World Health Organization

ICD-11

Implementation Guide

A guide for national decision-makers and implementers

Version 2.0 2026

Classifications and Terminologies

Department of Data, Digital Health, Analytics and AI

icd.who.int

SUGGESTED CITATION

ICD-11 Implementation Guide. Geneva: World Health Organization; 2026. Licence: CC BY-NC-SA 3.0 IGO.

COPYRIGHT AND LICENCE

© World Health Organization 2026. Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO). Under the terms of this licence, you may copy, redistribute, and adapt the work for non-commercial purposes, provided the work is appropriately cited.

ABOUT THIS DOCUMENT

This document supersedes the ICD-11 Implementation or Transition Guide (versions 1.x, 2019–2025). It reflects the experience of countries that have implemented ICD-11 since 2022, the evolution of the digital health landscape, and the development of the WHO Family of International Classifications and Terminologies. It is country- and region-neutral. Every country sequences ICD-11 implementation according to its own priorities.

The Guide is written for national decision-makers and the focal points who lead implementation. Technical detail is available at icd.who.int, in the Reference Guide, and through the WHO-FIC Network.

Contents

Why ICD-11 now 1

A.1 In brief 2
A.2 ICD-11 in essence 4
A.3 What ICD-11 is, and is not 6
A.4 Correcting four common misconceptions 6
A.5 ICD-11 as the entry point to the WHO-FIC family 8
A.6 ICD-11 in the digital health landscape 9
A.7 Risks and opportunity cost of delayed transition 10
A.8 Feasibility: what early adopters have shown 11
A.9 What is in this Guide 13

What ICD-11 delivers 14

B.1 Reading guide 15
B.2 Clinical documentation 15
B.3 Mortality 16
B.4 Morbidity 19
B.5 Specialty and cross-cutting use cases 21
B.6 The WHO-FIC-based casemix path 23
B.7 ICHI: the procedure layer 24
B.8 ICF and functioning 25
B.9 Languages, translation, and coding training 25
B.10 Maintenance, updates, and governance 27
B.11 The implementation package: what a country receives 27
B.12 Sequencing: building outward from the strongest entry point 28

Implementing ICD-11 30

C.1 Reading guide 31
C.2 Governance: getting the national structure right early 31
C.3 Self-assessment: what to know before drafting the plan 33
C.4 Planning: turning self-assessment into a roadmap 35
C.5 Workforce: the longest lead time in the plan 37
C.6 Stakeholder engagement: bringing the system along 39
C.7 Technical readiness: IT, integration, and vendor work 40
C.8 Transition for legacy countries: crosswalks and time-series continuity 43
C.9 Dual coding studies 47
C.10 Piloting and rollout 50
C.11 Monitoring implementation: indicators and evaluation 51
C.12 WHO and WHO-FIC Network support 52
C.13 Where the Guide ends and the rest of the resources begin 53

Reference material 55

Annex 1 Template implementation timetable 56
Annex 2 Crosswalks and dual coding studies: detailed guidance and evidence 60
Annex 3 Tooling reference 65
Annex 4 Glossary 67
Annex 5 Resources and where to find them 71
Annex 6 Consolidated bibliography 73

A

Why ICD-11 now

IN THIS PART

A.1 In brief
A.2 What ICD-11 is
A.3 What ICD-11 is, and is not
A.4 Correcting four common misconceptions
A.5 ICD-11 as the entry point to the WHO-FIC family
A.6 ICD-11 in the digital health landscape
A.7 Risks and opportunity cost of delayed transition
A.8 Feasibility: what early adopters have shown
A.9 What is in this Guide

A.1 In brief

ICD-11 is the international standard for recording, reporting, and comparing health information. The World Health Assembly adopted it in May 2019 by resolution WHA72.15.[1] It is the revision of the International Classification of Diseases that Member States use from 1 January 2022. The Nomenclature Regulations of 1967, adopted under Articles 21(b) and 22 of the Constitution of WHO, require Member States to compile their mortality and morbidity statistics in accordance with the current revision of the ICD.

ICD-11 is built on the Foundation component. The Foundation is a system of health concepts, each with a name and a definition. WHO maintains it according to fixed rules. Article 2(s) of the Constitution gives WHO the task of establishing and revising international nomenclatures of diseases, health conditions, and causes of death. The Foundation fulfils this task in a way that ICD-10 could not. From the Foundation, WHO derives tabular versions, called linearizations. The most important linearization is ICD-11 for Mortality and Morbidity Statistics (MMS). It is the version also used for statistical reporting.

In a national digital health architecture, ICD-11 provides the meaning of the data on diagnoses, related health problems, and causes of death. Interoperability standards such as HL7 FHIR define how data move between systems. ICD-11 defines what the data mean. The two are complementary, and different bodies maintain them. ICD-11 is governed by WHO under its constitutional mandate and adopted by the Member States through the World Health Assembly. It is the only diagnostic standard with this status. Other health terminologies are aligned to ICD-11, and not ICD-11 to them. ICD-11 is part of the WHO Family of International Classifications and Terminologies. The Family also includes the International Classification of Functioning, Disability and Health (ICF), the International Classification of Health Interventions (ICHI), related classifications and WHO terminologies. ICD-11, ICF, and ICHI are the three reference classifications. They cover the three essential parts of a health record: the condition, the functioning of the person and the intervention.

What ICD-11 delivers. Compared with ICD-10, and with systems that keep clinical terminology and statistical classification separate, ICD-11 has six advantages that are important for the implementation decision.

1. **Current science.** The content reflects present-day epidemiology, clinical practice, and research. A transparent annual update cycle keeps it current. Countries no longer code with a knowledge base that dates from 1990.
2. **Lower cost of coding.** Plain-language search, expandable lists of synonyms, the detail of the Foundation and postcoordination reduce training time and coding time. They also reduce the need for commercial coding software. Savings depend on the workflow, documentation, training, integration and level of detail required. The WHO Coding Tool is part of the standard. It is available online, offline, and through the application programming interface (API).
3. **Fully Digital, software built once, used everywhere**. ICD-11 is delivered through a single, uniform API, with standard encoding, FHIR support, multilingual content, and offline operation. Software built once for ICD-11 can therefore be reused across countries, languages, and care settings without re-engineering, while national data flows, security, interfaces and vendor products still require configuration and testing (see C.7). ICD-11 is thus a ready-made interoperability component of the digital public infrastructure for health that countries are

building under the Global Initiative on Digital Health and the WHO–ITU reference architecture.

4. **Data recorded once, used for many purposes**. Clinical detail recorded at the point of care serves statistics, reimbursement, research, and safety reporting from a single entry. Safety reporting includes devices, medicines, adverse events, and antimicrobial resistance. The detail that national clinical modifications used to add is already part of ICD-11.

5. **No licence cost, shared maintenance**. ICD-11 is a global digital public good. WHO provides the content and all supporting tools free of charge for commercial and non-commercial use. The tools are the Browser, the Coding Tool, the API, the mapping tool, the mortality and quality tools, and the training tools. Maintenance takes place on an open transparent online platform with open processes. The global user community shares the work, and no country carries it alone.

6. **Comparability by design.** Data coded in ICD-11 are comparable across all Member States, because one authority governs the content, the annual updates, and the mapping of other terminologies to ICD-11. The Foundation gives every concept a permanent identifier. National language versions, national extensions, and mappings from other terminologies all refer to the same international concept. Comparability is part of the standard. It does not have to be rebuilt later through national mapping tables.

Together, these six properties reduce total costs of ownership, and improve the value from the same clinical data, and interoperability by design.

At the time of this 2026 revision of the Implementation Guide, more than 130 WHO Member States are at different stages of transition.[2] Most of them are preparing, translating, or piloting. A growing number of countries publish national mortality or hospital morbidity statistics coded in ICD-11. First applications are documented in primary care, insurance, traditional medicine, patient safety, and clinical documentation. Cause-of-death certification remains the core statistical use, together with the automated selection of the underlying cause of death with WHO Digital Open Rule Integrated Cause-of-Death Selection (DORIS) tool. This is the use on which Member States report under Article 64 of the Constitution of WHO.

Implementation rests on one principle: standard coding at the source. Diagnoses and causes of death are recorded in ICD-11 at the point of care, by the clinician or the coder, with the international content as WHO publishes it. Three consequences follow for the national plan. First, ICD-11 is used as published. The Foundation, postcoordination, and the extension mechanisms of ICD-11 meet national requirements that earlier revisions could meet only through national clinical modifications. Countries can thus tailor ICD-11 to their needs through these built-in mechanisms rather than through national clinical modifications, which is what keeps nationally adapted data fully comparable internationally, as the Nomenclature Regulations require. Second, where a country uses another clinical terminology for documentation, the ICD-11 codes are derived through a mapping that is anchored to the Foundation and quality-assured by WHO. In this way the coded data as well as resulting statistics remain comparable with those of other countries. This matters more and more, because ICD-11 is used in decision support and automated systems, where a mapping error affects patient care and not only statistics. Third, local mapping and grouping of ICD-11 codes for analysis, reimbursement, or casemix purposes is decided by the country itself. It raises no issue of comparability.

This Guide is written for decision-makers who prepare the move to ICD-11 in their countries, and for the national focal points who will lead the work. It explains what ICD-11 is, what it delivers, and how to implement it. Technical detail and country-specific resources are available at icd.who.int and on the Implementation Hub. Clinical detail for practitioners is provided on the clinician pages of the same site. The Guide itself stays at the level that a Minister of Health, a director of statistics or a head of digital health needs in order to take the decision and guide its implementation.

The Guide is neutral regarding countries and regions. The examples from early-adopter countries show what is feasible and useful. They do not prescribe a single path. Every country sequences ICD-11 implementation according to its own priorities.

A.2 ICD-11 in essence

ICD-11 is a single integrated system that does two things at once: it is a clinical terminology[1], and it is a classification. In both roles it is designed for cross-cultural applicability: its content was developed and field-tested with clinicians and coders from all WHO regions and is available in multiple languages, so that the same categories can be applied consistently in different health systems and cultural settings. ICD-11 is international, open, and supported by a transparent update and maintenance mechanism.

As a **terminology**, ICD-11 contains around 85 000 clinical entities and more than 130 000 medical terms with definitions, synonyms, common clinical acronyms, and clinical descriptions.[3][2] These are accessible through plain-language search, with multilingual support and clinical reasoning surfaces (inclusions, exclusions, definitions, coding notes) at every concept. Clinicians, coders, and software can find the right concept by typing what they would say in clinical practice – "stroke left anterior cerebral artery", "fall from height with concussion", "chest pain on exertion" – and receive the clinically correct result.

Through **optional postcoordinatio**n, ICD-11 combines stem codes with other codes and extension codes across 41 declared axes (anatomy, laterality, severity, agents, histopathology, devices, circumstances, and others), enabling automated coding support to recognize up to 2 million medical terms.[3]

As a **classification**, ICD-11 provides standardized tabular views (linearizations) derived from the same underlying content. The Mortality and Morbidity Statistics linearization (MMS), with around 17 000 categories, is the international reference for statistical reporting. Other views support primary care, mental health, and specialty use. Every case lands in exactly one bucket in the classification view, and the buckets are exhaustive – nothing falls outside the count.

The two layers are not separate products. They are two views of the same content, governed together, updated together, and accessed through the same digital infrastructure. A clinician who documents in ICD-11 is producing data that are at once clinically meaningful at the bedside and statistically usable at the national and international level, without a second coding step or need for mappings.

---

[1] Under the definitions of ISO 1087, and the derived ISO 17117-1, the Foundation is the terminology of ICD-11 in the strict sense, a set of concepts (entities with definitions and characteristics) and designations (titles, synonyms, index terms) for the domain of diseases, causes of death, and related health problems. Because titles, synonyms, and definitions are formed according to the pre-established rules of the ICD-11 Content Model and style conventions, it also meets the definition of a *nomenclature*.

This integration is what makes ICD-11 different from earlier revisions of ICD, and from systems that separate clinical terminology from statistical classification.

ICD-11 as a diagnostic and clinical tool across all levels of care. While ICD-11 is primarily the international standard for the systematic recording, reporting, analysis, interpretation, and comparison of mortality and morbidity data, ICD-11 also provides direct support for clinical diagnosis and decision-making. A key example is Chapter 6 on Mental, Behavioural and Neurodevelopmental Disorders, which is accompanied by the WHO *Clinical Descriptions and Diagnostic Requirements* for ICD-11. This manual is designed to support mental health professionals, and qualified non-specialist health professionals, in the accurate and reliable identification and diagnosis of mental, behavioural, and neurodevelopmental disorders in clinical settings.

ICD-11 also provides an important reference point for clinical practice guidelines. By defining internationally standardized diagnostic categories, clinical descriptions, and diagnostic requirements, ICD-11 helps ensure that guidelines, care pathways, training materials, service packages, and quality-of-care indicators refer to the same health conditions in a consistent way. This does not mean that ICD-11 itself is a clinical practice guideline; rather, it provides the diagnostic and semantic foundation on which clinical guidance can be aligned, implemented, monitored, and compared across settings. WHO describes ICD-11 as the global standard for diagnostic health information and as a tool designed to improve clinical documentation and patient care.

A.3 What ICD-11 is, and is not

What ICD-11 is

- A clinical terminology and a statistical classification in one system.
- A digital public good, freely usable in every WHO Member State, in 15 published languages (the six United Nations official languages – Arabic, Chinese, English, French, Russian, Spanish – and nine more), with 25 further languages currently in progress.[4][2]
- The entry point to the WHO Family of International Classifications and Terminologies – ICD-11 for conditions, ICHI for interventions, ICF for functioning and disability – sharing one semantic foundation.
- Accessible through the REST API and documented FHIR services, with online and local deployment options and published integration guidance, with reference code, browser, and Coding Tool integration patterns published openly.
- Maintained on a transparent annual update cycle through the WHO-FIC Network, with version-stable identifiers that allow records from any year to be interpreted without ambiguity.

What ICD-11 is not

- Not "ICD-10 with more codes." The architecture, content, and digital infrastructure are new.
- Not a statistics-only system. Clinical use is a native capability, not an afterthought.
- Not dependent on a separate clinical terminology to function. ICD-11 contains the clinical terminology layer itself.
- Not dependent on a separate terminology server. The WHO API provides terminology services directly, including FHIR endpoints; existing national terminology servers can serve ICD-11 content where they are already deployed.
- Not licensed per country or per user. The classification and its tooling are openly available under WHO governance.

A.4 Correcting four common misconceptions

A number of assertions about ICD-11 are current in digital health policy discussions that do not withstand scrutiny. This section addressed them directly, since decision-makers responsible for national digital health investments need to base their choices on accurate information.

Claim 1: "ICD-11 cannot code at clinician level of detail."

This is incorrect. ICD-11 contains around 85 000 entities at a granularity that reflects current clinical practice, and supports optional postcoordination across 41 axes – the combination of a base code

[2] *Figures given in this Guide for the content of ICD-11, language availability, API usage, offline downloads, and proposal activity are as of late 2026. Current figures are available at icd.who.int.*

with additional codes for severity, anatomy, laterality, mechanism, agents, devices, and other clinically relevant dimensions. Peer-reviewed studies in Canada,[5] the Republic of Korea,[6] Kuwait,[7] and Malaysia[8] have demonstrated clinician-level coding at the point of care, including for complex multisystem presentations. Field trials in the Republic of Korea reported ICD-11 granularity higher than national modifications of ICD-10 in around 58% of paired codes.[9] Chinese comparative work on neoplasm coding found that 67.8% of ICD-10-CCM codes could be fully represented in ICD-11, with a further 7% expressible through Foundation uniform resource identifiers (URIs).[10] The Foundation Component, from which all linearizations are derived, is itself a clinical knowledge base – every entity carries a stable identifier, a definition, and the clinical descriptions a clinician can use to confirm fit.

Claim 2: "ICD-11 has less clinical detail than pure terminologies."

The two kinds of system – classification and terminology – are organized differently and serve overlapping but not identical purposes; direct comparison of concept counts is not informative. What matters for clinical use is whether the national information architecture can express the required clinical concepts, preserve statistical aggregation, and support the country's chosen terminology strategy. For diagnoses, functioning (through ICD and ICF), interventions (through ICHI), and external causes, the WHO-FIC family covers the core clinical domain, with derived classifications such as ICD-O extending coverage in oncology. Where finer granularity is needed for specific cases, postcoordination and the Foundation supply it. The coverage examples in the WHO-FIC family – antimicrobial resistance, patient safety events, rare diseases, traditional medicine, functioning – are illustrative of breadth, not exhaustive of it. Where a clinical site already operates a third-party terminology, ICD-11 maps to and from it via its Foundation layer. Using ICD-11 does not depend on having chosen a third-party clinical terminology: a country can implement ICD-11 first and decide on an additional terminology later, or not at all, and still have interoperability in the national health information architecture.

Claim 3: "ICD-11 produces statistics; it does not support clinical documentation."

ICD-11 was designed from the outset for both clinical and statistical use. The Coding Tool with clinician friendly language search, the postcoordination architecture, the clinical descriptions for confirmation of fit, and the FHIR-aligned API are clinical-use features. Statistical reporting is one output of clinically meaningful documentation, not a separate workflow. The following are illustrative examples, drawn from a much larger group of countries now implementing ICD-11: Rwanda (full clinical reporting with ICD-11 and ICHI), Kuwait (hospital morbidity, with a published methodology),[7] Malaysia (national data warehouse and hospital information systems across 149 Ministry of Health hospitals since January 2024),[8] China (national pilot across 59 tertiary hospitals from 31 provincial-level administrative regions, producing 3 723 959 coded diagnoses for 873 425 patients in a two-month phase),[11] India (national insurance under the National Health Authority (NHA), with ICD-11 and ICHI rollout across states),[12] Scotland (mental health), the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA; 140 primary care clinics serving 5.9 million Palestine refugees, on a cloud-based EMR),[13] and others.

Claim 4: "Using ICD-11 requires a separate terminology server."

It does not. WHO operates the terminology services for ICD-11 directly, through the ICD-11 API, with REST and FHIR endpoints, multilingual natural language processing (NLP) search, value-set support, and offline bundles for low-connectivity settings. The API serves around 6 million calls per day across the Browser, the Coding Tool, and third-party applications integrating ICD-11; the offline bundle has been downloaded more than 250 000 times.[14][2] Countries that already operate national

terminology servers can serve ICD-11 content through them, but no country needs to acquire or contract a terminology server in order to use ICD-11. The infrastructure is provided as part of the digital public good. Where countries deploy ICD-11 alongside other terminologies (e.g. Orphanet, MedDRA (Medical Dictionary for Regulatory Activities), LOINC (Logical Observation Identifiers Names and Codes), SNOMED CT) WHO works with, or is exploring collaboration with, the custodians of each terminology to establish and maintain interoperability linkages.

The clarifications on claim 1-4 matter because national digital health blueprints, terminology server procurements, and electronic health record (EHR) vendor specifications are being prepared now. Decisions on how ICD-11 is positioned and implemented in these instruments should be made on accurate and technically sound information, while respecting national governance choices, procurement contexts, and data-sovereignty requirements.

A.5 ICD-11 as the entry point to the WHO-FIC family

ICD-11 carries the strongest legal mandate within the WHO Family of International Classifications and Terminologies, but it is only one part of the classification and terminology architecture needed for a comprehensive national health information system.

- **ICD-11** covers diseases, injuries, external causes, signs and symptoms, traditional medicine, antimicrobial resistance, patient safety events, rare diseases, anatomy, medicaments, severity, and more. It is the answer to "what is the patient's condition."
- **ICHI** – the International Classification of Health Interventions – covers surgical, diagnostic, therapeutic, rehabilitative, nursing, and public health interventions. It is the answer to "what was done." ICHI maps to other procedure terminologies where these are already in national use; but the same fragmentation problem that affected ICD-10 with multiple country modifications is replicated when each country selects a different procedure terminology. Adopting ICHI alongside ICD-11 keeps interventions and conditions on the same semantic foundation, governed and updated together, and avoids creating new mapping debt across the procedure layer. WHO is adapting a casemix system on this foundation, using the engine and tools provided by the Nordic Casemix Centre and adapting them to ICD-11 and ICHI. This opens a path to ICD-11- and ICHI-based reimbursement without country-specific procedure-coding modifications.
- **ICF** – the International Classification of Functioning, Disability and Health – covers body functions, activities, participation, and environmental factors, with the WHO Disability Assessment Schedule (WHODAS 2.0) providing summary scoring. It is the answer to "how is the functioning of a person with a health condition."

The three classifications share a common semantic foundation, are accessed through the same API. A country implementing ICD-11 may use it as an entry point to a broader WHO-FIC architecture, while retaining national discretion over terminology, procedure coding, reimbursement, and digital health architecture.

This Guide uses the term national needs rather than "national modifications" when discussing country-specific requirements. The distinction matters. National versions of ICD-11 are possible and expected: countries can define national linearizations, subsets, and value sets, add local terms and language variants, and use extension codes and postcoordination to capture the detail their systems require – all drawn from, and mapped back to, the same international content. What ICD-11 removes is the need to create a separate national version of the classification that is then maintained independently: the Foundation's granularity, extension codes, and postcoordination cover most of

the historical reasons for country modifications. Where a genuine national need is not yet met – legal categories, specific reporting requirements, additions for context-specific conditions – the WHO ICD-11 Proposal Platform is the route. Content added through that route enters the Foundation for everyone, rather than diverging into a national modification that requires its own maintenance and mapping.

A.6 ICD-11 in the digital health landscape

National digital health strategies, regional blueprints, and international and regional health data exchange frameworks have made terminology and classification a strategic question. ICD-11 has been built for this context.

FHIR and HL7. The ICD-11 API exposes FHIR-aligned terminology services, including the operations that FHIR implementations expect – $lookup, $expand, $validate-code. Canonical URIs are stable and version-controlled. Dual identification of Foundation entities and MMS codes is supported. WHO and HL7 International convened a first joint connectathon in May 2026 at WHO Headquarters in Geneva to test the ICD-11 and ICF FHIR services with terminology server authors and FHIR implementers from around the world, and have committed to running these connectathons on a regular basis. ICD-11 is FHIR-ready, with terminology service operations developed and progressively extended in step with FHIR's own evolution.

Health data spaces and cross-border exchange. Initiatives such as the European Health Data Space (EHDS), regional health information exchanges in Africa, the Americas, and Asia, and global digital health convenings under the Global Initiative on Digital Health (GIDH) all rely on shared semantics for comparability. ICD-11 provides one of the few clinical classifications that is internationally agreed, openly licensed, multilingual, and version-stable – properties that data spaces depend on.

Data sets and data dictionaries. Exchange frameworks rely on agreed minimum data sets: patient summaries for cross-border care (such as the International Patient Summary), vaccination and test certificates, programme data sets derived from WHO guidelines (for example in maternal and child health), traditional medicine data sets and surveillance data sets. Comparability across settings depends on the condition elements of these specifications being bound to ICD-11, and where relevant to ICHI and ICF, through the value sets and version identifiers available from the ICD-11 API. For national implementers this means that ICD-11 binding should be specified when a national data set or data dictionary is adopted or revised, rather than added afterwards; a data set bound to another classification will need remapping at each exchange.

Digital public goods and open standards. ICD-11 is provided by WHO as an openly accessible global public good, with transparent governance and global availability. Health authorities investing in Digital Public Infrastructure can rely on ICD-11 as the semantic data standard without undue exposure to licensing constraints, jurisdiction-specific access conditions, or contractual terms that may vary across settings or change over time.

Artificial intelligence in clinical documentation and decision support. AI-assisted documentation, coding support, and decision support can benefit from internationally governed terminology and classification content. Use of ICD-11 in such tools should be accompanied by validation, human review, bias assessment, cybersecurity controls, and compliance with national data-protection and responsible AI governance requirements.

The strategic implication for national digital health planning is that ICD-11 should be considered early as a foundational semantic component of the national digital health architecture. Early national decisions give implementors and vendors clearer signals and reduce implementation risk; deferral can increase variation across local implementations and vendor products.

A.7 Risks and opportunity cost of delayed transition

Delaying ICD-11 implementation may be necessary in some countries and countries may continue to use ICD-10 while preparing. The opportunity costs of delayed transition nevertheless increase over time and should be considered explicitly in national planning.

- **ICD-10 is no longer maintained internationally.** New clinical concepts – emerging diseases, new pathogens, new procedures, new combinations of conditions – cannot be properly classified in ICD-10. Provisional codes and national workarounds proliferate, increasing local fragmentation rather than reducing it.
- **The data gap widens.** As more countries report in ICD-11, any country still reporting in ICD-10 becomes progressively less comparable to peers. Organisation for Economic Co-operation and Development (OECD) reporting, Sustainable Development Goal (SDG) indicator submissions, pandemic surveillance, and global health initiatives increasingly rely on ICD-11 data.
- **Translation, mapping, and reporting overhead is continuous.** Every cross-jurisdictional comparison, every linkage study, every international submission from an ICD-10 country requires custom mapping work – paid for, often, by the country still on ICD-10.
- **Vendor lead time is long.** EHR and hospital information system (HIS) vendors need years of lead time to redesign systems for a new classification. Each year of delay compresses the available window and increases implementation risk.
- **Workforce transition is multi-year.** Coder training, curriculum development, and the building of national health information management (HIM) capacity take two to three years even in well-resourced settings.
- **ICD-10 continues to be written into new instruments.** For as long as no national decision has been taken, new laws, statistical regulations, tariff tables, reporting forms, procurement specifications, and system interfaces continue to prescribe ICD-10. Each of these instruments must later:
  - be identified and amended before ICD-10 can be withdrawn.
  - The transition workload therefore grows with every instrument issued in the interval, and
  - the inventory of instruments to be amended is in practice the largest single item of transition work in countries with mature administrative systems.
- **Clinical content gaps grow.** ICD-10 reflects the medical evidence of the early 1990s. ICD-11 reflects current clinical reality. Every year on ICD-10 widens the gap between what clinicians see and what the data can say.
- **Neither transition nor deferral is cost-free,** and the comparison depends on national circumstances. Transition concentrates expenditure in a defined period and requires a decision; its costs need to be estimated locally, with explicit assumptions, contingency and review as the work develops. Deferral avoids that expenditure for the time being but carries costs that accrue gradually: mapping and bridging for international reporting, maintenance of national modifications of a classification that is no longer updated internationally, and divergence from

countries already reporting in ICD-11. For some Member States, deferral while completing other digital health investments is the appropriate course; for others, the recurring costs of deferral already exceed the cost of transition. This Guide identifies the cost categories and planning method so that each Member State can make the comparison for its own situation (see C.4 and Annex 1).[32]

A.8 Feasibility: what early adopters have shown

The question is no longer whether ICD-11 can be implemented under practical health-system constraints. Early implementation experience shows that it can; the priority is now to support an optimal, well-governed, and sustainable implementation at country level.

Mortality. Several countries have introduced ICD-11 cause-of-death coding with DORIS, the WHO automated cause-of-death selection tool, in their facility mortality systems. Seychelles has published its annual vital statistics reports for 2023 and 2024 with causes of death coded in ICD-11, each with an explicit note that the change of classification and of coding practice affects comparisons between years.[15] Cameroon reports ICD-11-coded mortality for 31 facilities in 24 districts across all 10 regions, with paper certification, coding by trained data managers in the national District Health Information Software 2 (DHIS2), DORIS for underlying-cause selection, ANACoD-3 for quality analysis and a bilingual abridged code booklet for offline use.[16] Senegal integrated the ICD-11 API and DORIS into DHIS2 and recorded 533 coded certificates in the first three months of operation.[17] Suriname released a mobile and web-based digital death certificate with direct ICD-11 selection in August 2024, trained 198 doctors, made digital completion mandatory from January 2025 and placed DORIS integration in a later phase.[18] Kenya has issued national standard operating procedures (2025) that define the workflow for medical certification and ICD-11 coding from the facility to the KHIS Tracker on DHIS2, including DORIS and ANACoD-3.[19] Ghana, Malawi, and Namibia have introduced ICD-11 coding in their mortality systems and are extending towards morbidity. Uganda and Yemen combine DORIS-based facility certification with verbal autopsy to extend coverage to community deaths. Brazil is testing DORIS and preparing mortality and morbidity coding in ICD-11, including traditional medicine. The mortality toolchain – electronic medical certificate of cause of death (eMCCD), DORIS for automated underlying-cause selection, ANACoD-3 for data quality, CodEdit for coding quality, the ICD-11 API for system integration, and verbal autopsy for community coverage – is in production use.

Morbidity and health insurance. Malaysia implemented ICD-11 for mortality and morbidity across the Ministry of Health hospital network on 1 January 2024, with national data warehouse integration and a structured certification programme for clinical coders.[8] Kuwait piloted ICD-11 morbidity coding in a major public hospital with physician users, and published the methodology and lessons learned.[7] Egypt, India, and Rwanda have introduced ICD-11 and ICHI in their national health insurance programmes.[12] Scotland has deployed ICD-11 for mental health coding. Namibia has introduced ICD-11 for hospital morbidity with improved precision for HIV, TB, and malaria. Nepal publishes inpatient morbidity by ICD-11 chapter in its annual health information system report, covering 631 921 coded discharges in fiscal year 2080/81 (2023/24), about one third of all reported discharges, an example of an aggregate national output that precedes complete facility-level coding.[20] Kenya placed ICD-11 discharge-diagnosis fields in the statutory claim form of its Social Health Insurance Regulations (2024), so that the payer instrument carries the classification from the

outset.[19] Chile, France, Norway, Uzbekistan, and Kazakhstan are preparing or running hospital-level pilots following translation into their national languages.

Primary care. Rwanda, Brazil, and Bhutan are among the countries that have implemented, or are in the process of implementing, ICD-11 within their primary health care system. Within the UN-System, UNRWA was one of the earliest health systems globally to deploy ICD-11 across its 140 primary care clinics on a cloud-based electronic medical record, serving 5.9 million Palestine refugees.[13]

Dual coding and crosswalks. The Canadian Institute for Health Information has produced both forward and backward crosswalks between ICD-10-CA and ICD-11 MMS, used to assess the impact of ICD-11 adoption on national reporting, casemix, and the Canadian Congenital Anomalies Surveillance System.[21] A national pilot in China across 59 tertiary hospitals from all provincial-level administrative regions produced 3 723 959 coded diagnoses for 873 425 patients in a two-month coding phase, with 58 of the 59 hospitals integrating ICD-11 Coding Software into their health information management systems.[11] Field trials in the Republic of Korea have compared coding under ICD-11 with the Korean ICD-10 modification, refining clinical coding rules to clarify inconsistencies.[9] Comparative work on Chinese neoplasm coding has documented the structural and expressivity gains of ICD-11 over national modifications of ICD-10.[10]

Casemix. WHO and the WHO-FIC Network are developing an ICD-11- and ICHI-based casemix system, using the engine and tools provided by the Nordic Casemix Centre, on the request of Member States. Canadian work on grouping-logic re-mapping has shown that DRG groupers can be adapted rather than rebuilt when transitioning to ICD-11.[21]

At scale. The ICD-11 API serves around 6 million calls per day across the Browser, the Coding Tool, and third-party applications integrating ICD-11; the offline bundle has been downloaded more than 250 000 times; and ICD-11 is available in 15 published languages with 25 more in progress.[4] [14] More than 18 000 update proposals have been processed through the open Proposal Platform, with active contributors from 99 countries.[2]

What the early adopters also show. A systematic review of implementation evidence from all 192 Member States conducted in 2026 found that most countries were in preparation, translation, or piloting, and that nationally published ICD-11 outputs existed in a small number of countries. The obstacles documented in that review were rarely in the classification or its tooling. They lay in national instruments that continue to prescribe ICD-10 (laws, statistical regulations, tariff tables, forms, system specifications); in payer, registry, and surveillance systems that transition separately from mortality and hospital coding; in pilots that were not carried into routine production; in training delivered years before the systems and forms could accept ICD-11 codes; and in the gap between an announced launch and verifiable coded output. Parts B and C therefore give particular attention to the legal basis of the transition, to the coexistence of revisions, to payers and registries, to the continuity between pilot and national decision, and to the evidence that distinguishes a launch from routine use.

The pattern across all of these implementations is that no two countries chose the same entry point. Each chose the use case where the value was clearest and the readiness was strongest, and built outward from there. This Guide does not prescribe a sequence; it sets out the considerations a country needs to weigh in choosing its own.

Reading the implementation evidence. A feasibility study, a training examination, user feedback and a national production report answer different questions. Results should be read with

their setting, release, workflow, coverage and limitations. Several publications from one project, or author affiliations in several countries, do not establish several independent national implementations. National plans should draw on implementer-led learning and independent review, and test benefits and difficulties in their own workflow (see C.10 and C.11).[5,7,11,37]

A.9 What is in this Guide

The remainder of this Guide is structured to support decision-makers and national focal points through the implementation decision and the work that follows.

Part B – What ICD-11 delivers describes the clinical, statistical, and specialty uses of ICD-11; the tooling available from WHO; and the path to a WHO-FIC-based casemix system. It is written for senior implementers who need to understand the system's capabilities before committing to a roadmap.

Part C – Implementing ICD-11 sets out the practical path: how to establish a national readiness programme, what stakeholder engagement looks like, how to plan technical work and workforce development, and how legacy countries handle transition specifics including crosswalks and dual coding. It is written for the national project manager and the implementation team.

Annexes provide a template timetable, a tooling reference, a glossary, pointers to icd.who.int, the Implementation Hub, the Reference Guide, and the clinician-facing resources, and – in Annex 2 – detailed guidance on crosswalks and dual coding studies, including country experiences, cost information, and the published literature.

The Guide is intended to be read end-to-end by a national focal point, and selectively by decision-makers – Part A and the executive headings of Parts B and C are sufficient for the political-level decision. Technical specialists should treat this Guide as orientation, and consult the Reference Guide, the API documentation, and the Implementation Hub for detail.

B

What ICD-11 delivers

IN THIS PART

B.1 Reading guide

B.2 Clinical documentation

B.3 Mortality

B.4 Morbidity

B.5 Specialty and cross-cutting use cases

B.6 The WHO-FIC-based casemix path

B.7 ICHI: the procedure layer

B.8 ICF and functioning

B.9 Languages, translation, and field testing

B.10 Maintenance, updates, and governance

B.11 The implementation package: what a country receives

B.12 Sequencing: building outward from the strongest entry point

B.1 Reading guide

Part A made the case for ICD-11 and corrected the misconceptions in circulation. Part B is for the senior implementer who has accepted the direction and now needs to see what implementation delivers. It describes the clinical, statistical, and specialty capabilities of ICD-11; the WHO tooling that supports each capability; and the path to a WHO-FIC-based casemix system. It is country-neutral. The tooling references point to icd.who.int and the Implementation Hub for current versions, integration patterns, and code samples.

The capabilities are presented as five domains: clinical documentation, mortality, morbidity, specialty and cross-cutting use cases, and casemix. Each domain names the tools that operationalize it. The aim is to give a national focal point a clear picture of the system they will be implementing – not a feature list, but a working map.

B.2 Clinical documentation

ICD-11 is designed for direct use by clinicians at the point of care, through plain-language search and clinical descriptions, and equally for coder-mediated, statistical, and institutional workflows that build on the same content. This dual design is the main capability difference from ICD-10. It does not by itself change who documents and who codes; it widens the choice. Each country decides, in its implementation plan, which workflow applies in which setting – clinician documentation, coder abstraction, or a combination in which clinicians document and coders validate – and designs training, system configuration, and quality assurance accordingly. Coding and health information management functions are not replaced by this choice; their role shifts towards validation, postcoordination, and data quality.

What clinical documentation in ICD-11 looks like. A clinician documents the patient encounter using the language of clinical practice. The Coding Tool, accessible in the browser or embedded in the electronic health record, takes the clinician's free-text terms and returns clinically relevant concepts ranked for fit. The clinician confirms the concept that matches the case. The clinician's own wording is kept in the record alongside the selected concept; the system offers the full classification through search rather than a fixed list of options (see C.7). Where finer detail matters – severity, anatomy, laterality, mechanism, agents, devices, temporality – postcoordination adds it. Where the base concept captures the case, no further work is needed. The structured record produced is at once a clinical document, a coded statistical entry, and a basis for downstream uses including decision support, quality measurement, research, and reimbursement.

Foundation and linearization. The clinician documents using concepts and terms linked to the Foundation – the polyhierarchical knowledge base from which all classification views are derived. Each concept carries a stable identifier (URI), a definition, synonyms, inclusion and exclusion terms, and clinical descriptions. Concepts can sit under more than one parent (gastric cancer is both a cancer and a gastrointestinal disease) because clinical reality is polyhierarchical. The classification views – MMS for statistical aggregation and specialty views – are derived from the Foundation and aggregate the clinical detail into mutually exclusive, exhaustive categories for counting. Residual categories ("other specified", "unspecified") ensure that the count is complete. The clinician does not need to think about linearization at the time of documentation; the system handles aggregation downstream.

Postcoordination. Postcoordination is the architectural feature that lets ICD-11 carry clinician-level detail without inflating the count of base concepts. A stem code (the condition) is combined with extension codes (the modifying detail) across 41 declared axes. A diagnosis of "ischaemic stroke, left anterior cerebral artery, with hemiparesis" is expressed as a stem code plus extensions for anatomy, mechanism, and severity, each of which is itself a coded concept with a stable identifier. Automated coding support recognizes up to 2 million terms through this combination architecture. Postcoordination is optional for routine documentation – use it where clinical detail matters to the intended use, skip it where the base concept is sufficient. Coding more detail always comes at a cost, in terms of time and in terms of reproducibility. The detail coded should be the detail that the documentation supports and the **intended use** requires.

Tools for clinical documentation.

- **ICD-11 Coding Tool.** Plain-language search, multilingual, ranks clinically appropriate stem-and-extension combinations, shows only valid modifiers, accessible without registration at icd.who.int. Available online and in offline bundles for low-connectivity settings.
- **ICD-11 Browser.** The full classification with lay-term search, multilingual support, rich clinical descriptions, and anatomical and mechanism-based navigation. Available without registration.
- **ICD-11 API.** Stable REST and FHIR-aligned endpoints for integration into electronic health records, ambient documentation systems, and clinical decision support. Canonical URIs, dual identification of Foundation and MMS concepts, version-stable endpoints, and code samples published on icd.who.int/icdapi.
- **ICD-FIT.** WHO's web-based platform for ICD-11 coding training and self-evaluation. Users code standardized case summaries and receive feedback against reference codes, so that coding accuracy can be tested and monitored for individuals, groups, or a national coder workforce.

What clinicians need to know. ICD-11 is designed for direct clinician use. Routine clinical documentation can use focused, role-specific orientation rather than full coder training, provided that the system is integrated and users have supervised practice and support. The amount of training should be determined by the workflow and demonstrated competence.[7] Coders continue to need training in order to handle difficult cases, postcoordination, and the rules for statistical reporting. The Coding Tool's plain-language search lets a clinician find the right concept using clinical terms rather than coding terminology. Specialist coders remain important for institutional and statistical work, especially in legacy contexts and for casemix, but day-to-day clinical documentation can be done by clinicians directly. This is a substantive shift from ICD-10 practice in many countries and a workforce question that the implementation plan needs to address explicitly.

B.3 Mortality

Mortality reporting is the use case with the longest international history and the most mature tooling. For countries with established civil registration and vital statistics systems, the move to ICD-11 based mortality reporting can be a lower-risk entry point and often the first capability to go live.

What ICD-11 mortality delivers. A complete, internationally comparable cause-of-death dataset, coded at clinician level at the point of certification, with automated underlying-cause selection applying WHO rules consistently across facilities, supported by data quality monitoring at each reporting cycle. The minimum requirement for international reporting is at the level of stem codes;

countries can add extension-code detail where clinical or epidemiological priorities make this valuable.

The mortality toolchain. WHO provides a complete, tested set of tools that operate end-to-end from the certifying physician to the national vital statistics output. Countries implementing ICD-11 mortality do not build from scratch.

- **eMCCD – electronic medical certificate of cause of death.** Structured digital certification at the point of death, with a standardized data dictionary and ICD-11 coding at source. Replaces paper certificates and the re-keying errors that paper introduces. Designed to integrate into national vital statistics systems and into hospital information systems where deaths occur in care.
- **DORIS – WHO Digital Open Rule Integrated Cause-of-Death Selection.** Automated selection of the underlying cause of death applying the WHO mortality rules consistently and transparently. Multilingual. Rule sets are published and nationally adaptable. DORIS is built for ICD-11 and operates only with ICD-11; for countries running ICD-10 mortality systems, DORIS marks the point at which the transition to ICD-11 simplifies rather than complicates the workflow.
- **ANACoD-3 – Analyse Cause-of-Death data.** Routine data-quality assessment for cause-of-death reporting: detection of poorly defined causes, gaps, suspicious patterns. Designed to be run on every reporting cycle so that quality becomes a published indicator rather than a one-off audit.
- **CodEdit.** Coding-quality assessment for individual records and for the consistency of the reporting file. Complements ANACoD-3.
- **WHO Verbal Autopsy Instrument.** Standardized instrument for cause-of-death assessment where medical certification is not available – community deaths, deaths in remote or rural settings, deaths in indigenous communities. A cause list matched to ICD-11 is provided by WHO. Verbal autopsy is the mechanism by which national mortality reporting can achieve full territorial coverage rather than coverage limited to facility deaths.
- **ICD-11 API.** Integration of ICD-11 mortality coding into existing vital statistics systems through REST and FHIR endpoints.

Sequencing mortality implementation. Three starting situations recur.

1. **Countries with paper-based or unstructured certification** that are undergoing digital transformation can move directly to the electronic certificate (eMCCD) as the entry point, with coding and DORIS in the national platform.
2. **Countries with established vital statistics systems** in which certificates are coded automatically from text (Iris, MedCoder, or similar engines operating on ICD-10) can introduce DORIS as the ICD-11 coding and selection engine alongside the existing pipeline: the certificate and the certifier's workflow do not change, the two engines run in parallel on the same certificates for a defined period, and the outputs are compared before the series is switched.
3. **Countries using simplified mortality lists** (such as the ICD-10 Startup Mortality List) can likewise transition without disrupting the data input layer, since the certifying physician records text rather than codes and ICD-11 coding is applied downstream. In all three situations, mortality implementation can begin without waiting for morbidity readiness. This is the pattern among countries that have begun with facility-based systems (Rwanda, Uganda, Ghana, Malawi, Namibia, Seychelles, Senegal, and others) and equally among countries with mature vital statistics systems that have fixed a date for the mortality series – Japan from the 2027 statistical year, Sweden from the 2027 death register, Brazil from 2027 – several of which are preceding the switch with a bridge-coding study.

The two pathways in practice.

In countries without a long-established automated pipeline, the most common entry point is cause-of-death coding in health facilities through the ICD-11 cause-of-death application in DHIS2 or an equivalent national platform, with DORIS and ANACoD-3 downstream (Cameroon, Kenya, Senegal, Seychelles).[15] [16] [17] [19]

In countries with full civil registration and vital statistics, the entry point is the coding centre of the statistics office or the ministry, where DORIS – or, for countries already using Iris in its ICD-11-based version – replaces or runs alongside the existing automated coder on certificates that already arrive electronically; the certifier is unaffected until the electronic certificate is itself modernized.

Three design decisions determine, on both pathways, whether the result is a national mortality statistic rather than a project.

The first is coverage and its denominator: on the facility pathway, facility deaths are a subset of all deaths and certification completeness is often low in the first years, so the plan should set a completeness target and report ICD-11-coded deaths against all registered deaths; on the statistics-office pathway, the equivalent decision is whether the switch applies to all deaths from a given registration year or is phased by region or coding centre, since a mixed year cannot be published as one series.

The second is the institutional hand-off: the ministry of health, the civil registration authority and the national statistics office commonly operate separate pipelines, and the health information system may code in ICD-11 while the official publication continues in ICD-10; where the statistics office owns the series, the change usually requires an amendment to the statistical regulation or an equivalent instrument, which should be scheduled with the technical work.

In both cases the data flow and the responsibility for the published series should be agreed in writing before go-live.

The third is comparability: the first ICD-11 mortality report should state the change of classification and its effect on trends, as Seychelles did in its 2023 and 2024 reports;[15] countries with long time series and policy indicators resting on them normally go further and publish comparability ratios from a bridge-coding study of a full reference year, as several are doing in preparation for 2027–2028 switches. Where certification remains on paper, coding by trained data managers using an abridged national code list, as in Cameroon, is a workable interim arrangement, provided that the full classification and a stated release are used in the system and the abridgment is documented as a value set rather than treated as a national modification.[16]

Maternal and perinatal death reviews, which sometimes run on ICD-MM and ICD-PM (the WHO applications of ICD-10 to maternal and perinatal deaths), should be brought onto the same ICD-11 basis within the same plan on either pathway; where they are left out, the country reports general mortality in ICD-11 and maternal mortality in ICD-10 for years.

Quality begins before the certificate. Tooling amplifies what training enables; it does not substitute for it. Two training tracks underpin mortality data quality: medical certification training for the examining clinician, and verbal autopsy training for the trained interviewer. Investment in these two tracks is the single highest-leverage decision in a national mortality implementation. Without them, downstream tools polish errors rather than correcting them.

B.4 Morbidity

Morbidity is where ICD-11 makes its biggest practical difference. ICD-10 morbidity coding evolved differently across countries in response to local needs, producing national modifications that diverged from the international classification and from each other. ICD-11 has been designed to reduce the pressure to create separately maintained national versions: extension codes, postcoordination, Foundation-level granularity, and the Proposal Platform together address most of the historical reasons for national modifications.

What ICD-11 morbidity delivers. A clinical record that is at once meaningful at the bedside, comparable across institutions and borders, and structurally suitable for downstream use in casemix, quality measurement, surveillance, research, and reimbursement. Hospital discharge data, ambulatory encounters, primary care visits, registry submissions, and patient-safety event reports can all be expressed in the same classification, on the same Foundation, with the same identifiers.

The minimum reporting standard. International morbidity reporting requires stem codes plus a description of the main condition, as set out in the Reference Guide. Countries report at this level as a floor; many will choose to report more detail – extension codes, postcoordination – for domestic uses and for international initiatives that benefit from richer data (patient safety, antimicrobial resistance, cancer registration). Whether to report at the minimum or above is a national choice; the classification supports either.

Coding workflow. Morbidity coding can be done by trained coders working from clinical records (the legacy model), by clinicians at the point of documentation (the direct model), or in a hybrid model where clinicians document in the system and coders refine and audit. ICD-11 supports all three. The pilot evidence from Kuwait, Malaysia, and China is that physician-tailored training, on-site support,

and integration into the existing hospital information system are the dominant facilitators; lack of leadership commitment and inadequate IT preparation are the dominant blockers.

Aggregate reporting before patient-level coding. In some countries the first visible national morbidity output in ICD-11 is a chapter, or block-level tabulation in the annual health information system report, produced before every facility codes every record natively. Such outputs are useful milestones and should be treated as such: the report should state the proportion of records coded, whether codes were captured natively or mapped from the legacy classification, and the ICD-11 release used. Without these three statements the output is read, nationally and internationally, as complete national coding, and the next target (coverage, native capture, release currency) is never set.

Minimum national morbidity data set. International reporting requires the stem code and the main condition, as set out in the Reference Guide; a national implementation needs more than this to produce usable data, and the items should be fixed in the national data dictionary before systems are configured. A national morbidity data set for ICD-11 should specify, as a minimum: the main condition and the rule by which it is selected; secondary conditions, with the policy on how many are captured and which are mandatory; external causes where injuries, poisonings, and adverse events are in scope; the extension-code and postcoordination policy, that is, which axes are required in which setting (for example laterality and histopathology in oncology, harm, cause, and mode for patient-safety events, resistance for antimicrobial resistance) and which are optional; the encounter type and the admission and discharge dates; facility and specialty identifiers; patient-safety and antimicrobial-resistance flags where these are collected; and the ICD-11 release and the capture mode (native or mapped) for each record. The data set is the content specification; the technical representation of each item (URI, code or cluster, language, source system, timestamps) is described separately (see C.7). A country that defines the data set once and publishes it with its code tables avoids the most frequent later problems: records that cannot be aggregated because facilities captured different items, and outputs whose release and capture mode cannot be established.

National morbidity coding audit. Mortality data quality is monitored with established tools (ANACoD-3, CodEdit); morbidity data need an equivalent national audit model, because the quality of ICD-11 morbidity data depends on decisions taken at the point of coding that no downstream tool can correct. Validation built into systems checks that a code exists and is permitted; the audit checks that it represents what the record says. The two are not interchangeable (see C.7). The audit should be designed with the implementation plan and run from the first pilot, covering: main-condition selection against the record; completeness of secondary-condition capture; external-cause coding where applicable; patient-safety event coding, including completeness of the harm–cause–mode cluster; antimicrobial-resistance coding where in scope; validity of postcoordination (permitted axes, valid combinations, correct ordering); unspecified-code rates by chapter and by facility; inter-rater reliability on a re-coded sample; rejected or returned records and the reasons; and coder productivity, measured so as to detect both under-coding and unsustainable workload. Results should be fed back to the facilities and to the training providers, so that recurrent errors become training content and system-configuration changes, and should be published in aggregate as part of the implementation monitoring (see C.11). Published pilot training examination shows that coding accuracy measured with and without postcoordination differs substantially in the first months of use,[11] Examination results identify training needs; production accuracy needs a separate audit against clinical records.

Tools for morbidity:

- ICD-11 Coding Tool and Browser (as for clinical documentation).

- ICD-11 API (as for clinical documentation).
- CodeFusion. A WHO coding tool that reads diagnostic text from files and maps it to ICD-11 codes and URIs. Suitable for batch coding, mapping support, and review of legacy data during transition.
- ICD-FIT (ICD Field implementation training platform). A WHO web-based platform for training and self-evaluation in ICD-11 coding. Users code pre-coded diagnostic term sets extracted from medical records and cause-of-death certificates with an embedded ICD-11 Coding Tool and receive immediate feedback as their code assignments are compared with a gold standard to generate a performance score and ranking. Its purpose is to build coder skills so that countries can produce reliable, standardized health and mortality data while transitioning to ICD-11. ICD-FIT term sets can also be used to measure inter-rater reliability for the national morbidity audit.

National needs. Where a country identifies a genuine need not covered by ICD-11 – a legal category, a specific reporting requirement, a context-specific condition – the Proposal Platform at https://icd.who.int/dev11 is the route. Content added through this route is reviewed by the relevant advisory groups, enters the Foundation, and becomes available to all countries. The historical alternative – creating a national modification – produces local divergence, creates ongoing maintenance debt, and reduces comparability. The Proposal Platform produces shared improvement and avoids the debt. Special requirements will be assessed whether present in the ICD-11 Foundation, feasible with postcoordination, and failing this, for correct placement in the Foundation.

B.5 Specialty and cross-cutting use cases

ICD-11 has integrated capabilities for several specialty and cross-cutting domains where ICD-10 was either silent or inadequate. These are not separate products; they are part of the same classification, accessed through the same tools, governed under the same framework. The examples below are illustrative, not exhaustive.

Antimicrobial resistance. Coding for antimicrobial resistance, aligned with the WHO Global Antimicrobial Resistance and Use Surveillance System (GLASS). Enables routine surveillance from coded health data rather than parallel reporting systems.

Patient safety and quality. ICD-11 includes a substantially revised patient-safety section aligned with the WHO patient safety framework. Extension codes capture adverse events, complications, device failures, and the specificity that quality measurement and reporting require.

Rare diseases. All Orphanet rare-disease concepts are mapped to ICD-11, with stable identifiers for diseases that do not have individual codes. This is the first time the rare-disease population has been routinely codable in international health data; the consequences for patient registries, drug-programme assessments, and reimbursement decisions are substantial.

Mental health. Clinical Descriptions and Diagnostic Requirements (CDDR) have been substantially updated and aligned with DSM-5 where the evidence supports alignment. Comparability with national DSM-based reporting is demonstrated; ICD-11 mental health coding is freely available, whereas DSM use is subject to licensing fees.

Functioning and disability. The supplementary section on functioning contains a shortlist of codes derived from the International Classification of Functioning, Disability and Health (ICF) alongside

the WHO Disability Assessment Schedule 2.0 (WHODAS 2.0). The ICF-derived code sets enable standardized documentation of functioning diagnosis, while WHODAS 2.0 provides a health outcome measure and allows calculation of a summary functioning score. Together they substantially improve data quality for rehabilitation, disability assessment, social policy, and care coordination.

Traditional medicine (TM). A supplementary chapter for traditional medicine conditions enables dual coding, allowing TM conditions to be counted alongside biomedical diagnosis. The ICD-11 TM Chapter initially covered traditional medicine conditions originating from ancient China and practised in China, Japan, the Republic of Korea, and other countries, was expanded in 2025 to include Ayurveda, Siddha, and Unani related conditions. For the first time the chapter enables standardized counting of traditional medicine encounters, the measurement of their outcomes, and comparison with mainstream care.

Primary care. Primary-care content was developed jointly with the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA). The full Foundation can be used directly in primary care settings for two reasons: it contains the conditions that are specific to primary care, and primary care also manages conditions that have been diagnosed by specialists.

Injuries and external causes. A reorganized injury and external-cause architecture covering nature of injury, anatomy, mechanism, and external cause as separable, post-coordinable axes. Suitable for road traffic injury surveillance, workplace injury reporting, sports injury research, and emergency department documentation.

Cancer registration. ICD-O was designed for population-based and hospital cancer registries, and its topography and morphology axes are carried into ICD-11: neoplasm stem codes in Chapter 2 are organized by site and behaviour, and the histopathology extension codes (XH) match ICD-O morphology, the anatomy includes the detail embedded also in ICD-O, so that a hospital record coded in ICD-11 with stem and histopathology codes, complemented as needed by anatomy extension codes, carries the information a registry needs, and a registry record in ICD-O can be expressed in ICD-11 without loss of detail. Registries do not change their primary coding; what changes is the layer in which they report and link. Today most registries publish incidence in ICD-10 groupings and link to mortality coded in ICD-10. When national mortality and hospital data move to ICD-11, the registry needs an ICD-O-to-ICD-11 conversion for its incidence tables, an agreed basis for incidence–mortality linkage during the years in which the two sources are coded differently, and a comparability note for the incidence series, because Chapter 2 regroups some neoplasms (by behaviour, by haematological classification, and by site) relative to ICD-10. These are registry workstreams to be scheduled with the national plan, not reasons to delay it. The transition to the current edition of ICD-O, which several registries are undertaking, and the transition of the reporting layer to ICD-11 should be planned together so that the registry changes its conversion tables once. Registry software should be checked for ICD-11 output and for acceptance of ICD-11-coded hospital notifications; where registries receive notifications from hospital systems that have moved to ICD-11, the conversion back to ICD-O is the same mapping in reverse and should be governed by the registry, not by each hospital.

Vaccination, certificates, and emergency response. Vaccination status, test results, and emergency response data dictionaries developed during the COVID-19 response are codable in ICD-11. The supporting work on Smart Vaccination Certificates and digital documentation of test results is operational.

How specialty content enters national practice. Specialty use of ICD-11 almost always begins in clinical guidelines and protocols that adopt ICD-11 diagnostic criteria, often years before the coding system changes. This is a legitimate first step, but it creates a period in which diagnoses are made on ICD-11 criteria and recorded with ICD-10 codes, sometimes with provisional national codes created for the purpose. The risk is twofold: data that cannot be interpreted against either classification, and code tables printed in guidelines that were transcribed rather than generated and contain errors. Three rules limit the risk. A guideline or protocol that adopts ICD-11 criteria should state which code is to be recorded and until when; code tables in protocols, forms, and regulations should be generated from the ICD-11 API for a named release and validated before publication; and the adoption of criteria in guidelines should not be reported as implementation of ICD-11.

Registries and surveillance systems transition separately. Rare-disease registries and reimbursement rules commonly rely on ORPHA codes alongside ICD-10; the Foundation linkage of ICD-11 to Orphanet allows these to be retained and linked rather than replaced, and the plan should specify the linkage and the system that maintains it. Patient-safety incident systems, pharmacovigilance (MedDRA), antimicrobial resistance surveillance (WHONET software, GLASS), cancer registries (ICD-O) and congenital anomaly registries each run on their own international standard and do not migrate with hospital coding. The plan should decide for each whether ICD-11 is to be added as a linkage, adopted as the primary code, or left unchanged for a defined period, and should say so in the national instrument. Some countries adopt ICD-11 chapter by chapter or exclude individual chapters at first; where this is done, the exclusions should be stated in the instrument so that reporting remains consistent and the omission is visible.

B.6 The WHO-FIC-based casemix path

For countries operating diagnosis-related group (DRG) or activity-based funding systems, casemix is often the sticking point that holds up ministerial-level decisions on ICD-11 transition in morbidity. Health authorities operating DRG systems or activity-based funding ask, reasonably, whether the move to ICD-11 will break their reimbursement infrastructure. The answer that emerges from the evidence and from the work underway is that it does not.

The strategic position. The Nordic Casemix Centre (NCC) develops and maintains the NordDRG engine – a casemix system used in the Nordic countries and in a growing number of other settings. NCC has made the engine and supporting tools available for adaptation to ICD-11 and ICHI. WHO and the WHO-FIC Network are leading the adaptation work, on the request of Member States. The result, when complete, is a WHO-FIC-based casemix system: DRG grouping logic that takes ICD-11 conditions and ICHI interventions as inputs and produces casemix groups that countries can adopt, adapt, or use as the starting point for national casemix work.

Why this matters strategically. Casemix has historically been a vector for national modifications: when the international classification did not provide the inputs the local DRG system needed, countries built modifications. The result was a proliferation of country-specific DRG systems with country-specific code modifications, no shared maintenance, and limited international comparability of cost-weighted outcomes. A WHO-FIC-based casemix system breaks this pattern: the inputs (ICD-11, ICHI) are internationally governed; the grouping logic is openly available and adaptable; the maintenance is shared.

The Canadian evidence. Work at the Canadian Institute for Health Information has demonstrated that casemix grouping logic can be re-mapped systematically to ICD-11 inputs rather than rebuilt from scratch. Stroke is a useful worked example: codes move chapter under ICD-11 (the reorganization by mechanism and vessel rather than by location), but the same DRG major group applies, and the richer clinical detail in ICD-11 produces better inputs for cost modelling – not worse. The lesson is that casemix transition is a workstream, not a blocker. However, casemix transition needs funding, tested outputs and an agreed acceptance decision

Sequencing casemix. Countries operating DRG systems should treat casemix as parallel to, not sequential after, the ICD-11 implementation decision. Beginning casemix transition planning early – assessing the impact of ICD-11 inputs on existing groupers, scoping the work to re-map logic, engaging vendors – compresses the overall timeline rather than extending it. Countries without DRG systems have an opportunity that legacy DRG countries do not: to adopt the WHO-FIC-based casemix system from the outset, on the same semantic foundation as the rest of their health information infrastructure.

Why payer systems are the slowest domain. Reimbursement rules, tariff tables, claim forms, and grouper versions are fixed in regulations or contracts with their own revision cycles, and each payer, including private insurers and medical-aid funds, controls its own instruments. This is why a transition can be complete for mortality and hospital morbidity yet incomplete for reimbursement: until each payer revises its own instruments, it will keep requiring ICD-10 codes as a condition of payment, regardless of what the national statistics system uses. Where payers enforce ICD-10 strictly, clinicians and coders receive the stronger signal from the payer, and ICD-11 use stalls in the clinical domain even where the systems support it. The payer transition therefore needs its own workstream in the plan: an inventory of the instruments that prescribe codes for claims; a decision whether claims will accept both revisions for a defined period, be mapped centrally, or require ICD-11 from a set date; the placement of ICD-11 fields in the statutory claim form, as Kenya did in its Social Health Insurance Regulations of 2024;[19] and a frozen ICD-11 release for grouping. Countries establishing a new insurance scheme or claims system can specify ICD-11 from the outset and avoid the transition entirely.

B.7 ICHI: the procedure layer

ICHI – the International Classification of Health Interventions – is the WHO-FIC component covering surgical, diagnostic, therapeutic, rehabilitative, nursing, and public health interventions. Where ICD-11 answers "what is the patient's condition," ICHI answers "what was done."

Why ICHI alongside ICD-11. Many countries operate national procedure classifications or third-party procedure terminologies. These systems serve their national purposes, but they differ from one another in structure and granularity, so that intervention data, surgical outcomes, and casemix groupings are not directly comparable across borders, and each system is maintained and licensed separately. ICHI offers a WHO-FIC procedure classification that is built on the same Foundation as ICD-11 and governed and updated with it. It supports international comparability of intervention data and can serve, where appropriate, as a national procedure classification and terminology, or as a reference to which an existing national system is mapped. The choice between adoption, mapping, and retention rests on national assessment of the existing system, its users, and the cost of change.

ICHI is mappable. Where a country already operates a national procedure terminology, ICHI maps to and from it. The mapping work is real, but it is the same mapping work that any other choice of procedure terminology would require, with the difference that mapping to ICHI also opens the door to the WHO-FIC-based casemix system and to international comparability. Choosing a non-WHO procedure terminology replicates the fragmentation that ICD-10 national modifications created – different in each country, separately maintained, separately licensed.

The integration with traditional medicine. ICHI includes a traditional medicine interventions workstream, paralleling the traditional medicine conditions chapter in ICD-11. This is the procedural counterpart that allows traditional medicine encounters to be fully documented – both what the patient presented with and what was done.

Status and adoption. ICHI is under active development through the WHO-FIC Network. It has not yet been formally adopted as a WHO classification by the World Health Assembly, but it is already being used in implementation work in a number of settings – Egypt in health financing, India under the National Health Authority, Rwanda in full clinical reporting, among others. Implementation of ICHI does not need to wait for ICHI to be feature-complete in every domain; countries adopting it now shape its development through the Proposal Platform.

B.8 ICF and functioning

ICF – the International Classification of Functioning, Disability and Health – is the WHO-FIC component covering body functions, body structures, activities, participation, and environmental factors. It is the answer to "how is the patient functioning."

Why ICF in a clinical record. Functioning is the dimension that diagnosis alone does not capture. Two patients with the same diagnosis can have very different functioning trajectories; two patients with different diagnoses can have similar functioning needs. Rehabilitation, long-term care, disability assessment, and care coordination all depend on functioning data, and have historically been hampered by the absence of routine functioning capture. ICF, with the WHO Disability Assessment Schedule 2.0 (WHODAS 2.0) for summary scoring, fills this gap.

Integration with ICD-11. The functioning section of ICD-11 (Section V) links directly to a shortlist of ICF categories and incorporates the 36-item WHODAS 2.0, allowing functioning to be documented and measured alongside the diagnosis. A summary functioning score can be calculated and tracked over time, before and after interventions.

Computer and AI-assisted data capture. The historical obstacle to routine ICF based documentation has been the cost of structured capture. Ambient AI and natural-language processing change this: where the clinical conversation is captured and structured, functioning categories can be inferred and presented to the clinician for confirmation, rather than asking the clinician to enter them by hand. ICF documentation at scale becomes feasible for the first time since the classification was published.

B.9 Languages, translation, and coding training

Multilingual availability is one of the structural differences between ICD-11 and earlier revisions. ICD-10 acquired country-specific translations that diverged over time and across regions; ICD-11 is maintained as a single source with multiple language outputs, governed centrally.

Published languages. The 2026-01 release of the ICD-11 MMS is available in 15 languages: the six United Nations official languages (Arabic, Chinese, English, French, Russian, Spanish) and Czech, Kazakh, Portuguese, Slovak, Swedish, Turkish, and Uzbek, together with a Latin version that contains titles only. A German version is available as a prerelease, and a Japanese version has been released for national use. A further 25 languages are at various stages of translation in the WHO Translation Tool, from first draft to clinical review; 40 languages in total are represented on the platform. These figures refer to the MMS and to the 2026-01 release; the ICD-11 Foundation and ICF have their own language lists.

The Translation Tool. Part of the ICD-11 Maintenance Platform, the Translation Tool allows registered translation centres to build and maintain language versions that stay faithful to the source. Changes in the source are notified to registered translators; the same set of outputs is produced in multiple languages from one platform. The result is convergence rather than divergence – one French, one English, with local synonyms built in for clinical or regional variants.

Coding training tool. ICD-FIT, WHO's web-based platform for ICD-11 coding training and self-evaluation, lets coders practise on standardized cases and check their results against reference codes (see B.4).

National translation work as a workstream. For countries whose national language is not yet a published ICD-11 language, language work is one of the implementation workstreams. It is not a blocker – countries can implement in a UN official language while language work progresses – but for population-level deployment in clinical use, completion of the national language version is an essential prerequisite.

Planning the language workstream realistically. A WHO-published language version, a nationally validated version, and a version deployed in national systems are three distinct outputs, and the plan should state which of them it is working towards and by when. In the countries that have completed it, full translation and expert validation of ICD-11 has taken one to three years, depending on scope and on the resources committed. The Clinical Descriptions and Diagnostic Requirements for mental health, the Reference Guide, the Coding Tool interface, and the training materials are separate items with their own timelines and should be planned as such. Machine-assisted translation shortens the first draft but not the clinical review, which is the step most often left unfinished; a version published while individual chapters are still under review should say so. The plan should name the release being translated and provide for keeping the translation current with the annual update, since a version frozen at an earlier release cannot be used with current tools. Terms used in local clinical practice should be captured as synonyms rather than by changing category titles. Where the national language version will not be available for some years, implementation can proceed in an available WHO language, as Suriname did by implementing in English while a Dutch version was in preparation,[23] with the national version introduced later as a synchronized update rather than as a second implementation.

Approval and search testing. The language workstream should name the translation administrator, clinical reviewers and approving authority, with separate records for translated content, clinical approval and deployment. Before deployment, test common national terms, spelling variants, synonyms and abbreviations in the Browser and Coding Tool; a completed translation does not by itself establish satisfactory search. Record unresolved terms, add missing synonyms on the translation platform and submit search problems to WHO, and repeat the relevant tests after updates.[34,38]

Questions about particular categories. Debate about a category's name, placement or diagnostic requirements should be considered separately from readiness to implement ICD-11. WHO explains selected topics in its classifications FAQ. National focal points should use the current FAQ, Reference Guide and named release in training and communication, and record any remaining clinical or operational concerns. Evidence-supported change proposals can be submitted through the WHO-FIC maintenance platform.

B.10 Maintenance, updates, and governance

ICD-11 is maintained on an annual update cycle. This is a substantive change from ICD-10, which had triennial major updates and annual minor updates and which is now frozen. The annual cycle keeps the classification current with clinical evidence; the digital infrastructure makes annual updates feasible without disruption to country systems.

The Proposal Platform. Proposals for content changes – new concepts, refinements to existing concepts, clarifications, corrections – are submitted through the open Proposal Platform at icd.who.int/dev11. Proposals are reviewed by the relevant advisory bodies. Over 18 000 proposals have been processed since the platform opened, with active contributors from 99 countries. The platform is open to clinicians, researchers, coders, and any other interested party; participation in the maintenance process is one of the routes through which countries shape the international classification.[2]

Advisory governance. Maintenance is overseen by WHO together with the WHO-FIC Network through the Classification and Statistics Advisory Committee (CSAC), informed by the Medical and Scientific Advisory Committee (MSAC), the Mortality Reference Group (MRG), the Morbidity Reference Group (MbRG), and the Traditional Medicine Reference Group (TMRG). The CSAC also advises on updates for ICF and ICHI, ensuring coordination across the WHO-FIC family.

Version stability for implementers. Each ICD-11 release carries version-stable identifiers; records coded at any point in time can be interpreted unambiguously. National implementers and EHR vendors plan their transitions to incorporate updates on a predictable schedule. For casemix, a longer freeze period (typically at least two years) is recommended to allow grouping logic to settle before further refinement. National instruments, code tables, and value sets should always state the ICD-11 release they refer to; a code list without a release identifier cannot be validated, updated, or compared.

B.11 The implementation package: what a country receives

A country implementing ICD-11 receives a complete, free, openly governed package of classifications, tools, and supporting infrastructure. The package is summarized here for orientation; Part C describes how to plan its deployment.

Classifications and content.

- ICD-11 (Foundation, MMS, specialty linearizations, primary care views, traditional medicine modules).
- ICHI (interventions).

- ICF (functioning), with WHODAS 2.0.
- Derived and related classifications: ICD-O for oncology; integration patterns with MedDRA, the International Medical Device Regulators Forum (IMDRF), Orphanet, International Nonproprietary Names (INN), the Anatomical Therapeutic Chemical (ATC) classification, GLASS, the Global Medical Device Nomenclature (GMDN), LOINC, and others.

Tools for use.

- ICD-11 Browser and Coding Tool (online, offline, multilingual, no registration required).
- ICD-11 API (REST and FHIR-aligned endpoints).
- CodeFusion (mapping and batch coding).
- ICD-FIT (ICD Field implementation training platform): training and self-evaluation in ICD-11 coding (see B.4).
- Translation Tool.

Tools for mortality.

- eMCCD (electronic medical certificate of cause of death).
- DORIS (automated cause-of-death selection).
- ANACoD-3 (data-quality assessment).
- CodEdit (coding-quality assessment).
- WHO Verbal Autopsy Instrument.

Reference and guidance.

- ICD-11 Reference Guide (the authoritative companion to this Implementation Guide).
- Implementation Hub at icd.who.int with current versions, integration patterns, code samples.
- Clinician-facing pages including the Implementation FAQ and the clinician documentation resources.
- Proposal platform at icd.who.int/dev11.
- Training resources (i.e. WHO Academy supported ICD-11 training module and the WHO-FIC Collaborating Centres).

WHO support. WHO and the WHO-FIC Network provide technical assistance, training support, and coordination for national implementation. Regional offices and Collaborating Centres are the operational points of contact for in-country work.

B.12 Sequencing: building outward from the strongest entry point

Part A noted that no two early adopters chose the same starting point. This is the practical implication for the implementer: there is no single sequence for ICD-11 implementation. The right starting point is the one where the value is clearest and the readiness is strongest in the country's context.

Some patterns from the evidence:

- **Countries with mature mortality systems** typically start with mortality. The toolchain (eMCCD, DORIS, ANACoD-3, CodEdit, verbal autopsy) is in production use; the gains in data quality and timeliness are immediate; the impact on existing reporting is bounded and well-understood.
- **Countries with new or rebuilding morbidity systems** can adopt ICD-11 directly without intermediate ICD-10 transition costs. UNRWA, India under the NHA, and Egypt's health financing system are examples.
- **Countries with established hospital morbidity systems on ICD-10** typically pilot ICD-11 morbidity in selected hospitals – the Kuwait, Malaysia, and China pilots are the documented examples – and scale on the evidence.
- **Countries with mature legacy systems and a national coordinating agency** can run a phased, agency-led roadmap. France, with the National Health Information Agency (ATIH) leading and a structured roadmap covering translation, system readiness, workforce training, and partnerships with hospital information system providers, is an example documented in the published literature.[22]
- **Countries with strong specialty drivers** – mental health, cancer registration, traditional medicine, patient safety – sometimes begin with the specialty workstream and use it as the wedge for broader adoption. Scotland's mental health implementation is an example.
- Countries with primary care priorities can enter through primary care using the full ICD-11 rather than a reduced list. The full classification covers all health situations relevant to primary care, including the conditions that patients carry from secondary and tertiary care, so that the primary care record remains complete and continuous with the hospital record; the Coding Tool's plain-language search keeps the full classification usable at this level. Primary care analytics are generated using a special tabulation list.

The implementation plan for any country balances these patterns against its own diagnostic resources, IT infrastructure, workforce, and policy priorities. Part C sets out how to do that planning.

C

Implementing ICD-11

IN THIS PART

C.1 Reading guide

C.2 Governance: getting the national structure right early

C.3 Self-assessment: what to know before drafting the plan

C.4 Planning: turning self-assessment into a roadmap

C.5 Workforce: the longest lead time in the plan

C.6 Stakeholder engagement: bringing the system along

C.7 Technical readiness: IT, integration, and vendor work

C.8 Transition for legacy countries: crosswalks and time-series continuity

C.9 Dual coding studies

C.10 Piloting and rollout

C.11 Monitoring implementation: indicators and evaluation

C.12 WHO and WHO-FIC Network support

C.13 Where the Guide ends and the rest of the resources begin

C.1 Reading guide

Part A made the case for ICD-11. Part B described what implementation delivers. Part C is the practical guide to doing the work.

It is written for the national focal point, the project manager, and the team that will lead implementation. It assumes that the political-level decision has been taken or is close to being taken, and that the focus is now on building a workable national plan.

The guidance here is country-neutral. Every country sequences ICD-11 implementation according to its own priorities, its existing infrastructure, its workforce, its languages, and its policy environment. Part C sets out the considerations and the work streams that any country needs to address; it does not prescribe a single path. Where evidence from early adopters is informative, it is cited; where the right answer depends on national context, the Guide says so.

For technical detail beyond the level of this Part, the reader is referred to the Reference Guide, the API documentation at icd.who.int/icdapi, the Implementation Hub, and the relevant WHO-FIC Collaborating Centres. The Guide is a hub, not an encyclopedia.

C.2 Governance: getting the national structure right early

The single most important decision a country makes at the outset of ICD-11 implementation is who is responsible. Countries in every region have given the transition a named home, in forms that fit their own systems: a ministry programme with a university-based training arm (Rwanda), national standard operating procedures issued by the ministry (Kenya), a ministry mortality programme across all regions (Cameroon); a ministry roadmap with a fixed national date (Brazil), ministerial resolutions with a transition deadline (Colombia), an inter-institutional transition committee bringing together the ministry, the statistics institute, civil registration, and social security (Ecuador), a national health information agency leading the technical work (Canada); a hospital-led programme under the ministry (Kuwait), a national Universal Health Insurance Authority (Egypt), a ministry notification programme with designated focal points (Jordan); a national health information agency with a structured roadmap (France), a government agency given statutory responsibility for the classification (Sweden), an interministerial commission (Czechia), a ministerial order introducing ICD-11 through clinical protocols (Uzbekistan); a national health authority and a traditional medicine programme (India), a ministry rollout on the national patient information system (Bhutan), the national health information system reporting in ICD-11 chapters (Nepal); a ministry-wide hospital programme with coder certification (Malaysia), a national health commission circular (China), a statistical regulation under the statistics law (Japan), a phased administrative order with the insurance agency (Philippines). The experience is consistent on one point: a clear, named, mandated national governance structure, with ministerial-level commitment behind it, is the foundation. Countries that postpone the governance question or leave it ambiguous spend the resulting time and resources twice.

The national focal point or centre of excellence. A designated organizational home for ICD-11 implementation, usually based in or affiliated with the Ministry of Health and often co-located with the WHO Collaborating Centre for the WHO Family of International Classifications and Terminologies where one exists. The focal point is the operational point of contact for WHO, for national stakeholders, and for the implementing teams. It is the place where national positions are

formed, where training is coordinated, where the Proposal Platform is engaged on behalf of the country, and where implementation progress is tracked.

The national implementation task force. A cross-sector body that brings the relevant decision-makers together under a shared mandate: the Ministry of Health, the national statistics office, the national civil registration authority, the agency responsible for hospital data and casemix, payers and insurers (public and private), health information management professional bodies, clinician associations, and where relevant national digital health authorities. The task force is the body that takes implementation decisions – sequencing, timelines, technical choices, workforce planning – and reports against them. It needs explicit terms of reference, a defined reporting line to the political level, and meeting cadence sufficient to keep momentum.

The legal and regulatory basis. In most countries ICD-10 is not only a practice but a requirement written into statistical regulations, health insurance rules, tariff decrees, occupational-disease and disability law, mandatory reporting forms, and system specifications. Each of these instruments continues to prescribe ICD-10 until it is amended, and new instruments continue to be issued in ICD-10 for as long as no decision has been taken. This is the most common reason why training and tooling do not translate into use: the staff are trained, the system can code, and the form, the regulation, or the payer still requires the old code. The task force should therefore commission, as one of its first outputs, an inventory of every legal and administrative instrument that names a classification, and should decide the instrument through which the transition will be established: in practice a ministerial order, decree, resolution, or statistical regulation, depending on the national system. The instrument should define the scope by domain (mortality, hospital morbidity, primary care, insurance, registries), the date from which ICD-11 is required in each, the period during which both revisions are accepted, the ICD-11 release to be used and the rule for its annual update, any exception for settings where implementation is not yet possible, and the rule that instruments issued after its date may no longer prescribe ICD-10 alone. Countries that have set a legal date and later extended it have progressed further than countries that have left the date open, and a plan without a legal basis is vulnerable to suspension when leadership or budgets change.

Ministerial-level leadership. Implementation crosses ministry boundaries (health, statistics, finance, digital, social security) and crosses budget cycles. Leadership at ministerial level is necessary to hold the work together. The sponsorship does not need to be visible at every operational decision; it needs to be available when cross-ministry issues require resolution and when the budget cycle requires defence.

Federal, sub-national, and parallel systems. Where provinces, states, or regions control their own health information systems, or where social security, military, occupational-health, or private systems code independently, implementation proceeds at different speeds and a single national go-live date is unrealistic. The governance structure should include these systems from the outset, agree a common release and a common reporting standard, and allow an advanced sub-national or sectoral system to go first on the condition that its data remain comparable with the national series. Cross-national operators present in the country are a separate case: their coding does not constitute national implementation and should not be reported as such.

Engagement with the WHO-FIC Network. The WHO-FIC Network of Collaborating Centres is the operational counterpart of the Proposal Platform. Centres run training, lead translation work, host pilots, participate in advisory groups, and connect the national focal point to the wider community of implementers. Countries that engage early – sending staff to WHO-FIC annual meetings,

contributing to reference groups, hosting regional workshops – extract more value from the network than countries that engage transactionally only when problems arise.

A common failure mode. Implementation that is led from a technical unit (an IT department, a coding-standards office) without ministerial sponsorship and without cross-sector representation tends to deliver tooling without adoption. The tooling is necessary; it is not sufficient. The governance question is not optional. Two further failure modes are as common. Implementation led by training alone produces cohorts of trained staff who return to systems and forms that still require ICD-10; after two years the competence has decayed without having been used. Training should be scheduled against the date on which the system and the instrument will accept ICD-11 codes. Implementation led by announcement produces a launch, a workshop, a press release, or a dashboard that is reported as implementation while coded output remains small or unverifiable. The task force should define in advance what will count as implemented (see C.11) and report against that definition.

C.3 Self-assessment: what to know before drafting the plan

Self-assessment is the first workstream a national focal point commissions, and the input to every implementation decision that follows. It produces a structured picture of where the country stands, what needs to change, and what the realistic timeline and resource envelope look like.

The self-assessment is not a one-off audit. It is a structured baseline that is revisited as implementation progresses – at minimum annually, and at any major phase transition.

The five domains. A national self-assessment for ICD-11 covers five domains. Each domain produces a written output that feeds into the national implementation plan.

1. **Current state of classification use.** What versions of ICD are in use, where, by whom, and for what purposes? Mortality, morbidity, primary care, billing, insurance reimbursement, registries, research, quality, and safety reporting – each may use a different classification and a different version. The first task is to map the current state honestly. Where national needs have produced country-specific extensions to ICD-10, those need to be documented; they become inputs to the crosswalk work later in the implementation. The inventory should include the legal and administrative instruments that prescribe a classification, including statistical regulations, insurance and tariff rules, reporting forms, and procurement specifications, since these, rather than the information systems, usually determine when ICD-10 can be withdrawn.

2. **Data and reporting infrastructure.** What information systems are in use at each level – facility, regional, national? What is the IT readiness for an API-based classification system? Where are paper-based processes still in place, and what is the realistic timeline for digitization? What are the connectivity constraints, and where will offline tooling be needed?

3. **Stakeholder landscape.** Who are the decision-makers for mortality, for morbidity, for casemix, for primary care, for insurance? Who are the vendors of the major hospital information systems and electronic health records? Which professional bodies represent coders, clinicians, and HIM staff? Which academic and research institutions work with the classification? The mapping of stakeholders is the input to the engagement plan (see C.6). The mapping should name the payers, public and private, that require codes as a condition of payment and the instrument in which they do so; the registries and surveillance systems that

run on their own classification standards; and the development partners, software providers, and donor-funded projects already engaged in classification work, with their timelines.

4. **Workforce capacity.** How many coders are in active practice? What is their training pipeline? What is the average level of ICD-10 proficiency, and what training infrastructure exists? Where are clinicians documenting directly versus relying on dedicated coders? What is the IT workforce capacity for an API-driven integration?

5. **Language and translation.** Is the national language an already-published ICD-11 language? If not, what is the status of any translation work, what resources are needed to complete it, and what is the timeline? What synonym work is needed for regional or specialty variants?

The questions to answer in each domain. The 2019 Implementation Guide produced a useful list of self-assessment questions; the current Guide updates and structures them around the five domains above. The list is illustrative, not exhaustive – national context will add questions.

On current state of classification use:

- Which versions of ICD, ICF, ICHI, and related classifications are in use in the country, and since when?
- For each use case (mortality, hospital morbidity, primary care, casemix, billing, registries), what is the data flow from point of capture to national reporting?
- Where do country-specific national needs currently produce extensions, modifications, or local conventions, and what is the rationale for each?
- What is the level of integration with international reporting – WHO mortality reporting, OECD indicators, SDG indicators, regional reporting frameworks?
- Which laws, regulations, tariff rules, forms, and system specifications prescribe a classification, and which authority can amend each of them?

On data and reporting infrastructure:

- What is the IT infrastructure at each level of the system, and what is its readiness for an API-driven classification?
- Where is connectivity limited, and where will offline tooling be needed?
- What is the EHR landscape – which vendors, which versions, what is their ICD-11 roadmap?
- What is the lead time the major HIS and EHR vendors need to deliver ICD-11-ready systems?

On stakeholders:

- Who are the decision-makers for mortality? For morbidity? For casemix? For primary care? For insurance?
- Which professional bodies are involved – for coders, clinicians, HIM staff?
- Which academic and research institutions are engaged with classification work?
- Where do potential resistors sit, and what are their concerns?
- Which development partners, software providers, and donor-funded projects are engaged in classification work, when do their projects end, and are their timelines aligned with the national plan?

On workforce:

- What is the size, composition, and training pipeline of the national coder workforce?
- What proportion of clinical documentation is done directly by clinicians versus by dedicated coders?
- What training infrastructure exists, and what is its capacity to deliver ICD-11 training at scale?
- What are the gaps in IT, HIM, and clinical education curricula that need to be addressed before national go-live?

On language and translation:

- Is the national language already a published ICD-11 language? If not, what is the translation status?
- What national or regional language variants need synonym work?
- What translation infrastructure exists, and what is its capacity to maintain a published language version?
- Where will translation be co-developed with regional partners?

Existing regional self-assessment work. Several WHO regional offices have run structured self-assessment exercises that countries can build on. The Pan American Health Organization (PAHO) ran systematic self-assessments across 15 countries in the Americas; similar work has been conducted in the African and Eastern Mediterranean regions. Countries should consult their WHO regional office and the relevant Collaborating Centres for templates and for the experience of regional peers.

Where the self-assessment goes wrong. Two common failure modes deserve mention. First, the self-assessment becomes a paper exercise – completed because it is a step in the plan, filed because the plan requires it, and not used to inform decisions. The remedy is to ensure the self-assessment outputs are presented to and discussed by the task force, with explicit decisions taken on each domain. Second, the self-assessment underestimates the time and resource needs of the workforce and language domains. These are the two domains where countries most often discover, two years into implementation, that they should have started earlier.

C.4 Planning: turning self-assessment into a roadmap

The national implementation plan is the document that translates self-assessment into action. It states the goal, the sequence, the resources, the milestones, and the risks. It is owned by the task force and signed off at ministerial level.

Structure of the plan. A workable national implementation plan covers, at minimum:

- The scope of implementation: which use cases (mortality, morbidity, primary care, specialty, casemix), in which sequence, on which timeline.
- The governance structure: who decides what, who reports to whom, what the meeting cadence and decision-making processes are.
- The workstreams: legal and regulatory basis, language and translation, workforce, IT and integration, content adaptation for national needs, dual coding and crosswalks for legacy countries, payer and casemix transition, registries and surveillance systems, stakeholder engagement.

- The timeline: phases with named milestones, dependencies between workstreams, decision points.
- The resources: personnel, budget, technical infrastructure, training infrastructure, external support.
- The risks: identified risks, mitigations, escalation paths.
- The monitoring framework: indicators, reporting cadence, evaluation points.

Pre-implementation, implementation, and post-implementation phases. The plan should structure work in three phases with explicit transitions between them. *Pre-implementation* covers governance setup, self-assessment, language work, stakeholder engagement, training infrastructure development, and pilot preparation. *Implementation* covers piloting, scaling, dual-running with legacy systems, vendor engagement on full system deployment, and progressive go-live by use case or geography. *Post-implementation* covers full national operation, decommissioning of legacy reporting, integration with the Proposal Platform for ongoing maintenance, and the move from project mode to business-as-usual operation.

Time horizon. Early-adopter evidence converges around a two- to four-year window from initiation to substantive national implementation, with significant variation by national context. Countries with established mortality systems and strong governance can implement mortality use cases within 18–24 months. Countries with complex hospital morbidity systems and large coder workforces typically need three to four years to reach substantive morbidity coverage. The plan should commit to a phased timeline rather than to a single national go-live date; phased implementation reduces risk and allows lessons from earlier phases to inform later ones. Countries with large legacy infrastructures, payer-driven coding, and a national language still to be translated have set horizons of five to eight years, and several have revised their first target dates. The horizon should be stated by domain rather than for the country as a whole, so that a slower payer or registry transition does not hold back mortality or clinical documentation.

Setting a target date matters. One of the consistent findings from countries that have implemented well is that setting a national target date – even an aspirational one – is the single most important unlock. It gives vendors, IT teams, training providers, and educators the justification to invest. Countries that decline to set a target date typically find that their vendors and educators delay matching investments, and the implementation slips by default. A target date that is later revised is more useful than the absence of a target date.

Decision points and continuity. Implementation plans most often fail not at launch but in the interval between pilot and national decision: a pilot ends and its results are not published; the national decision is deferred for years while the crosswalks and translations are complete; external funding for the pilot ends; or a change of government suspends the plan. The plan should fix the decision points in advance, with the date by which the pilot evidence is reviewed and the scaling decision taken and the body that takes it, and should secure the budget for the period after the pilot from domestic sources, since partner funding is typically tied to the pilot phase. A plan that has been formally adopted and given a legal basis is less easily suspended than one that exists as a project document.

Defining what counts as implemented. The plan should define the stages against which it will report, in terms that can be verified: preparations (governance, legal drafting, mapping, translation); pilot running or legal basis established; national rollout commenced; data collection in a national system; national output published in ICD-11; and a published assessment of the quality of ICD-11 data. For each stage the plan should specify the evidence, that is the instrument, the coded dataset, or the

published output, rather than the activity. These stages correspond to those WHO uses to monitor implementation globally and avoid the frequent discrepancy between what is announced and what can be shown.

Embedding ICD-11 in existing programmes. Where possible, ICD-11 implementation should be embedded in existing digital health, data quality, or EHR programmes rather than run as a stand-alone initiative. Implementations that share governance, budget, and timeline with the broader digital health workstream tend to deliver more reliably and at lower marginal cost than implementations that compete with it.

Funding and budgeting. The transition needs an explicit budget line, because its costs fall across several institutions and budget years and are otherwise absorbed unevenly or not at all. A national budget submission requires illustrative cost ranges, even where exact figures are jurisdiction-specific; published material from Malaysia, France, and Kuwait, the 2024 PAHO Practical Implementation Guide to ICD-11 for Mortality and the Implementation Hub can inform a cost envelope covering capital costs (system integration, vendor work, translation, training infrastructure) and recurring costs (annual updates, retraining, translation maintenance, proposal-platform engagement). In practice, ICD-11 transition has rarely been funded as a stand-alone item. It has been carried as a component of digital health transformation programmes and health information system procurements, of civil registration and vital statistics investments supported by development partners, of health financing and insurance reforms, and in some countries of regional structural funds; translation has been procured by tender or funded within such projects. Aligning the transition with one of these programmes is therefore both a programmatic choice and the principal resource mobilization strategy, and the timing of the national plan should take account of the programme cycles through which funds become available. Two provisions protect continuity: the recurring costs should be carried in the domestic budget from the outset, since partner and project funding is normally tied to the preparatory and pilot phases and has ended before routine operation was reached; and the budget should be approved for the whole horizon of the plan, including the phase after the pilot, rather than for the pilot alone.

Building the cost estimate. For each workstream, record local quantities and unit costs, the price year and currency, the funding source, the budget owner and the years in which funds are needed. Include protected training and practice time, replacement cover and temporary productivity loss, language review and search testing, integration and hosting, mapping and dual coding, parallel operation, and recurring updates and quality assurance. Separate cash expenditure from staff time and other in-kind contributions, and distinguish planned, committed and actual costs. Annex 1 provides a costing worksheet and a worked training-time calculation.[32,34]

C.5 Workforce: the longest lead time in the plan

Workforce development is the workstream that most often determines whether implementation succeeds. Tool deployment, language validation and vendor updates have different lead times. A first translation draft may take months to a year; a clinically reviewed national version and the supporting materials can take longer. Vendor systems can be updated in two to three years. Building a national workforce competent in ICD-11 – coders, clinicians who document directly, IT staff, HIM professionals, statisticians, analysts – takes longer and starts earlier than most national plans anticipate.

Coder training. The professional coder remains central to national morbidity statistics, casemix, and quality measurement, even where clinicians document directly. Coder training for ICD-11 differs from ICD-10 training in two ways: the Foundation-and-linearization architecture and the postcoordination axes need to be understood, and the digital coding workflow replaces the print-and-index workflow. The shift to a digital, API-based classification also calls for a new competency – computer-assisted coding – in which the coder works alongside software that proposes candidate codes from clinical text, and the coder's role moves toward validating, refining, and postcoordinating those suggestions rather than building each code manually from an index. This competency includes recognizing and correcting the software's suggestions where they are wrong: computer-assisted coding accuracy depends on the quality of the underlying clinical documentation, and the coder remains accountable for the final code. Malaysia's certification programme for clinical coders – a three-day intensive structured around a planning–implementation–evaluation framework, with continuous-learning modalities – is one published model.[23] Kuwait's experience showed the value of physician-tailored training, on-site support, and the use of social media (instant messaging apps for daily questions, video content for training resources) as a low-cost, high-reach complement to formal training.[7]

Posts, not only training. Training produces competence; only established posts, job descriptions, and performance requirements that name ICD-11 produce routine use. In several countries large cohorts have been trained without a dedicated coding post being created, and recruitment notices continue to require ICD-10 competence years after training began. Workforce planning should therefore cover the establishment of posts, the amendment of job descriptions and competency frameworks, and the timing of training to the date on which systems and instruments will accept ICD-11 codes, so that competence is used within months of being acquired rather than lost.

Clinician training. Clinicians documenting directly in ICD-11 do not need coder-level training, but they do need orientation: how the Coding Tool works, how plain-language search returns clinically appropriate concepts, when to use postcoordination, how the documentation supports downstream uses. Specialty-tailored training is more effective than generic training. The training needs to fit into the clinical workflow – short, focused, and reinforced by on-site support during the initial weeks of use.

Workload and readiness. Estimate staffing from current record volumes, coding time, backlog, expected growth, staff turnover and retirements, and the additional time for training, dual coding, audit and support. Recruit and prepare additional staff before transition training where gaps are identified. Define protected learning time as required by the role and the cover required to maintain routine reporting; retain expertise for manual handling of difficult records. Before go-live, the task force should agree role-specific competence and workload criteria and verify them on representative cases.[34]

IT and HIM staff training. Technical staff need training in the API, in FHIR integration patterns, in the offline bundles, and in the data structures of the Foundation and the linearizations. HIM staff need training in workflow redesign, quality monitoring, and the new audit patterns that follow from a digital, structured classification.

Trainer training. A national implementation at any scale needs more trainers than exist at the outset. The early years of implementation should include explicit train-the-trainer programmes, with mentorship from established qualified educators with solid ICD-11 implementation experience from WHO Collaborating Centres or early ICD-11 adopter countries. WHO Academy supported modules on

ICD-11 are part of this infrastructure; national curricula developed by Collaborating Centres in regional languages extend it.

Curriculum integration. For long-term sustainability, ICD-11 needs to enter the standard curricula of medical schools, nursing schools, and HIM training programmes. Curriculum change is slow; starting the conversation with academic accreditation bodies early in implementation is part of the long-term strategy.

The published evidence on training. Evidence on training effectiveness for ICD-11 is now accumulating, including from Malaysia's COC programme,[23] field trials in the Republic of Korea,[9] Eastwood et al. (HIMJ 2023), the Kuwait social-media-supplemented approach,[7] and the "Rethinking ICD-11 Training" paper by Ibrahim, Kostanjsek, and Jakob.[24] Implementers should consult this literature when designing national training programmes rather than starting from scratch. Training should reflect the "inside-out" approach recommended in the ICD-11 training literature: start with user tasks, clinical examples, and use of the Coding Tool; introduce classification structure and postcoordination concepts as needed; use simulations and ICD-FIT to assess learning; define specialty- and role-specific learning objectives; and reinforce formal training through supervised practice, on-site support, peer learning, and continuous-learning channels.

C.6 Stakeholder engagement: bringing the system along

ICD-11 implementation is a change-management programme as much as a technical one. Stakeholders include everyone whose work is affected by the change – clinicians, coders, HIM staff, IT staff, vendors, payers, statisticians, academic communities, professional bodies, patient advocacy groups, and the wider public where mortality and morbidity statistics are publicly reported. Engagement is the workstream that builds the constituency for implementation and surfaces the operational problems before they become political problems.

Clinicians. The hardest stakeholder to engage and the most important to bring along. Clinicians have lived through previous classification transitions that disrupted their workflow without producing visible value; they are appropriately sceptical. Effective engagement leads with the value to clinical work – better search, clinically modern content, postcoordination where detail matters – rather than with the international reporting case. Champions within specialty societies, demonstrations at clinical conferences, and pilots that produce visible improvements in the clinical workflow build the constituency more effectively than top-down communication. The Kuwait pilot's investment in physician-tailored training and on-site support is a documented model.[7]

Coders and HIM professionals. This is the professional group whose daily work changes most. Engagement should begin with the professional bodies – the national HIM association, the coder certification body, and the institutions that train coders – and should address both the substance of the change and its implications for careers. How the change is presented matters: if ICD-11 is experienced as deskilling or as a threat to the coder's professional standing, resistance is likely; if it is presented, and resourced, as an opportunity to extend coders' skills into clinical documentation quality, data analysis, and terminology management, coders become its most effective advocates.

Vendors. The hospital information system and EHR vendor community needs a clear and credible signal from the national market that ICD-11 is coming. Vendor lead times are long; vendors will not invest in ICD-11 readiness ahead of a credible national signal. Early engagement – at the point of the implementation decision, not after – shapes vendor roadmaps and reduces total implementation lead

time. The signal needs to be backed by procurement intentions: future tenders that require ICD-11 readiness move vendor roadmaps faster than any communication strategy.

Statisticians and analytical communities. National statistics offices, academic epidemiology departments, and researchers using ICD data need to understand the impact on time series, on indicator construction, and on comparability with legacy data. Engagement with this community needs to be substantive – comparability studies, dual coding evidence, casemix impact analyses – not communication-led. The Canadian work on crosswalks and the field trials in the Republic of Korea are useful reference material.

Payers and insurers. Where ICD codes drive reimbursement, the payer community is a critical stakeholder. Engagement needs to address the casemix question explicitly and early, with reference to the Nordic Casemix Centre work and the Canadian re-mapping evidence in Part B.

The public. In jurisdictions where mortality and morbidity statistics are publicly reported and used in political debate, the public is a stakeholder in time series comparability. Comparability ratios, bridge-coding evidence, and transparent communication about what is changing and what is not are needed before high-profile statistics shift to ICD-11.

Development partners, software providers, and projects. In some countries the practical work of implementation, from software configuration and integration to training and translation, is carried out by development partners, WHO country offices, donor-funded projects, and software providers, each with its own timeline and reporting. This support is valuable, but it produces three recurring problems: partner timelines end before national routine operation is reached; partner reports describe launches and training in terms that are later cited as implementation; and software providers advertise ICD-11 readiness that has not been demonstrated in a running installation. The task force should keep a register of partner activities with their end dates and hand-over arrangements, require that any implementation claim be backed by a named system, release, and coded volume, and verify vendor claims against a working installation before procurement decisions or public statements rely on them.

C.7 Technical readiness: IT, integration, and vendor work

The technical workstream covers the infrastructure that makes ICD-11 usable in national systems: the API integration, the EHR and HIS updates, the offline tooling deployment, the FHIR alignment, the value-set platform, and the data-flow architecture from the point of capture to national reporting.

API integration. The ICD-11 API and the Embedded Coding Tool (ECT) as User Interface is the primary integration point. EHRs, HIS systems, coding tools, mortality systems, casemix groupers, and analytical platforms all consume the API. Integration patterns are published at icd.who.int/icdapi and include reference implementations, code samples for embedding the Coding Tool, and operational guidance for the FHIR endpoints. The technical readiness assessment should map every system that currently consumes ICD-10 content and plan the migration path for each.

FHIR alignment. Where the national digital health architecture is FHIR-based, ICD-11 integrates through the FHIR terminology service operations – $lookup, $expand, $validate-code. Canonical URIs are stable and version-controlled; the dual identification of Foundation and MMS concepts allows clinical detail and statistical aggregation to coexist in the same FHIR resource. For countries

building or updating national FHIR profiles, ICD-11 binding should be part of the profile design rather than added later.

Offline deployment. Where connectivity is intermittent or unreliable, the ICD-11 offline bundle provides the full functionality of the online tooling, with periodic synchronization when connectivity allows. The offline bundle is suitable for rural facilities, mobile health workers, and field deployments. The Rwandan integration of ICD-11 into the OpenMRS electronic medical record across district hospitals is a documented example of API-based deployment in a connectivity-constrained setting.[25]

Value sets and national configurations. Where a country needs subsets of ICD-11 for specific use cases – primary care, mental health, specific reporting requirements – the WHO value-set platform supports country-level value sets that are governed and versioned. Value sets should be developed in line with international value sets where these exist, with national variants only where genuine national needs require them. Countries should define a minimum ICD-11 technical data model that captures release version, Foundation URI, MMS code or code cluster, postcoordination details, language/title, value-set information, source system, workflow metadata, timestamps, and audit trails. They should also make explicit architectural decisions on whether to use WHO-hosted services, local caches, national terminology services, or offline bundles, taking into account cybersecurity, privacy, data sovereignty, performance, procurement, and continuity requirements. In conjunction with pilots, countries should conduct production-like testing of APIs, offline packages, postcoordination, data formats, validation, mappings, and export files.

Correct use of ICD-11 in systems. The value of ICD-11 data depends on how the code is captured and stored, not only on which code is chosen. The Reference Guide sets the principle of lossless collection of information at the source: the exact wording of the health provider is retained together with the URI of the closest matching ICD-11 entity and the ICD-11 code, so that the record can be verified and reanalysed later, even where several conditions share one statistical code. The following rules apply this principle to national systems and should be written into system specifications and procurement requirements.

- The original clinical statement is the reference. It is stored as free text in its own field; the selected ICD-11 code, the displayed title, and the URI of the selected entity are stored in separate fields, one set per diagnosis.
- Diagnoses are captured through the ICD-11 search (the Coding Tool, the Embedded Coding Tool, or the API, online or deployed locally), which gives access to the full Foundation terminology. Fixed drop-down lists restrict the range of diagnoses and reduce the accuracy of the record; they are acceptable only for defined narrow value sets with a specific purpose, such as the vaccine names on a vaccination certificate.
- Optional postcoordination clusters are stored complete, including extension codes for laterality, severity, and other attributes. Storing the stem code alone loses meaning.
- The detailed primary coding, as URI or code cluster, is retained at the source; statistical groupings are derived from it and never replace it.
- Context is kept with the code: whether a condition is confirmed or suspected, current or historical, whether it concerns the patient or another person, and how certain a stated causal relationship is.

- Detail is coded only as far as the documentation supports it and the intended use requires it.
- Codes and URIs, not display labels, serve as identifiers. Each record carries the ICD-11 release, the API or tool version, the language, the coding method, the author and time of coding, and any later review or change.
- Coding assistance, code validation, and coding-quality assurance are distinct functions. A check that a code exists, or belongs to a permitted value set, does not establish that it represents the provider's statement; that is the task of the audit (see B.4). Search modes designed for simple look-up are not used for medical coding.

A system that meets these rules produces data that remain usable when the classification is updated, when codes are regrouped for casemix or reporting, and when the same record is later reviewed, mapped, or used for decision support.

Terminology distribution is not use. Publishing ICD-11 on a national terminology server, registering an identifier, or binding ICD-11 in a national FHIR implementation guide are necessary steps, but several countries have completed them while their reporting systems continue to transmit ICD-10. The technical plan should pair each distribution milestone with the system and the data flow that will consume it, and should verify that transmitted records carry ICD-11 codes together with the release identifier, not to forget implementing an appropriate coding infrastructure.

Code tables in national documents. Code lists printed in protocols, forms, and regulations are a frequent source of error: codes transcribed by hand, ICD-10 codes under ICD-11 headings, identifiers altered by transliteration, tables without a release. All such tables should be generated from the API for a stated release and validated before publication, and the machine-readable version should be published with the document.

Paper registers and low-resource settings. Where registers remain on paper, a national short list derived from the classification, with ICD-11 codes and the release stated, allows reporting to begin and can be expanded as systems are digitized. It should be documented and governed as a value set, not as a modification, and the full classification should be used wherever a system is in place.

EHR vendor engagement. Major EHR vendors are increasingly delivering ICD-11 support, but rollout varies by vendor, by country, and by product line. The national focal point should engage directly with the major vendors operating in the country, understand their ICD-11 roadmap, identify gaps, and where necessary use procurement levers to align timelines. Where ICD-11 readiness is included in vendor requirements for national tenders, vendor delivery accelerates.

Mortality system integration. Mortality systems integrate ICD-11 through eMCCD at the point of certification and through DORIS for automated cause selection. The integration is at the data-flow level: structured medical certificate of cause of death, ICD-11 coding at source, DORIS-based underlying-cause selection, transmission to the national vital statistics system. Countries currently using ICD-10 mortality systems with automated tools (such as Iris) need a transition path; dual-running during the transition is the recommended approach.

Casemix system updates. Casemix systems integrate ICD-11 (conditions) and ICHI (interventions, where used) as inputs to DRG grouping logic. The WHO-FIC-based casemix work described in Part B is the current direction; countries operating other DRG systems can adapt their grouping logic to ICD-11 inputs, as the Canadian work has demonstrated.[21]

Lead times. Technical readiness is paced by vendor lead times – typically two to four years for major EHR and HIS updates – and by national IT procurement cycles. Starting vendor conversations at the point of the implementation decision, not after, compresses the timeline. Setting a national target date is the most effective lever.

Operational issue management. The national focal point should maintain an issue register with the use case, classification release, language, tool or API version, reproducible example, severity, responsible owner, interim action and review date. Distinguish content proposals, search or translation problems, coding-rule questions, software defects and local integration failures, so that each reaches the appropriate team. Use examples that protect patient information. The national support team should triage issues with the vendor, Collaborating Centre or WHO as appropriate; API queries can be directed to icd@who.int.[36,39]

Closing an issue. A reply or new release is followed by testing against the reported case and related cases. Record the decision, verified outcome and any remaining limitation, then update national guidance, training and system configuration. Review unresolved high-impact issues before scaling and after updates, with reporting through the task force (see C.11).

C.8 Transition for legacy countries: crosswalks and time-series continuity

Countries with an existing ICD-10 system in place – referred to as legacy countries – need to manage the transition so that historical data remain usable, time series remain interpretable, and casemix and reimbursement systems remain functional. The scale depends on national content, legacy systems and intended outputs. Crosswalks and dual coding provide established methods, but require local expertise, time, funding and validation. To support Member States, WHO provides bidirectional crosswalks between ICD-10 and ICD-11. These resources are publicly available and facilitate continuity, comparability, and transition planning for both morbidity and mortality use cases.

Crosswalks: what they are and what they are for. Crosswalks are standardized mapping tables that establish correspondence between codes in two different versions of the ICD. The WHO-FIC Classifications and Terminology Mapping: Principles and Best Practice paper, citing ISO/TR 12300:2014, defines mapping as "the process of defining a relationship between concepts in one coding system to concepts in another coding system, following a documented rationale, for a given purpose". In this ICD-11 context, a crosswalk is the outcome of a bidirectional mapping process between ICD-10 and ICD-11. The WHO crosswalks allow comparison of ICD-11 data with legacy ICD-10 data, support the preservation of longitudinal data series, and inform the adaptation of casemix grouping logic. They are updated with each annual release of ICD-11 MMS.

Why crosswalks are needed. Where there is a legacy of collecting and comparing ICD data, the WHO crosswalks are an important and valuable resource. The tables assist to:

- preserve the integrity of historical data, and support longitudinal statistics and the construction of comparable data for statistics and other uses;
- reduce, where possible, a break in continuity arising from the introduction of ICD-11 for multiple use cases;
- inform casemix methodologies for grouping comparable data – for example, the crosswalk tables may be used to review grouping logic to determine whether cluster coding can be used within a grouper software or whether unbundling of code clusters is necessary.

The WHO ICD-10/ICD-11 mapping tables. WHO provides two types of map, MapToOneCategory and MapToMultipleCategories, released as the following files with each release of ICD-11:

Table 1. WHO ICD-10/ICD-11 mapping tables

File	Description
10To11MapToOneCategory	Map from one ICD-10 code (source) to one ICD-11 MMS code or code cluster, linearization URI, and Foundation URI (target) that is either equivalent to or broader than the source code or URI.
10To11MapToMultipleCategories	Map from one ICD-10 code (source) to one or more ICD-11 MMS codes or code clusters, linearization URIs, and Foundation URIs (target).
11To10MapToOneCategory	Map from ICD-11 MMS URIs (source) to ICD-10 codes (target); not all MMS URIs have codes (e.g. chapters).
foundation_10To11MapToOneCategory	Map from one ICD-10 code (source) to an ICD-11 Foundation URI (target).
foundation_11To10MapToOneCategory	Map from one ICD-11 Foundation URI (source) to one ICD-10 category (target).

All MapToOneCategory crosswalks link a source code or Foundation URI to one target category that is either equivalent to or broader than the source code or URI. These crosswalks can be used automatically, as they place the ICD source entities in the correct positions within the target hierarchies.

For the 10To11MapToMultipleCategories crosswalk, the map source may be broader than, narrower than, or equivalent to the target; sources and targets may also represent concepts whose meanings overlap or "potentially overlap". Because of the complex relationships between map sources and map targets, using the MapToMultipleCategories crosswalk requires a manual process. Where ICD-10 coded data and (possibly textual) additional information are available, this crosswalk may help coders manually recode the data in ICD-11 with greater granularity, albeit with a potential loss of detail.

Crosswalks as transitional tools. ICD-11 to ICD-10 crosswalks are designed for limited, short-term use during transition – not for ongoing data generation, reporting, clinical documentation, or policy decision-making. ICD-11 introduces a fundamentally new structure, including reorganized chapters, expanded clinical concepts, and a postcoordination system that enables greater specificity. These features cannot be fully or accurately represented within the constraints of ICD-10. Routine use of crosswalks in operational systems undermines the integrity of ICD-11 data, distorts clinical meaning, and risks misinforming health trends and resource planning. Crosswalks are the bridge across the transition; they are not the destination.

Limitations of crosswalks. The limitations stem from conceptual and structural differences between the two classifications. ICD-11's modern, flexible framework – with polyhierarchical organization and detailed coding options – cannot be reliably mapped to ICD-10's linear and more limited format. Many mappings are imprecise or ambiguous, often resulting in one-to-many or many-to-one conversions that introduce inconsistencies and loss of clinical detail. Crosswalks should be used only for specific scenarios: retrospective data comparisons, temporary interoperability during the transition period to full ICD-11 implementation, and informing casemix grouping (e.g. DRG) logic

adaptation. Maps are validated against the original documentation: the same records are coded directly in the target classification and the results compared with the mapped codes, with discrepancies investigated and automated maps subject to human review.

When crosswalk tables are needed. Crosswalks help maintain historical comparability and are critical in the early stages of implementation, especially for countries with national needs already encoded as extensions to ICD-10. Understanding the impact of the change – potential discontinuities in statistical time series, areas of improvement or difference, areas where postcoordination enables new detail not available in ICD-10, and where enhancements will be required in ICD-11 – is part of the early implementation work. Countries that have a legacy of collecting ICD-10 data will need to assess their need for the ICD-10/ICD-11 mapping tables and determine:

1. the level of ICD integration, and reporting requirements;
2. where additional maps are necessary due to national systems or country-specific content;
3. how these will be stored and updated as ICD-11 evolves; and
4. for how long the crosswalk tables will be required.

If ICD is not currently used at a national, regional, or organizational level, an implementer will have no requirement for the ICD-10/ICD-11 mapping tables to support the implementation of ICD-11.

Countries preparing a specific language version of ICD-11 will need to schedule translation and quality assurance activities ahead of mapping activities. WHO provides a Translation Tool as part of the ICD-11 Maintenance Platform to assist implementers with this task (Annex 5).

One important use case is national health indicators, which measure the health of a country's population and the effectiveness of the health-care system. Indicators can be used to monitor chronic health conditions, such as heart disease, cancer, diabetes, stroke, and mental health disorders, as well as infectious diseases, injuries, life expectancy, births, and deaths. These indicators will be required and monitored at different levels of complexity, and some countries will only need to use a small subset of the crosswalks to support their needs.

Countries with national needs encoded in ICD-10. National modifications of ICD-10 are adaptations designed to reflect a country's clinical practices, coding policies, and health system needs. Where a country has historically maintained country-specific extensions to ICD-10 for extra specificity, those extensions also need mapping to ICD-11. The WHO crosswalks serve as the starting point; the implementer plans and allocates resources for the additional mapping work tailored to country-specific content. Practical considerations include:

- understanding any legal or regulatory requirements;
- collaborating with health-care stakeholders – for example, in Germany, the National Board for Classification in Health Care at the Federal Ministry of Health (KKG) – and with clinical and other use-case experts;
- resources (time, relevant expertise, and financial investment) to undertake the work within the required timeframe – Canada, for example, planned for this early and assessed how many months of effort were required for the level of mapping needed;
- the complexity of the mapping – one-to-many or many-to-many maps require time and expertise to avoid inconsistencies or misinterpretations;

- ensuring semantic interoperability of health data systems in the transition from ICD-10 to ICD-11 – the mapping needs to ensure that accurate, meaningful value sets are maintained and that the overall interoperability of the systems is not compromised;
- assessing the impact on existing systems and associated tools;
- clear documentation of the mapping methodology and conventions, which improves transparency and reproducibility.

Country experiences. The Canadian Institute for Health Information has developed both forward and backward crosswalks between ICD-10-CA (version 2022) and ICD-11 MMS (2022 release), utilizing and extending the WHO mapping table, to evaluate the impact of ICD-11 adoption on national health indicator reporting, casemix methodologies, and the Canadian Congenital Anomalies Surveillance System.[21] The work began in spreadsheets and transitioned to an online mapping tool to enhance accessibility, support updates, and improve scalability. The Canadian experience is one of the most fully documented examples of legacy-country crosswalk work and is widely referenced internationally.

Malaysia used the WHO-provided mapping tables as a baseline, adapting them to the country's use of the ICD-10 2010 version through a panel of national experts; the revision took approximately two weeks of dedicated work, and the resulting table was deployed in the integration between hospital systems not yet transitioned and the national health information management system.[8] Kuwait uses an unmodified version of WHO ICD-10 and consequently uses the WHO mapping tables directly without country-specific adaptation.[7] The contrast illustrates the principle: a country that has stayed close to WHO ICD10 has lighter crosswalk work; a country with substantial national modifications has heavier crosswalk work. Fuller accounts of the three cases are given in Table 7 in Annex 2.

Mapping software and standards. For some countries a spreadsheet may be sufficient to maintain the maps; for those with complex requirements, such as country-specific content, it may be best to adopt best practices in software development and use version control systems such as Git and platforms such as GitHub to maintain versions, track issues, and manage releases. In a recent evaluation of terminology mapping software by the WHO-FIC Mapping Task Force, CodeFusion – a WHO coding tool repurposed for mapping – demonstrated good sensitivity and precision; it can suggest candidate maps for review by mapping specialists. Countries should also consider adopting or adapting map format standards such as the Simple Standard for Sharing Ontological Mappings (SSSOM). The use of such standards enables automated processing and sharing of maps between country-specific content and ICD-11.

Annual maintenance. WHO releases an annual update to ICD-11 MMS, and the bidirectional crosswalks between ICD-10 and ICD-11 are revised to reflect these changes, along with corrections to the tables. As part of the quality assurance process for the crosswalks, corrections and suggested additions should be sent to the Mapping Task Force (whofic.mtf@gmail.com). There will be a need to analyse the impact of the WHO changes in each annual release on data comparability and on national systems. For the purposes of casemix, the crosswalks need to be systematically reviewed, which involves repeated scrutiny of backward maps against forward maps to ensure consistent grouping. Casemix users must rely on the crosswalks for a suggested period of at least two years before further refining their groupings; it is therefore advisable to freeze the ICD-11 version used for casemix purposes for the corresponding period, to allow grouping logic to settle before further refinement.

Where to find more. The crosswalks are published by WHO as the ICD-10/ICD-11 Mapping Tables, available for download from the "Info" tab of the ICD-11 MMS Browser (Annex 3). The WHO-FIC

Classifications and Terminology Mapping: Principles and Best Practice paper, the SSSOM specification, and the CodeFusion documentation are listed in Annex 5. Country experiences with crosswalks are collected in Annex 2.

C.9 Dual coding studies

A dual coding study is a methodological approach used to assess the impact of transitioning from one version of a classification or terminology to another. The same dataset – for example, hospital discharge diagnoses or data from death certificates – is coded using two different versions of the ICD, such as ICD-10 and ICD-11, and the outputs are compared. For countries with a strong ICD-10 legacy, particularly where mortality and morbidity time series carry significant policy weight, a dual coding study is a substantial investment that produces evidence the implementation plan can rely on. Countries that have developed and implemented a national modification of ICD-10 are encouraged to use their own ICD-10 modification when comparing it to ICD-11, to ensure accuracy and national relevance.

What dual coding studies are for. The objective is to compare the outputs and quantify the impact of the transition on data classification, analysis, and reporting. The same hospital discharge records, or the same death certificates, are coded in both ICD-10 and ICD-11, and the outputs are compared. Differences are quantified, sources of difference are identified, and the impact on downstream statistics – incidence rates, cause-of-death distributions, casemix groupings, indicator constructions – is assessed. Dual coding may be performed using either manual or automated coding methods.

Why dual coding matters. Dual coding studies support the transition from ICD-10 to ICD-11 by enabling the identification and analysis of classification differences and assessing the impact on coding practices, data quality, and statistical continuity. They reveal how changes in classification affect epidemiological and statistical trends, such as cause-of-death frequencies or morbidity incidence rates. They serve several purposes:

- **Understanding classification differences** in entity definitions, coding conventions, and hierarchical structure between ICD-10 and ICD-11.
- **Adapting data analysis** by enabling data analysts and data users to understand the implications of ICD-11 for existing statistical indicators and groupings, and so to adapt reporting frameworks to the ICD-11 structure.
- **Assessing coding accuracy and consistency** of ICD-11 coding relative to ICD-10 for specific use cases, applicable to both manual and automated coding practice.
- **Exploring new coding capabilities** – extension codes, postcoordination – and how these capture clinical detail.
- **Informing stakeholders** by providing evidence for policymakers, researchers, and health-care administrators on the expected impact of classification changes on reporting and service planning.
- **Evaluating casemix implications** by assessing how changes in coding rules and categories may affect grouping systems (e.g. DRG, casemix) and payment models.

Dual coding versus mapping. Dual coding and mapping are related but distinct. Mapping identifies conceptual correspondences between classifications – what an ICD-10 code maps to in ICD-11 – and facilitates the alignment of content between the previous and the revised version, highlighting gaps or

changes in content and structure. Dual coding evaluates the impact of those correspondences on real data – what happens to time series, to incidence rates, to casemix groups when actual records are recoded – and highlights the so-called trend breaks. A country planning the transition typically needs both: mapping to understand the structure of the change, dual coding to quantify the impact on national data.

Where dual coding is needed. A dual coding study is recommended for countries with a strong ICD-10 legacy in their health data, in any use case, where evaluating the comparability of cause-of-death or morbidity statistics between ICD-11 and ICD-10 is essential for the continuity of time-series analyses. For countries with a poor or no ICD-10 legacy, a dual coding study may not be necessary or even feasible; if there are data sets to analyse, such a study may be conducted at a smaller scale, focusing on specific morbidity and mortality tabulation lists or selected national health indicators. A dual coding study requires additional resources and time; the cost varies with the number of personnel and the resources required. It is nevertheless a critical investment: it enables the identification of coding and data variations, and therefore predicts the impact of introducing a new classification on the clinical coder workforce and on trends in statistical data. The timing and scope of a dual coding study should be carefully considered during the transition to ICD-11.

Methodology for mortality. Many countries use automated mortality coding tools (such as Iris and DORIS). These automated tools may be used for dual coding to a certain extent. DORIS was developed for ICD-11 and cannot be used for ICD-10; this means that mortality dual coding studies typically combine manual ICD-10 coding with DORIS-supported ICD-11 coding, and the methodology needs to account for this asymmetry. When a country is transitioning from manual to automated coding, the dual coding study can also identify differences in coding outcomes and rule application between manual and automated approaches, which should be reviewed and addressed to maintain coding consistency.

Methodology for morbidity. Morbidity coding typically involves multiple diagnosis codes and is often conducted manually. Dual coding studies for morbidity tend to be more resource-intensive and may need to be limited in scope – focusing on specific hospitals, regions, or types of cases. Mapping tools can assist preparation and analysis, but mapped codes should not substitute for independent recoding from the clinical record when the purpose is to validate comparability or map accuracy.

Planning a dual coding study. Key planning considerations include:

- *Sample size and representativeness*. Select a sample that balances feasibility with the need to detect meaningful differences in the data, ensuring the data reflect the country's context and use case.
- *Data reference period*. Define the study period. Decide whether the study will be retrospective (dual coding existing ICD-10 coded data) or prospective (real-time coding of records in ICD-10 and ICD-11).
- *Resources*. Allocate sufficient time, personnel, and infrastructure; additional clinical coders and data analysts may be required.
- *Training*. Ensure all coders and analysts are adequately trained in ICD-11 before the study begins, including familiarity with postcoordination and the use of the ICD-11 Coding Tool.
- *Methodology*. Develop a clear protocol covering coding rules, analytical methods, statistical definitions, and data aggregation procedures. Define outputs and reporting formats in advance.

- *Pilot*. Conduct a pilot to test the methodology and identify potential issues before full implementation.
- *Timing of analysis*. Decide whether to analyse dual-coded data cumulatively during the study or retrospectively after data collection is complete. Consider the implications for resource planning and responsiveness.
- *Data management*. Implement data systems capable of storing, processing, and managing dual-coded records without disrupting routine data flows.
- *Automated tools*. If using automated tools, assess their performance and determine whether manual review is needed to ensure accuracy and consistency across both ICD versions.

Small-scale projects. Some countries may be unable to conduct large-scale dual coding projects for various reasons: classification and data analysis tools and resources may not be easily available; for some use cases a large-scale project would require collaboration across jurisdictions, which can present logistical challenges; and some use cases may be limited to a smaller volume of data relative to other countries. Although random sampling or "representative" samples of data may be considered the best option for small-scale dual coding projects, purposive sampling has also been used – for example, selecting records likely to present coding difficulties, or at least one case of each underlying cause of death (Table 8 in Annex 2).

Published evidence and country examples. The dual coding evidence base now covers a range of national contexts and use cases:

- *Sweden* dual-coded approximately 2 500 mortality records covering at least one case of each underlying cause of death from 2021, focusing on records likely to present coding challenges under the mortality rule base.
- *Argentina* dual-coded approximately 2 500 mortality cases from three provinces (800 certificates per jurisdiction) from 2022, using a national web platform with the ICD-11 API and expert review; the study illustrates both the value and the limitations of dual coding when training materials and tooling (DORIS) are still maturing, and the workload constraints that limit sample size.
- *The Republic of Korea* has conducted multiple dual coding studies: a 2021 study comparing the Korean Standard Classification of Diseases, 8th revision (KCD-8), the national modification of ICD-10 (ICD-10-KM) with ICD-11 that measured specificity, difficulty, ambiguity, and coder and physician accuracy; a 2024 study with full mapping between KCD-8 and ICD-11 and time-series analysis of 104 cause-of-death items across 372 939 deaths, in which appropriate mapping codes were available for 74% of cases and 26% required code addition or partial mapping (49 coders; US$ 107 944);[9] and a 2025 line- and case-coding study using the KSCH Portal of Statistics Korea (42 participants; US$ 50 370), in progress.[9]
- *United Kingdom* is planning a large-scale bridge coding study in 2026–2027 covering at least a 12-month reference period for England and Wales, with provisional results published before ICD-11 implementation; the cost of the bridge coding has not been distinguished from the full implementation project.
- *South Africa* intends to code a full year of data in both ICD-10 and ICD-11 and then carry out the necessary reviews, dependent on resources.
- *China*'s national pilot across 59 hospitals produced 3 723 959 coded diagnoses for 873 425 patients in a two-month coding phase, with reported coding accuracy of 82.9% when postcoordination is included and 92.2% for stem code only.[11]

- *Australia, Canada, Germany, and Sweden* – countries with strong integration of ICD-10 in their health care systems – have completed or indicated plans to develop morbidity dual coding projects. Best results are achieved after the necessary mappings from ICD-10 (or a national modification) are completed.

Published literature. Implementers should consult the accumulating literature on ICD-11 dual coding and on earlier coding-system transitions (notably the experience of the United Kingdom with the introduction of Iris and with comparability ratios) when designing national studies. The main studies are listed in Annex 2, A2.4, and cited in Annex 6 (references 5, 6, 9, 11, and 26–33); the Implementation Hub maintains a more complete bibliography.

C.10 Piloting and rollout

The transition from planning to implementation is mediated by piloting. Pilots produce evidence, build confidence, refine processes, identify problems, and create the cohort of trained users who become the trainers and champions for wider rollout. Implementations that move directly from planning to national rollout without piloting tend to discover, expensively, what piloting would have shown for less.

Pilot design principles. Effective pilots share several characteristics:

- **Concrete scope**. A defined facility or set of facilities, a defined use case, a defined timeline. Vague pilots produce vague results.
- **Production-equivalent conditions**. Piloting in a sandbox produces sandbox results. Piloting in a real facility with real clinical workflow produces results that generalize.
- **Stakeholder representation**. Clinicians, coders, HIM staff, IT staff, and management all need to be active participants. Pilots run by IT alone produce IT results; pilots run by clinicians alone produce clinical results; pilots run by the full stakeholder set produce implementation results.
- **Pre-pilot preparation**. IT issues should be resolved before the pilot begins; training should be completed; on-site support should be available from day one. The Kuwait pilot's emphasis on small-scale pre-pilot testing before launching the actual pilot is documented as a key facilitator.[7]
- **Data collection**. The pilot is itself a study. Coding accuracy, time per encounter, user-experience surveys, qualitative feedback, IT incident logs, and the comparison with pre-pilot baselines all need to be planned in advance, captured systematically, and analysed.
- **Defined exit criteria**. What does the pilot need to show to justify scaling? What would justify going back to the drawing board? The exit criteria need to be agreed before the pilot begins.

Pilot to scale. The transition from pilot to scale is itself an implementation challenge. Lessons from the pilot need to be integrated into the wider rollout: training materials updated, IT issues anticipated and pre-empted, change-management approaches refined. Countries that treat the pilot as one-off and start scaling from scratch lose much of the value the pilot generated. Countries that treat the pilot as the first phase of the implementation extract the full value.

Why pilots stall. The 2026 review of implementation evidence found pilots that ended without a published result; pilots whose continuation after the pilot period could not be established; pilots paused when partner funding was interrupted; and pilots run alongside an unchanged national requirement for ICD-10, so that the piloted coding was never transmitted to the national system. Each has the same remedy: planning the exit criteria, publishing results, funding for the subsequent

phase and amending the national instrument that will accept the pilot's output should be settled before the pilot starts, not after it ends.

Sequential or parallel rollout. Some countries scale ICD-11 by use case (mortality first, then morbidity, then casemix); others scale by geography (one region first, then nationally); others scale by sector (public hospitals first, then private). The right approach depends on the national context – political readiness, infrastructure, workforce capacity, vendor delivery. The plan should commit to a sequencing approach and explain its rationale.

Maintenance of existing systems during transition. The 2019 Implementation Guide recommended maintaining current classification systems for a defined overlap period – at least 18 months – alongside the new system. This remains broadly the right approach, though the evidence from early adopters suggests the duration should be calibrated to national context rather than set as a fixed period. The benefits of maintaining the existing system during transition include stability of reporting, continuity of trained workforce, ability to assess transition impact on time series, support for crosswalk and dual coding work, and detection of errors in the new system. The cost is the resource demand of running two systems in parallel. National plans should set the overlap duration based on the use case, the legacy system maturity, and the risk tolerance for transition disruption.

Designing coexistence. In practice, coexistence of ICD-10 and ICD-11 is the normal state for several years rather than a short overlap: countries have accepted both revisions in their registers for defined periods, moved the death register and the hospital register on different dates, updated ICD-10 to its latest version as an interim step, or adopted ICD-11 for statistics while hospitals continued in ICD-10. Plans should design coexistence explicitly: which domains accept both revisions and for how long; whether records are captured natively in ICD-11 and mapped back for legacy outputs, or the reverse; whether the legacy classification will be updated in the interim; and the criteria and date for withdrawing it. The withdrawal date is the point at which most implementations are decided; without it, parallel operation becomes permanent and the cost of running two systems is borne indefinitely.

C.11 Monitoring implementation: indicators and evaluation

The implementation plan commits to a set of monitoring indicators and an evaluation cadence. The aim is not paperwork but evidence – for the task force, for the political sponsors, for WHO and the international community, and for the country itself in subsequent phases of implementation.

Categories of indicators. A national monitoring framework typically covers:

- **Coverage indicators**. What proportion of facilities are using ICD-11? What proportion of records are being coded in ICD-11 versus the legacy system? Coverage by region, by sector, by use case.
- **Quality indicators**. Coding accuracy (where dual coding evidence supports measurement); proportion of poorly defined causes; consistency across coders (inter-rater reliability); use of postcoordination where clinically appropriate.
- **Timeliness indicators**. Time from clinical encounter to coded record; time from death certification to national vital statistics aggregation.
- **Workforce indicators**. Number of trained coders, clinicians, IT staff; training completion rates; certification rates where formal certification exists.

- **Stakeholder indicators**. User satisfaction surveys (clinicians, coders, HIM staff); vendor readiness against roadmap; engagement of professional bodies.
- **International reporting indicators**. Completeness and timeliness of reporting to WHO, regional frameworks; comparability with peer countries.

Reporting evidence, not activity. Monitoring must be able to distinguish a launch from routine production, because the two are routinely confused in national and partner reporting. For each use case, the monitoring record should state: the ICD-11 release in use; whether codes are captured natively or mapped from a legacy classification; the instrument that makes the coding mandatory, if any; the facilities or systems covered and the denominator; the number of coded records in the reporting period; and whether the legacy classification continues in parallel. The data year should always be stated separately from the publication year. The same attributes should accompany any statement a country makes to WHO or in international fora, and the instruments on which they rest (orders and regulations with their annexes, data dictionaries, code tables) should be published at stable addresses. In the 2026 global review, the implementation evidence most often found to be unverifiable consisted of unpublished annexes to orders, payer coding instructions, and partner reports without a named system or coded volume.

Existing WHO tools for monitoring. ANACoD-3 supports routine assessment of cause-of-death data quality and should be run on every reporting cycle. CodEdit supports coding-quality assessment for individual records and reporting files. The Implementation Hub will host country-level monitoring resources and templates as these mature.

Evaluation cadence. Quarterly monitoring at the task force level; annual external review with WHO and Collaborating Centre input; phase-transition evaluations at the boundaries between pre-implementation, implementation, and post-implementation phases. Substantive evaluation findings should be shared with the WHO-FIC Network and the wider international community; implementation evidence is a global public good.

Interpreting and reviewing the evidence. Reports should distinguish training examinations, user surveys, production audits and routine national outputs. State the method, release, workflow, coverage and denominator, implementation roles of authors or evaluators, funding and material limitations. Repeated publications or multinational author affiliations should not be counted as separate national implementation results. Independent review should complement implementer-led evaluation, with conclusions separated for the system, clinical domains and particular categories. The task force should record its response to findings, the responsible owner, the action and the follow-up date.[37]

C.12 WHO and WHO-FIC Network support

A country implementing ICD-11 is not implementing it alone. The WHO Classifications and Terminologies Unit, the WHO regional offices, and the WHO-FIC Network of Collaborating Centres provide a structured support framework.

WHO Headquarters. The Classifications and Terminologies Unit (CAT) in WHO Geneva is the global focal point for ICD-11. CAT maintains the classification and its tooling, leads the development of ICHI and the maintenance of ICF, runs the Proposal Platform, hosts the Reference Guide and the Implementation Hub, coordinates the annual update cycle, and convenes the international advisory bodies. National focal points can contact CAT directly through icd@who.int.

WHO regional and country offices. WHO's six regional offices – AFRO, AMRO/PAHO, EMRO, EURO, SEARO, WPRO – and the country offices under them are the operational entry points for national implementation work. Regional offices run training, support country self-assessments, host regional workshops, and connect national focal points to regional peers. Several regional offices have produced regional implementation toolkits and have led structured self-assessment exercises across multiple countries.

WHO-FIC Collaborating Centres. Collaborating Centres host much of the operational classification work – translation, training, dual coding studies, mapping work, content development. The Centre network is the technical and operational counterpart of WHO Headquarters and the regional offices. National focal points should connect with their regional Collaborating Centres early in the implementation work.

WHO Academy. The WHO Academy supported the development of ICD-11 e-learning modules.

Reference groups. The Mortality Reference Group, Morbidity Reference Group, Medical and Scientific Advisory Committee, Traditional Medicine Reference Group, and the Classification and Statistics Advisory Committee provide subject-matter expertise on the maintenance of the classification. Country participation in reference groups is one of the ways national expertise enters the international classification.

The Proposal Platform. The platform at icd.who.int is open to any contributor. National focal points should engage with the platform proactively – submitting national needs, commenting on proposals from others, tracking changes that affect national implementation. The platform is the most accessible and continuous channel of engagement with the international classification work.

WHO-FIC annual meetings. The WHO-FIC Network meets annually, with sessions covering implementation, reference groups, education, and strategic direction. Country representatives – typically from the Collaborating Centre and the national focal point – should attend. The meetings are where international consensus is built and where national experience is shared.

C.13 Where the Guide ends and the rest of the resources begin

This Guide is the orientation document for national decision-makers and implementers. It does not contain the full operational detail needed at every stage. The following resources, all at icd.who.int and the Implementation Hub, complement the Guide:

- **The ICD-11 Reference Guide.** The authoritative companion. Where the Implementation Guide describes the path, the Reference Guide sets out the rules – coding conventions, the structure of the classification, the rules for mortality and morbidity, the use of extension codes and postcoordination, the maintenance process. The Reference Guide is the binding instrument; this Implementation Guide defers to it.
- **The API documentation at icd.who.int/icdapi.** Technical documentation for integration, including FHIR endpoints, code samples, and operational guidance for offline deployment.
- **The Implementation Hub.** Country-level implementation resources, including templates, case studies, regional toolkits, and links to Collaborating Centre materials.
- **The clinician-facing pages.** Including the Implementation FAQ and the clinician documentation hub, with material aimed directly at clinical practice rather than at national implementation.

- **The Proposal Platform at icd.who.int/dev11.** The open channel for content proposals, comments, and engagement with the classification's ongoing maintenance.

For specialty-specific guidance, country-specific examples, technical integration patterns, and the operational detail needed at each stage of implementation, the reader is referred to these resources.

The path from this Guide to a successful national implementation is not short, but it is well-trodden. The countries cited throughout the Guide – Rwanda, Kuwait, Malaysia, China, India, the United Kingdom, France, Canada, the Republic of Korea, Argentina, Sweden, UNRWA, and others – have shown that ICD-11 implementation is feasible across very different national contexts. The work the international community has done since 2019 has produced the tools, the methods, and the evidence base that make the next decade of national implementations easier than the first decade was.

§

Reference material

IN THIS PART

Annex 1 Template implementation timetable

Annex 2 Crosswalks and dual coding studies: detailed guidance and evidence

Annex 3 Tooling reference

Annex 4 Glossary

Annex 5 Resources and where to find them

Annex 6 Consolidated bibliography

Annex 1 Template implementation timetable

The timetable below is a template for national ICD-11 implementation, organized by the five priority areas identified through WHO regional consultations. It is not a prescriptive schedule; every country adapts the sequence and pace to its national context. The two-year window is illustrative for legacy countries with mature systems; countries with new or rebuilding systems can move faster, and countries with large, complex legacy infrastructures need longer.

Use of the template. The timetable is intended to be used by the national task force as a planning aid: a starting point that is adapted, expanded, and made specific to the country's circumstances. Activities that are not relevant to the country's context are removed; activities that are missing are added. The "WHO tooling available" column indicates the WHO-provided support for each activity.

For every retained activity, the national task force should record a named delivery owner, approving authority, start and completion dates, dependencies, a cost and funding source, the evidence required for acceptance, and the decision to proceed. The costing and delivery-control worksheets below complement the timetable; their fields are to be completed from the national plan.

Foundational step – to be in place before activities begin.

> Form a national task force for ICD-11 implementation, including all relevant stakeholders (Ministry of Health, national statistics office, civil registration authority, hospital data and casemix agency, payers and insurers, HIM professional bodies, clinician associations, digital health authorities, and Collaborating Centre). Ensure ministerial-level sponsorship and a clear reporting line.

Legal and regulatory workstream, to run in parallel with Priority area 1. Inventory of all instruments that prescribe a classification (Q1–Q2, Year 1). Decision on the transition instrument and drafting, including domain-specific dates, the coexistence period, the release rule, and any exception clause (Q3–Q4, Year 1). Adoption of the instrument (Year 2, Q1–Q2). Amendment of payer, registry, and form instruments in the agreed sequence (Year 2 onwards). WHO tooling available: this Guide (see C.2); Implementation Hub templates.

Priority area 1: Language and classification readiness

Table 2. Priority area 1: activities, WHO tooling, and timing

Activity	WHO tooling available	Year 1	Year 2
Complete the translation of the classification, tools, and supporting materials into the national language	Translation Tool	Throughout	Throughout
Carry out manual coding and field tests on computer systems to make any adjustments needed	ICD-FIT training and self-evaluation in ICD-11 coding	Q3–Q4	—
Identify and document national needs requiring proposals to the platform	Proposal platform	Q1–Q4	Q1–Q4

Priority area 2: Capacity building

Table 3. Priority area 2: activities, WHO tooling, and timing

Activity	WHO tooling available	Year 1	Year 2
Evaluate existing ICD coding capacity in the country	WHO-FIC platform	Q1–Q2	—
Develop training programmes adapted to different user profiles (coders, clinicians, IT staff, analysts)	WHO Academy supported ICD-11 e-learning module, WHO-FIC training resources	Q3–Q4	—
Provide ICD-11 training across the workforce	WHO Academy supported ICD-11 e-learning module, WHO-FIC training resources	Throughout	Throughout
Provide training in the use of the digital tooling (Browser, Coding Tool, API)	API documentation, training resources	Throughout	Throughout
Provide training in DORIS and the mortality toolchain	Specialist training	As determined by Member State	—
Provide training in mortality and morbidity data analysis and data quality	Specialist training	Q3–Q4	Q1–Q2
Evaluate the impact of training activities on quality indicators (coding accuracy)	ICD-FIT	Q3–Q4	Q1–Q2
Develop coder profile and certification	WHO-FIC curriculum	Q2–Q4	—

Priority area 3: Information technology infrastructure

Table 4. Priority area 3: activities, WHO tooling, and timing

Activity	WHO tooling available	Year 1	Year 2
Carry out a technology needs assessment	Self-assessment templates	Q1–Q2	—
Ensure availability of computing equipment and reliable connectivity, with offline tooling where connectivity is limited	Offline bundles	Q1–Q4	—
Integrate IT personnel into the transition team	—	Q3–Q4	Throughout
Adjust national information systems for ICD-11 implementation	—	—	Throughout

Activity	WHO tooling available	Year 1	Year 2
Explore interoperability between the ICD-11 API and national health information systems	API, FHIR endpoints	Q3–Q4	Throughout
Initial testing of ICD-11 online and offline versions	Online tooling, offline bundles	—	Q1–Q2
Implement automated coding system for causes of death (DORIS)	DORIS	As determined by Member State	—
Engage with EHR and HIS vendors on ICD-11 readiness roadmaps	—	Q1–Q4	Throughout

Priority area 4: Data comparability and quality

Table 5. Priority area 4: activities, WHO tooling, and timing

Activity	WHO tooling available	Year 1	Year 2
Monitor data quality indicators for mortality and morbidity using internationally recommended methods	ANACoD-3, CodEdit	Throughout	Throughout
Make crosswalk tables between ICD-10 and ICD-11 available	ICD-10/ICD-11 mapping tables	Q4	—
Conduct impact studies for the transition: reimbursement, casemix, mortality and morbidity statistics, legal frameworks	CodeFusion, mapping tables	Q3–Q4	Q1–Q2
Carry out comparability of coding quality and reproducibility studies in selected areas	ICD-FIT	—	Q1–Q2
Conduct dual coding studies for priority public health subjects	Mapping tables, ICD-FIT	—	Q3
Monitor specific changes during the transition and implementation	—	—	Throughout

Priority area 5: Advocacy and stakeholder engagement

Table 6. Priority area 5: activities, WHO tooling, and timing

Activity	WHO tooling available	Year 1	Year 2
Strengthen inter-institutional committees, councils, or centres (health, statistics, social security, civil registration)	—	Q2–Q4	Throughout
Engage professional associations, colleges, universities, clinicians, and other sectors in national implementation activities	—	Q2–Q4	Throughout
Raise awareness of the importance of correct classification use across user communities	—	Continuous	Continuous
Develop and maintain the national transition and implementation plan, aligned with the broader national health information strategy	This Guide	Throughout	Throughout

Sources. The template is informed by consultations with WHO Member States, supported by WHO regional offices including AMRO/PAHO, EMRO, AFRO, and others, and refined through the experience of countries that have implemented ICD-11 since 2022.

Costing and delivery controls

Use local quantities, unit costs and quotations to estimate each item. State the currency and price year, cash and in-kind resources, funding source, budget owner and annual profile. Compare a base case with credible alternatives for scope, pace and parallel operation, and identify contingency for uncertain items.[32,34]

Cost item	Local calculation and evidence	Timing and budget responsibility
Governance and legal work	Staff and specialist days for coordination, instrument inventory, drafting, consultation and approvals.	Preparation and transition; named national lead and contributing institutions.
Language and search validation	Translator and clinical-reviewer time; supporting manuals and training materials; national-term search tests and annual update workload.	Before each language deployment, then recurring; translation lead.
Workforce and learning	Number of staff by role × protected learning/practice hours × local fully costed hourly rate; add trainers, materials, travel and any cover not already included.	Before go-live and during recovery; workforce lead and employing institutions.

Cost item	Local calculation and evidence	Timing and budget responsibility
IT, hosting and integration	Vendor quotations and internal staff time; equipment, connectivity, local hosting, security, testing, interfaces and version changes.	Initial deployment and recurring operation; IT lead and system owners.
Mapping and dual coding	Specialist days, representative record sample, coding/review time, analytical work and platform costs; retain routine-service cover.	Before each affected series or payment change; classification/statistics lead.
Coexistence and withdrawal	Running both revisions, legacy maintenance, conversion and reconciliation until the agreed withdrawal date.	Defined overlap period; system and reporting owners.
Routine operation	Annual content and language updates, compatibility testing, refresher learning, issue resolution, audit and independent review.	Recurring domestic budget; named operational owners.

Decision	Evidence required	Responsible approval and record
Language ready for deployment	Clinical reviewer sign-off; defined release and scope; national-term search tests; unresolved items and update plan.	Translation lead recommends; designated national authority approves.
Pilot ready to begin	Legal permission and accepted outputs; trained staff; functioning systems; support and issue log; funded evaluation and next-phase decision date.	Project manager recommends; task force records readiness and conditions.
Scale or revise the pilot	Coding accuracy audited against pilot clinical records, workload and user feedback; verified resolution or mitigation of high-impact issues; funded staff and vendor capacity.	Task force records evidence, decision, owner and follow-up dates.
Routine operation and legacy withdrawal	Sustained coded output and quality; reporting/payer acceptance; tested updates; recurrent budget; evidence that affected legacy outputs can end.	Responsible reporting/system authorities approve withdrawal and operational handover.

Annex 2 Crosswalks and dual coding studies: detailed guidance and evidence

This Annex collects the detailed country experiences and the published literature that underpin sections C.8 (crosswalks) and C.9 (dual coding studies). It is based on the work of the WHO-FIC Education and Implementation Committee (EIC) and on contributions from Member States, updated to October 2025. Country entries are reproduced as reported by the countries concerned.

A2.1 Country use of the WHO ICD-10/ICD-11 mapping tables

The table highlights examples of how countries have utilized the WHO mapping tables to support transition planning and implementation-related activities.

Table 7. Country use of the WHO ICD-10/ICD-11 mapping tables

Country	Use of the WHO mapping tables
Canada	The Canadian Institute for Health Information (CIHI) developed bidirectional crosswalks between the national modification, version 2022 of ICD-10-CA, and ICD-11 MMS (2022 release) to support the evaluation of the potential impacts of ICD-11 adoption on Canada's health-care system, including national health indicator reporting, casemix methodologies, and the Canadian Congenital Anomalies Surveillance System.[21] This step-by-step approach utilized and extended the WHO ICD-10 to ICD-11 mapping table based on the ICD-11 2022 release. The work initially began using Excel spreadsheets but has since transitioned to an online mapping tool to enhance accessibility, streamline updates, and enhance scalability.
Kuwait	Kuwait has always used an unmodified version of WHO ICD-10 for both mortality and morbidity statistics and is now transitioning to ICD-11. It is therefore not necessary for Kuwait to make amendments to the WHO-provided mapping tables, as these meet its requirements.[7]
Malaysia	The Ministry of Health mandated the implementation of ICD-11 for mortality and morbidity data across all related systems by 1 January 2024. During the transition period, Malaysia used the WHO-provided mapping tables as a baseline but made modifications to accommodate its use of the ICD-10 2010 version. The mapping process involved a group of national ICD experts: initially one expert prepared a draft, after which the remaining experts independently reviewed it and provided feedback, which was then used to refine and enhance the mapping tables. The revision of the mapping table took two weeks of dedicated effort. The process presented challenges, such as the absence of a one-to-one mapping in some instances, requiring decisions on the most appropriate equivalent codes. The mapping table was implemented as part of the system integration between hospital information systems not yet transitioned to ICD-11 and the national health information management system. While Malaysia did not establish a formal requirement for regular updates post-transition, revisions continue on a case-by-case basis as the country has fully adopted ICD-11.[8]

A2.2 Small-scale dual coding projects (mortality)

Some countries may be unable to conduct large-scale dual coding projects for various reasons. For example, classification and data analysis tools and resources may not be easily available; for some use cases, conducting a large-scale dual coding project would require collaboration across jurisdictions, which can present logistical challenges; and some use cases may be limited to a smaller volume of data relative to other countries. Although it may be considered that random sampling or "representative" samples of data reflect the best option for small-scale dual coding projects, purposive sampling has also been used. Examples of purposive-sampling mortality projects:

Table 8. Small-scale dual coding projects (mortality)

Country	Dual coding project details	Date of study
Sweden	Dual coded a sample of approximately 2 500 mortality records, covering at least one case of each underlying cause of death from 2021. Records were chosen that might have problems during coding according to the mortality rule base.	Began in 2019

Country	Dual coding project details	Date of study
Republic of Korea	Dual coding of ICD-10-KM (KCD-8) versus ICD-11. **Main findings – survey results, KCD-8 (ICD-10-KM) vs. ICD-11:** • Specificity: KCD-8 is more specific (31.4%); about the same specificity (50.2%); ICD-11 is more specific (11.7%); others (6.8%). • Difficulty: ICD-11 is more difficult than KCD-8 (25.8%); moderate (37.0%); easier (30.8%); others (6.6%). • Ambiguity: ICD-11 is more ambiguous than KCD-8 (15.2%); moderate (10.8%); not ambiguous (67.4%); others (6.7%). **Accuracy results for ICD-11 (line / case):** • Coders – overall line/case accuracy rate 62.3% / 57.8%; stem-code accuracy rate 73.4% / 77.6%. • Physicians – overall line/case accuracy rate 64.2% / 77%; stem-code accuracy rate 79.2% / 83.1%. **Strengths of ICD-11 compared to KCD-8:** • Easier search functionality. • More detailed and up-to-date diagnosis codes. • Mapping with standard terminologies (e.g. SNOMED CT). • Convenient use via web browser operation. Participants: 23.	2021
Republic of Korea	In 2024, a study was carried out on mortality statistics using ICD-11 mapping: mapping between KCD-8 and ICD-11 (including index terms and Korean-specific extension codes), followed by a time-series analysis of 104 cause-of-death items in 2022 using the completed mapping table.[9] **Main findings – mapping results, ICD-10-KM (KCD-8) to ICD-11:** • Appropriate mapping code available: 4 802 cases (74.0%). • Code addition or no complete mapping code available: 1 694 cases (26.1%). • Others: 93 cases (1.4%). • Cardinality: 1:1 (96.7%), 1:n (3.3%). Within 1:1 mappings – stem code (29.1%); stem/stem code (28.0%); stem and extension code (41.2%); stem and extension code / stem and extension code (0.8%). **Time-series analysis:** • 2022 annual cause-of-death data (Type A) from Statistics Korea: 372 939 cases. • Analysis conducted by converting KCD-8 (ICD-10-KM) codes to ICD-11 codes. • Diseases were mapped to the first stem code; injuries were mapped to the underlying cause codes in External causes of morbidity and mortality (V01–Y98). Participants: coders (49 people). Cost: US$ 107 944.	2024
Republic of Korea	Dual coding of 50 line and case codings by occupation and chapter using ICD-11 and KCD-8 (ICD-10-KM), utilizing the KSCH Portal currently under development by Statistics Korea. Key results: in progress (as of August 2025). Participants: 42. Cost: US$ 50 370.	2025

Country	Dual coding project details	Date of study
Argentina	Dual coded a sample of approximately 2 500 mortality cases from three provinces covering two periods of the selected year. **Design:** • Each jurisdiction was asked to digitalize and code a sample of 800 death certificates. • For the selection of the sample, certificates that had poorly defined causes as their underlying cause were removed. Months of high incidence of deaths from COVID-19 were also removed, to have a greater variety of causes. • Depending on the number of deaths, complete months distributed across different periods of the year were selected. **Main findings:** • While there have been improvements in the certification of causes of death, many certificates have poor or no specific information, limiting the evaluation of changes in the classification and the possibility to use the improvements in ICD-11. • The start of the study may have been very early in relation to the training materials on the use of ICD-11 for mortality available in Spanish at the time. For example, there were many doubts about the use of postcoordination, which had to be reviewed by the expert coders. • Sample size is another limitation. If sufficient size is desired, the workload for expert coders is very large and difficult to tackle. In addition, people who code at the local level must continue with their usual coding activities, which limits the amount of extra work. It is not feasible to double code all death certificates. • The version of DORIS available at the time of the fieldwork was still at an early stage. All cases where there was no agreement between manual and DORIS coding were reviewed; many discrepancies could have been due to the DORIS version that was used. • It is hoped to extend this experience to other provinces, in a phase of further development of both the training of coders and the DORIS tool, before evaluating and publishing the results. A larger sample is needed to evaluate the changes between revisions. **Resources and cost:** • Local coders who had previously undergone ICD-11 training and who routinely code mortality with ICD-10 entered the records (full texts of causes of death and codes) into a web platform developed at the Dirección de Estadísticas e Información de Salud (DEIS). This platform includes the ICD-11 API for coding each term and the underlying cause of death. • In a second stage, two coding experts reviewed the coding. • Financial resources were provided to develop the web platform, for one person in each province to enter the data, and for the two experts who reviewed the coding. The study was not published.	Began in 2022

A2.3 Large-scale mortality dual coding projects

Examples of plans for large-scale projects for the mortality use case:

Table 9. Large-scale mortality dual coding projects

Country	Dual coding project details
South Africa	The intention is to code data for a year in both ICD-10 and ICD-11 and then do the necessary reviews, but this is dependent on resources. Main findings, cost, and publication: not yet available.
United Kingdom	Plans to conduct a large-scale bridge coding study in 2026–2027 with at least a 12-month reference period covering data for England and Wales. The aim is to publish provisional bridge coding results before implementing ICD-11, which would then be updated after implementation. Main findings: not applicable – yet to be undertaken. Cost: the United Kingdom has not distinguished the cost of the bridge coding separately from the full costs of the ICD-11 implementation project at this point in time.

For morbidity, some countries with strong integration of ICD-10 in their health care system (such as Australia, Canada, Germany, and Sweden) have completed or indicated plans to develop dual coding projects for morbidity data. Best results will be achieved after the necessary mappings from ICD-10 (or a national modification) are completed.

A2.4 Published literature on experiences with ICD-11 dual coding projects and earlier coding transitions

Full citations and links are given in Annex 6 under the reference numbers indicated.

1. Office for National Statistics (United Kingdom). Impact of the implementation of IRIS software for ICD10 cause of death coding on mortality statistics, England and Wales. Published 2014. [Annex 6, ref. 26]
2. Office for National Statistics (United Kingdom). Impact of the implementation of IRIS software for ICD10 cause of death coding on stillbirth and neonatal death statistics: England and Wales. Published 2016. [ref. 27]
3. Office for National Statistics (United Kingdom). Cause of death coding in mortality statistics, software changes: January 2022. Published 2022. [ref. 28]
4. Office for National Statistics (United Kingdom). Comparability ratios: what they are and when to use them (UK experience). [ref. 29]
5. Field testing a new ICD coding system: methods and early experiences with ICD-11 Beta Version 2018. BMC Research Notes. Published 2022. [ref. 30]
6. Eastwood CA, et al. Training and experience of coding with the World Health Organization's International Classification of Diseases, Eleventh Revision (ICD-11). Health Information Management Journal; published online 2021. [ref. 5]
7. Describing agreement in the main condition coding field using Canadian ICD-11 inpatient data. Published 2021. [ref. 31]
8. Paving the way: a cost and outcome evaluation framework for the transition from the 10th to the 11th version of the International Classification of Diseases. Published 2020. [ref. 32]

9. Lee H, Kim S. Impact of the ICD-11 on the clinical coding in South Korea. Health Information Management Journal. Published 2022. [ref. 6]

10. A study on initial productivity trend in the transition of the ICD-10 to ICD-11 morbidity coding in Iran. Published 2024. [ref. 33]

Annex 3 Tooling reference

The table below summarizes the WHO tooling supporting ICD-11 implementation. Every tool listed is provided free of charge as part of the digital public good. Current versions, integration patterns, and code samples are available at the locations indicated.

Classification content and access

Table 10. Classification content and access: tools and where to find them

Tool	Function	Where to find it
ICD-11 Browser	Full classification with multilingual lay-term search, clinical descriptions, anatomical and mechanism-based navigation	icd.who.int
ICD-11 Coding Tool	Plain-language search returning ranked stem-and-extension combinations, showing only valid modifiers	icd.who.int
ICD-11 API	Stable REST and FHIR-aligned endpoints with canonical URIs, dual Foundation/MMS identification	icd.who.int/icdapi
Offline bundles	Full Coding Tool and Browser functionality for low-connectivity settings, with periodic synchronization	icd.who.int
Reference Guide	Authoritative companion: coding rules, classification structure, mortality and morbidity rules, postcoordination, maintenance	icd.who.int

Translation, testing, and content development

Table 11. Translation, testing, and content development: tools and where to find them

Tool	Function	Where to find it
Translation Tool	Registered translation centres build and maintain national language versions, notified of source changes	icd.who.int/dev11/f/en/Multilingual
ICD-FIT (ICD Field implementation training platform)	Training and self-evaluation in ICD-11 coding.	icd.who.int

Tool	Function	Where to find it
Proposal Platform	Open submission of content proposals, comments, and contributions; review by advisory groups; transparent decision log	icd.who.int/dev11

Mortality toolchain

Table 12. Mortality toolchain: tools and where to find them

Tool	Function	Where to find it
eMCCD (electronic medical certificate of cause of death)	Structured digital certification at the point of death, with standardized data dictionary, ICD-11 coded at source	icd.who.int
DORIS (WHO Digital Open Rule Integrated Cause-of-Death Selection)	Automated selection of the underlying cause of death applying WHO rules; multilingual; published, adaptable rule sets	icd.who.int
ANACoD-3	Data quality assessment for cause-of-death reporting: poorly defined causes, gaps, suspicious patterns	icd.who.int
CodEdit	Coding quality assessment for individual records and reporting files	icd.who.int
WHO Verbal Autopsy Instrument	Standardized instrument for cause-of-death assessment where medical certification is unavailable	who.int

Mapping and content tools

Table 13. Mapping and content tools: function and where to find them

Tool	Function	Where to find it
ICD-10/ICD-11 Mapping Tables	Bidirectional crosswalks: forward, backward, and Foundation-level. Updated annually with each ICD-11 release	icd.who.int ("Info" tab in the MMS Browser)
CodeFusion	Reads diagnostic text from files; maps to ICD-11 codes and URIs; supports batch coding and mapping work	icd.who.int/docs/codefusion/

Training and capacity-building

Table 14. Training and capacity-building: resources and where to find them

Tool	Function	Where to find it
WHO-FIC training resources	Curricula, training materials, and certification frameworks maintained by the WHO-FIC Network	who.int
ICD-FIT	Training and self-evaluation in ICD-11 coding.	icd.who.int
Collaborating Centre training programmes	Regional training delivered through the network of WHO-FIC Collaborating Centres	who.int

Related WHO classifications

Table 15. Related WHO classifications: function and where to find them

Classification	Function	Where to find it
ICHI	International Classification of Health Interventions: surgical, diagnostic, therapeutic, rehabilitative, nursing, public health interventions	who.int/standards/classifications/international-classification-of-health-interventions
ICF	International Classification of Functioning, Disability and Health, with WHODAS for summary scoring	who.int/standards/classifications/international-classification-of-functioning-disability-and-health
ICD-O	Derived classification for oncology, integrated with ICD-11 through the Foundation	who.int

Annex 4 Glossary

ANACoD-3. Analyse Cause-of-Death data, version 3. WHO tool for assessing the quality of cause-of-death data.

API. Application Programming Interface. In this Guide, refers specifically to the WHO ICD-11 API, providing REST and FHIR-aligned access to classification content.

Casemix. A method of grouping clinical episodes into clinically and resource-homogeneous categories for the purposes of reimbursement, performance measurement, and management. DRG (Diagnosis-Related Groups) is the most common casemix methodology.

CDDR. Clinical Descriptions and Diagnostic Requirements. The companion to ICD-11 for clinical use in mental health.

Classification. A system that organizes entities into mutually exclusive, exhaustive categories for counting and statistical aggregation. ICD-11 produces classifications (linearizations) such as the MMS from the underlying Foundation.

CodeFusion. WHO tool that reads diagnostic text from files and maps it to ICD-11 codes and URIs, supporting batch coding and mapping work.

CodEdit. WHO tool for coding-quality assessment.

Coexistence period. The defined period during which a national system accepts records coded in both ICD-10 and ICD-11, by domain, before the legacy classification is withdrawn.

Collaborating Centre. A WHO Collaborating Centre is a national institution designated by WHO to support a specific area of WHO's work. The WHO Family of International Classifications and Terminologies Collaborating Centres support classification work nationally and regionally.

Coding Tool. WHO web application that supports searching and selecting ICD-11 codes from clinical text, including support for postcoordination.

Crosswalk. A standardized mapping table establishing correspondence between codes in two classifications. WHO publishes bidirectional crosswalks between ICD-10 and ICD-11.

CSAC. Classification and Statistics Advisory Committee, the principal advisory committee to WHO on ICD-11 maintenance.

Digital public good. A digital product that is openly licensed, openly governed, designed for accessibility across populations, and serves the public interest. ICD-11 meets the criteria.

DORIS. WHO Digital Open Rule Integrated Cause-of-Death Selection. WHO tool for automated underlying-cause selection in mortality coding.

DRG. Diagnosis-Related Group. The most common form of casemix classification, used in reimbursement and performance measurement.

Dual coding (bridge coding). Coding the same clinical or mortality data in two classification versions (typically ICD-10 and ICD-11) to compare outputs and quantify the impact of transition.

eMCCD. Electronic medical certificate of cause of death. WHO standard for structured digital certification of cause of death at the point of death.

EHDS. European Health Data Space. A European Union framework for primary and secondary use of health data across Member States.

Entity (in ICD-11). A clinical concept in the Foundation, with a stable identifier (URI), a definition, and clinical descriptions. Diseases, disorders, signs, symptoms, injuries, and other clinical concepts are all entities.

Extension code. A code that modifies a stem code in postcoordination. Extension codes cover dimensions such as severity, anatomy, laterality, mechanism, agents, devices, and temporality.

FHIR. Fast Healthcare Interoperability Resources. The HL7 standard for health information exchange. ICD-11 API exposes FHIR-aligned terminology service operations including $lookup, $expand, and $validate-code.

Foundation. The Foundation Component of ICD-11: a polyhierarchical ontology of around 85 000 clinical entities, from which all linearizations are derived. The Foundation is the knowledge base; linearizations are views of it.

GIDH. Global Initiative on Digital Health.

GLASS. Global Antimicrobial Resistance and Use Surveillance System.

HL7. Health Level Seven International, the standards-development organization responsible for FHIR among other health-care information standards.

ICD-10. International Statistical Classification of Diseases and Related Health Problems, Tenth Revision. Adopted in 1990. No longer maintained internationally.

ICD-11. International Classification of Diseases, 11th Revision. Adopted by the World Health Assembly in May 2019, in effect from 1 January 2022.

ICD-11 MMS. ICD-11 for Mortality and Morbidity Statistics. The reference linearization used for international statistical reporting.

ICD Browser. WHO web application for browsing the ICD-11 content.

ICD-FIT. WHO's web-based platform for ICD-11 coding training and self-assessment.

ICD-O. International Classification of Diseases for Oncology, a derived classification for cancer registration.

ICF. International Classification of Functioning, Disability and Health. The WHO-FIC component covering body functions, body structures, activities, participation, and environmental factors.

ICHI. International Classification of Health Interventions. The WHO-FIC component covering health interventions, under active development through the WHO-FIC Network.

Implementation Hub. WHO-maintained resource site for ICD-11 implementation, including country case studies, technical resources, and regional toolkits.

IPS. International Patient Summary. A specification for cross-border clinical record exchange.

Legacy country. A country with an existing ICD data collection system (typically ICD-10 or an earlier revision) in place at the time of ICD-11 implementation.

Linearization. A view derived from the ICD-11 Foundation organizing entities into a tabular structure for a specific purpose. The MMS is the reference linearization for mortality and morbidity statistics; specialty and primary care linearizations exist for other use cases.

Mapping. The process of defining a relationship between concepts in one coding system to concepts in another coding system, following a documented rationale, for a given purpose (ISO/TR 12300:2014, as adopted in the WHO-FIC Classifications and Terminology Mapping: Principles and Best Practice paper). The output is a mapping table or crosswalk.

MbRG. Morbidity Reference Group.

MMS. Mortality and Morbidity Statistics. See ICD-11 MMS.

Morbidity data. Data on the presence of disease, illness, injury, disability, or adverse health events.

Mortality data. Data on deaths by age, sex, and cause, typically reported by Member States from their civil registration and vital statistics systems.

MRG. Mortality Reference Group.

MSAC. Medical and Scientific Advisory Committee.

Native capture - preferred (versus mapped capture). Native capture means that the ICD-11 code is selected at the point of documentation or coding; mapped capture means that a record coded in another classification is converted to ICD-11 by a crosswalk. National outputs should state which applies.

National needs. Country-specific requirements for content additions or refinements to the classification. The term is used in this Guide in preference to "national modifications" because WHO-FIC reduces the need to create and maintain a separate national version; genuine national needs are addressed through the Proposal Platform, with content entering the Foundation for all countries.

Nordic Casemix Centre. Provider of the NordDRG casemix engine and supporting tools. WHO and the WHO-FIC Network are leading the adaptation of NordDRG to ICD-11 and ICHI inputs.

Polyhierarchy. An organizational structure in which an entity can have more than one parent. The ICD-11 Foundation is polyhierarchical, allowing entities to sit under more than one classification path (a gastric cancer can sit under both "cancer" and "gastrointestinal disease").

Postcoordination. The combination of a stem code with one or more extension codes to express clinical detail. Distinct from pre-coordination, where the same clinical idea is expressed as a single concept.

Pre-coordination. Expression of a clinical idea as a single concept (e.g. "Gastric cancer stage 2 grade 2" as one code). Distinct from postcoordination.

Proposal platform. WHO open platform at icd.who.int/dev11 for submitting and reviewing content proposals.

Reference Guide. The authoritative companion to ICD-11, setting out coding rules, classification structure, mortality and morbidity rules, the use of extension codes and postcoordination, and the maintenance process.

Routine production. Ongoing, mandatory, or nationally scaled generation of ICD-11-coded records in a national system, as distinct from a pilot, a launch, a training event, the availability of a tool or language version, or a one-off retrospective recoding.

Shoreline. The resolution limit of the MMS linearization. Clinical detail finer than the shoreline exists in the Foundation but is not counted separately in the MMS.

SMART guidelines. WHO Standards-based, Machine-readable, Adaptive, Requirements-based, Testable guidelines: WHO normative content in computable form.

SSSOM. Simple Standard for Sharing Ontological Mappings, a standard for the exchange and integration of semantic entity mappings.

Stem code. A base code from the classification, which can stand alone or be combined with extension codes via postcoordination.

TMRG. Traditional Medicine Reference Group.

Transition. The phase of moving from an existing ICD system (typically ICD-10 or earlier) to ICD-11, including all preparatory and implementation activities.

URI. Uniform Resource Identifier. Every ICD-11 entity carries a stable URI, independent of versioning, allowing unambiguous reference across systems and time.

Update cycle. ICD-11 is maintained on an annual update cycle through the WHO-FIC Network and the Proposal Platform.

Verbal autopsy. A standardized interview-based method for ascertaining cause of death where medical certification is not available. The WHO Verbal Autopsy Instrument is the standard tool, with a cause list matched to ICD-11.

WHO Academy. WHO's learning institution, supported development of ICD-11 e-learning module.

WHO-FIC. WHO Family of International Classifications and Terminologies. The integrated family comprising ICD-11, ICF, ICHI, and derived classifications including ICD-O.

WHO-FIC Network. Network of WHO Collaborating Centres and reference groups that coordinate the development, implementation, and maintenance of WHO-FIC classifications.

WHODAS. WHO Disability Assessment Schedule. Instrument for calculating a summary functioning score based on ICF categories.

WONCA. World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians. Partner in the development of ICD-11 primary care content.

Annex 5 Resources and where to find them

This Annex consolidates the resources referenced throughout the Guide.

Primary entry points

- **icd.who.int** – The main entry point for ICD-11. Browser, Coding Tool, Reference Guide, releases, supporting documents.
- **icd.who.int/icdapi** – The ICD-11 API home page, with documentation, integration patterns, and registration for API keys.
- **icd.who.int/dev11** – The open Proposal Platform for content contributions.
- **icd.who.int/dev11** – The ICD-11 Maintenance Platform, including the Translation Tool.
- **icd@who.int** – Direct contact for the WHO Classifications and Terminologies Unit.

WHO institutional resources

- **who.int/standards/classifications** – WHO Family of International Classifications and Terminologies, the parent page.

- **who.int/standards/classifications/classification-of-diseases** – The ICD-11 page.
- **who.int/standards/classifications/international-classification-of-functioning-disability-and-health** – ICF.
- **who.int/standards/classifications/international-classification-of-health-interventions** – ICHI.
- **who.int/standards/classifications/frequently-asked-questions/icd-11-implementation** – Implementation FAQ.
- **academy.who.int** – WHO Academy, including ICD-11 training modules.
- **who.int/about/structure/who-fic** – WHO Collaborating Centres directory (consult the relevant regional office for current Centre listings).

Implementation resources

- **The Implementation Hub** – WHO-maintained resource hub for ICD-11 implementation: country case studies, technical resources, regional toolkits. (Linked from icd.who.int.)
- **The clinician-facing pages** – Implementation FAQ, clinician documentation hub, specialty-specific resources. (Linked from icd.who.int.)
- **Regional WHO offices** – AFRO, AMRO/PAHO, EMRO, EURO, SEARO, WPRO. Operational entry points for in-country implementation work.
- **WHO-FIC Mapping Task Force** – whofic.mtf@gmail.com. Corrections and suggested additions to the ICD-10/ICD-11 Mapping Tables are sent here as part of the crosswalk quality assurance process.

Tooling-specific resources

- **DORIS** – Available at icd.who.int.
- **ANACoD-3** – Available at icd.who.int.
- **CodEdit** – Available at icd.who.int.
- **CodeFusion** – Available at icd.who.int/docs/codefusion/.
- **ICD-FIT** – Available at ICD-FIT (registration necessary)
- **WHO Verbal Autopsy Instrument** – Available at who.int.
- **Translation Tool** – Available at icd.who.int/dev11/f/en/Multilingual (registration required).

Standards and interoperability

- **HL7 FHIR** – hl7.org/fhir
- **SSSOM (Simple Standard for Sharing Ontological Mappings)** – mapping-commons.github.io/sssom
- **WHO-FIC Classifications and Terminology Mapping: Principles and Best Practice** – https://cdn.who.int/media/docs/default-source/classification/who-fic-network/whofic_terminology_mapping_guide.pdf

Partner organizations

- **WONCA International Classification Committee** – For primary care content.
- **Orphanet** – For rare disease classification.
- **HL7 International** – For FHIR alignment and the WHO–HL7 connectathon work.
- **Nordic Casemix Centre** – For NordDRG engine and tooling, adapted by WHO and the WHO-FIC Network for ICD-11 and ICHI inputs.

Annex 6 Consolidated bibliography

References cited in Parts A, B, and C, consolidated and renumbered. Where references include DOI or URL, these are the most reliable access points.

1. World Health Assembly, 72nd Session. Resolution WHA72.15: Eleventh revision of the International Classification of Diseases. Geneva: World Health Organization; 2019.
2. ICD-11 implementation status; https://www.who.int/standards/classifications/classification-of-diseases
3. World Health Organization. *WHO releases 2025 update to the International Classification of Diseases (ICD-11)*. 14 February 2025. https://www.who.int/news/item/14-02-2025-who-releases-2025-update-to-the-international-classification-of-diseases-(icd-11)
4. World Health Organization. ICD-11 language availability and release notes. https://icd.who.int/
5. Eastwood CA, Southern DA, Doktorchik C, Khair S, Cullen D, Boxill A, Maciszewski M, Otero Varela L, Ghali W, Moskal L, Quan H. Training and experience of coding with the World Health Organization's International Classification of Diseases, Eleventh Revision. *Health Information Management Journal* 2023;52(2):92–100. doi:10.1177/18333583211038633. https://pmc.ncbi.nlm.nih.gov/articles/PMC10170554/
6. Lee H, Kim S. Impact of the ICD-11 on the accuracy of clinical coding in Korea. *Health Information Management Journal* 2023;52(3):221–228. doi:10.1177/18333583221095147
7. Ibrahim I, Alrashidi M, Al-Salamin M, Kostanjsek N, Jakob R, Azam S, Al-Mazeedi N, Al-Asoomi F. ICD-11 Morbidity Pilot in Kuwait: Methodology and Lessons Learned for Future Implementation. *International Journal of Environmental Research and Public Health* 2022;19(5):3057. doi:10.3390/ijerph19053057
8. Ooi ECW, Md Isa Z, Abdul Manaf MR, Ahmad Fuad AS, Sidek HF, Mustapa MN, Ahmad A, Ali FZ, Kharie MF, Shith SA, Mohd Marzuki N. From data collection to downstream data use: Malaysia's experience with ICD-11. *Health Information Management Journal* 2025;54(3):325–332. doi:10.1177/18333583241295717
9. Lee H, Lee Y. A Korean field trial of ICD-11 classification under practical clinical coding rules to clarify the reasons for inconsistencies. *Health Information Management Journal* 2025;54(3):303–310. doi:10.1177/18333583251319371
10. Xu Y, Zhou J, Li H, Cai D, Zhu H, Pan S. Improvements in Neoplasm Classification in the International Classification of Diseases, Eleventh Revision: Systematic Comparative Study With the Chinese Clinical Modification of the International Classification of Diseases, Tenth

Revision. *Interactive Journal of Medical Research* 2024;13:e52296. doi:10.2196/52296. https://pmc.ncbi.nlm.nih.gov/articles/PMC10960217/

11. Zhang M, Wang Y, Jakob R, Su S, Bai X, Jing X, Xue X, Liao A, Li N, Wang Y. Methodologies and key considerations for implementing the International Classification of Diseases-11th revision morbidity coding: insights from a national pilot study in China. *Journal of the American Medical Informatics Association* 2024;31(5):1084–1092. doi:10.1093/jamia/ocae031
12. World Health Organization India. *Strengthening universal health coverage: NHA and WHO collaboration on ICD-11 and ICHI rollout under PMJAY*. 11 August 2022. https://www.who.int/india/news-room/detail/11-08-2022-strengthening-universal-health-coverage
13. Broadwin C, Zeidan W, Siam M, Kostanjsek N, Doctor HV, Aly EA, Shraim M, Ballout G, Seita A. Advancing Refugee Health Data Management: The Implementation of ICD-11 in UNRWA's Primary Care System. *International Journal of Environmental Research and Public Health* 2024;21(9):1121. doi:10.3390/ijerph21091121. https://www.mdpi.com/1660-4601/21/9/1121
14. WHO Classifications and Terminologies Unit, operational metrics, 2025–2026. https://www.who.int/standards/classifications/classification-of-diseases
15. Ministry of Health, Seychelles. Annual Vital Statistics Report 2023. Victoria: Ministry of Health; 2024. https://www.health.gov.sc/wp-content/uploads/2024/05/Annual-Vital-Statistics-Report-2023.pdf; Annual Vital Statistics Report 2024. Victoria: Ministry of Health; 2025. https://www.health.gov.sc/wp-content/uploads/Annual-Vital-Statistics-Report-2024.pdf
16. Ministère de la Santé Publique, Cameroun. Rapport national sur la mortalité hospitalière 2025 (certification, codage CIM-11, DORIS et ANACoD-3 dans 31 formations sanitaires). Yaoundé: Ministère de la Santé Publique; 2025. https://biblio-minsante.cm/server/api/core/bitstreams/545ca98a-adab-492e-b1b0-36897ba13842/content; Ministère de la Santé Publique, Cameroun. Classification internationale des maladies, 11e révision: version abrégée bilingue à quatre caractères. Yaoundé; 2023. https://biblio-minsante.cm/server/api/core/bitstreams/d9787905-0bac-4859-a349-81015a9b1d45/content
17. Les causes de décès selon la CIM-11 dans le DHIS2: intégration de l'API CIM-11 et de DORIS au Sénégal. DHIS2 Community, conference report; May 2026. https://community.dhis2.org/t/les-causes-de-deces-selon-la-cim-11-dans-le-dhis2/72150
18. Toelsie J, Mendes R, Dhanpat R, Ori R, Adams R, van Gool C, Alsokhn C, Kontio K, Ouattara Y. Digital transformation of mortality reporting using an ICD-11 integrated death certificate system in Suriname. Revista Panamericana de Salud Pública 2025;49:e85. doi:10.26633/RPSP.2025.85. https://pmc.ncbi.nlm.nih.gov/articles/PMC12302431/; Ministry of Health, Suriname. Digital Health Suriname: Information Systems for Health. Paramaribo; 2025. https://www.is4h-suriname.sr/wp-content/uploads/2025/11/Digital-Health-Suriname-v04-ENG.pdf
19. Republic of Kenya. Social Health Insurance Regulations, 2024 (Legal Notice No. 49 of 2024), Regulation 58(4) and Form 3. Nairobi: Kenya Gazette; 8 March 2024. https://new.kenyalaw.org/akn/ke/act/ln/2024/49/eng%402025-02-28/publication; Ministry of Health, Kenya. Standard Operating Procedures for Medical Certification of Cause of Death and ICD-11 Coding. Nairobi; September 2025. https://health.go.ke/sites/default/files/2026-06/Standard%20Operating%20Procedures%20%28SOP%27s%29%20for%20MCCoD%20and%20%20ICD%2011%20Coding.pdf

20. Department of Health Services, Ministry of Health and Population, Nepal. Annual Health Report 2080/81 (2023/24). Kathmandu; 2025. https://hmis.gov.np/media/40/Annual-Health-Report-208081_compressed.pdf; Health Management Information System reporting form HMIS 9.4. https://giwmscdnone.gov.np/media/pdf_upload/HMIS-Reporting-form-94_ydoy6h8.pdf

21. Lyall K, Roberge I, Yang W, Baker S, Denny K. ICD-11 in Canada: Leveraging crosswalks to evaluate adoption, impact and transition strategies. *Health Information Management Journal* 2025. doi:10.1177/18333583251392355; Canadian Institute for Health Information. *Assessing ICD-11 Implementation in Canada: Leveraging Crosswalks to Evaluate Adoption Impacts and Transition Strategies*. 2024. https://www.cihi.ca/

22. Boussat B, Jakob R, Boyer L, Romano PS. Strategic pathways to International Classification of Diseases, 11th Revision, adoption in France and the United States. *Health Affairs Scholar* 2025;3(7):qxaf099. doi:10.1093/haschl/qxaf099

23. Ahmad Fuad AS, et al. *ICD-11 Certification of Coders Training Programme: Experience Sharing by the Ministry of Health Malaysia*. 2024. https://www.researchgate.net/publication/383647678

24. Ibrahim I, Kostanjsek N, Jakob R. Rethinking ICD-11 training: Why and how. *Health Information Management Journal* 2025;54(1):3–13. doi:10.1177/18333583241295459

25. Mugisha M, Byiringiro JB, Uwase M, Abizeyimana T, Ndikubwimana B, Karema N, Kayiganwa M, Tran Ngoc C, Kostanjsek N, Celik C, Marc D, Twizere C, Tumusiime D. Integration of International Classification of Diseases version 11 Application Program Interface (API) in the Rwandan Electronic Medical Records (OpenMRS): findings from two district hospitals in Rwanda. *Studies in Health Technology and Informatics 2020*. doi:10.3233/shti200549

26. Office for National Statistics. Impact of the implementation of IRIS software for ICD-10 cause of death coding on mortality statistics, England and Wales. 8 August 2014. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/impactoftheimplementationofirissoftwareforicd10causeofdeathcodingonmortalitystatisticsenglandandwales/2014-08-08

27. Office for National Statistics. Impact of the implementation of IRIS software for ICD-10 cause of death coding on stillbirth and neonatal death statistics: England and Wales. 2016. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/impactoftheimplementationofirissoftwareforicd10causeofdeathcodingonstillbirthandneonataldeathstatistics/englandandwales

28. Office for National Statistics. Cause of death coding in mortality statistics, software changes: January 2022. 2022. https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/causeofdeathcodinginmortalitystatisticssoftwarechanges/january2022

29. Office for National Statistics. Comparability ratios: what they are and when to use them. UK Government Web Archive. https://webarchive.nationalarchives.gov.uk/ukgwa/20160108084125/http://www.ons.gov.uk/ons/guide-method/classifications/international-standard-classifications/icd-10-for-mortality/comparability-ratios/index.html

30. Eastwood CA, Southern DA, Khair S, Doktorchik C, Cullen D, Ghali WA, Quan H. Field testing a new ICD coding system: methods and early experiences with ICD-11 Beta Version

2018. BMC Research Notes 2022;15:343. doi:10.1186/s13104-022-06238-2. https://bmcresnotes.biomedcentral.com/articles/10.1186/s13104-022-06238-2

31. Wiebe N, Quan H, Southern DA, Doktorchik C, Eastwood C. Describing agreement in the main condition coding field using Canadian ICD-11 inpatient data. International Journal of Population Data Science 2021;6(1):1397. doi:10.23889/ijpds.v6i1.1397. https://pmc.ncbi.nlm.nih.gov/articles/PMC8532191/

32. Khair S, Quan H, Eastwood CA, Doktorchik C, Zhao J, Losev T, Denny K, Baker S, Lu M. Paving the way: a cost and outcome evaluation framework for the transition from the 10th to the 11th version of the International Classification of Diseases. Perspectives in Health Information Management 2020. https://ahisp.ahima.org/page/paving-the-way-a-cost-and-outcome-evaluation-framework-for-the-transition-from-the-10th-to-the-11th-version-of-the-international-classification-of-disease

33. Azadmanjir Z, Sheikhtaheri A, Zarei J, Golpira R, Bakhshandeh H, Vahedi A, Hashemi N. A study on initial productivity trend in the transition of the ICD-10 to ICD-11 morbidity coding in Iran. Informatics in Medicine Unlocked 2024;44:101440. doi:10.1016/j.imu.2023.101440. https://www.sciencedirect.com/science/article/pii/S2352914823002861

34. A Practical Implementation Guide to ICD-11 for Mortality. June 2024. Support acknowledged from Bloomberg Philanthropies Data for Health through the CDC Foundation. https://data4healthlibrary.org/sites/default/files/2024-08/ICD11%20Implementation%20Guide_061124.pdf

35. World Health Organization. Classifications: frequently asked questions; https://www.who.int/standards/classifications/frequently-asked-questions/; (accessed 2 November 2026).

36. World Health Organization. ICD-API documentation: release notes for version 2.6; FHIR support (prerelease); local deployment; API contact. https://icd.who.int/docs/icd-api/ReleaseNotes-Version2.6/ ; https://icd.who.int/docs/icd-api/ICDAPI-FHIR-Support/ ; https://icd.who.int/docs/icd-api/ICDAPI-LocalDeployment/ ; https://icd.who.int/icdapi/Home/About (accessed 2 November 2026).

37. World Health Organization Evaluation Office. Frequently asked questions. https://www.who.int/about/evaluation/frequently-asked-questions (accessed 2 November 2026).

38. Steps for Translating ICD-11 and Customizing the Tools. Technical working instructions, 5 June 2026.

39. Kostanjsek N. ICD-11 piloting and implementation. Regional technical presentation, 2025.

.



Classifications and Terminologies
Department of Data, Digital Health, Analytics and AI
World Health Organization · 20 Avenue Appia · 1211 Geneva 27 · Switzerland
icd@who.int · icd.who.int