# Introduction to ICD

The **ICD-11** (International Classification of Diseases, 11th Revision) has been updated to reflect advancements in science and medicine over the past 30 years. Designed for both **digital and paper-based systems**, ICD-11 can be accessed online or downloaded for free and in multiple languages. The system allows **dual coding** for traditional and mainstream medicine, and incorporates a functioning score based on the **WHO Disability Assessment Scheme (WHODAS)**.

For the first time, ICD-11’s revision process was open to the public, involving hundreds of specialists from over 270 institutions across 99 countries. These experts contributed through an online platform, promoting transparency and collaboration. The **Reference Guide** provides comprehensive instructions, explains changes from ICD-10, and allows countries to add national guidelines while maintaining global consistency in coding and reporting.

ICD-11 is more user-friendly than previous versions, improving data capture and enabling countries to monitor and improve health outcomes with lower costs.

# Why ICD-11?

The **ICD-11** has been developed to improve the accuracy and comparability of **health data** at an international level. Currently, **70% of global health expenditures** rely on ICD coding for reimbursement and resource allocation, and **110 countries** use ICD data for **cause-of-death reporting**. ICD-11 addresses the need for a robust classification system to support the critical use of such data.

Key benefits of ICD-11 include:

* **Easier use and better coding quality** at a lower cost.
* An **updated structure** reflecting the latest scientific advances.
* Enhanced functionality, including dedicated sections for **antimicrobial resistance**, **patient safety**, and a more detailed representation of **injuries, cancers, devices**, and other health-related areas.
* Simple integration into **software systems**, enabling **clinicians** to code without disrupting their workflow.
* A comprehensive **implementation package** that includes tools and guidance for adopting ICD-11.

ICD-11 replaces the outdated **ICD-10**, adopted in 1990, which has led to **divergent local modifications** and a lack of uniformity. The new system offers a more **standardized**, globally consistent approach, revolutionizing how conditions are classified and coded. The **World Health Assembly** adopted ICD-11 in **May 2019**, with implementation starting on **January 1, 2022**.

# The ICD-11

**ICD-11** is both a **revised classification system** and a **digital platform**.

**1.1.1. Revised Classification System:**

* **ICD-11** incorporates more than just diseases—it includes **disorders, injuries, symptoms, substances, devices**, and more, covering **55,000 entities** and over **120,000 clinical terms**.
* It is based on current science, expert input, and public consultation, making it more comprehensive than ICD-10, which is over 28 years old.
* The **coding system** offers more flexibility, allowing health conditions to be described at varying levels of detail, from simple to complex, by combining codes.

**1.1.2. Digital Format:**

* ICD-11 is fully **digital** and integrates with **local health information systems** without adding extra administrative layers. It can be used online or offline and provides an **API** for core functionalities, making it compatible with **e-Health** platforms.
* Clinicians no longer need to search or memorize codes—typing a term into the **Coding Tool** quickly directs them to the correct ICD code.
* The main innovation is the **Foundation Component**, a database that includes all ICD entities, structured to support **point-of-care data capture** and integration into health information systems.
* A **Content Model** standardizes how ICD entities are defined, facilitating the use of the system in computerized environments, while **extension codes** allow detailed descriptions of diseases without expanding content volume unnecessarily.

# Advantages of ICD-11

**1.2.1. Up-to-Date Scientific Knowledge**

* Medicine evolves rapidly, and ICD-11 reflects these advancements by capturing **modern clinical details**. Since its inception in 1900, ICD has expanded significantly, growing from **179 categories** to over **55,000 unique entities** in ICD-11, derived from the latest scientific knowledge.
* ICD-11’s flexibility allows for coding millions of clinical terms, making it suitable for a wide range of applications, including **patient safety, population health reporting, integrated care**, and **strategic health planning**.
* Its **ontological structure** preserves data integrity, enabling meaningful aggregation for various uses of health information.

**1.2.2. Improvements and Additions**

ICD-11 includes many enhancements, based on **over 10,000 revision proposals** and extensive collaboration with healthcare professionals. Some major improvements include:

* **Primary care concepts** tailored for settings where simple diagnoses are made.
* A revamped section for documenting **patient safety events**, aligning with WHO’s patient safety framework.
* New coding for **Antimicrobial Resistance (AMR)**, addressing a gap in ICD-10 and supporting data collection aligned with WHO's **GLASS** system.
* Updated **HIV coding**, adding subdivisions and simplifying codes, including distinctions like "HIV with malaria or tuberculosis."
* A **Functioning Assessment** section allows monitoring of functional status before and after interventions, with the use of tools like **WHODAS 2.0** or the **WHO Model Disability Survey** for generating scores.
* Collaboration with **OrphaNet** has led to the inclusion of rare diseases, each linked with a **Uniform Resource Identifier (URI)**, supporting research and epidemiological tracking.
* The URI enables linkage to other terminologies and information exchange systems.
* A new **Supplementary Chapter for Traditional Medicine** addresses the integration of traditional medicine practices (e.g., from China, India, Japan, and Korea) into standardized data capture, enabling **dual documentation** alongside mainstream medicine and **international comparisons**.

# Ease of Use and Multiple Applications of ICD-11

**1.2.3. Ease of Use**

* ICD-11’s **digital infrastructure** simplifies coding. Its **Coding Tool** can be embedded in local health IT systems, allowing clinicians to search for diagnoses using **natural language** and linking it to the correct code without needing to memorize technical codes.
* This integration reduces steps in documentation, improving user compliance and lowering training costs and time.
* The **ontological core** enables quick updates for new terms, synonyms, and user guidance across different language versions.
* Specially customized versions (e.g., for **mental health**) make it easier for departments with focused practices to use. For **paper-based systems**, printed indexes or subsets allow easy access to codes.

**1.2.4. Multiple Applications to Meet Health System Priorities**

* While ICD was initially designed for **mortality data**, its usage expanded to **morbidity data** over time. ICD-11 was developed with this dual function in mind and addresses modern public health needs for data.
* Applications of ICD-11 include:
  + **International mortality and morbidity reporting**
  + **Primary care** across various resource settings
  + **Epidemiology and population health**
  + **Research**
  + **Health system performance** and **patient safety**
  + **Activity-based funding** (e.g., casemix)
* ICD-11 can capture health information at varying levels of detail, from broad overviews to specific data. This flexibility is enabled by combining **stem codes** with optional **extension codes** (e.g., for anatomy, severity, injury, etc.).

# The ICD-11 Package and Components

**1.2.5.1. ICD-11 Browser**

* The **web-based browser tool** allows users to search ICD-11 terms using concepts like **anatomy** or other elements.
* It provides **context-sensitive help** and includes a **proposal platform** where users can contribute suggestions for updates, which are reviewed annually.

**1.2.5.2. ICD-11 Coding Tool**

* The **Coding Tool** dynamically updates as the user types in a term (e.g., "neoplasm").
* It generates outputs such as a **word list**, **matched entities** linked to the Browser, and associated **chapters** to help users find the appropriate code.

**1.2.5.3. Foundation Component (Index, Guidance)**

* The **Foundation Component** is a comprehensive database of all ICD entities, including **diseases, disorders, injuries**, and their relationships.
* It is the source from which the **Tabular List** and **Alphabetic Index** are derived and is structured to support **point-of-care data capture**.
* This component standardizes the terminology and structures necessary for integration with **digital health information systems**.

**1.2.5.4. Linearization for Mortality and Morbidity Statistics (MMS)**

* **Linearization** are subsets derived from the Foundation Component used for specific purposes, such as **mortality and morbidity statistics** or specialized fields (e.g., **Mental Health**, **Infectious Diseases**).
* These subsets are comparable to classical print versions (e.g., the **ICD-10 Tabular List**) and can be tailored to different **granularity levels** and use cases, ensuring consistent use of ICD across applications like **primary care, clinical care**, or **research**.

# Translation Tool and API Services

**1.2.5.5. Translation Tool**

* The **Translation Tool** is part of the ICD-11 Maintenance Platform, enabling specific language centers to create accurate translations of ICD-11 that remain faithful to the original content.
* It notifies registered translators about updates and provides outputs in multiple languages, enhancing the tool's functionality and accessibility.
* Users must register with WHO HQ to ensure transparency and verification in the translation process.
* As of the current writing, the most advanced translations of ICD-11 are available in **Spanish**, followed by **Chinese**, with several other languages in progress.

**1.2.5.6. Application Programming Interface (API Services)**

* The **ICD API** offers programmatic access to the International Classification of Diseases, allowing users to integrate ICD functionalities into their applications.
* Users need to register on the ICD website to gain access to the API, where they can find up-to-date documentation and manage their API keys for usage.

# Digital Health (eHealth) Compatibility and Interoperability with Health Information Systems

* The **ICD-11 Foundation** is designed to facilitate standardized **point-of-care data capture**, integrating content that replicates the functions of the **Tabular List** and **Alphabetic Index** from ICD-10. This includes terminology for diseases, health conditions, and structures necessary for integration into digital health information systems.
* Each ICD-11 entity is linked to a unique **Uniform Resource Identifier (URI)**, ensuring easy access to current ICD content and enabling connections to external terminologies. The URI remains consistent with the entity, even through updates.

**Key Features for Enhanced Coding and Interoperability:**

* **Implementation Assessment and Training Tool**: Supports coding of diagnostic terms in both ICD-10 and ICD-11, available in multiple languages.
* **Web Services**: Enable comprehensive search and coding functionality integrated into any software.
* **Online Services**: Allow ICD-11 usage without local software requirements, accessible at [ICD API](https://icd.who.int/icdapi).
* **Offline Services**: Provide the same functionalities as online services and can be downloaded for local use, with regular updates available through the internet.
* **Output Tools**: Facilitate file production in various formats (e.g., **CSV**, **Classification Markup Language (ClaML)**, **API**).
* **Transition (Mapping) Tables**: Help view disease classification in ICD-10 format and convert data for comparison with ICD-11.
* **Proposal and Commenting Tool**: Allows user participation in suggestions and discussions regarding ICD-11.
* **Notification Settings**: Keep users informed about implemented changes.

# Linkages with Other Classifications and Terminologies

The **ICD-11 Foundation** integrates or establishes connections with various classifications and terminologies, enhancing its utility and interoperability. The key linkages include:

* **International Classification of Diseases for Oncology (ICD-O)**
* **International Classification of External Causes of Injury (ICECI)**
* **International Classification of Functioning, Disability and Health (ICF)**
* **International Classification of Primary Care (ICPC)**
* **Other terminologies**, including **OrphaNet** and **SNOMED-CT**.

**Key Example:**

* The ICD-11 features an embedded section on **Functioning** within **Chapter 24** (Factors influencing health status or contact with health services) that links directly to the **ICF**. This allows for assessing an individual’s functioning in daily life through specific questions and enables the calculation of a summary score.

**Collaborative Efforts:**

* The **World Organization of Family Doctors (WONCA)** has collaborated with WHO to address gaps from previous ICD revisions concerning primary care and family medicine. Future iterations of **WONCA’s ICPC** will share a unified set of categories with ICD-11, enhancing cross-sectoral comparability among family medicine, primary care, and secondary care hospital activities.

# Maintenance of ICD

Maintaining the **ICD-11** is essential for adapting to the evolving medical field and ensuring international consistency. Here’s an overview of the maintenance process:

**1.2.8.1. Oversight of the Maintenance Process**

* The **maintenance of ICD-11** is a transparent international activity led by WHO, alongside the **Network of the WHO Family of International Classifications (WHOFIC)**, which includes country representatives responsible for national classification activities.
* **Advisory Bodies**:
  + **Classification and Statistics Advisory Committee (CSAC)**: The principal advisory committee that also provides updates for other WHO classifications, such as the **International Classification of Functioning, Disability and Health (ICF)** and the **International Classification on Health Interventions (ICHI)**.
  + **Medical and Scientific Advisory Committee (MSAC)**: Composed of approximately 18 experts from various scientific disciplines, advising the CSAC on medical and scientific content.
  + **Mortality Reference Group (MRG)** and **Morbidity Reference Group (MbRG)**: These groups consist of WHOFIC members who provide subject-specific advice on mortality and morbidity classification and coding.

**1.2.8.2. Proposal Platform**

* The **internet-based proposal platform** used during the development of ICD-11 will continue to facilitate ongoing updates throughout its lifecycle.

**Advantages of the Proposal Platform**:

* Open to all interested parties for making proposals and commenting on others' contributions.
* Available for review year-round rather than on set dates.
* Supports digital curation to enhance discussions and reviews.
* Final inclusions are provided in both digital and printable formats.
* Enables translation into multiple languages from a single platform, accommodating a wider range of users.
* Facilitates international collaboration by allowing WHO Member States to share real-world experiences and expertise.

**1.2.8.3. Updating**

* Countries may identify needs for specific details or additions to ICD-11 based on local contexts, but such updates will undergo the same international process to avoid regional divergences and maintain a unified classification system.
* These additions will ideally be incorporated into the **Foundation Component** before implementation in the requesting country.
* Countries may need to establish standards or guidelines for using specific ICD-11 features to ensure consistent coding and reporting of mortality and morbidity both nationally and internationally.

For further information on processes, structures, and content, the **ICD-11 Reference Guide** is available for reference.

# Moving Towards ICD-11

The **World Health Organization (WHO)** aims to design **ICD-11** as an updated classification system that accurately reflects current healthcare practices and effectively captures health concepts compatible with modern information systems. This transition will improve data quality and usability for population health initiatives.

While transitioning to a new classification system can pose challenges and face resistance, the long-term benefits include better identification of macro-trends, trend spotting, and reduced overheads in clinical settings. Early engagement in the transition, especially through piloting and testing, enables healthcare organizations to better identify local needs, anticipate disruptions, and design effective change management strategies.

**2. Implementing or Transitioning from Existing Systems of ICD**

Countries currently using **ICD-10** or earlier modifications are considered **legacy countries**, and their transition to **ICD-11** will take place over a **2-3 year** period. However, the exact timeline may vary based on local health systems, infrastructure, and translation needs. Countries without existing ICD systems can opt for a **fast-tracked implementation** of ICD-11, avoiding the need to replace existing infrastructures.

**2.1. Implementation Considerations for ICD-11**

**2.1.1. Mortality Coding**

* Mortality data has been standardized internationally for many years, and maintaining this standard during the transition to ICD-11 involves several straightforward steps.
* The **minimum reporting requirement** for mortality will be at the **stem code** level.
* Countries currently using automated coding (e.g., Iris ICD cause-of-death selection coding) can continue to report underlying causes of death, aiding international comparability.
* Previous transitions from ICD-9 to ICD-10 in countries like **Australia**, **Germany**, and the **US** provide useful insights for other nations.
* The **WHO Mortality Reference Group** is actively updating decision tables and mortality rules to assist with local uptake of ICD-11.

**2.1.2. Morbidity Coding**

* Unlike mortality coding, morbidity coding has evolved diversely at the national level to address specific healthcare needs and practices.
* Legacy countries will require a **tailored approach** to transition to ICD-11, considering existing reporting rules and coding variations.
* The minimum requirement for morbidity reporting will also be stem codes, accompanied by a description of the main condition as detailed in the **ICD-11 Reference Guide**.
* Future international reporting could evolve to include more detailed conditions beyond the stem code as the full potential of ICD-11 is leveraged.
* Consistent and relatable casemix systems can be developed if national classification systems adhere to standardized diagnosis coding rules.
* Widespread adoption of ICD-11 for morbidity data collection will support international tools for analysis and reporting, such as patient safety and quality measurement.
* **ICD-11** is designed to be flexible and adaptable for morbidity coding, which should minimize the need for national modifications.
* **Dual coding studies** during the transition will help assess the completeness of ICD-11, with local adaptation needs directed back through the **ICD-11 proposal platform** to maintain international standardization.
* Specific settings may utilize ICD-11 for patient safety reporting systems, traditional medicine applications, or to provide diagnostic guidance in mental health contexts.

**2.2. Looking to Early-Adopters and Pilot Testing**

Some countries have begun transitioning to **ICD-11**. For instance, in **2017**, the **Pan American Health Organization (PAHO)**, in collaboration with **WHO**, conducted systematic self-assessments in **15 countries** to identify their classification requirements and current status in transitioning from **ICD-10** to **ICD-11**. The findings were further refined through workshops in various regions, and the results can be found in **Appendix 1** of this document. While this provides a solid foundation for planning implementation, it is recommended that all countries conduct their own self-assessments.

Centralized pilot testing of **ICD-11** has been executed in all regions using the English version of the **ICD-11 Browser**, alongside educational materials like coding scenarios. This effort included general field testing and evaluation across various countries, yielding results from **28 countries**, with **61,065 code assignments** and feedback from **600 participants** who rated the system. The insights gathered have been utilized to refine the structure and content of **ICD-11** and to inform other countries about their transition needs.

Since early **2019**, early adopters across different regions have commenced the implementation of **ICD-11**.

**2.3. Stakeholder Involvement and Agreement**

**WHO** has initiated stakeholder engagement in various areas, initially focusing on disseminating information about **ICD-11**, providing hands-on experience with the browser and coding, and evaluating the costs and benefits associated with the transition. Dedicated training workshops on the use of **ICD-11** have been organized in all **WHO** regions, with ongoing individual support to facilitate implementation in member states.

At the national or regional level, stakeholder engagement should begin with responsible parties overseeing the transition process, targeting all levels of implementation. This includes engaging extensively with:

* Coders
* Clinical personnel
* Potential suppliers
* Other countries where implementation is already in progress

**2.4. Key Recommended Actions**

Transitioning to a new classification system requires meticulous planning and should ideally follow a **project management framework**. Given that the responsibility for national **ICD-11** data management and hospital administration varies from country to country, a standard approach cannot be prescribed universally. However, the following recommendations can guide the transition from **ICD-10** to **ICD-11**:

**2.4.1. Establishing a National Centre of Excellence**

Establishing a **National Centre of Excellence** is highly recommended to provide coordination and focused leadership for the transition process. This center could be based in existing **WHO** collaborating centers and should include personnel from relevant agencies and areas of expertise. The benefits of a National Centre include:

* Enhanced visibility and transparency in the transition process.
* Centralized stakeholder engagement to facilitate information sharing about implementation and progress among all involved parties and organizations.

**2.4.2. Maintenance of Existing Systems During the Transition**

It is advisable to maintain the current classification system for a defined period, allowing for an overlap of at least **18 months** with the new system until **ICD-11** is fully integrated into local systems and infrastructure. This approach provides several benefits:

* **Stability of Reporting**: Ensures data continuity during the transition.
* **Impact Assessment**: Allows for transition studies and the evaluation of the effects on longitudinal statistics through data analysis.
* **Dual Coding Studies**: Facilitates data capture for dual coding studies, which can inform workforce change requirements.
* **Crosswalks and Bridge-Coding**: Supports the development of crosswalks between revisions and country modifications, ensuring consistency in time series analysis, casemix systems, and resource allocation.
* **Error Detection**: Helps identify errors or problems during transition and implementation, as well as user issues.
* **Continuity of Trained Coders**: Ensures that trained coders can continue during the transition, facilitating their learning of the new system and the development of new coders.
* **Training Needs Assessment**: Assesses the training needs of managers, physicians, data personnel, and other stakeholders.

**2.4.3. Project Management and Strategic Planning**

To facilitate the transition to **ICD-11**, it is essential to appoint a **designated project manager** along with a **core team** that identifies key individuals and decision-makers for each aspect of the transition project. This team is responsible for comprehensive project planning and oversight, as well as determining readiness and prioritizing actions following self-assessment. The transition should be managed through clearly articulated phases: **pre-transition**, **implementation**, and **post-implementation**.

A **strategic plan** should outline the goals of the implementation and the steps necessary to achieve those goals. This includes the allocation of resources to each step and incorporating a collaborative approach that gathers stakeholder feedback and surveys to assess local needs and cost estimates. The resulting document should provide a timeline for the transition to implementation.

Strategic planning should be informed by requirements and cost-benefit analyses of potential implementation approaches. This includes budget planning for all components and personnel requirements. The plan will also inform the project team about whether the conditions and criteria for a successful transition are met and how to avoid potential pitfalls. If significant obstacles to transition are identified, the project team will prioritize minimum initial implementation phases and create timelines for full implementation.

**2.4.4. Self-Assessment**

Self-assessment is a crucial element of transition planning, especially when upgrading from paper-based systems to the fully digital capabilities of **ICD-11**. This process enables project leaders to gain a clear understanding of what is required for progress, identify potential obstacles, and conduct a ‘before and after’ analysis. Self-assessment is essential for guiding budgetary and personnel needs and accurately estimating timeframes.

As previously noted in this document, a summary of country-level self-assessments conducted in **2018** is presented in **Appendix 1**.

**2.4.5. Crosswalks (Mapping) and Comparability**

The term **crosswalk** refers to the process of identifying equivalent codes between two different classifications (or different editions of the same classification). This is essential for data users interpreting data recorded in various classifications, particularly in longitudinal studies. Crosswalks play a vital role in time series data analysis and in grouping data using **casemix** or **Diagnosis-Related Group (DRG)** software, as each **ICD** version comprises a specific set of disease and intervention codes. Decisions about the use of cluster coding within DRG software may require a review of the DRG grouping logic or necessitate unbundling code clusters.

**Types of Crosswalks:**

1. **Forward Crosswalk**:
   * Uses codes from an earlier classification to map to corresponding codes in a later classification.
   * Useful for grouping old data using new grouper software and comparing reports of mortality or health service use over time.
2. **Backward Crosswalk**:
   * Maps codes from the currently used classification to those from earlier classifications, allowing for the use of a previous version of the grouper or facilitating time-series analysis.
3. **Historical Crosswalk**:
   * Achieves the most appropriate coding and clinical meaning by selecting a code map. This may consist of one or more codes due to changes between classification revisions. While useful for large-scale applications, historical crosswalks should be evaluated on a case-by-case basis for specific data subsets.
4. **Logical (Special Purpose) Crosswalks**:
   * Specifically designed for casemix grouping purposes, linking each code to the most clinically similar code to achieve appropriate DRG assignments.

It is important to note that crosswalks may result in some loss of information, as the precision of **ICD** codes varies between revisions due to the evolution of scientific understanding and classification changes. For instance, the code for "Malignant neoplasm of breast" in **ICD-10** is classified only by site, while in **ICD-11**, it is organized by both site and histopathology. Therefore, caution must be exercised when interpreting health data collected after the implementation of a new revision. Analyses of temporal or regional trends, particularly where multiple classification systems have been used, should carefully track the conditions under study, as demonstrated in dual coding studies.

Importantly, countries transitioning to **ICD-11** should utilize code crosswalks for a suggested period of **two years** before refining their DRG classification systems. For casemix purposes, crosswalks require systematic review, involving repeated scrutiny of backward maps against forward maps to ensure consistency at the DRG level.

**Adjusting Systems:**

As part of the transition, several key adjustments must be considered:

* **Modification of Casemix or DRG Classification Systems**: Any systems in use, especially where DRGs are used for reimbursement purposes, may need consequential modifications.
* **Impact on the Clinical Coder Workforce**: Changes in classification will affect the workforce involved in clinical coding.
* **Effects on Existing Statistical Systems**: Adjustments will be necessary for statistical systems in mortality, hospitals, and primary care.
* **Education and Training**: Comprehensive education and training for clinical coders, clinicians, and other users are essential to ensure a smooth transition and effective use of the new system.

**2.4.6. Dual Coding Studies**

**Dual coding studies** involve comparing mortality or morbidity data derived from coding the same medical episodes using two different versions of the **ICD**. Initially, these studies may require additional time and resources; however, over the long term, they offer valuable insights. They help identify coding variations and predict the impacts on the clinical coder workforce and revenue when introducing a new classification system. Additionally, dual coding studies provide information on how effective crosswalks are for trend analysis and casemix grouping, which is critical for funding and establishing comparability factors in long-term trend analysis.

Automated mortality coding arrangements in many countries facilitate dual coding studies for mortality. In contrast, such arrangements are less common for morbidity reporting, making dual coding studies for morbidity more complex but still feasible.

**2.4.7. Use of ICD-11 with Terminologies and Electronic Health Records**

**ICD-11** can be integrated seamlessly with electronic health records (EHRs) without requiring additional tools or terminologies to record clinical content effectively within clinical workflows. However, if a system uses a third-party terminology for diagnostic and related information, it is possible to set up mappings or links between third-party codes and ICD-11 codes for use in statistical outputs and other analyses.

The development of appropriate links between ICD-11 and third-party terminologies within local systems is crucial. **ICD-11** has been designed to complement existing software and IT systems, thereby supporting electronic health records. Its built-in interoperability features enhance data retrievability and allow for the integration of other functionalities, such as pharmacy and laboratory data.

Modification of health information software systems is essential to accommodate the new structure of ICD-11 codes. Necessary changes include adapting the software to the new ICD-11 code structure, using the coding API (both offline and online, which replaces the index), and ideally incorporating features for clustering.

**2.4.8. Technical Requirements and Lead Time for Health Information System Changes**

The determination of **technical requirements** and **lead times** for implementing health information systems will vary significantly depending on the existing infrastructure, investments made in health systems, and the capabilities of staff. Because of this variability, a one-size-fits-all approach is not feasible. Therefore, technical requirements should be articulated in the site-specific self-assessment and strategic planning conducted by organizations transitioning to **ICD-11**.

To determine the necessary lead time, iterative consultations with local and regional personnel, as well as IT specialists, are crucial. Existing health information systems collecting morbidity and mortality data will need modifications to incorporate ICD-11. This process requires collaboration with system vendors, with whom the **WHO** has been engaging regarding ICD-11 adaptations.

Consideration must be given to the extent of linkages between ICD-11 and other terminologies in local implementations. It is essential to assess whether it is necessary to replicate pre- and post-coordinated codes or clusters to facilitate international comparability. For instance, some countries already collect **“diagnosis timing” flags** (such as "present on admission" and "developed after admission") outside the ICD coding system. While ICD-11 includes these flags as extension codes, countries may choose to continue recording these flags separately and combine them for reporting purposes rather than integrating them directly within the ICD-11 system.

Additionally, there are considerations regarding the need for software to retain even the **Uniform Resource Identifier (URI)** of the terms in electronic records. This would ensure independence from versioning and maintain all clinical details at the source.

The **ICD-11 Coding Tool** plays a significant role in this context. This tool represents a substantial advancement for ICD and provides a solid foundation for implementation across various situations. It replaces the traditional print index as a coding reference and offers considerable flexibility in searching and recording events.

# Appendix - Glossary of Terms

* **API**: **Application Programming Interface**. A set of routines, protocols, and tools for building software and applications.
* **Crosswalks (mapping)**: The term "crosswalk" refers to the process of finding equivalent codes from two different classification revisions or editions, facilitating the interpretation of data recorded in various classifications.
* **CSAC**: **Classification and Statistics Advisory Committee**. A committee that provides guidance on classification and statistical standards.
* **Dual coding or bridge coding**: The collection and comparison of the same mortality or morbidity data episodes coded using two (or more) versions of ICD.
* **ICD10**: The **International Statistical Classification of Diseases and Related Health Problems**, Tenth Revision. An earlier version of the ICD used for health statistics.
* **ICD11**: The **International Classification of Diseases**, 11th Revision. The latest version of the ICD, designed for modern healthcare data classification.
* **ICD11 MMS**: **ICD11 for Mortality and Morbidity Statistics**. The version of ICD11 specifically tailored for mortality and morbidity data collection.
* **ICD Browser**: A web application that allows users to browse through the content of ICD11.
* **ICD Coding Tool**: A web application designed to assist users in searching for and finding the relevant categories within ICD.
* **ICD Foundation**: A multidimensional collection of all entities related to ICD.
* **ICF**: **International Classification of Functioning, Disability and Health**. A classification system for health and disability.
* **ICHI**: **International Classification of Health Interventions**. A classification for health interventions.
* **Implementation**: The process of putting ICD11 into effect as the primary data collection system for mortality and morbidity statistics.
* **Legacy countries**: Countries that currently have an existing ICD data collection system in place.
* **MbRG**: **Morbidity Reference Group**. A group that provides support and guidance on morbidity data.
* **MMS**: **Mortality and Morbidity Statistics**. Data related to mortality and morbidity.
* **Morbidity data**: Information on the presence of disease or adverse health events, including illness, injury, or disability.
* **Mortality data**: Information categorized by age, sex, and cause of death, as reported annually by member states from their civil registration systems.
* **MRG**: **Mortality Reference Group**. A group that provides support and guidance on mortality data.
* **MSAC**: **Medical and Scientific Advisory Committee**. A committee providing expert advice on medical and scientific matters related to ICD.
* **Transition**: The phase of preparing to move from an existing ICD system to a more current revision, encompassing all necessary activities for implementation.
* **Update**: Changes made to content or structure within the lifetime of an ICD revision (e.g., updates within ICD10).
* **URI**: **Uniform Resource Identifier**. A string of characters that uniquely identifies a particular resource.
* **WHOFIC**: **Network of the WHO Family of International Classifications**. A collaborative network aimed at supporting the use and development of international classifications.