imaging results not elsewhere classified; Abnormal results of function studies of other organs and systems in the grouping Abnormal results not elsewhere classified

R95-R99 Ill-defined and unknown causes of mortality Ill-defined and unknown causes of mortality

3.7.22 Differences between ICD–10 and ICD–11 in Chapter 22

The high-level categories have only a few changes. Changes are mainly at the lower character level and include additions of more specific categories of injury types and body location of the injury. There are no longer separate codes for burns and for corrosions. They are all together under Burns. Additional dimensions are available from Chapter X Extension codes, for postcoordination to add further detail such as laterality, or depth of burn. Major changes have been made to the section for complications of medical and surgical care. The Quality and Safety TAG has revised the coding of health care related injuries and events. The concept of a mechanical complication of a device is now classified as an external cause of harm.

Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>S00-S09 Injuries to the head</td>
<td>Injuries to the head</td>
</tr>
<tr>
<td>S10-S19 Injuries to the neck</td>
<td>Injuries to the neck</td>
</tr>
<tr>
<td>S20-S29 Injuries to the thorax</td>
<td>Injuries to the thorax</td>
</tr>
<tr>
<td>S30-S39 Injuries to the abdomen, lower back, lumbar spine and pelvis</td>
<td>Injuries to the abdomen, lower back, lumbar spine or pelvis</td>
</tr>
<tr>
<td>S40-S49 Injuries to the shoulder and upper arm</td>
<td>Injuries to the shoulder or upper arm</td>
</tr>
<tr>
<td>S50-S59 Injuries to the elbow and forearm</td>
<td>Injuries to the elbow or forearm</td>
</tr>
<tr>
<td>S60-S69 Injuries to the wrist and hand</td>
<td>Injuries to the wrist or hand</td>
</tr>
<tr>
<td>S70-S79 Injuries to the hip and thigh</td>
<td>Injuries to the hip or thigh</td>
</tr>
<tr>
<td>S80-S89 Injuries to the knee and lower leg</td>
<td>Injuries to the knee or lower leg</td>
</tr>
</tbody>
</table>
S90-S99 Injuries to the ankle and foot

T00-T07 Injuries involving multiple body regions

T08-T14 Injuries to unspecified part of trunk, limb or body region

T15-T19 Effects of foreign body entering through natural orifice

T20-T32 Burns and corrosions

T363-T35 Frostbite

T36-T50 Poisoning by drugs, medicaments and biological substances

T51-T65 Toxic effects of substances chiefly nonmedicinal as to source

T66-T78 Other and unspecified effects of external causes

T79 Certain early complications of trauma

T80-T88 Complications of surgical and medical care, not elsewhere classified

T90-T98 Sequelae of injuries, of poisoning and of other consequences of external causes

Injuries to the ankle or foot

Injuries involving multiple body regions

Injuries to unspecified part of trunk, limb or body region

Effects of foreign body entering through natural orifice

Burns

Frostbite

Now included under the main grouping Harmful effects of substances

Now included under the main grouping Harmful effects of substances

Other or unspecified effects of external causes

Other or unspecified effects of external causes

Other or unspecified effects of external causes

Injury or harm arising from surgical or medical care, not elsewhere classified

Redistributed to the specific body grouping as index terms. Sequelae will now be indicated by an cluster identifying the condition that is the sequelae, a code from Chapter 24 QC50 and the original injury.

### 3.7.23 Differences between ICD–10 and ICD–11 in Chapter 23

The primary axis for all external causes except exposure to extreme forces of nature, maltreatment, legal intervention, armed conflict and health care related harm or injury is now based on ‘intent’. The codes are a combination of intent, followed by mechanism and object or substance involved in occurrence of injury. There has been an expansion in the areas of vehicle types, places of occurrence, types of activities, legal/war codes, and substances. The areas of Complications of medical and surgical care and Maltreatment syndromes have been revised and improved. Additional dimensions are available from Chapter X Extension codes, for use in postcoordination.
### Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>V01-X59 Accidents</td>
<td>Redistributed to the main groupings of Unintentional cause, Intentional self-harm, Assault and Unknown intent</td>
</tr>
<tr>
<td>X60-X84 Intentional self-harm</td>
<td>Intentional self-harm</td>
</tr>
<tr>
<td>X85-Y09 Assault</td>
<td>Assault</td>
</tr>
<tr>
<td>Y10-Y34 Event of undetermined intent</td>
<td>Undetermined intent</td>
</tr>
<tr>
<td>Y35-Y36 Legal intervention and operations of war</td>
<td>Split into two groups: Legal intervention; Armed conflict</td>
</tr>
<tr>
<td>Y40-Y84 Complications of medical and surgical care</td>
<td>Causes of health care related harm or injury</td>
</tr>
<tr>
<td>Y85-Y89 Sequelae of external causes of morbidity and mortality</td>
<td>Redistributed to the specific external cause grouping as index terms. Sequelae will now be indicated by a cluster identifying the condition that is the sequelae, a code from Chapter 24 QC50 and the original external cause code.</td>
</tr>
<tr>
<td>Y90-Y98 Supplementary factors related to causes of morbidity and mortality classified elsewhere</td>
<td>Entities from this block are now found in either Chapter 21 Symptoms, signs and clinical findings (e.g. blood alcohol level findings) or have been added to Section X ‘Extension codes’ (e.g. nosocomial condition)</td>
</tr>
</tbody>
</table>

### 3.7.24 Differences between ICD–10 and ICD–11 in Chapter 24

This chapter has undergone reorganisation and is divided into two main sections: Reasons for contact with the health system and Factors influencing health status. There has been an expansion of the section related to reproduction with the addition of a new section Contact with health services for procreative management. There is also a new section for healthcare related adverse events that occur but do not result in any harm to the patient.

### Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z00-Z13 Persons encountering health services for examination and investigation</td>
<td>Contact with health systems for purposes of examination or investigation – a section under the grouping Reasons for contact with the health system</td>
</tr>
<tr>
<td>Z20-Z29 Persons with potential health hazards related to communicable diseases</td>
<td>Contact with or exposure to communicable diseases – a section under the grouping Reasons for contact with the health system</td>
</tr>
</tbody>
</table>
Z30-Z39 Persons encountering health services in circumstances related to reproduction

Contact with health services for reasons associated with reproduction diseases – a section under the grouping Reasons for contact with the health system

Z40-Z54 Persons encountering health services for specific procedures and health care

Split into two new sections, under Reasons for contact with the health system: Contact with health services for specific surgical interventions; Contact with health services for nonsurgical interventions not involving devices

Z55-Z65 Persons with potential health hazards related to socioeconomic and psychosocial circumstances

Reorganised and now appear under main grouping of Factors influencing health status

Z70-Z76 Persons encountering health services in other circumstances

Reorganised and now appear under main grouping of Factors influencing health status

Z80-Z99 Persons with potential health hazards related to family and personal history and certain conditions influencing health status

Reorganised and now appear under main grouping of Factors influencing health status

3.7.25 Differences between ICD–10 and ICD–11 in Chapter 25

Diseases formerly coded here have been moved to their primary places within ICD–11. New codes for use as international provisional codes have been included.

Table 1: Comparison of ICD-10 block structure with ICD-11 equivalent structure

<table>
<thead>
<tr>
<th>ICD-10 block heading</th>
<th>ICD-11 equivalent structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>U00-U49 Provisional assignment of new diseases of uncertain aetiology or emergency use</td>
<td>Split into two new sections: International provisional assignment of new diseases of uncertain aetiology; National provisional assignment of new diseases of uncertain aetiology</td>
</tr>
<tr>
<td>U82-U85 Resistance to antimicrobial and antineoplastic drugs</td>
<td>Moved to Chapter 21 with the new title Finding of microorganism resistant to antimicrobial drugs</td>
</tr>
</tbody>
</table>

3.8 Annex - ICD-11 Updating and Maintenance

This document describes the workflow for updating ICD-11. It will be reviewed in 2 years (2019).
3.8.1 Background

Updatating ICD-11 makes sure that ICD meets the needs of users in content and terminology. Any individual can submit a proposal for an update to the ICD. Such updates can refer to one or more entities of the ICD. The proposals will be reviewed by scientific experts and classification experts. The decision regarding the outcome of a particular proposal will be based on the recommendations by these experts. A workflow between a mortality reference group (MRG) and a morbidity reference group (MbRG), a medical scientific advisory committee (MSAC), and a classification and statistics advisory committee (CSAC) will ensure that all aspect concerning a proposal are considered. Reviews of the synthesis by classification experts ensure suitability of the proposed changes to the diverse use cases of the ICD. The process is based on consensus of the members of the CSAC about a proposed change. All rounds of editing will be handled through electronic platforms. Where consensus cannot be achieved, the proposal can either be deferred to subsequent cycles of editing pending arbitration by the WHO or be solved in a face to face meeting of classification and content experts. In all other cases, a consensus recommendation is given to the WHO for final decision.

All proposals for change must be submitted through the proposal mechanism to ensure a clear and transparent review of the proposed content. The different types of proposals that may move through a workflow in order to ensure consistency, structural integrity, and scientific correctness of the classification. The different workflows warrant proper use of the available resources of the Network and WHO. All changes are reported. There can be the need of steps for verification of updates.

3.8.2 Updating Cycle

The ICD is continuously updated (development version). Official releases are produced annually for international use in mortality and morbidity. A standardised process has been established to ensure that the proposed updates are collected, routed, reviewed, and duly considered before being implemented.

The updating is carried out at different levels with different frequencies. That will keep stability for mortality and allow quicker updates for morbidity use.

- Updates that impact on international reporting (the 4 and 5-digit structure of the stem codes) will be published every five years.
- Updates at a more detailed level can be published at annual rates and pending the needs of clinical modifications also twice a year.
- Additions to the index can be done on an ongoing basis.
- Mortality and morbidity rules will be updated in a 10-year cycle.

3.8.3 Types of proposals for ICD-11-MMS maintenance

After reviewing the established proposal types and criteria of ICD-10 and those used thus far during ICD-11 Revision, taking into context the needs of ICD-11, the following proposal
types for ICD-11 are proposed (see Table below for impact on Morbidity and Mortality Statistics (MMS)).

- **Add new entity:**
  - to add an entity ‘below the shoreline’ (becoming an index entry in MMS)
  - to add an entity ‘above the shoreline’ (becoming a category in MMS)

- **Delete entity:**
  - applicable to an entity below the shoreline (removing an index term from the MMS)
  - applicable to an entity above the shoreline (removing a category from the MMS)

- **Change of Coding Status:**
  - moving something from the index into the MMS (e.g. giving it an individual code), or moving something from the MMS to the index (e.g. eliminating the individual code and directing it elsewhere)

- **Content Enhancement** including the following subtypes:
  - Change of Preferred Term (title) (Changes to a code that affect the meaning of that code are not allowed and will not be accepted. If a concept is outdated and must be updated, or a new concept is necessary, the relevant delete entity or add new entity proposal types, or both, must be used.)
  - Addition / Deletion of a synonym
  - Addition / Deletion of an exclusion
  - Change of Description (Definition)
  - Change of Additional Information (Long Definition)
  - Correction of spelling or grammar (in any field)
  - Addition / Deletion of a postcoordination combination
  - Addition / Deletion of entity rubric content (does not allow change to meaning)

- **Structural Change** including the following subtypes:
  - Change a primary parent link
  - Change a secondary parent link

- **Reference Guide Change** applicable to any text of the ICD-11 Reference Guide, including coding rules and defaults, etc. Subtypes include:
  - Correction of spelling or grammar
  - Clarification of a rule
  - Change to a rule (that effects data integrity), including changing a coding hint

- Proposals for clarification that do not require change to the classification
- Correction of inconsistency between volumes

Ideally, each proposal will specify if it relates to the foundation or to a classification, including if it is for a national clinical modification or specialty linearization. Tick boxes in the proposals will allow to indicate the scope.
Not all authors will be familiar with these distinctions. The default may assume that the proposal relates to the MMS, unless specified otherwise. Regardless, the CSAC will need to determine if the item, once accepted, will be ‘above or below the shoreline’ in the MMS.

Not all proposals will require the same level of scrutiny, as each may be considered in the context of its impact on the statistical classification and the desirability for a scientifically accurate and up-to-date classification. A ‘fast track’ to review urgently needed updates, such as for national clinical modifications will be put in place as needed. Criteria and a specific workflow exist for each ‘track’ used for proposals.

**Table 1**: Overview of ICD-11 maintenance proposal types and their potential impact on MMS-collected data. List does *not* imply a hierarchy of prioritization. ‘X’ means applies.

<table>
<thead>
<tr>
<th>Proposal Type</th>
<th>Major</th>
<th>Minor</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add new entity</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delete entity (+)</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Change of Coding Status</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Content Enhancement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change of Preferred Term (title)</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Addition/Deletion of a synonym</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Addition/Deletion of an exclusion</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Change of Description</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Change of Additional Information (Long Description - outside WHO)</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Correction of a typo (in any field)</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Addition/Deletion of a postcoordination combination</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Addition/Deletion of entity rubric content – no change to meaning</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Structural Change</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change a primary parent</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Change a secondary parent</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Reference Guide change</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correction of a typo</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Clarification</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Change to a rule (that affects data integrity), including changing a coding hint</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

(+): Errors are deleted; obsolete terms and entities are not deleted as they assist with mapping and coding as they may still be in use.
**Table 2:** Groups responsible for maintenance of potential changes. 'X' meaning 'applies'; (X) meaning applies only in special situations; 'X+' meaning applies only for the specific usecase

<table>
<thead>
<tr>
<th>Proposal Type</th>
<th>CSAC</th>
<th>MSAC</th>
<th>MRG</th>
<th>MbRG</th>
<th>FDGRG or TM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Add new entity</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X+</td>
</tr>
<tr>
<td><strong>Delete entity (+)</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X+</td>
</tr>
<tr>
<td><strong>Change of Coding Status</strong></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X+</td>
</tr>
<tr>
<td><strong>Content Enhancement</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change of Preferred Term (title)</td>
<td>X</td>
<td>(X)</td>
<td></td>
<td></td>
<td>X+</td>
</tr>
<tr>
<td>Addition/Deletion of a synonym</td>
<td></td>
<td></td>
<td>X+</td>
<td></td>
<td>X+</td>
</tr>
<tr>
<td>Addition/Deletion of an exclusion</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change of Description</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X+</td>
</tr>
<tr>
<td>Change of Additional Information (Long Description - outside WHO)</td>
<td>(X)</td>
<td></td>
<td></td>
<td></td>
<td>X+</td>
</tr>
<tr>
<td>Correction of a typo (in any field)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addition/Deletion of a postcoordination combination</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Addition/Deletion of entity rubric content – no change to meaning</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X+</td>
</tr>
<tr>
<td><strong>Structural Change</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change a primary parent</td>
<td>X</td>
<td>(X)</td>
<td>X</td>
<td>X</td>
<td>X+</td>
</tr>
<tr>
<td>Change a secondary parent</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reference Guide change</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correction of a typo</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clarification</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X+</td>
</tr>
<tr>
<td>Change to a rule (that affects data integrity), including changing a coding hint</td>
<td>X</td>
<td>(X)</td>
<td>X+</td>
<td>X+</td>
<td>X+</td>
</tr>
</tbody>
</table>

(+) Errors are deleted; obsolete terms and entities are not deleted as they assist with mapping and coding as they may still be in use

### 3.8.4 Proposal completeness

Any individual can submit a proposal for an update to the ICD. Proposals shall be provided in the format of a short (approximately 500-words) explanation with references to underpinning literature and evidence (publications in peer reviewed journals, or in official meetings of WHO, its CC or NGO in official relationships). The proposal shall also visualize the changes in the position and address potential impact on entities outside the proposal.
• The author has registered with full name and affiliation and declared a possible conflict of interest.
• All proposals must have a clearly written and compelling rationale, with citations to establish the proposals’ evidence base.
• Proposals that suggest adding entities must have a description, and a definition of the entity. This ensures the correct placement in the foundation. The rationale must have a scientific background, with references to publications in peer reviewed journals, or in official meetings of WHO, its CC or NGO in official relationships.
• Proposals for new codes should include information about how the case would be coded if the proposed new code is not accepted.
• Proposals with impact on the statistics must include a description or analysis of the resulting impact.
• Proposals suggesting rule changes must come with an impact analysis.
• An incomplete proposal will be returned to the author.
• The proposal mechanism will not allow submitting proposals without rationale or with missing description or definition, adequate to process the proposal.

3.8.5 Proposal Timelines

Proposals can be submitted at any time. No impact proposals are processed on an ongoing basis, proposals requiring review by any of the groups and committees involved in the workflow, are bundled every 28 February of a year and routed in the necessary workflow.

Proposals are processed in parallel by the relevant groups. Formal comments are provided in 2 rounds (2 Months, 1 Month) - offering the opportunity for edits in between. Final decision about acceptance, rejection or ‘further discussion’ is taken at a teleconference of the CSAC in June every year. Formal confirmation of the translated proposals is done by the council teleconference in September. Problematic cases are held over for face-to-face discussion at the annual meeting. Official releases are published end September for validity according to the updating cycle of the kind of proposal, earliest being proposals for adoption in January of the following year (minimum 6 months for translation, 3 months for formal dissemination, e.g. for clinical detail, secondary parents or synonyms).

3.8.6 Proposal Workflow

ICD maintenance is a process that requires broad expertise in statistics and medical science as well as in different use cases. It has already been established that the structure associated with ICD update and maintenance will be revised in line with new requirements and efficient use of limited resources. The figure below shows the flow by which proposals received through the update platform might move through the expert groups for review and recommendation to WHO. A ‘proposal filter’ will initially review all proposals received to ensure that they are complete and have been submitted correctly. The proposals will then be forwarded to the appropriate next step(s). This triage may identify proposals that can or must be processed in an accelerated process, such as due to the type of proposal or in cases of extreme urgency. The proposed typology of proposals may help to identify the
impact on the classification which will, in turn, inform whether the proposal is an improvement or clarification that can be implemented on an ongoing basis, or if the change must be queued for implementation on the updating cycle. The threshold for considering proposals to the foundation is low, allowing for simple rules to identify what is ‘receivable/actionable’ – namely, if it is complete and correct, it may be considered. Consideration does not guarantee acceptance.