

# ICD-11

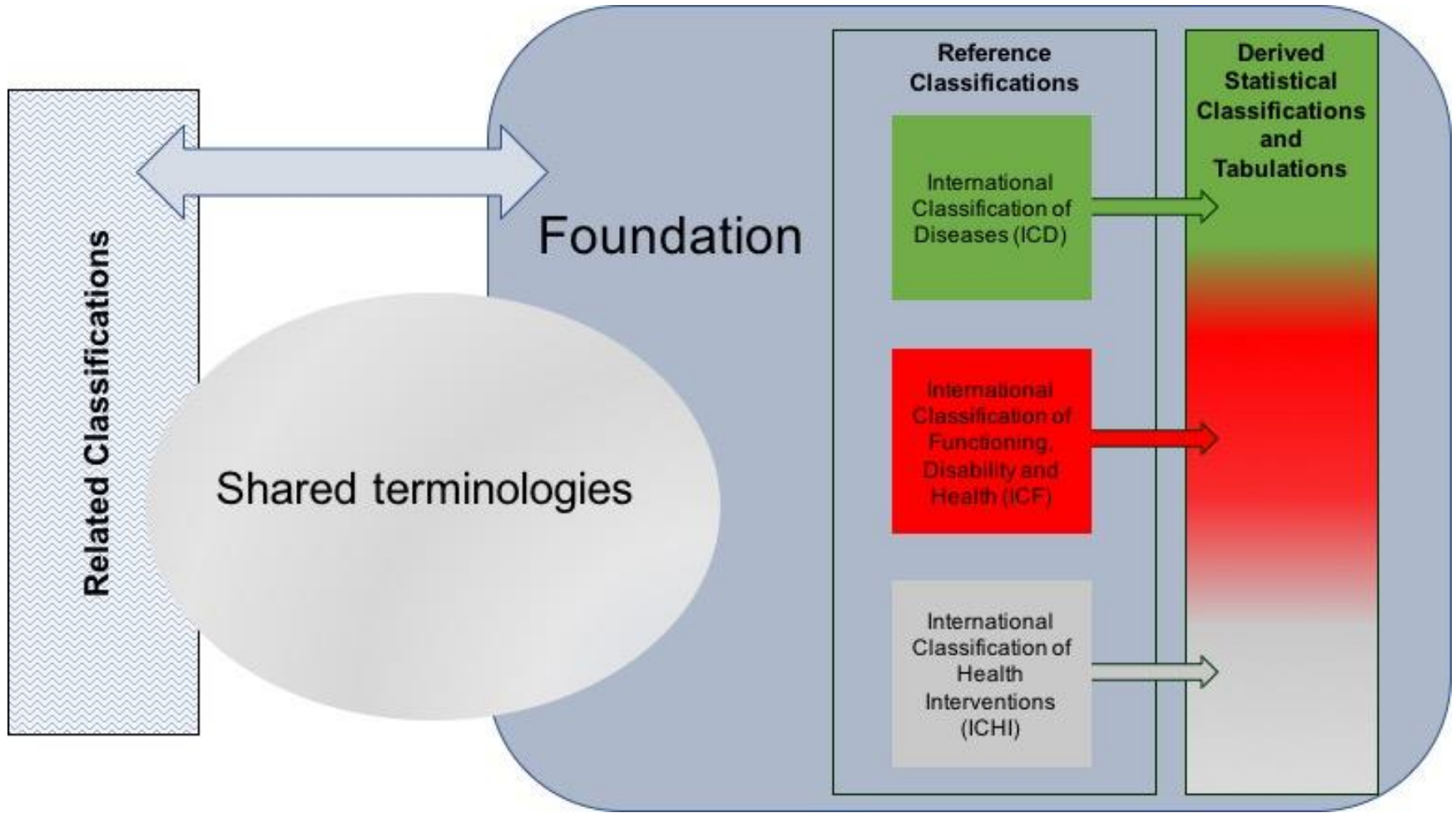
**Dr Robert JAKOB**

Team Leader Classifications, Terminologies and Standards,  
WHO, Geneva



**World Health  
Organization**

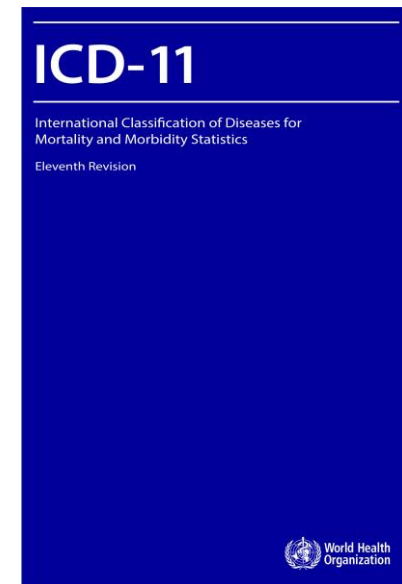
# WHO Family of Classifications



# ICD-11

is the **international standard** for recording, reporting and measuring health & health services

- Mortality Statistics
- Morbidity Statistics
- Quality and Safety
- Primary care
- Health Care Costs
- Progress towards SDGs
- Clinical documentation



# Why ICD-11?

- Improved usability
  - Less training
  - All clinical detail – code combinations
- Update scientific content
- Enable coding of all clinical detail
- Make eHealth ready for use in electronic environments
- Linkage to relevant other classifications and terminologies
- Full multilingual support on translation and output

# Timeline

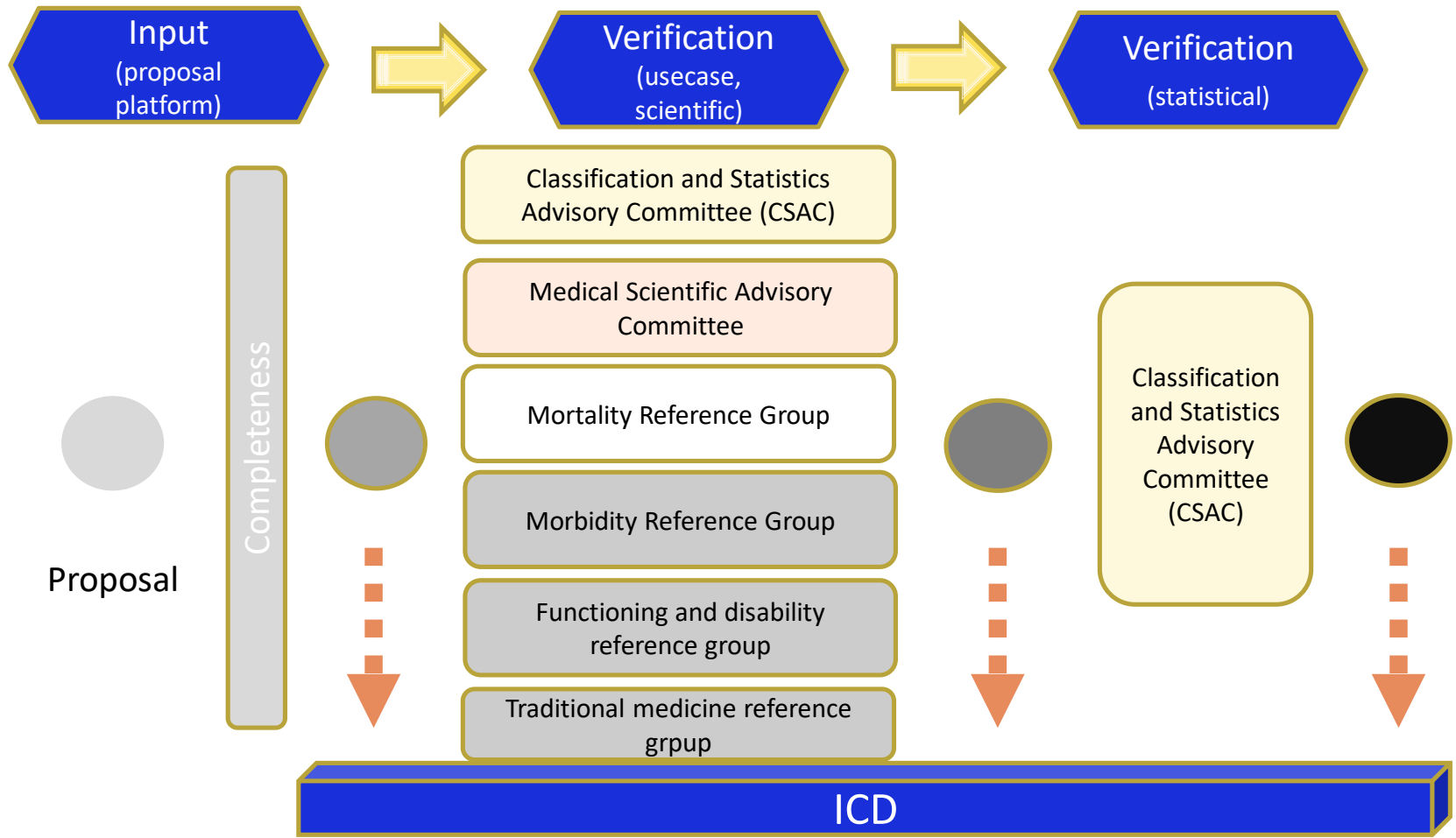
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- 2018 Release of version for implementation
- 2019 January WHO Executive Board
- 2019 May World Health Assembly

# ICD-11 Scientific clinical input

- Extensive participation by national and international scientific societies
- Over 300 clinical specialists organized in 30 topic advisory groups, 270 Institutions, 55 countries
- Input from clinical modifications of old ICD-10 – and they were based on clinical needs
- Reviews, testing, commenting => 99 countries

# ICD – Maintenance and governance - transparent



# ICD-11 Transparent

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- Proposal platform allowing discussion and decision tracking, and notification
- You can suggest new changes and adding new terms
- Development browser (orange) allows to see and track daily changes



# ICD-11 IT friendly –

- **Web services** – full functionality available in the software of choice - **you keep your preferred software user interface**
- Online services – everybody can use ICD without any local software
- Offline services – all the functionality on a local computer and updates when internet is available
- Output files – formats include CSV, ClaML and others as necessary
- Print version – Real paper version gives look and feel of the past

# ICD-11 IT friendly –

Authoring Tool  
(iCat)



ICD-11 repository  
Daily versions  
Releases  
Snapshots



ICD Search Index  
multiple versions  
multiple languages

ICD-11 Database  
Proposals  
Translations



ICD-API  
RESTFUL Web services

ICD-11 Browser

ICD-11 Coding  
Tool

Proposal  
Mechanism

Translation Tool



- **Web services**
- Online services
- Offline services
- Output files
- Print version



ICD API allows programmatic access to the International Classification of Diseases (ICD). You may use this site to access up to date documentation on using the API as well as managing the keys needed for using the API.

## Register for using the API

[Register](#) to get access to the APIs *(if you haven't registered already)*

[View API access key\(s\)](#) *(requires logging in)*

## How to Use the APIs

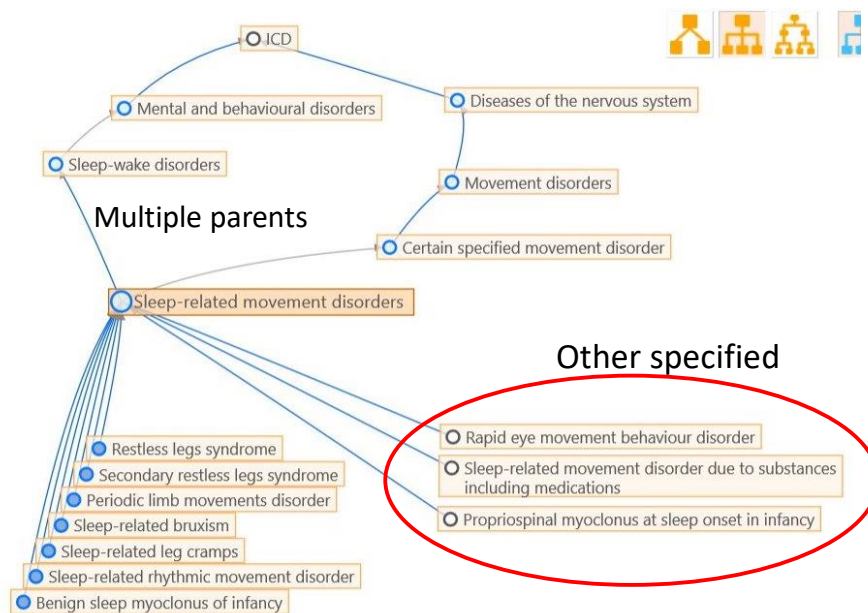
[ICD REST API Documentation](#)

[ICD API Authentication](#)

<https://icd.who.int/icdapi>

ICD-11 is built on an ontological complex structure. This technology provides the user guidance, but the normal user does not have to deal with this (like normal drivers do not touch the engine of their cars. They just drive)

In the browser, 'multiple parenting' is shown as "code elsewhere"



Detail that is grouped in categories with the name 'other specified', can be coded using URI

# URI – uniform resource identifier

Entity has a code

grouped into a category;  
has URI for recording, if desired

Shoreline



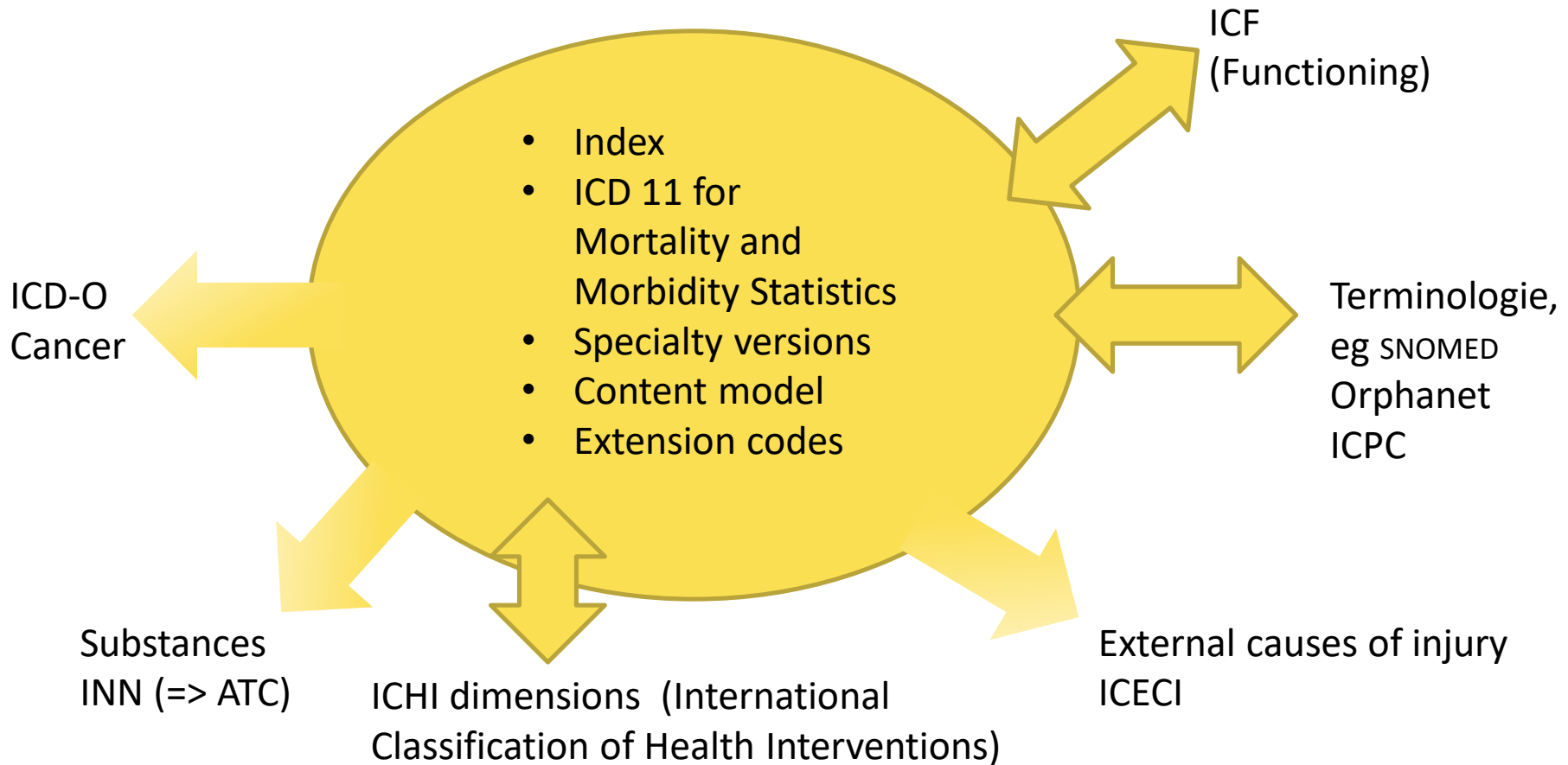
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1C5.1Z	

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URI – electronic reporting in electronic health records with more detail than with categories.

# ICD-11 Foundation

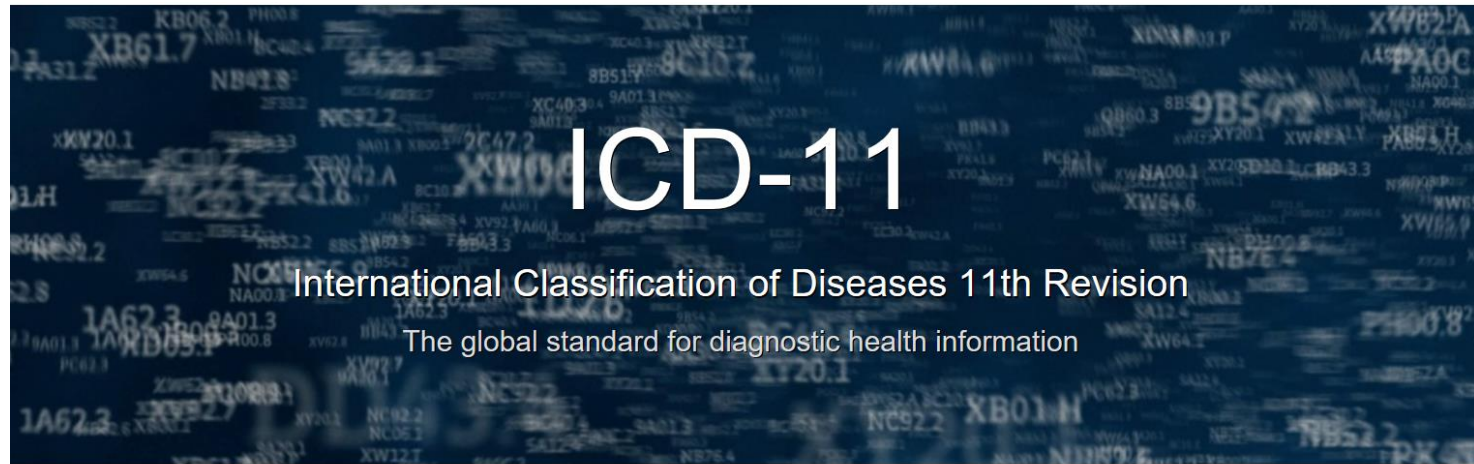


# ICD-11 User friendly

- Easier coding – coding tool, more instructions built in
- Guidance for single code combinations
- Specialty versions focus on needs for particular specialties

# Browser and Coding tool

<https://icd.who.int>



## Use ICD-11

- [ICD-11 Browser](#)  
*for seeing the content*
- [ICD-11 Coding Tool](#)  
*for coding with ICD-11*
- [ICD-API](#)  
*web services to get programmatic access to ICD-11*

## Learn More

- [ICD Home Page](#)
- [ICD-11 Reference Guide](#)
- [About ICD-11](#)
- [ICD Video](#)

## Be Involved

- Our maintenance platform provides various ways to contribute
- Comments
  - Proposals
  - Translations



# The ICD-11 browser

- Current orange browser is the maintenance tool for ICD-11
- Not only a search tool, but also the mechanism to add proposals and comments after registering
- Registered users are able to:
  - Comment on the content
  - Submit proposals for change
  - Read comments and proposals from others
  - Access PDF or Word versions of the classification

# ICD-11 Browser

[ Register ] | [ Log In ] ?  
Last Update: Sep 11

ICD-11 Beta Draft (Mortality and Morbidity Statistics)

Search  [ Advanced Search ]

Foundation ? Linearizations ? Contributions Info More...

**ICD-11 Beta Draft - Mortality and Morbidity Statistics**

- ▶ 01 Certain infectious or parasitic diseases
- ▶ 02 Neoplasms
- ▶ 03 Diseases of the blood or blood-forming organs
- ▶ 04 Diseases of the immune system
- ▶ 05 Endocrine, nutritional or metabolic diseases
- ▶ 06 Mental, behavioural or neurodevelopmental disorders
- ▶ 07 Sleep-wake disorders
- ▶ 08 Diseases of the nervous system
- ▶ 09 Diseases of the visual system
- ▶ 10 Diseases of the ear or mastoid process
- ▶ 11 Diseases of the circulatory system
- ▶ 12 Diseases of the respiratory system

Foundation Id : <http://id.who.int/icd/entity/14352>

## 01 Certain infectious or parasitic diseases

### Description

This chapter includes certain conditions such as a bacterium, virus, parasite, or fungus.

### Exclusions

- Infections of the fetus or newborn
- Human prion diseases \* (8E20-8E29)
- Pneumonia \* (CA40)

### All Index Terms

There are no index terms associated with this chapter.

User Guide  
Training Videos  
Caveats  
ICD-11 Reference Guide  
ICD Revision Site  
Downloads  
Frozen Releases

Proposals !

# ICD-11 Coding tool

- This tool works by searching all ICD-11 terms and is the ICD-11 index
- Has links to the browser so the user can confirm location is correct for term being searched
- Generates and dynamically updates two different outputs
  - Word list
  - Matched entities
- Synonyms, word completion... - like online search engines

# Simple search

Type a diagnostic statement into the Coding Tool

e.g. *cancer of stomach*

The screenshot shows the ICD-11 Coding Tool interface. At the top, a search input field contains the text "cancer of stomach" with a red 'X' icon to its right. Below the input field, the text "Guessing the word being typed..." is displayed. The interface is divided into two main sections: "Word list" and "Destination Entities".

**Word list**  
sort: Relatedness/repetition ▾  
gastric  
stomach

**Destination Entities**  
sort: Matching score

- 2B72.Z Malignant neoplasms of stomach, unspecified ☰ 🔗
- 2B72.Y Other specified malignant neoplasms of stomach ☰ 🔗
- 2D8Y Malignant neoplasm metastasis in other specified digestive system organs 🔗
- Malignant neoplasm metastasis in stomach**

Two red arrows point from the text "e.g. cancer of stomach" to the search input field and the "Destination Entities" section.

# Simple search

Type a diagnostic statement into the Coding Tool

e.g. ***Osteoarthritis of right knee***

The screenshot shows the ICD-11 Coding Tool interface. At the top, a search box contains the text "osteoarthritis right knee" with a red arrow pointing to it. Below the search box, the text "Guessing the word being typed..." is visible. The interface is divided into two main sections: "Word list" on the left and "Destination Entities" on the right. The "Word list" section has a "sort:" dropdown menu set to "Relatedness/repetition" and the word "knee" is listed. The "Destination Entities" section has a "sort:" dropdown menu set to "Matching score" and lists four entities:

- FA01.Z &XX9K **Osteoarthritis of knee, unspecified [Right]** ⓘ Ⓞ
- FA01.0 &XX9K Primary **osteoarthritis of knee [Right]** ⓘ Ⓞ
- FA01.1 &XX9K Post traumatic **osteoarthritis of knee [Right]** ⓘ Ⓞ
- FA01.2 &XX9K Other secondary **osteoarthritis of knee [Right]** ⓘ Ⓞ

Red arrows point from the search box to the first entity in the list and from the word "knee" in the word list to the same entity.

# Flexible search

Type a diagnostic statement into the Coding Tool

e.g. *splenic flexure colonic liposarcoma*

The screenshot shows a search input field containing the text "splenic flexure colonic liposarcoma". Below the input field, the text "Guessing the word being typed..." is visible. To the left of the input field, the text "Word list" is displayed in orange, with the message "Couldn't find additional matching words" below it. To the right of the input field, the text "Destination Entities" is displayed in orange, with the message "Couldn't find matching entities" below it. At the bottom right, there is a blue button labeled "Try flexible search" with a question mark icon.

# Flexible search cont.

## Try flexible search

splenic flexure colonic liposarcoma

Guessing the word being typed...

Word list  
Couldn't find additional matching words

Destination Entities  
Couldn't find matching entities

[Try flexible search](#) ?

A red arrow points from the 'Word list' section to the 'Try flexible search' button.

splenic flexure colonic liposarcoma

Guessing the word being typed...

Destination Entities

- 2B90.Z&XA1... Malignant neoplasms of colon, unspecified [Splenic flexure of colon] ⓘ
- colon cancer [Splenic flexure] ⓘ
- 2B90.12 Malignant neoplasm of descending colon or splenic flexure of colon, unspecified ⓘ
- 2B90.Y&XA1... Other specified malignant neoplasms of colon [Splenic flexure of colon] ⓘ

A red arrow points from the 'Try flexible search' button in the previous screenshot to the 'colon cancer [Splenic flexure]' result in this screenshot.

# Flexible search cont.

- Browser view with postcoordination option for histopathology

**2B90.Y Other specified malignant neoplasms of colon**

**Parent**  
2B90 Malignant neoplasms of colon  
Show all ancestors

This category is an **'other specified'** residual category.

Show all index terms [32]

ICD-10 : C18

**Postcoordination**

2B90.Y Other specified malignant neoplasms of colon Code: 2B90.Y&XA1PY9&XA95L3&XH2J05

Specific anatomy  
XA1PY9 Splenic flexure of colon  
XA95L3 Hepatic flexure of colon

Histopathology  
XH2J05 Liposarcoma, NOS

Add detail to **Other specified malignant neoplasms of colon**

Specific anatomy (use additional code, if desired)

XA03U9	Colon
XA8PW4	Appendix
XA3AL5	Ascending colon
XA95L3	Hepatic flexure of colon
XA49U1	Transverse colon
XA1PY9	Splenic flexure of colon
XA2G13	Descending colon
XA8YJ9	Sigmoid colon

Histopathology (use additional code, if desired)

Search liposarcoma

Search results Histopathology

- XH2J05 Liposarcoma, NOS
- XH1C03 Dedifferentiated liposarcoma
- XH6R46 Fibroblastic liposarcoma
- XH7PE7 Inflammatory liposarcoma
- XH7Y61 Liposarcoma, well differentiated
- XH8VG3 Mixed liposarcoma
- XH3EL0 Myxoid liposarcoma
- XH25R1 Pleomorphic liposarcoma
- XH8D43 Sclerosing liposarcoma



# ICD-11

- 26 chapters,
  - Special tabulation lists  
(for analysis only, e.g. infections by agent)
- Functioning pattern
- Traditional medicine
- Extension codes
  
- Multiple languages – controlled translation platform

# Differences to ICD-10- Coding scheme


- The chapter numbering:
  - Arabic numbers (not roman numerals)
- The coding scheme for categories:
  - Minimum 4 characters
  - 2 levels of subcategories
- Coding scheme
  - always letter in second position (distinction codes of ICD-10)
  - No l,l (L,i); 0,O (Zero, o)
- First character relates to the chapter number (1-Z)

# No change to ICD-10

- Conditions included in following chapters have not been subjected to moves:
  - Maternal
  - Perinatal
  - Injury
  - Tumour
  
- Mortality coding rules have kept their intent

# Extension codes – add all the detail you need

## Type 1

- Severity
- Temporality (course of the condition)
- Temporality (Time in life)
- Aetiology  Medicaments (WHO INN)  
Chemicals  
Infectious agents
- Anatomic detail Topology Anatomic location
- Histopathology
- Biological Indicators
- Consciousness
- External Causes detail
- Injury Specific detail

## Type 2

- Main Condition
  - Reason for encounter
  - Reason for admission
  - Main Resource Condition
- Present on Admission
  - Developed after admission
  - Uncertain timing relative to admission
- Provisional diagnosis
- Diagnosis confirmed by...
  - Lab
  - Serology
  - Histology
  - Genetics
  - Imaging –
  - Unspecified means
- Differential Diagnosis

# Examples of problems solved with ICD-11

- Antimicrobial resistance - essentially **missing in ICD-10**
- HIV subdivisions - **outdated** detail in **ICD-10**
- Skin cancer - melanoma types missing – basalioma **missing in ICD-10**
- Valve diseases - **outdated** structure, need by valve, less rheumatic
- Postprocedural conditions - **clarify** when use 19 and when not for postprocedural
- Diabetes coding clinically more relevant and flexible
- External causes - **Loosing detail** in non-accidents; traffic accidents

# Differences to ICD-10

- ICD-11 has five new chapters and 2 additional sections:
  - Chapter 3 Diseases of the Blood or Blood-forming Organs
  - Chapter 4 Disorders of the Immune System
  - Chapter 7 Sleep-Wake Disorders
  - Chapter 17 Conditions related to Sexual Health
  - Chapter 26 Traditional Medicine
  - Section on functioning (activity and participation – WHODAS2/MDS)
  - Chapter X Extension codes
- OR means ‘and’ or ‘or’ – replacing formerly used ‘and’

# Chapters - changes

- 06 – Mental, behavioural or neurodevelopmental disorders
  - New structures
- 08 – Diseases of the nervous system
  - More clinical restructuring,
  - Received prion disease
  - Received cerebrovascular diseases
- 09 – Diseases of the visual system
  - More clinical detail

# Chapter 01 – Certain infectious diseases

- Minimise the impact on longitudinal statistics of major infections;
- Allow reporting of main infection syndromes without mention of a specific agent or when public health concern
  - Influenza, moved into Chapter 1
  - Prion diseases moved into Nervous system.
  - Antimicrobial resistance is found in Ch. 21 but is to be reported in combination with the infectious disease.



# Chapter 02 – Neoplasms

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- Morphology has been precoordinated
- The concepts of unknown and uncertain behavior have been split into two unique categories

# Chapter 02 – Neoplasms

- Generally, the hierarchy :
  - Behaviour;
    - Broad sites or systems;
      - the specific site or morphological (histology) type
  
- Three exceptions to this hierarchy:
  1. Neoplasms of brain and central nervous system 1<sup>st</sup> level is broad sites
  2. Neoplasms of haematopoietic and lymphoid tissues where 1<sup>st</sup> level is broad morphological (histology) type
  3. Malignant mesenchymal neoplasms where 1<sup>st</sup> level is specific morphological (histology) type

# Chapter 04 – Diseases of the immune system

- This new chapter (previously part of Chapter III in ICD-10) has the following sections:
  - Immunodeficiencies
  - Non-organ specific systemic disorders (NOSSAD)
  - Autoinflammatory disorders
  - Allergic or hypersensitivity conditions (+anaphylaxis)
  - Certain diseases involving the immune system
  - Diseases of thymus

# Diseases of the circulatory system

- Heart valve disease no longer dominated by rheumatic fever (now: valve-vitium-etiology)
- New distinct higher level categories
  - 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’
  - New subsection on Pulmonary Hypertension in the Pulmonary heart disease and diseases of pulmonary circulation section

# Chapter 12 – Diseases of the respiratory system

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- Specific Infectious lung diseases have been moved to Chapter 01 to better reflect the infectious nature of these conditions.
- Developmental respiratory diseases are now located in Chapter 20 Developmental anomalies.
- Cystic fibrosis has been moved to Certain lower respiratory tract diseases and multi-parented to metabolic disorders in the Endocrine chapter

# Chapter 13 – Diseases of the digestive system

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- More detailed anatomical groups - rostral-caudal order
- More recent clinical detail
- Important digestive diseases have been allocated their own category (e.g. gastro-oesophageal reflux disease)

# Chapter 14 – Diseases of the skin

- 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
- Major changes have been made to this chapter adding detail coming from the fusion of the American, British and German dermatological terminologies

# Chapter 16 – Diseases of the genitourinary system

- 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 (KDIGO)



# Chapter 17 – Conditions related to sexual health

- New chapter in ICD-11 divided into major sections for:
  - Sexual dysfunctions
  - Sexual pain disorders
  - Gender incongruence
- The general hierarchy consists of:
  - 1st level broad category of condition
  - 2nd level - specific type of condition
  - 3rd level - - specific disease/disorder

# Chapter 18 – Pregnancy, childbirth or the puerperium

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- Additional specifications have been included for “Early pregnancy loss”.
- A new section Obstetric haemorrhage has been added to enable all types of haemorrhage to be grouped together

# Chapter 20 – Developmental anomalies

- Chapter 20 has undergone a major restructure with it now having four major sections
  - Structural developmental anomalies primarily affecting one body system
  - Multiple developmental anomalies or syndromes
  - Chromosomal anomalies, excluding gene mutations
  - Conditions with disorders of intellectual development as a relevant clinical feature

# Chapter 23 – External causes of morbidity or mortality

- Removed detail (not usually reported)
  - Can be added with code combination with extension codes
- Other sections include Exposure to extreme forces, Maltreatment, Legal intervention, Armed conflict and
- Causes of healthcare related harm
  - Completely overhauled for modern reporting of harm or near failure

# Patient safety

## **"Cause"** of harm

- Substances
- Procedures
- Devices
- Other Aspects of Care

## **"Mode or Mechanism"** of harm

- e.g. overdose/underdose for substances
- e.g. accidental perforation for procedures
- e.g. dislodgement/malfunction for devices
- e.g. mismatched blood used in transfusion for other aspects of care

A cluster of codes to denote the  
**"Injury or Harm"**  
that resulted from the event

# A clinical example

- A patient presents with an intracranial hemorrhage arising while on warfarin anticoagulation. INR found to be 7.0 and careful history reveals patient to have accidentally taken double doses over several days.
- Clustered Coding:

# A clinical example

- A patient presents with an intracranial hemorrhage arising while on warfarin anticoagulation. INR found to be 7.0 and careful history reveals patient to have accidentally taken double doses over several days.
- Clustered Coding:
  - PH80 & XE9AC Code for the cause of harm (exposure to drug in therapeutic intent & warfarin)
  - PH92.0 Code for mode/mechanism (overdose)
  - 8B00.Z Code for actual harm (intracranial hemorrhage)

# Why ICD-11?

- Improved usability
  - Less training
  - Easily add all clinical detail
  - Add terms
- Updated scientific content
- Improved incorporation in electronic environments
- Linkage to relevant other classifications and terminologies
- Improve comparability of translations
- Implementation package





ICD 11  
Start now