WHO-FIC Annual Meeting

16-20 October, Bonn Germany

2023

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Part 1  Committees and Reference Groups Annual Report
Introduction

The Classification and Statistics Advisory Committee (CSAC) was launched at the Mexico Network meeting in 2017. It replaced the Update and Revision Committee. The purpose of the CSAC is to provide strategic and technical advice to WHO and the WHO-FIC Network in keeping its Family of International Classifications up to date in line with current knowledge, and relevant to the purpose for which they were designed. The functions of the CSAC are to maintain the Family of International Classifications, in maintaining policy, and maintaining work. CSAC is co-chaired by Meng Zhang (ICD) and Masahiko Mukaino (ICF). Secretariat support is provided by Brooke Macpherson (ICD) and Paula Tonel (ICF).

Methods & Materials

CSAC work is conducted through the WHO-FIC Maintenance platforms. These are workflow engines designed to facilitate communication within expert workgroups and ensure transparency of processes. Work and communications are also carried out via email, conference calls, and meetings, including during the WHO-FIC Network annual meeting. CSAC activities are carried out in accordance with the WHO-FIC Strategic Work Plan.

ICD

CSAC Small Group

Formed in 2019, the function of the Small Group (SG) is to evaluate proposals on the ICD-11 platform and provide recommendations for CSAC voting. The SG met in Geneva from 21-23 March 2023 to discuss the proposals for the 2023 voting rounds. 127 proposals were reviewed, with the majority (102) going to the CSAC for Round 1 voting. Most had recommendations for acceptance or rejection; only some were put to the CSAC for broader discussion without a recommendation (Table 1).

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<td>Retired by author</td>
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Note this is the final status of the 127 proposals after the SG meeting. Some may have been further referred to other groups for advice or had new proposals created after discussion.

ICF

The CSAC ICF activity was focused on integration of 2019+ approved updates into the new platform.

Implementation of 2019+ approved updates in the new platform

69 update proposals that CSAC ICF had discussed, voted on, and approved between 2018 and 2020 still need to be integrated into the new platform. It is important that these updates are integrated because it will then be possible to release a new version of ICF containing all updates approved up to now.

A screening by the CSAC ICF Secretariat (CSAC-ICF Co-chair, CSAC ICF Secretariat, and WHO) of the 69 updates identified some issues. Some of the issues were related to the fact that the features of the new platform allow to manage the proposed changes in a different way compared to the past; other issues were content issues.

ICD-11 updates 2022

87 proposals were considered by the CSAC ICD voting members in 2022. After voting rounds and the annual meeting, 49 proposals were accepted (46 with modification), 11 were rejected, and 8 referred to WHO (for technical editorial changes or further discussion). At the conclusion of the annual meeting, there were six unresolved proposals; these proposals were held over for voting in 2023. Table 2 shows the full 2022 voting results.

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<td>Referred to WHO (for further discussion)</td>
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<tr>
<td>Referred to WHO (for technical editorial changes)</td>
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The accepted proposals were incorporated into the 2023 release of ICD-11 MMS.

ICD-11 updates 2023

For the first time in 2023, ICD-11 Reference Guide proposals were included in CSAC voting.

104 ICD proposals and 4 Reference Guide proposals were available for round 1 voting by CSAC voting members, which ran from April 20 to June 11.

Round 2 opened on July 12 with 5 extra ICD proposals (n=109) and 51 extra reference guide proposals (n=55). Round 2 closed on August 31.

Any unresolved proposals will be discussed by CSAC at the Annual Meeting.

Acknowledgements

The achievements of the Committee are only made possible by the generous efforts of CSAC members and relative institutions. A special thanks goes to the WHO experts, Network Reference Groups, MSAC and CSAC Small Group for their consideration of proposals and advice.

References

**MRG ANNUAL REPORT 2022-2023**

Authors: Donna L. Hoyert¹, Kathy O’Brien², James Eynstone-Hinkins³

1) NCHS, USA; 2) Statistics Canada, Canada; 3) ABS, Australia

**Abstract.** The Mortality Reference Group (MRG) comprises members from WHO FIC Collaborating Centres and regional offices, with a work program focused on advising on the mortality application of the ICD. In its 25th year, the MRG work program was mostly focused on supporting the transition from ICD-10 to ICD-11 with respect to mortality data.

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**Introduction**

This is the 25th annual report of the Mortality Reference Group (MRG), established at the 1997 meeting of the Centre Heads as part of an updating mechanism for ICD-10. ICD-11 was adopted by the WHA in May 2019. As such, the MRG’s main focus has been on supporting the implementation of ICD-11 throughout 2021-2022. However, ICD-10 is still used in many countries and so the MRG has also provided ICD-10 guidance.

This report describes the background of the MRG and its activities in the 25th year.

**Methods & Materials**

Provisions for the MRG are described in the conduct paper of the WHO-FIC network [here](http://www.who.int/classifications/network/EN_WHOFICNetworkConductPaper.pdf?ua=1), where its objective is to improve international comparability of mortality data by establishing standardized application of the ICD. The MRG was one of the first groups WHO – working with the Centre Heads - established for updating ICD-10 and continues its role with ICD-11. The MRG discusses issues raised in the Mortality Forum or those referred from other sources including the Centre Heads and WHO. The MRG can make decisions regarding the application and interpretation of ICD to mortality and submit a subset as recommendations to the CSAC for a vote on ICD updates and changes.

* See also WHO long-term strategy document (WHO/HST/ICD/ C/97.39) and the Centre Heads’ Report for 1997 (WHO/HST/ICD/C/97.65).

**2023 Meetings**

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**MRG achievements, operations and plans**

In 2022-2023, the MRG continued ongoing discussions, entertained issues referred to the MRG by other groups, and organized issues into themes as part of the MRG work program.

**Major topics discussed in MRG**

- ICD-11 implementation:
  - Working through coding exercises
  - Issues encountered through implementation projects
  - Practical implementation issues such as data structures, storage, analysis and reporting
  - ICD-11 data submission process for WHO
  - Develop reference guide proposals
  - Consideration of 80 CSAC proposals
  - Progressed discussions on other topics
  - Considered proposals relating to SIDS/SUDEI.

**Facilitating discussions**

During the pandemic, the MRG had to meet virtually. This was challenging and slowed progress. Convening small groups to focus on single-topic proved effective when working on short term projects. So, the MRG began to hold monthly virtual meetings. The MRG continued this practice in 2023 to try to better progress key topics. The MRG also participated in face-to-face biannual meetings in 2022-2023.

**Upcoming milestones**

The MRG are expecting to receive queries from Member States once they begin ICD-11 mortality coding. As such, the MRG is working to anticipate and to be ready to respond to queries as they arise. The MRG also wants to be in a position to provide strong advice around use of ICD-11 that will maintain international consistency as countries adopt the classification.

**MRG Workplan**

- Assessing proposals and/or putting forward proposals for updates to ICD-11
- Mapping of ICD-11 with direction from the mapping task force
- Coding, tabulation, and reporting issues
  - Provide advice on coding issues/decisions
  - Advise on tabulation lists
  - Prepare for bridge coding exercises
- Automated coding tools
  - Support efforts to develop automated coding tools
  - Provide input into development of revised decision tables
  - Prepare and code test datasets as required
- Data storage, structures, and metadata issues
  - Consider data structure, storage, analysis and reporting mechanisms
  - Consider IT implications of managing new ICD-11 structures

**Conclusions**

The MRG has dealt with many issues related to updating and clarifying ICD as it applies to mortality classification and coding. Such work continues as countries move toward implementation of ICD-11. So far, attention has focused on transition topics related to the content of the Reference Guide, coding exercises, and aspects of implementation.
Mapping Task Force 2023 Annual Report

Sharon Baker¹, Samson W. Tu², Alana Lane¹, Eva Krpelanova³, and members of MTF
Canadian CC¹, Stanford University CC², USA; WHO, Switzerland³

Abstract. The WHO-FIC Mapping Task Force (MTF) is a collaborative initiative with a term of reference to provide oversight for mapping between ICD versions (e.g., ICD-10 and ICD-11) and eventually mappings between ICD and other terminologies (e.g., SNOMED CT, MedDRA). It will promote internationally agreed upon best practices and standardized methodologies to enable interoperability between different health terminology systems.

Introduction

In January 2023, a Mapping Task Force (MTF) was established based on the recommendation of the WHO-FIC Council meeting at the WHO-FIC Annual Meeting in 2021. The role of the MTF is to (1) serve as an international entity to determine priorities that are needed for mapping, (2) provides advice on use cases for maps ICD and other terminologies, (3) gives recommendations on how to enable information exchange for mapping, (4) facilitates sharing of experience and views among countries or regions about implementation and maintenance of maps, (5) recommends strategies to minimize mapping efforts in the future, for new maps and map maintenance, (6) draws on expertise from the scientific community when needed, and (7) engages in additional special projects at the request of WHO.

More specifically, the MTF is charged with facilitating discussion and coordination of ICD-10 to ICD-11 mapping to avoid duplicated efforts that took place during the ICD-9/ICD-10 transition.

Methods & Materials

Based on collaborating centre’s nominations, WHO appointed 15 members to the MTF, including Eva Krpelanova who serves as the WHO liaison. WHO appointed Sharon Baker from the Canadian CC and Samson Tu from the Stanford CC as co-chairs for two-year terms. Later, Alana Lane from the Canadian CC joined as the secretariat.

The MTF works with online file sharing and via videoconferencing at 2-3 weeks intervals.

The MTF is designed to draw on a pool of subject matter experts on different expertise and use cases and maintain close communication with other CRGs in the WHO-FIC Network. Its role is to provide oversight and advisory functions, without doing the work of terminology mapping itself.

The co-chairs and WHO liaison took advantage of the in-person mid-year meetings in Sydney to meet and to formulate a draft workplan that consolidates prior discussions and informal feedback from the WHO-FIC community. The workplan was presented to the group and underwent significant revision.

Results

The first meetings of MTF were largely devoted to discussion on the scope of MTF’s work, with members describing their CCs’ use cases and priorities for mappings.

Many CCs are interested in mapping their national modifications of ICD-10 to ICD-11 and vice versa. For some, relating SNOMED-CT and ICD-11 is a priority. The Canadian CC has completed a preliminary mapping of ICD-10-CA to ICD-11 MMS and ICD-11 Foundation. (Sharon Baker of the Canadian CC had uploaded a sample of ICD-10-CA-to-ICD-11 maps to MTF’s SharePoint repository.) Mapping of ICD-10-AM and ICD-10-GM to ICD-11 are in the planning stage. MTF has created a collection of slides that describe these national use cases and priorities. A more formal survey has been created and tested and is expected to be distributed to WHO-FIC CCs before the Annual Meeting.

Eva Krpelanova shared details of the SNOMED CT<->ICD-11 Foundation mapping pilot project. The pilot project produced many lessons, chief among them the need for tool support for discovering candidate maps and reviewing them. Detailed documentation outlining mapping methodologies and guidance was developed during the project to support those conducting the mapping.

A priority task that emerged from the MTF group discussions is the validation and enhancement of theWHO maps. Both the Canadian and Japanese mapping efforts found problems in the WHO maps. A subgroup was formed to investigate the criteria for validating the WHO crosswalks. This work will be informed by the use cases collected from the survey, and examples of problems provided by MTF members.

Another priority task for the MTF is to investigate the methods and technologies for automating mapping that can produce candidate maps. A protocol for performing a scoping review of this topic was constructed. However, preliminary work using the search and filtering criteria defined in the protocol suggested that the proposed review topic is too broad. A revised protocol focusing on practical technologies that are more applicable to WHO-FIC mapping requirements is being constructed.

Discussion

Charged with the mission of being a cross-cutting entity whose work involving multiple committees and reference groups across collaborating centres, the MTF is still in the process of defining its workplan, its output, and how it communicates with other WHO-FIC entities. One of the strengths of MTF is that its members are among the most experienced in the WHO-FIC community. On the other hand, participation in MTF is an added responsibility for many members, which limits the extent they can engage in MTF tasks. For it to be successful, MTF must recruit experts for carrying out its mission.

Acknowledgements

The authors would like to thank the members of the Mapping Task Force for their thoughtful insights and contributions throughout the year.
Abstract

In 2022-2023 Informatics and Terminology Committee (ITC) worked on updates of tools and technologies that support the WHO-FIC classifications, the alignment and harmonization of WHO-FIC Foundation content, the integration of ICD-11 and the Mondo disease ontology, and on terminology mappings, especially the technology to support such mappings.

Introduction

The Informatics and Terminology Committee (ITC) seeks to fulfill its mission by providing a forum for WHO headquarters (HQ) developers and collaborating centre representatives to meet and by working on assignments from the WHO HQ, leveraging the expertise of both ITC members and colleagues from other committees and reference groups. The work is governed by the priorities set in the WHO-FIC Strategic Framework and Work Plan. In 2022-23, the work of the ITC focuses on: 1. WHO-FIC platforms and software tools, including the Digital Open Rule Integrated cause of death Selection Tool (DORIS) and APIs; 2. WHO-FIC Foundation alignment and harmonization; 3. Mondo/ICD-11 integration; and 4. mapping methods and technology.

WHO-FIC Foundation Alignment & Harmonization

After the 2022 WHO-FIC Network Annual Meeting, we divided the WHO-FIC Foundation alignment and harmonization work into four tasks:
1. Anatomical mapping - the work on mapping ICF and ICD-11 anatomical entities has resulted in a publication (https://pubmed.ncbi.nlm.nih.gov/37498874/). The mapping between ICD anatomical entities and ICHI targets is being completed. From these maps, it is possible to derive update proposals to the Foundation and potentially to the classifications. A promising approach is to map ICF body structure leaf entities to ICD functional anatomy entities. The result preserves ICF body structure hierarchy while gaining more granular sub-classes. ICD functional anatomy gains some intermediate categories that can be filtered out during linearization.
2. The development of an inventory of possible areas of overlap among the classifications - the team working on this task iteratively developed a protocol for creating an inventory of possible areas of overlap while investigating specific topic areas. They exhaustively enumerated the topical areas in the three reference classifications and assessed areas that might have been missed in early investigations. By the time of the 2023 WHO-FIC Network Annual Meeting, the team expects to have completed the inventory, classified the types of overlap, and investigated some ways of harmonizing the overlapping entities.
3. Update process and criteria - ITC and FDC members reviewed the current ICD and ICF update process and investigated the ways a harmonized WHO-FIC Foundation may impact the process. They suggest that current classification-specific CSACs need to develop a new protocol to coordinate cross-classification discussion, amendment, and voting.
4. Uses cases for cross-classification linkages - ITC and FDC members reviewed several potential use cases for linkages but concluded that none was appropriate. They developed a set of criteria for good cross-classification linkages and reached out to the WHO-FIC community for potential use cases. It is possible that no good linkage (as opposed to joint use) use cases can be found.

Platforms, Software Tools and APIs for WHO-FIC

The 2023 version of ICD-11 was released in January, with Russian and Turkish added to the existing languages of Arabic, Chinese, English, Spanish and French. The ICD-API was enhanced with better searching using individual properties; pre-release support for DORIS (underlying cause of death detection); availability in German, Czech, Slovak and Uzbek; and full compatibilities with earlier versions. The Embedded Classification Tool (ECT) now captures full foundation detail by providing foundation URIs and provides full keyboard support in the use of the ECT. The DORIS has a web version for demonstration and testing and an offline version that can batch process certificates. The ICD-API has been enhanced to process death certificates with the DORIS rule engine and automated text-to-code processing. A new tool that allows online editing of digital mortality rules together with referred value sets is now available. Finally, an electronic death certificate standard format that is limited to fields in the international version of Medical Certificate Cause of Death has been established. It supports textual as well as coded data. The draft format is available in GitHub at: https://github.com/ICD-API/electronic-death-certificate-format

Mondo/ICD-11 Integration

WHO HQ staff and members of ITC and the Monarch Initiative have been in conversation about the possibility of “integrating” the ICD-11 Foundation with the Mondo Disease Ontology. At the mid-year meeting, Dr. Chute invited Dr. Haendel of the Monarch Initiative to introduce Mondo to the ITC and to outline the mutual benefits to each party with a proper ICD-11-Mondo integration. The work to integrate ICD-11 into Mondo through the Mondo ingestion pipeline has started. However, at the time of the poster submission, it is not yet clear who will be the curators and whose role it is to evaluate the automatically generated maps and place ICD-11 entities in the Mondo hierarchy.

Terminology Mappings

Members of ITC are active in the Mapping Task Force (MTF) appointed by WHO. ITC Co-Chair, Samson Tu, also serves as the Co-Chair of MTF. ITC can contribute to the work of the MTF by collecting and reviewing information on mapping methods and technologies. Mr. Tu designed a protocol for a scoping review of such methods and technologies. To evaluate the feasibility of the terminology mapping/ontology alignment review protocol, Mr. Tu conducted a preliminary search based on keywords and criteria defined in the protocol. He obtained 339 English-language references from PubMed, and 2915 from SCOPUS. With further filtering and review of the abstracts, the PubMed references were reduced to 80, but almost 200 SOPUS references remained after 300+ candidates were reviewed. The scope of the review as defined by the protocol is clearly too large. The experiences of mappings (SNOMED-CT/ICD-11 and ICD-10 CA/ICD-11) described in the work of the MTF suggest the focus of the review of should be on practical tools that can support such large-scale mapping projects. A revised protocol is being constructed. Sources for systems to review may come from those that participated in the Ontology Alignment Evaluation Initiative in addition to those that are reported in the literature.
This poster describes the activities of the Functioning and Disability Reference Group in the last 12 months from October 2022 to October 2023 as part of the Strategic Work Plan and this tasks were developed during the WHO-FIC annual meeting, full teleconferences and the midyear meeting in 2023 and FDRG/EIC/CSAC-ICF joint sessions in Sydney and the contribution with other technical groups.

**Abstract**

As a part of the Strategic Work Plan (SWP), FDRG has the goal to provide input and advice for the development and use of the family for functioning and disability purposes to ensure that the family is fit for use to generate national and international functioning, disability and health statistics. The goal includes the use of the WHO Disability Assessment Schedule (WHODAS) and other instruments aligned with the ICF framework by the producers and users of health information to promote optimal use of ICF and its appropriate linkage with the other WHO-FIC classifications.

**Introduction**

As a part of the follow-up tasks in Supplementary Section V of the ICD-11, the FDRG reviewed the technical content of the exercise's material with the notable points: Complexity Level, Functionality of Coding Tool, postcoordination required and Gold Standard Code string ICD-11 assigned as per FDRG subgroup consensus. In addition, related with the ICD-11 Education Tool Unit 12 Section V Supplementary section for functioning assessment, the FDRG reviewed the content according with the Learning Outcomes: 1. Understand the structure, conventions and content of Section V; 2. Understand the special instructions for Section V, if applicable and 3. Apply the structure, conventions, content. The special items in Section V of the ICD are a subset of the entities contained in the ICF. This chapter contains three subsections derived from three main generic assessment instruments for health, functioning and disability: WHO Disability Assessment Schedule (WHODAS 2.0 36-item version) Brief Model Disability Survey Generic functioning domains instructions to Section V and coding examples. These tools may serve to generate functioning scores for assisting for: evaluation for general medical practice, evaluation for social benefits, payment or reimbursement purposes need assessment (e.g. for rehabilitation, long term care) outcome evaluation of interventions.

**Functioning assessment Decision support**

WHO developed packages of ICF-ICHI uses under the rehab 2030 initiative, FDRG contributed with revision in each intervention also in view of the ICF and its granularity. The result was a list of 270 interventions that were reviewed for their mapping to each code. While mapping was seen as a positive point, the alignment needs to be reconciled.

**Enrichment terminology ICF**

The FDRG is working in the new context of the migration of ICF entities in the common WHO-FIC foundation. This opens new perspectives towards the improvement in the descriptive ability of the ICF entities that might take advantage of by an enrichment of fully searchable index terms, stemming from the natural language use of the classification in real world settings. The objective to this is guiding the selection from datasets containing natural language description of functioning elements linked explicitly or implicitly to ICF entities, The selected terms should be checked for meaningfulness as possible candidates as index terms.

**ICF new proposals**

FDRG have been involved into the ICF-CSAC work of integration through the new process and the major changes in the new platform (synonyms, narrower terms & under the shoreline entity). These new features permit to overcome the limitations of the old paper-based system and approach. Few proposals with content issues need to be addressed.

**ICF-based criteria for UHC**

The WHO-FIC CC in South Africa is guiding a contribution related with a process of health policy with the proposed introduction of UHC supported by a National Health Insurance. The ICF is recommended as the most suitable framework to reframe clinical guidelines, but no ICF-based criteria existed for the development of clinical guidelines to monitor UHC. Data collection and outcome measures proposed by the guideline include all the components of the ICF framework, namely body functions and structures, activities (activity limitations), participation (participation restriction) and contextual factors (environmental and personal).

**Crosswalk ICD/ICF/ICHI**

As part of the follow-up tasks in Supplementary Section V of the ICD-11, the FDRG reviewed the technical content of the exercise's material with the notable points: Complexity Level, Functionality of Coding Tool, postcoordination required and Gold Standard Code string ICD-11 assigned as per FDRG subgroup consensus. In addition, related with the ICD-11 Education Tool Unit 12 Section V Supplementary section for functioning assessment, the FDRG reviewed the content according with the Learning Outcomes: 1. Understand the structure, conventions and content of Section V; 2. Understand the special instructions for Section V, if applicable and 3. Apply the structure, conventions, content. The special items in Section V of the ICD are a subset of the entities contained in the ICF. This chapter contains three subsections derived from three main generic assessment instruments for health, functioning and disability: WHO Disability Assessment Schedule (WHODAS 2.0 36-item version) Brief Model Disability Survey Generic functioning domains instructions to Section V and coding examples. These tools may serve to generate functioning scores for assisting for: evaluation for general medical practice, evaluation for social benefits, payment or reimbursement purposes need assessment (e.g. for rehabilitation, long term care) outcome evaluation of interventions.

**Acknowledgements**

All the members of the FDRG are recognized for their collaboration and participation in the work and the achieved goals in all areas. The participation during the virtual sessions, the follow-up and the face-to-face meeting is critical to promote and consolidate FDRG activity.

**WHO - FAMILY OF INTERNATIONAL CLASSIFICATIONS NETWORK ANNUAL MEETING 2023**

**FDRG ANNUAL REPORT 2022-2023**

Aarhus University, Denmark; IRCCS E. Medea. Italian WHO-FIC Collaborating Centre, Italy; Ministry of Health, Mexico, WHO
Abstract Development Committee (FDC) aims to develop and maintain the World Health Organization’s Family of International Classifications (WHO-FIC) as an integrated and comprehensive suite of classifications that provide a common language for health information across the world. It also aims to ensure that the WHO-FIC reference classifications have a logical and unified structure with the complement of related classifications to fulfill any gaps in coding health information across settings. The poster will present a summary of the FDC activities from October 2022 to October 2023.

Introduction

The tasks of the Family Development Committee (FDC) detailed in the Strategic Work Plan (SWP) have been addressed along the year with special emphasis on items falling within some of the FDCs Terms of Reference mandates:

1. To serve as a focal point for the Network for the finalization of ICHI.
2. To oversee the work on content alignment and harmonization across the three classifications:
   - International Classification of Diseases 11th version (ICD-11)
   - International Classification of Functioning, Disability and Health (ICF).
   - International Classification of Health Interventions (ICHI)
3. To oversee the expanded mapping of WHO-FIC across UHC health indicators.
4. To identify and describe joint use of the WHO-FIC reference classifications.

Methods & Materials

The activities have been developed through three modalities:

- Teleconferences among co-chairs and WHO.
- Mid-year hybrid meeting held in Sydney 11 May 2023. Joint session with Informatics and Technology Committee (ITC).
- Dedicated small working groups and meetings with these working groups
- Meetings with ITC Co-Chairs for collaborative work involving the content alignment and harmonisation.

SWP1 Finalising of ICHI

Work has continued towards the finalization of ICHI for implementation (separate poster). In the Progress Report to the World Health Assembly on ICD-11 implementation, WHO advised the following on ICHI:

The ICHI clinical components are stable and already used in some Member States. The section on public health interventions is being reviewed. Following that last step, the ICHI will be finalized after a Member State consultation.

The surgical/medical and functioning parts of ICHI are ready for use.

The ICHI content alignment and harmonization with the WHO-FIC Foundation has continued during 2023 such as some extension codes used in ICHI are now the same as those in ICD-11 (e.g. laterality and relational, anatomy and topography, and substances) to ensure consistency across the three classifications.

The review of the ICHI Reference Guide has been completed. Ongoing collaboration with EIC regarding review and updating of the ICHI educational material.

A review of the WHO Package of Rehabilitation Interventions maps to ICHI has resulted in some changes in the maps. It has also resulted in proposals of approximately 45 new stem codes and several index terms (separate poster).

Consideration is being given to the development of a Health Interventions Reference Group.

The earlier maps between ICF body structures and ICD-11 extension codes has been analyzed and resulted in some update proposals. A scientific paper about the maps between ICF and ICD has been published (separate poster).

Use Cases for Cross-Classification linkages. This work has been done by exploring prior work, developing a template for the use cases, presented some potential use case at the mid-year meeting and called for members to contribute with cross-classification linkage use cases. Criteria for linkage use cases was developed and further call to members for additional use cases with a new template (separate poster).

SWP 3 UHC Mapping

The UHC working group undertook a review of the indicators using the most recent version of the reference classifications, as most had changed since the last review. Some shifts in the classifications that could be used for indicators were found.

The working group also reviewed the guiding principles used for the work. At the mid-year meeting, FDC members approved freezing the mapping as of the May 2023 version. The related paper has been reviewed and revised by the working group members.

SWP4 Joint Use Cases

As part of the 2022-2025 Framework for the WHO FIC Network Strategic Plan, FDC has developed several use cases as examples of the reference classifications being used together. As part of this work, FDC designed a template to collect the information. FDC members are called for use cases. Further work on this may continue into the next year (separate poster).

Acknowledgements

The FDC co-chairs thank Robert Jakob, WHO and the FDC members and working groups for their contributions to the FDC work plan activities during the year, especially the dedicated working groups.
Abstract: The WHO Verbal Autopsy (VA) Reference Group, supports and advises WHO regarding development and maintenance of VA standards, respective instrument and associated processes including use of VA cause of death data to ensure consistency with ICD classification rules, and in supporting users in the application of VA. This poster presents a summary of the work undertaken by the VARG, highlighting activities and achievements from October 2022 to October 2023.

Introduction

As VA becomes increasingly part of routine mortality data collections systems, the VARG supports and advises WHO regarding:

- Development and maintenance of WHO VA standards;
- Standards and recommendations for VA training and implementation;
- Advancement of methods and tools for assigning causes of death from VA interviews;
- Use of the causes of death data determined by VA;
- Use of the VA causes of death data as a complement to medically certified cause of death data;
- Quality assessment and assurance of VA data; and
- Methods for comparing and evaluating VA results.

Methods & Activities

Activities have been carried out through three modalities:

- Dedicated working groups collaborating online under the coordination of VARG workstreams;
- Regularly scheduled teleconferences among co-chairs, secretariat, workstreams and working groups; and
- Virtual quarterly full VARG meetings.

Five workstreams decentralize work structure and facilitate collaboration.

- WS1 Questionnaire improvement & maintenance;
- WS2 Development and maintain resources & guidance;
- WS3 IT developments and cause of death analysis;
- WS4 User engagement;
- WS5 Develop & support VA research agenda.

WS1. Questionnaire improvement & maintenance

Availability of 2022 WHO VA instrument in other languages

Availability in 5 other languages – French, Spanish, Portuguese, Arabic and Swahili. The translated instruments will be available soon on the WHO VA standards website for download. Corresponding VA question by question guidance will also be made available in these languages in the near future.

WS2. Development and maintain resources & guidance

Release of supporting materials for the 2022 WHO VA instrument

- Training manuals and PPs for interviewers and supervisors/master trainers; ODK quick guide; extended hints
- Based on review of the supporting materials for the 2016 instrument with contributions from VARG members and the VA community of practice.

Release of cause of death assignment by physicians from VA data – manual for physician reviewers

Guidance on standard practices for physicians nominated for assigning causes of death from VA data, according to principles of selection and coding of the underlying cause of death as prescribed by WHO.

Development of guidelines for quality assurance and for ethical issues in the implementation of VA in CRVS systems.

Guidelines in preparation to assist countries developing local policies that contemplate individual citizens’ rights and population-level interests and setting up quality assured implementing systems for the use of VA in CRVS.

WS3. Harmonization of VA IT environment

Supported planning, development, and maintenance for VA IT

- Updated, continued development for openVA cause of death assignment software
- Development of reference architecture outlining IT standards in accordance with WHO SMART guidelines

Ensuring progress and support for the update of the probbase for algorithms’ compatibility for COVID-19 and the 2022 WHO VA instrument

- Coordination of panel of physicians on a consensus-driven approach based on Delphi methodology to 1) review and update issues in the probbase and 2) to generate new probbase values as required by the updates of the 2022 WHO VA instrument and addition of COVID-19 to the list of VA causes of death.

WS4. User engagement

Expanded engagement with VA implementation community

- VA community of practice expanded to 450 participants regularly engaged through monthly webinars. Webinars presented in English, French, Spanish, and Portuguese and are archived for later download on the WHO Collaborating Center for VA website.
- Web surveys of community of practice members as well as VA implementing institutions used to maintain an interactive global map of the type and distribution of VA implementations on the WHO VAstandards website.
- Concept note to improve implementing country membership in the VARG as well as stronger engagement of WHO Regional and Country Offices in play.

WS5. VA research agenda

Contribution to the protocol to validate 2022 WHO VA instrument

- ProbBase update under development

Implementation of the VA literature alert service

- Quarterly reports shared with the VA community of practice.

TeleVA

- Documentation of experiences around telephonic verbal autopsy as reported in the literature

Use of the narrative of VA

- Scoping review under implementation

Acknowledgements

We would like to thank all members of the VARG, collaborating centers and partners for their commitment and contributions to the maintenance and advancement of VA standards, especially the dedicated working groups.
Developing an inventory of existing quality of care & patient safety indicators and potentially novel quality and safety indicators.

Assessing potential uses of ICD-11 for health services, quality & patient-centered outcomes research.

Producing knowledge translation around ICD-11

Examine Implementation of ICD-11 in adverse reporting systems

2022/23 Meeting Attendees

Harold Pincus (Co-Chair, Columbia University); William Ghali (Co-Chair, University of Calgary/Canada and Co-Chair WHO Morbidity Committee); Patrick Romano (University of California Davis); Oluseun Atolagbe (University of California Davis); Hude Quan (University of Calgary/Canada); Alan Forster (Ottawa Hospital/Canada); Chris Chute (Johns Hopkins University/US); Yana Gurevich (CIHI/Canada); Sharon Baker (CIHI/Canada); James Harrison (Flinders University/Australia, Chair of Injury and External Causes TAG); Marilyn Allen/Brandon Hoffman (American Acupuncture Council/Member of Traditional Medicine TAG); Bernard Burnand (University of Lausanne/Switzerland); Danielle Southern (University of Calgary/Canada); Saskia Droesler (Niederrhein University of Applied Sciences/Germany); Jean-Marie Januel (EHESP/France); Marie-Annick Le Pogam (University of Lausanne/Switzerland); Bastien Boussat (CHU/Spain); Robert Jakob (WHO/Switzerland).

Meetings:

In person meetings:
- NYC Nov 14/15 2022
- Washington, DC March 7/8, 2023
- Virtual meeting

Topics:
- Update on PSI algorithms
- Dissemination and implementation of the innovations to capture quality and safety data through ICD-11 as well as stakeholder engagement (i.e., coders, otologists/ classification experts, hospital administrators, health services researchers, etc.).
- US Stakeholder Meeting - Gathered US stakeholders to share our updates/knowledge of ICD-11 (specifically Q&S use case)
- Discussed needs of stakeholders and how Q&S working group can be helpful with transition/implementation
- Stakeholders present at Washington meeting: Angelo Pardo (CMS/OBRIH); Daniel Kalwa (CMS/OBRIH); Michael Cimmino (CMS/OBRIH); Loraine Doo (CMS); Carmela Couderc (ONC/HHS); Charles Hawley (NAHD); Rebecca Hines (Executive Secretary NCVHS); Sharon Arnold (Executive Staff Director NCVHS); Christopher Macintosh (NCVHS ICD-11 Workgroup); Mary Stanfill (NCVHS ICD-11 Workgroup); Valerie Watzlaf (NCVHS ICD-11 Workgroup); Jamie Ferguson (NCVHS); Denise Love (co-chair standards subcommittee); Margaret Skurka (previous workgroup co-chair); Susan Fenton (NCVHS); Tammy Banks (NCVHS); Denene Harper (AH); Tammy Love (AH); Elizabeth Drye (NQF); Erin Grace (AHRQ); Judy George (AHRQ); Julia Soo (NLM); Kin Wah Fung (NLM); Patrick McLaughlin (NLM); Krista Mastel (HRSA); Margretta Diemer (USUHS); Sue Bowman (AFHIMA)

Dissemination & implementation:

Emphasis of meetings activities focused on strengthening stakeholder & user engagement.

Academic articles in BMC Medical Informatics and Decision Making. In addition, the group has plans to work on dissemination appropriate for stakeholders at the decision-making levels.

https://bmcmedinformdecismak.biomedcentral.com/articles/supplements/volume-21-supplement-6

Figure 1: Q&S TAG meeting participants

Conclusions

The Quality & Safety TAG has secured funding from AHRQ for future meetings

ICD-11 PSI development work is underway and focus is now on dissemination of ICD-11 Quality and Safety.

Acknowledgements or Notes

Q&S TAG was funded by the Agency for Healthcare Research and Quality (AHRQ), Canadian Institute of Health Research (CIHR). Current meeting funds have been funded through the Canadian Institutes of Health Research (CIHR).
The EIC is a cross-cutting committee which collaborates with the WHO-FIC reference groups including the Mortality Reference Group (MRG), the Morbidity Reference Group (MbRG) and the Functioning and Disability Reference Group (FDRG). The EIC in consultation with the WHO-FIC Reference Groups facilitates improvement in the level and quality of the use of the reference classifications in the WHO member states. Through the development and delivery of a Strategic Work Plan (SWP), the EIC plays an integral role in supporting WHO in education and implementation activities for the family of international classifications. This poster presents the workplan activities undertaken by the Education and Implementation Committee (EIC).

The EIC is a cross-cutting committee which collaborates with the WHO-FIC reference groups including the Mortality Reference Group (MRG), the Morbidity Reference Group (MbRG) and the Functioning and Disability Reference Group (FDRG). The EIC in consultation with the WHO-FIC Reference Groups facilitates improvement in the level and quality of the use of the reference classifications in the WHO member states. Through the development and delivery of a Strategic Work Plan (SWP), the EIC plays an integral role in supporting WHO in education and implementation activities for the family of international classifications.

Since the annual meeting in October 2022, the EIC have aimed to meet quarterly throughout 2023.

- **15 February 2023 (Virtual)**
- **09 May 2023 (Face to Face/Virtual)**
- **10 May 2023 Joint session with SWP**
- **17 October 2023 (Face to Face)**
- **18 October 2023 (Virtual)**

In **Februrary 2023**, WHO gave a detailed update on the ICD-11 from the UK WHO FIC Collaborating Centre. The update included an overview of the work done since the last meeting, with a focus on the latest changes and updates. The presentation included slides on the ICD-11 coding exercises and the implementation progress.

In **May 2023**, the joint session with SWP was held as a hybrid in-person/virtual meeting, hosted by the Australian Collaborating Centre. These technical sessions focused on the analysis of the ICD coding exercises included in the ICD-FIT platform. The joint session with FDRG focused on ICD-11 WHO Academy material and call for new case vignettes.

The WHO Academy Material platform was launched in 2022, and the EIC members were asked to provide feedback on the platform. The feedback was used to improve the platform and make it more user-friendly for users.

**ICHI Reference Guide:** EIC members completed the review from 15 to 29 January 2023. The 8 Collaborating Centres that participated were: Australia, China, Japan, Korea, Mexico, Sweden, United Kingdom. Feedback was discussed at the Feb-23 EIC meeting, collated into one document and handed over to ICHI Working Group.

**WHO-FIC Network ICD-11 Implementation Forum went fully live early May 2023**

https://nhsengland.kahootz.com/WHOFCICInfoShareForum/groupHome

The initial focus is morbidity (but the forum will evolve to cover ICHI and ICF). So far EIC, MbRG, MRG members and WHO ICD-11 focal points were invited to create an account and log-in to raise topics and participate in discussions.

**ICD-11 Transition and Implementation Guide review**

This is work in progress. A series of topics will be posted on the ICD-11 Implementation Forum to broaden discussion and gather input based on country implementation plans and experience to date to enrich the content of the Guide.

**National Coding Examination / Assessment and Country Practice**

This is work in progress. EIC members were asked to provide a summary of country practice for coding training examination / method of assessment, level of competence, examination passmark, and any course requirements. This information will be used to feed into further WHO work to develop a robust coding scoring system suitable for the ICD-FIT platform for morbidity and mortality.

**Acknowledgements**

The authors would like to acknowledge EIC members for their contributions and discussions throughout the year.
This poster presents an annual report of the work of the Morbidity Reference Group, highlighting activities undertaken during 2022-2023.

Introduction

The Morbidity Reference Group (MbRG) identifies, discusses and provides guidance related to interpreting and applying the ICD to morbidity coding and classification. Specifically, MbRG supports WHO and the WHO-FIC Network by providing input and advice for development and use of the ICD-11 for morbidity purposes, to support the collection of internationally comparable morbidity data.

The MbRG also supports the work of other reference groups and committees where there are opportunities for collaboration and overlapping priorities.

Activities and Achievements

This year, the work of the MbRG has been conducted in person for the first time since the COVID-19 pandemic.

October 2022 – Annual WHO-FIC meeting, Geneva (hybrid)

The MbRG had two 90-minute hybrid sessions at the annual meeting on October 17th. Keith Denny and Miroslav Zvolsky were appointed by acclamation as co-chairs for a second term. Kristy Mabon agreed to continue as secretariat until October 2024.

The main topics of discussion were:
- Joint use of ICD-11 and ICHI to create an international case mix tool
- Information sharing forum (with EIC)
- ICD-11 Quality and Safety use case
- ICD-11 descriptions maintenance
- ICD-11 use cases: cancer and rare disease

Work Plan: 2022-23

The following priorities were identified for the annual work plan:
- Explore options for supporting the use of ICD-11 for cancer and rare disease coding.
- Support the development of a consistent and aligned approach to descriptions maintenance.
- Liaise with the Quality and Safety working group to ensure appropriate communication and support for the quality and safety use case.
- Support the launch of an information forum.
- Provide guidance, as required, in response to emerging questions and issues.

Mid-year meeting, Sydney Australia

The mid-year meeting continued the return to in-person activities using a hybrid format. The in-person meeting was hosted by the Australian Collaborating Centre and took place at the Grace Hotel, Sydney. MbRG members unable to attend in person participated virtually.

Progress on the annual work plan:

- Cancer coding
  - MbRG members completed two cancer coding exercises, which generated rich data that will be used to improve guidance on cancer coding.
  - A small working group was formed to review the findings of the exercises and feedback provided by participants. The group will identify recommendations for coding guidance content to add to the Reference Guide.
  - An MbRG ICD-FIT account was created and is being used to generate the answer key to the second cancer coding exercise.
  - The Mexican Collaborating Centre plans to conduct the coding exercises in Spanish.

- Rare disease coding
  - MbRG continued its dialogue with Orphanet, which published a structured nomenclature of rare diseases.
  - Members conducted a rare diseases coding exercise utilising the ICD-11 coding tool that displays URIs as well as the Orphanet search tool and mapping.
  - On the basis of the exercise, general support was expressed by MbRG members for an advanced coding tool that provides additional detail (URIs, Orpha codes, etc.)

- Quality and Safety
  - The former Quality and Safety TAG is a working group of the MbRG and the group provides updates on its work to MbRG.
  - MbRG members participated in a coding exercise using ICD-11’s 3-part harm model.
  - Participants were introduced to a Canadian-developed coding resource designed to support correct selection of “cause” and “mode”.
  - A number of recommendations emerged from the exercise, including suggestions for enhanced coding tool functionality and that a technical solution for code ordering be explored.

- Descriptions maintenance
  - MbRG had several discussions about descriptions in ICD-11 that were informed by the Czech Collaborating Centre’s assessment during its translation of ICD-11.
  - A small working group of MbRG members volunteered to support the drafting of a methods paper.

- Information forum
  - The Information Forum was formally launched at the mid-year meeting. Governance and maintenance will be the responsibility of EIC.

- International case mix tool
  - Substantial progress on the mapping for this project has been made.
  - Once mapping is complete, work can begin on the DRG system itself. MbRG will be able to provide support and input at this stage.

- Emerging and ongoing issues
  - MbRG members discussed the issue of dual coding – including methods and potential for identifying best practices – based on a report of the Chinese experience of such an exercise. It was agreed that the new Information Forum will be a useful platform for further discussion and information sharing.

- ICHI mapping paper
  - The MbRG task group completed the paper, Applying a standard approach when mapping national intervention classification to ICHI.

- CSAC referral
  - MbRG provided input in response to a number of requests from CSAC-ICD.

Conclusions

ICD-11 is the new global standard. Around the world, Member States are at different stages in their planning for implementation. The years ahead will bring opportunities and challenges as these plans are finalized and begin to be implemented.

The MbRG is committed to being a resource within the WHO-FIC network for ongoing review of ICD-11 content, coding rules, reference guide content, training materials, and related aspects. Going forward, the MbRG will continue to contribute to exploring and refining innovative uses of ICD-11 and other WHO-FIC classifications. In this regard, the joint use of ICD-11 and ICHI to develop a global case mix standard represents a genuinely novel opportunity. We also look forward to collaborating with our WHOFIC colleagues to identify opportunities to refine and improve guidance in the use of ICD-11.

As countries continue to plan for the implementation of ICD-11, the MbRG is committed to supporting the WHO in the important work that lies ahead.

Acknowledgements

The co-chairs wish to acknowledge the work of the MbRG members and collaborating centres for their contributions over the past year.
The Medical and Scientific Advisory Committee (MSAC) provides medical and scientific advice on changes or enhancements to the ICD-11, particularly in response to proposals received via the ICD-11 maintenance platform, or requests from the Classifications and Statistics Advisory Committee (CSAC), and associated reference groups. MSAC may also recommend changes or enhancements to ICD-11 based on scientific advances or other new information.

### Introduction

The MSAC was launched at the ICD Revision Conference in 2016 and is comprised of 20 experts selected by WHO, some of whom were drawn from the Topic Advisory Groups. In addition, the co-chairs of CSAC sit as ex-officio members. The primary role of the MSAC is to advise WHO on medical and scientific updates to ICD-11.

The advice of this committee reduces pressure on national experts to review proposals, while still allowing for that input, and accelerates the implementation and maintenance of the classification by streamlining the process. It allows for apolitical reflection of important scientific innovations in the classification, in a timely fashion.

The MSAC met in hybrid format during the annual WHO-FIC Network meeting in 2022. During the period between November 2022 and September 2023, the MSAC met 9 times via videoconference. The main focus of the meetings has been on the review and consideration of proposals submitted via the ICD-11 maintenance platform.

### Methods

The MSAC reviews proposals on the scientific merit including published evidence and international cross-disciplinary consensus, before a new entity can be added to or deleted from the ICD foundation. The MSAC will also evaluate proposals for entity descriptions and may be asked to participate in the review of changes to coding rules.

Proposals are initially assigned to a specific MSAC member for scientific review. Where possible, these are assigned according to specialty, but all members are experts in research methodology. If the topic relates to a specialty not represented on MSAC, members may consult with colleagues or external experts for the review. The introduction of a consent agenda has facilitated an effective proposal reviewing process.

### Other issues discussed

As the MSAC consent agenda review process was revisited for it to become fully digitalized on the ICD-11 maintenance platform starting 2022, its application has been tested by the members and is functioning to well deliver information to other WHO-FIC committees and reference groups as well as the public.

Ongoing discussion points:

- **Expansion of restructuring of the organ donor area**

Given that there were proposals suggesting new entities be added under Donors of organs or tissues, in Chapter 24 (Factors influencing health status of contact with health services), MSAC has initiated and will continue its discussion on how the area could be reconsidered to enrichen the foundation in a more comprehensive and restructured manner, also given that the field of transplantation rapidly develops with new emerging technologies. Further discussion for solutions on this will take place during the WHO-FIC Annual Meeting 2023.

### Conclusions

MSAC recommendations are added to the proposal platform to ensure transparency of the maintenance process, and to inform CSAC members. Certain topics receive considerable attention from advocacy groups despite decisions attained regarding whether to add an entity to the ICD-11.

### Acknowledgements

The MSAC Co-chairs and Secretariat, would like to thank all contributions made by experts, including the MSAC general membership, for their valuable contributions to the ongoing development and maintenance of the ICD-11.
Part 2  Collaborating Centre Annual Report
The Australian Institute of Health and Welfare (AIHW) hosts the WHO Collaborating Centre for the Family of International Classifications in Australia (ACC) and has done so since 1991. The AIHW's designation is from 2022.

The ACC has also actively participated in the WHO’s ICD maintenance/modernization and tooling support, providing support and technical assistance in the implementation of the ICF. The ACC has submitted proposals for changes to the ICHI Reference Guide and has provided feedback on the ICHI Reference Guide as part of an EIC task force.

The ACC anticipated increased contributions in the next reporting period if the ICHI Reference Group and the ACC Network members to update the EIC’s activity to review and update the EIC tooling support to the EIC’s activity to review and update the EIC tooling support.

In May 2023, the ACC hosted and facilitated the WHO-FIC Network activity to update and refine the ICHI implementation support. The ACC actively participates in this group.

Photo: The participants of the EIC meeting. Michael Frost, Vicki Bennett and James Eynstone-Hingley all participate in the Network Advisory Council, with James also a member of the Small Executive Group. The ACC has active representation on all CRGs except Verbal Autopsy. ACC members continued to act as moderators on the ICF Education portal during this period.

More locally, the ACC convenes two meetings per year with its ACC Network members to update them on WHO-FIC Network activities, and to discuss classification issues of relevance at the local level.

This activity is new to the ACC work program for 2022-23. The AIHW has established the Pacific Health Information Support Hub (PHISH) through which this activity can be facilitated. The scope of the PHISH extends beyond classification support but is a key component. Some of the activities already undertaken are:

- Presenting at the WHO Western Pacific Regional Office’s Webinar Series ‘Journey towards ICD-11 in the Pacific’ on the reference classifications, proposal platform and ICD uses.
- Presenting on ICD-11 at the Pacific Health Information Network (PHIN) and the Brisbane Accord Group (BAG) meetings in Fiji in March, and the Beyond Essentials Regional Forum in August.
- Facilitated discussions with PHIN members to better understand members’ needs for support in using the classifications.
- Investigating a proposal to establish a Pacific coding support centre through which the ACC could provide technical support in coding to the region.

The ACC continued to contribute to the global ICD-11 implementation work for ICD-11. This was achieved by:

- Convening the Australian ICD-11 Task Force, raising issues for consideration at the local level, but feeding this back at the global level.
- Regular engagement with other countries with similar health systems and implementation issues to Australia to share ideas and insights.
- Engagement with other countries who have some degree of ICD-11 implementation to share ideas and what they’ve learnt.
- Participation in the Network’s Implementation Forum.
- Refinement of ICD-11 implementation package through participation in EIC activities.

The ACC provided secretariat support for the CSAC ICD Secretariat meeting in Geneva, Switzerland in March, and participated in discussions on proposals for changes to ICD-11 and the reference guide. As EIC Secretariat, the ACC submitted over 350 ICD proposals resulting from the EIC coding exercise testing ICD-11 education materials.

The ACC also actively participated in the WHO’s ICD-11 Mapping Taskforce and its subgroup of countries with national modifications.

ACC work plan activities (2022-26):

At WHO’s request:

1. Provide technical support in the implementation of the global ICD-11 in the implementation strategy and implementation guidance
2. (and under WHO’s guidance) provide support for ICD-11 maintenance and improvement of the ICD-11 tooling environment.
3. Provide support in the implementation of ICHI.
4. (and under WHO’s guidance) provide support for ICHI development/ maintenance and improvement of the ICHI tooling environment.
5. Provide support in the implementation of the ICF.
6. (and under WHO’s guidance) provide support for ICF maintenance/ modernization and improvement of the ICF tooling environment.
7. Support WHO-FIC cross-cutting activities.
8. Provide technical support for local and regional users of ICD.

4: ICHI maintenance and tooling support

Australia has continued its contribution to the ICHI Taskforce, providing co-chair and secretariat support. The ACC provided feedback on the ICHI Reference Guide as part of an EIC task force.

The ACC anticipates increased contributions in the next reporting period if the ICHI Reference Group and proposal process are established.

5: ICF implementation support

The ICF is not implemented nationally in Australia, however, there are many instances of local use. The Australian ICF Interest Group convened by the University of Sydney provides valuable insight to the ACC as to where ICF is used and opportunities for its use. The ACC actively participates in this group.

The ACC ICF Symposium

In conjunction with hosting the Network’s mid-year meetings (see activity 7), there was also an opportunity for the ACC to hold an ICF Symposium. The Symposium brought together ICF specialists and interested parties from key Australian government agencies to provide information about, and explore the potential of, the ICF and potential uses in Australian government funded service and policies.

15 speakers from Australia and overseas discussed projects in which the ICF had been used. The first session focused on international experiences, with the second session dedicated to the Australian experience. There were about 50 in-person attendees and 100 online.

6: ICF maintenance/modernization and tooling support

With the integration of the ICF into the Foundation, and the processes for its update and maintenance under establishment, there have been limited opportunities to participate in the ICF voting process. The ACC has submitted proposals for changes to the ICF during this period and awaits the opportunity to discuss these further.

The ACC has also assisted in developing and providing coding examples for the ICF and will continue assessing the ICF for areas of improvement. The ACC anticipates that the new proposal and update processes for the ICF will allow for more active contributions to be made.

7: Support WHO-FIC cross-cutting activities

The ACC actively participated in many CRG activities, including the EIC line coding exercise testing of the WHO Academy training materials and the MIRG exercises on cancer coding and the 3-part harm model coding.

The ACC is also a member of the FDC working group on the Universal Health Coverage (UHC) exercise, which involves mapping the reference classifications to global indicators to assess their capability to assist with UHC.

Recently, the ACC began providing dedicated support to the EIC’s activity to review and update the eTool modules on ICD-11.

Hosting mid-year meetings in Sydney

In May 2023, the ACC hosted and facilitated the WHO-FIC Network meetings in Sydney, Australia. Six CRGs held meetings and met over 28 sessions across four days. The meetings were held in hybrid format, which 160 participants attended. Of these, 66 attended in person, 2/3 of which were international delegates.

8: Support for local and regional users of ICD

This activity is new to the ACC work program for 2022-23. The AIHW has established the Pacific Health Information Support Hub (PHISH) through which this activity can be facilitated. The scope of the PHISH extends beyond classification support but is a key component. Some of the activities already undertaken are:

- Presenting at the WHO Western Pacific Regional Office’s Webinar Series ‘Journey towards ICD-11 in the Pacific’ on the reference classifications, proposal platform and ICD uses.
- Presenting on ICD-11 at the Pacific Health Information Network (PHIN) and the Brisbane Accord Group (BAG) meetings in Fiji in March, and the Beyond Essentials Regional Forum in August.
- Facilitated discussions with PHIN members to better understand members’ needs for support in using the classifications.
- Investigating a proposal to establish a Pacific coding support centre through which the ACC could provide technical support in coding to the region.

The ACC comprises a network of Australian and New Zealand experts and organisations with an interest and experience in health classifications. The ACC thanks its Network members for their invaluable contributions to the work plan activities during 2022-23. Many of the activities occur through in-kind support from these individuals and their organisations.

This annual report summarises the activities of the ACC from October 2022 to October 2023.
Introduction

As early as 1989, WHO appointed a predecessor of the current Dutch WHO-FIC collaborating centre (CC) as a CC for the ICIDH. Since then, the Dutch WHO-FIC CC has been re-designated multiple times as a CC for the Family of International Classifications. The last re-designation was late 2021, for the period 2021 – 2025.

Strategic Workplan

With its re-designation in 2021 a new Strategic Workplan was implemented. Therefore, 2023 marks the second full year of this designation period.

This poster highlights the activities of the Dutch WHO-FIC CC that took place from October 2022 to October 2023 along the six key activities in the Strategic Workplan 2021 - 2025:

I. Support the implementation of the global ICD-11 in the implementation strategy and implementation guidance.
II. Support ICD-11 maintenance and improvement of the ICD-11 tooling environment.
III. Support the implementation of the International Classification of Health Interventions (ICHI).
IV. Support ICHI development / maintenance and improvement of the ICHI tooling environment.
V. Support implementation of the International Classification of Functioning, Disability and Health (ICF).
VI. Support ICF maintenance / modernization and improvement of the ICF tooling environment.
VII.Support WHO-FIC crosscutting activities.

I. Support ICD-11 Implementation

The health information domain in The Netherlands is changing rapidly; new laws will come into effect, and new health care standards will apply. The transition from ICD-10 to ICD-11 in The Netherlands will happen amidst these changes. Conditions for ICD-11 implementation in the Netherlands are under study. Nonetheless, the Dutch Ministry of Health, Welfare and Sport has decided to subsidize the translation of ICD-11 into Dutch. The work has commenced in the summer of 2023. Important stakeholders that will contribute to the translation are Statistics Netherlands (CBS), Dutch Hospital Data (DHD), and the National Centre of Expertise for Standardisation and eHealth (Nictiz).

II. Support ICD-11 maintenance and tooling

The Dutch CC participated actively in the review of the online Learning Modules for ICD-11, which are being developed for the WHO-Academy.

III. Support ICHI Implementation

Over the reporting period, the Dutch collaborating centre has provided information sessions on the value of ICHI as a reporting standard of health interventions to multiple (national) audiences.

IV. Support ICHI maintenance and tooling

Over the reporting period the Dutch CC has participated actively in the mapping of the Nordic interventions classification NCS+ to ICHI to support the development of an ICD-11/ICHI DRG grouper.

V. Support ICF Implementation

The Dutch WHO-FIC CC contributed to the ICF update process by commenting on and voting for ICF update proposals. Furthermore, each year the Dutch WHO-FIC CC receives numerous requests for using the Dutch version of the WHODAS, but also requests for other languages spoken in the Netherlands than Dutch (Arabic, Farsi, Turkish, Somali).

VI. Support ICF maintenance and tooling

Over the reporting period, the Dutch WHO-FIC CC finalized the Dutch translation of the ICF eLearning tool. The Dutch version is now published and accessible at: ICF e-learning (icf-elearning.com).

VII. Support cross-cutting activities

The Dutch CC also actively participates in and supervises the ICF Facilitators Course that took place the past year to support the implementation of the ICF in the Flemish vocational rehabilitation system.

The Dutch WHO-FIC CC provides the FDC co-chair, and actively participates in the FDC strategic work plan. As such the Dutch WHO-FIC CC is involved in the work on harmonizing the WHO-FIC content model (together with ITC), the work on Universal Health Coverage, the completion of ICHI and in the work on the use of terminologies in the context of WHO-FIC.

Over the reporting period there have been multiple exchanges with ICF, ICD-O and terminology experts from Belgium and Germany, indicating the interest of our neighbors in matters related to classifications. With our German colleagues we exchange on a regular basis.

Finally, the Dutch center acts as a clearing house, referring people to other WHO-FIC classification specialists at other collaborating centers, for example in the case of ICF dietetics. Lastly, the Dutch CC actively participates in the newly founded WHO-FIC EURO network.
Digitalizing healthcare is the future in medicine which enables semantic interoperability of healthcare data. Thus, enhanced understanding and better evidence-based interpretation of diseases as well as better patient outcomes can be achieved. In this context, international classifications are of major importance. The WHO Family of Health Classifications (WHO-FIC) has included three reference classifications, covering diseases (ICD), functioning and disability (ICF), and health interventions (IHI). As a WHO-FIC Collaborating Centre (CC), the Federal Institute for Drugs and Medical Devices (BfArM) is able to actively contribute and take influence on the further development of these international classifications and to adequately represent national and international interests.

In the following, the work of BfArM on the individual classifications since the last WHO-FIC Meeting in the year 2022 is presented.

### Processing of classifications

**ICD-10:** The ICD-10-GM was updated in the context of the national annual submission process, to better support the needs of the various morbidity use cases, e.g. case mix, reimbursement, quality and patient safety. Publication of the 2024 release of the ICD-10-GM is scheduled for the end of September 2023, together with an updated index. Implementation is expected by January 1st, 2024.

**ICHI:** As ICHI has not been finally released, work on ICHI is still on hold at the BfArM. However, the BfArM contributed to the discussions around the ICHI update and maintenance process on the WHO ICHI proposal platform. It will support the processing of ICHI update proposals in relevant committees and reference groups of the WHO-FIC Network once the process has been initiated.

**ICD-11:** The primary translation of the ICD-11 into German was almost completed in the past year (Fig. 1), which led to the publication of a first German draft version in February 22.

### WHO-FIC Annual Meeting 2023

As host of this year’s annual meeting of the WHO-FIC Network, planning has already begun in early 2022. Regular meetings with the WHO have been held since December 2022. A particular challenge was posed by the hybrid format of the meeting which placed high demands especially on the event technology. In general, cost calculation is very difficult, as the number of on-site and virtual participants can only be estimated in advance. However, hosting the annual meeting strengthens the cooperation with the WHO and makes this important work more visible in Germany.

### Committee work

BfArM has actively participated in mid-year and ad-hoc meetings of the MbRg, the MRG, the FDRG, the CSAC for ICD and ICF matters and within the annual submission process, the ITC and the FDC. BfArM also contributed to the newly established Mapping Task Force (MTF) to support interoperability of code systems. Holding one of the both co-chairs of the Council, BfArM also contributed to monthly and ad-hoc meeting calls of the Small Executive Group (SEG) of the WHO-FIC network.

### Future perspectives

BfArM is currently preparing the redesignation process of the German CC to continue the cooperation with the WHO, the WHO-FIC Network and other partners over the next 4 years. BfArM will focus its work increasingly on the quality assurance of the German version of the ICD-11 and mapping to ICD-10-GM, as this is crucial for future implementation. Furthermore, the CC will support cooperative efforts of the WHO, SNOMED International and several countries in bringing both systems closer together for their joint use. The CC is very much looking forward to this year’s annual meeting of the WHO-FIC Network and we hope to see you in Bonn in October 2023!
Introduction

The internal team of the University of Barcelona – Hospital Clinic is composed of a total of 15 members plus the collaboration of personnel from the Clinical Informatics department of the Hospital Clinic (HCB). The members of the internal team are committed to the different activities of the WHOFIC. The other members are involved punctually according to their capacity and experience for specific tasks proposed by the different Committees and Reference Groups of the WHOFIC and with the agreement of the Heads of the CC.

Methods & Materials

The two Co-Heads, Profs. X. Pastor and S. Frid with the help of Ms. Nerea Palacios as assistant, manage and coordinate the different activities in which we are involved along the year. An executive board composed by six members, the three cited above plus Drs. Sara Laxe, Artur Conesa and Jaume Canela, meet regularly each month to review the ongoing activities and propose new actions to do. Quarterly there is a meeting with the participation of all the 20 members Between October 2022 and June 2023, we met a total of 13 times. In 4 occasions was a plenary meeting. The rest were executive meetings. A One-Note resource serves as a repository and communication element to support the CC tasks.

A full report for each meeting is updated and available to all the members. Their expertise is showed in showed in Table 1.

Table 1: Composition of the staff of the Academic CC

<table>
<thead>
<tr>
<th>Specialty</th>
<th>Number</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>18</td>
<td>• 7 experts in coding and clinical informatics • 11 clinicians</td>
</tr>
<tr>
<td>Lawyer</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Administrative</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Activities

We have attended to all WHOFIC global meetings and working groups, including those promoted by the European WHO Regional Office, also participating in specific activities of Committees and Reference groups, and being engaged in ICD-11 webinars.

Activities (cont.)

According to the agreed ToR items, in item #1, technical support has been provided through the active involvement in two task force groups: the Terminologies paper, which includes the development of the use case of online multiple coding at HCB and the new Mapping task force. Also, we contributed to the review of the Reference Guide. Regarding item #2, advise users in embedding API, we have shown the resources available for ICD11 coding embedded in the EHRs to the ISGlobal Health Institute, who is conducting an important project called CHAMPS on Pediatric Health in underdeveloped countries. Item #3, focuses in providing technical support in the development and maintenance of ICD-11. Our team has contributed to several proposals or reviews and exercises like the “Cancer Exercise” done by the Morbidity Group and "Applying the 3-part harm model". Academic activities, included in the item #4, comprise the introduction of the topic about the WHOFIC in the curricula of the Medicine program at our University for the first time, the proposal of Graduate assignments related with the use of ICD-11 to code diseases under special surveillance, and the development of a doctoral thesis entitled: “Description of the functioning in people suffering from neuromuscular diseases and study of their tolerance to physical exercise programs: a view from the classification of functioning disability (ICF) of the WHOFIC”. Also, we did an internal training course on ICD11 delivered by the Mexican CC with a total of 21 participants. Lastly, about the item #5, related with providing information about the usage of WHOFIC classifications in Spain, we have actively participated in answering the survey "Standardized tool to assess and quantify the quality of hospital-based inpatient administrative data" conducted by the University of Calgary Academic CC.

Conclusions

As an Academic CC we can conclude we are actively participating in the WHOFIC strategic roadmap, and we provide not only advisory and consultancy but also in field use-case of important projects like the Mapping initiative and the Multiterminological coding and capture of on-line clinical information in the EHRs.

Acknowledgements

Authors wish to mention all the rest of the current members of the Academic CC Alejandro Alborno, Elisa Asensi, Maria Jesus Bertran, Maria Dolors Estrada, Miquel Angel Lopez-Boado, Itziar De Leuona, Federico Matorra, Pablo Peret, Natalia Rakislova, Raquel Salinas, Mihaela Taranu, Maria Antonia Vare, Josep Mª Vilaseca, Rosauro Vara.
Annual report from the Nordic WHO-FIC Collaborating Centre 2023

Marie Vikdal, Solvejg Bang
Nordic WHO-FIC Collaborating Centre, Oslo, Norway

Abstract
The Norwegian/Nordic Collaborating Centre for the WHO Family of International Classifications is in its current redesignation period from November 2020. The centre was established in 1987, and is hosted by the Norwegian Directorate for E-health in Oslo, under the Ministry of Health and Care Services.

The centre contributes to the work in the WHO-FIC Network in accordance with the agreement with WHO. It provides members in eight Committees and Reference Groups including co-chairs in both FDRG and FDC, and contributes to the work with the WHO-FIC Classification of interventions ICHI, and in the Mapping Task Force.

The Nordic WHO-FIC Collaborating Centre
The Centre has bilateral 4-year agreements between the Health Authorities in Denmark, Iceland, Finland, Norway and Sweden. The countries have agreed on a 4-year work plan that is updated in concordance with the regulations of the Norwegian/Nordic WHO-FIC Collaborating Centre.

Work from September 2022 to September 2023
A delegation of 17 experts from the Centre participated in the Annual WHO-FIC Meeting in Geneva October 2022. Additional contribution in CRGs are described below.

FDC
• Ann-Helene Almborg was re-elected for another two years as co-chair, and has prepared and chaired virtual meetings and the hybrid FDC mid-year (and joint ITC session) meeting May 11th, where also Solvejg Bang (VM), Marie Vikdal (VM) and Thomas Maribo (M) participated.
• Ann-Helene Almborg has contributed in several tasks in the FDC SWP, e.g. the WHO reference classifications and in the WHO-FIC content model alignment and harmonization.
• Ann-Helen Almborg, Ralph Dahlgren and Arna Harðardóttir are the Nordics participants to the NCSP+ and ICHI mapping for the Casemix/DRG use case.
• Ann-Helene Almborg are first author of three posters, and co-author in several other posters in WHO-FIC Annual meeting 2023.

MRG
• Anne-Gro Pedersen (VM) and Eva Strand (VM) have participated in regular and frequent online meetings on strategic discussions for implementation of ICD-11, and on premises in mid-year meeting mortality coding proposals in ICD-11.
• Nordic experts have participated in IRIS user groups forum to better understand the needs for implementation of ICD-11.
• Nordic experts have performed their routine regional coding comparisons for Nordic and Baltic countries. Our acknowledgements goes to Patricia Wood (Canadian WHO-FIC CC) for continuous support on the coding exercises.

MRB
• Øystein Hebnes (VM), Olaf Steinum (VM), and Christian Francke (M) have participated in meetings and contributed in discussions of morbidity coding proposals in ICD-11 and the topic of Mpox in ICD.
• Several Nordic representatives participated on premises in mid-year meeting exercises on cancer coding (part 2), and in the mid-year meeting; rare diseases, and the 3-part harm model.
• Olaf Steinum and Christian Francke volunteered to join a newly established small working group on MRB cancer coding exercises.

CSAC-ICD
• Olaf Steinum (VM) and Øystein Hebnes (VM) and Christian Francke (M) have regularly contributed in meetings.
• Olaf Steinum have participated in proposal triage in the CSAC Small Group.
• Olaf Steinum (VM) and Christian Francke (M) participated in the mid-year meeting May 8-11th in Sydney, and also contributed substantially with comments and update suggestions to several proposals before final voting.

CSAC-ICF
• Solvejg Bang (VM), Ann-Helene Almborg (VM) participated in virtual meetings and discussions about ICF.

EIC
• Solvejg Bang (VM) and Ann-Helene Almborg (VM), as well as other representatives of the Nordic Centre has attended meetings, including the mid-year meeting May 9-10th in Sydney.
• Several Nordic representatives and colleagues have participated in morbidity coding exercises in ICDFIT.

ITC
• Several virtual ITC meetings and the mid-year meeting June 6th was attended by observers and Ann-Helene Almborg (VM) from the Nordic centre.

Mapping Task Force
• Ann-Helene Almborg and Eva Strand are resources provided from the Nordic centre, and have participated and contributed in frequent meetings since the establishment of the task force.

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Abstract

In 2022–2023, the focus of the Stanford CC work included: (1) Providing leadership in the activities of the WHO-FOC Informatics and Terminology Committee (ITC) and the Mapping Task Force; (2) Collaborating with the FDC on WHO-FOC Foundation content harmonization; (3) Preparing for the modernization of iCAT; (4) Investigating the literature on terminology mapping and ontology alignment.

Introduction

The Stanford University WHO CC has the mission to provide support for the development, maintenance, and implementation of infrastructure to author and manage WHO classifications and their associated terminologies. To fulfill this mission our Centre assist the WHO-FOC Network by (1) Providing leadership in the activities of the WHO-FOC Informatics and Terminology Committee (ITC) and the Mapping Task Force (MTF); (2) Collaborating with the FDC on WHO-FOC Foundation content harmonization; (3) Preparing for the modernization of iCAT; (4) Investigating the literature on terminology mapping and ontology alignment.

Methods & Materials

1. As a co-chair of the ITC, Mr. Tu helps to lead the ITC work. Appointed a co-chair of the MTF, Mr. Tu worked with the other co-chair and the WHO liaison to propose a work plan for the task force. He organized a working group to provide guidance and recommendations for centres embarking on the mapping of ICD-10 country modifications to ICD-11.

2. Mr. Tu worked closely with the FDC on the harmonization of ICD, ICF, and ICHI content in the WHO-FOC Foundation. In particular, he led the work to create an inventory of areas of potential overlap among ICD-11, ICF, and ICHI and to analyse the nature of the overlaps.

3. The Musen Lab at Stanford University, which supports the work of the Centre, formed a consortium with two Romanian companies led by former Centre members to bid for the contract to modernize the WHO-FOC Content Model and the iCAT web-based software for curating the WHO-FOC classifications. WHO decided to award the contract to the Stanford-led consortium, although at the time of poster preparation the contract has not been issued.

4. To advance the TOR activity “Assistance in the development of terminology mapping methodology,” Mr. Tu designed a protocol for a scoping review of terminology mapping and ontology alignment methods and technologies. He conducted preliminary work based on the protocol.

Results

1. Mr. Tu has had monthly conference calls with co-leaders of the ITC and he helped to plan for and conduct ITC activities at WHO-FOC annual and mid-year meetings. For the Mapping Task Force, he, the other co-chair, and the WHO liaison proposed a workplan focusing on (a) national mapping use cases, priorities, and current work, (b) guidance and coordination on ICD-10/ICD-11 mappings, (c) two-way communication strategy with the WHO-FOC community, and (d) resources on terminology mapping and ontology alignment. A subgroup of MTF is actively developing the criteria and processes for reviewing the adequacy of the WHO ICD-10/ICD-11 crosswalks.

2. Mr. Tu worked closely with ITC and FDC members on the harmonization of ICD, ICF, and ICHI content in the WHO-FOC Foundation. Together the group found significant areas of overlap in chapters on ‘Reasons for contact’ with the health services, ‘Factors influencing health services’, ‘Causes of healthcare related harm or injury’, ‘Dimensions of external causes’, and other extension codes. They found that there are many instances where the same entities play different roles in different or even within the same classifications. For example, Motorcycle plays the role of “Object involved in causing injury,” “mode of transport of person injured in transport related event”, and “Product as counterpart in land transport crash” in ICD, and as “Assistive product and technology for transportation” in ICHI. A completed inventory is expected to be available at the time of the Annual Meeting. Additionally, Mr. Tu studied US Social Administration’s disability benefit criteria as a potential use case for linkages between entities of multiple WHO-FOC classifications but concluded that it’s a use case for joint use rather than linkage.

3. The Musen lab proposes to develop a new authoring tool for the WHO-FOC Foundation, called iCAT-X, as a modern Web application based on a microservices architecture. iCAT-X will be a customization of the latest WebProtégé (https://webprotege.stanford.edu/) that was built from the ground up using the latest standards in knowledge representation and modern best practices in software engineering. Applications that are implemented using microservices, such as the proposed iCAT-X system, are more maintainable, more extensible, and much more scalable than their monolithic counterparts.

4. To evaluate the feasibility of the terminology mapping/ontology alignment review protocol, Mr. Tu conducted search based on keywords and criteria defined in the protocol. He obtained 339 English-language references from PubMed and 2915 from SCOPUS. With further filtering and review of the abstracts, the PubMed references was reduced to 80, but almost 200 SCOPUS references remained after 300+ candidates were reviewed. The scope of the review as defined by the protocol is clearly too large. A reset of the review is necessary.

Discussion

A refactoring that distinguishes between objects and the roles they play would make the hierarchies of the classifications more consistent. Such refactoring can be modelled formally in an ontology with neutral hierarchies of entities (e.g., products) and their roles. The use of an entity in a particular classification can be logically composed from them (e.g., “Motorcycle as mode of transport of person injured in transport event” can be defined in Manchester OWL syntax as (Motorcycle and (hasRole some “Mode of transport of person injured in transport event”)) if “Motorcycle” and “Mode of transport of person injured in transport event” are defined separately.

The review of mapping methods and technologies can be adjusted by 1. sharpening the requirements from the WHO-FOC perspective, 2. narrowing the scope in terms of different subtasks in the mapping lifecycle (e.g., only looking at creation of maps between schema (class) entities and 3. surveying only available tools/systems. The review should examine the theoretical basis, use cases, formats, strengths and weaknesses included systems. Sources for systems to review may come from those that participated in the Ontology Alignment Evaluation Initiative. The experiences of mappings (SNOMED CT/ICD-11 and ICD-10 CA/ICD-11) described in the work of MTF suggest the need and timeliness of for such a review of practical mapping technologies.
WHO - FAMILY OF INTERNATIONAL CLASSIFICATIONS NETWORK ANNUAL MEETING 2023

Annual Report from the WHO-FIC Collaborating Center in China, 2022-2023

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Abstract
WHO-FIC Collaborating Center in China has been prioritizing the implementation preparation and pilot use of ICD-11 in China. This poster presents the annual report of the Center, highlighting ICD-11 related activities conducted between July 2022 and August 2023.

Introduction
Peking Union Medical College Hospital (PUMCH) has been designated as the Collaborating Center for the WHO-FIC in China since 1981, and re-designated in March 2023.

This is a summary of the ICD-related activities of the Center between July 2022 and August 2023. Activities related to Traditional Medicine and ICF may be reported separately.

Translation of ICD-11
The Chinese translation of ICD-11 excluding descriptions has been completed on the Translation platform. Chinese is available for ICD-11 MMS 202009, 202105, 202202 and 202301 release on the ICD-11 Browser.

ICD-11 Maintenance
Along with the routine update of ICD-11 by WHO, the Center has been continuously contributing to the maintenance of ICD-11 Chinese version on the translation platform. The maintenance includes translation of the newly added entities and update to the changed contents.

By analyzing the feedback from the ICD-11 national morbidity pilot, members of the Chinese Center submitted 443 proposals on the ICD-11 Proposal Platform from July 2022 to August 2023, including hierarchical changes, addition/deletion of entities, content enhancement and post coordinations.

Table 1: Summary of proposals submitted by the Center from July 2022 to Aug 2023.

<table>
<thead>
<tr>
<th>Proposal Type</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add New Entity</td>
<td>37</td>
</tr>
<tr>
<td>Complex Hierarchical Changes</td>
<td>180</td>
</tr>
<tr>
<td>Content Enhancement</td>
<td>87</td>
</tr>
<tr>
<td>Delete Entity</td>
<td>96</td>
</tr>
<tr>
<td>Postcoordination</td>
<td>43</td>
</tr>
<tr>
<td>Total</td>
<td>443</td>
</tr>
</tbody>
</table>

The Center provides Classification and Statistics Advisory Committee co-chair to lead the review on ICD-11 proposals submitted by early adopters and other users from October 2022 to October 2024.

ICD-11 Education
A series of webinars were held to familiarize the users with ICD-11, with over 1000 participants each time. More webinars are scheduled.

Table 2: A series of ICD-11 webinars held from Jun 2022 to July 2023.

<table>
<thead>
<tr>
<th>Webinars</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious diseases</td>
<td>15 Jun 2022</td>
</tr>
<tr>
<td>Tumors</td>
<td>27 Jul 2022</td>
</tr>
<tr>
<td>Endocrine and metabolic</td>
<td>14 Sep 2022</td>
</tr>
<tr>
<td>Neurological diseases</td>
<td>28 Dec 2022</td>
</tr>
<tr>
<td>Sleep-related disorders</td>
<td></td>
</tr>
<tr>
<td>Eye diseases</td>
<td></td>
</tr>
<tr>
<td>Respiratory diseases</td>
<td></td>
</tr>
<tr>
<td>Pregnancy, childbirth or the</td>
<td></td>
</tr>
<tr>
<td>19 Jul 2023 puerperium</td>
<td></td>
</tr>
</tbody>
</table>

Translation of the descriptions of entities is ongoing. A draft Chinese translation of reference guide available together with 202205 release was ready. It needs to be updated to the most up to date 2023 version. Differences between the old and new versions will facilitate updating the translation and save the efforts of manual review.

Other activities
Experiences and lessons learnt from ICD-10 and ICD-11 dual coding in morbidity were shared at the MbRG mid-year meeting in May.

A presentation to elucidate the integration of classification and terminology in ICD-11 was made at the conference of HIM professionals in Henan Province, with over 700 participants.

The Chinese Center has translated the WHO recommendations for conducting an external inspection of a body and filling in the medical certificate of cause of death into Chinese.

From Dec 2022 to Jun 2023, a staff from the Center worked with WHO, helping with the improvement of ICD-11 postcoordinations and logical definitions of the entities.

The Chinese Center has been positively participated in the activities of WHO-FIC Committees and Reference Groups during the past year. The Center provides the CSAC co-chair and TMRG co-chair.

Acknowledgements or Notes
We are grateful for the support from PUMCH and National Health Commission of PR China, as well as the technical support from WHO CAT Team.
Assist WHO/PAHO in the development, maintenance and revision of the Classifications, Terminologies and Standards (CTS) products, in particular the International Classification of Diseases (ICD), the International Classification of Functioning, Disability and Health (ICF), the International Classification of Health Interventions (ICHI).

Mexican WHO-FIC CC (CEMECE) has maintained the ICD-11 dissemination and training tasks for basic general knowledge, as well as for the mortality and morbidity components. Likewise, work has been done in collaboration with countries of the Region of the Americas through PAHO coordination, with advice on the use of the ICD-11 to Panama and Ecuador. Since April 2023, through the Pan American Health Organization (PAHO) and the national representation in Ecuador requested technical collaboration of Mexican WHO-FIC CC, in its role as CC to support technical tasks for the implementation and transition of the ICD-11 in that country. The activities focused on the following axes: Basic and intermediate training for ICD-11: generalities, code assignment, platform management, mortality and morbidity and training of resources to have ICD-11 instructors to replicate the technical contents within the MoH and the Institute of Statistics. Also, collaboration for a course for Panama through cooperation agencies with the aim of training ICD-11 instructors for disability assessment boards within the National Secretariat for Disability (SENADIS by its Spanish acronym). He has also participated in teleconferences to share the progress of the implementation of the ICD-11 for Bolivia, Nicaragua, Colombia and Sri Lanka. In May, PAHO held a webinar to share the experience of the countries of the Region of the Americas in the training of instructors in ICD-11 and this activity will be replicated throughout the Region. During all the trainings, users are encouraged to use the ICD-11 in real scenarios so that the Spanish language is suitable for the coding tool.
Activity Report from WHO-FIC CC in Japan

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Abstract

The Collaborating Centre for the WHO-FIC in Japan (Japan CC), at Japan ICD Office in the Ministry of Health, Labour and Welfare, began its third designation period in September 2019. At that time, a collaborative network was established with the ministry and seven other organizations, including national research institutes that were members of the Centre during the second designation period. We have now entered the fourth designation application process, as the third designation period will expire in September 2023. To enable the use of ICD-11 in official statistics in Japan, Japan CC works with Japanese medical and dental societies to translate ICD-11 into Japanese, including its latest updates. It hosts the ICD Advisory Board meetings, organizes lectures on the status and challenges related to ICD-11 implementation in Japan, and participates in WHO-FIC activities through the collaborative network.

Application for fourth designation as WHO-FIC CC in Japan

Since its first designation in 2012, the WHO Collaborating Centre for the Family of International Classifications in Japan ("Japan CC") has participated, for 12 years over three designation periods, in the activities of the WHO-FIC, in cooperation with many experts and organizations in Japan. After the expiration of the third period in September and redesignation by WHO, Japan CC will begin its activities for the fourth period.

The last decade-plus years saw improvements to ICD-10 in parallel with the development of ICD-11, which finally came into effect in January 2022. Japan CC's fourth designation period comes at a time when substantial discussions will begin on ICD-11 implementation in countries around the world. Japan CC hopes to continue to contribute to the development of the WHO-FIC in each area of its TOR.

Members of the collaborative network of Japan CC

- Core of the WHO-FIC community in Japan

- Ministry of Health, Labour and Welfare
- National Institute of Public Health
- National Rehabilitation Center for Persons with Disabilities
- National Cancer Center
- National Cancer for Global Health and Medicine
- National Center for Child Health and Development
- Japan Hospital Association/Japan Society of Health Information Management
- Japan Liaison for Oriental Medicine

Terms of Reference of the third designation period of Japan CC

TOR 1: Assist WHO in its work to develop, maintain and revise the WHO Family of International Classifications (WHO-FIC).
TOR 2: Contribute to the global network of WHO Collaborating Centers on FIC under WHO's leadership.
TOR 3: At the request of WHO provide support for local and regional users of classifications.
TOR 4: In support of and in coordination with WHO, promote use of the WHO-FIC as and when appropriate by developing, and sharing training materials, organizing and conducting training courses and translating international WHO-FIC materials for local use, in coordination with WHO.
TOR 5: Support WHO to strengthen the implementation of WHO classifications, supporting quality assurance procedures of the WHO-FIC classifications regarding mechanisms, norms and standards of classification use, data collection, and data analysis.

TOR 3

• Assist WHO in its work to develop, maintain and revise the WHO Family of International Classifications (WHO-FIC).
• Contribute to the global network of WHO Collaborating Centers on FIC under WHO's leadership.
• At the request of WHO provide support for local and regional users of classifications.
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• Support WHO to strengthen the implementation of WHO classifications, supporting quality assurance procedures of the WHO-FIC classifications regarding mechanisms, norms and standards of classification use, data collection, and data analysis.

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• Support WHO to strengthen the implementation of WHO classifications, supporting quality assurance procedures of the WHO-FIC classifications regarding mechanisms, norms and standards of classification use, data collection, and data analysis.

TOR 5

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• Support WHO to strengthen the implementation of WHO classifications, supporting quality assurance procedures of the WHO-FIC classifications regarding mechanisms, norms and standards of classification use, data collection, and data analysis.

Contribution to the global implementation of ICD-11

In preparation for transition to ICD-11, the WHO-FIC Network is focusing more efforts in activities involving actual coding using ICD-11 and envisioned system integration.

• Mapping Task Force, established in 2023, meets once every two to three months.
• Japan CC recommended members and participates in the activity.
• Discussions began on digitalization of mortality coding rules. DORIS Version 1.0 Release Candidate was released in 2023. Japan CC continues to contribute to this development.
• MbRG conducted Cancer coding exercise. Upon request, Japan CC cooperated in conducting a pilot study in Japan and provided the results.

Translation work for application of ICD-11 in Japan

The ongoing translation of the terms listed in ICD-11 into Japanese is one of the essential tasks for integrating ICD-11 into official statistics in Japan. Under the auspices of the Japanese Association of Medical Sciences (JAMS) and the Japanese Association for Dental Science (JADS), the work is carried out in cooperation with more than 50 academic societies in Japan, with the terms at the chapter, block, and category levels of Mortality and Morbidity Statistics (MMS) in the final stages of coordination for finalization. Specifically, to meet the requirement of the Japanese statistics law to use single expressions for description, considered are the status of use of medical terms in Japan, expressions used in ICD-10, and linguistic features of the Japanese language. Additionally, there is consultation with JAMS, JADS, and other related societies, and coordination with other related laws and regulations as a basic policy.

The terms in the Foundation, beyond those at the chapter, block, and category levels of MMS, are also being translated. Given the continuous updates to ICD-11 and our policy to basically translate all terms in ICD-11 to make them widely available even if they are not part of the official statistical standard, a framework for continuous translation of the updated terms in Japan is also being considered, in parallel with the actual translation work.

Meeting of ICD Advisory Committee - Knowledge resource for ICD-11 in Japan

The Advisory Committee on Diseases, Injuries and Causes of Death ("ICD Advisory Committee") consists of medical and statistical experts who deliberate on development of supplementary classifications for implementation of the ICD-based "Statistical Classification of Diseases, Injuries and Causes of Death" established in Japan as a statistical standard, minor changes to the standard, and other technical issues related to the standard.

The committee met in September 2023 to discuss issues and progress made in translating ICD-11 into Japanese, and will continue to discuss implementation of ICD-11 in official statistics in Japan.

Lecture on "ICD-11 implementation: current status of and challenges related to application in Japan"

A member of Japan CC gave a lecture on the "current status of and challenges related to application of ICD-11 in Japan."

• In developing the ICD-11-based statistical standard, a discussion is needed on the handling of chapters added as new concepts in ICD-11 for MMS.
• For implementation and operationalization of ICD-11 and the statistical standard that will be revised based on ICD-11, the basic policy being considered is to translate terms in ICD-11, including the many terms in the Foundation, even if they are not included in the statistical standard, and publish the translations so that they can be used widely.
• From the perspective of basing the development of Japan's Mortality Classification Table and Morbidity Classification Table on ICD-11, the plan is to first verify the special tabulation lists published by WHO and then establish a policy for the development of the tables based on ICD-11.
WHO-FIC Korea Collaborating Centre is carrying out diverse tasks to prepare for the smooth implementation of ICD-11. It includes conducting pilot studies for mapping between the Korean version of ICD-10(KCD-8) and ICD-11, validating the Korean translation of ICD-11 terms, and enhancing the capabilities of healthcare and medical institutions. To drive forward these efforts, various organizations are collaborating.

### Introduction

The WHO-FIC Korea Collaborating Centre is actively engaged in promoting activities related to the development and utilization of the WHO-FIC international classification system.

Furthermore, we are preparing for the smooth implementation of ICD-11 and is progressing with the development of the Korean-language version.

### Development of ICD-11 Korea version

WHO-FIC Korea Collaborating Centre and the Health Insurance Review and Assessment Service (HIRA) are preparing the initial implementation of ICD-11 in Korea by developing its Korean version. The Korea Health Information Service (KHIS) has completed the primary Korean translation of the entire ICD-11 foundation. HIRA has validated the Korean translation of titles for chapters 1 to 26 to improve clinical relevance.

### ICD-11 Mapping Pilot Study

WHO-FIC Korea Collaborating Centre is conducting research on mapping efficiency and utilization of ICD-11 through a pilot mapping analysis between the Korean version of ICD-10 (KCD-8) and ICD-11. This research aims to analyze the correspondence between KCD-8 and ICD-11, quantitatively identify disease names and post-coordination concepts unique to KCD-8, and anticipate manual effort reduction and efficient mapping planning through this analysis.

### Education and Research for ICD-11 Implementation

The Korean Health Information Management Association initiated an ICD-11 session during its spring academic conference. Experts were invited for ICD-11 topics such as its application areas, implementation readiness, exploration of chapters, introduction and extended codes.

Furthermore, an ICD-11 initiative team has been formed for research meetings focusing on the structure, principles, and mapping between ICD-11 and KCD. Discussions are regarding the smooth implementation of tasks such as statistical reporting, computer systems, and analyzing the usage of codes across various medical institutions.

### Traditional medicine activities

WHO-FIC TMRG Korea members participated in the Korean translation and validation of the Traditional Medicine Chapter 26 of ICD-11. They conducted Korean translation and validation for 407 TM disorder and pattern titles in module 1 of the Traditional Medicine in Chapter 26 of ICD-11.

### Development Research of Core Rehabilitation Medical Data for Next-Generation EMR based on ICF

The Ministry of Health and Welfare has initiated the development of a Next-Generation National Hospital Information System. As part of this effort, the National Rehabilitation Center is working on the systematic management of core rehabilitation medical data through the next-generation medical information system. This includes selecting, creating, and managing key rehabilitation medical data for accuracy, validity, and usefulness. The goal is to enhance data utilization for public benefit and rehabilitation policy-related initiatives.

### Conducting an ICF-based International Spinal Cord Injury Survey (InSCI) study

The National Rehabilitation Center participated as the Korean representative in the 1st international spinal cord injury survey in 2017 with data from 892 participants. The ongoing 2nd InSCI survey involves 40+ countries aiming for 1000 participants. This year, in addition to the National Rehabilitation Center, four other institutions are collaborating for a multi-institutional study. The survey, based on ICF, covers lesion characteristics, energy and mood, health issues, activity, independence in daily living, healthcare service utilization, COVID-19 and vaccination, personal factors, with 75 questions.

### Acknowledgements

The WHO-FIC Korea Collaborating Centre has been striving to develop and utilize the WHO standard classification system since 2012, and plans to carry out various tasks to utilize and maintain the WHO standard classification system changed into electronic resources.

We deeply appreciate the relevant experts and organizations supporting and cooperating with the Korean WHO-FIC Collaborating Centre.

Webpage:
- (MOHW) www.mohw.go.kr
- (K-HIS) www.k-his.or.kr
South African WHO-FIC Collaborating Centre: 2023 report
Debbie Bradshaw¹, Lyn Hanmer¹, Soraya Maart², Warrick Sive³, Stefanus Snyman¹
¹South African WHO-FIC Collaborating Centre, SAMRC Burden of Disease Research Unit; ²University of Cape Town; ³University of Witwatersrand, South Africa

Abstract
Activities of the WHO-FIC Collaborating Centre in South Africa are focused on support for the development, implementation and use of the WHO-FIC in South Africa, in the WHO African Region and internationally; and support for strengthening civil registration and vital statistics (CRVS) in the WHO African Region. The CC is actively represented in most of the Committees and Reference Groups of the WHO-FIC network.

Introduction
The WHO-FIC Collaborating Centre in South Africa (WHO-FIC SA) is the only WHO-FIC CC in the WHO African region. The CC is hosted by the South African Medical Research Council (SAMRC) in Cape Town, and is based in the SAMRC Burden of Disease Research Unit. WHO-FIC SA continues to support the development, implementation and maintenance of the WHO-FIC in South Africa, across the Region, and through the WHO-FIC network. The term of designation as collaborating centre ended in 2020 and we are currently under designation for a further term as a WHO CC.

The CC continues to implement its work plan in close collaboration with key stakeholders in South Africa, and in the Region through the WHO African Regional office.

Key results: 2022-2023

Support the implementation of WHO-FIC classifications in South Africa and in the African Region
The CC is engaging with key stakeholders in South Africa on how to support the transition from ICD-10 to ICD-11 for morbidity and mortality coding, and support the strengthening of births and deaths registration processes in the country.

WHO-FIC SA supported the efforts of the WHO regional office to promote WHO-FIC through activities such as
✓ the meeting of African region delegates during WHO-FIC 2022 at WHO headquarters, a regional reportback on WHO-FIC in June 2023, and WHO-FIC annual meeting orientation for African region delegates;
✓ WHO African region activities related to strengthening of CRVS in the Region including training in cause of death certification.

WHO-FIC SA is assisting the WHO African region in the identification of potential WHO-FIC related CCs in the Region, and has initiated contact with the Verbal Autopsy CC based at the University of the Witwatersrand (currently under designation) with a view to future collaboration.

Participate effectively in the international WHO-FIC network
The CC is actively represented in most of the WHO-FIC Committees and Reference Groups, including the Verbal Autopsy Reference Group (VARG). Representatives of the CC participate in CRG working meetings and projects, and successfully participated virtually in the 2023 mid-year meetings of the WHO-FIC structures.

Contribute to the development and maintenance of WHO-FIC classifications aligned to the needs of the Region
ICD-10 & ICD-11:
Inputs to the further development of ICD-11 are essential to ensure that the classification meets regional needs.
✓ The CC continues to participate in the ICD-11 update process (Dr Natasha Kallis and Dr Lyn Hanmer).
✓ Prof Debbie Bradshaw and Dr Pam Groenewald have been invited to participate in WHO task teams related to ICD-11 mortality coding development.
✓ The CC is collaborating with the WHO Regional Office for Africa in planning and supporting the development of ICD-11 online training for the region (Prof Bradshaw, Drs Kallis, Groenewald and Snyman).

ICF:
✓ WHO-FIC SA continued to participate in the ICF Update process (Prof Soraya Maart and Dr Stefanus Snyman)
✓ An online ICF Facilitators Course was presented to the physiotherapist, occupational therapist and speech-language & hearing therapist professional associations in South Africa. They are now equipped to develop ICF-based clinical guidelines for UHC.
✓ The ICF Education Portal (www.icfeducation.org) was maintained.

Key results: 2022-2023

ICHI:
✓ The successful development of ICHI is of relevance for South Africa, since the country does not currently have a national procedure coding standard. Accurate data on procedures are essential for the planned implementation of a National Health Insurance (NHI) system, which is currently under way.
Dr Warrick Sive has initiated projects to investigate the appropriateness of ICHI in the local context.

Develop, deliver and evaluate education relating to the WHO classifications and Cause of Death Certification
✓ The online Medical Certification of Cause of Death (MCCD) course for South Africa is freely available at: http://www.deathcertification.org/
✓ The CC is collaborating with the WHO Regional Office for Africa on the development of comprehensive MCCD and ICD-11 online training materials by providing content for a Regional online MCCD course, based on the South African course.
✓ The ICF Facilitators course, which was originally developed by the Dutch WHO-FIC Collaborating Centre, was augmented by members of the collaborating centres in South Africa, Australia and The Netherlands. It is now a fully-fledged online course.

Acknowledgements
Activities and projects of WHO-FIC SA are funded largely by the SAMRC. All support for WHO-FIC SA is gratefully acknowledged.

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UK WHO-FIC Collaborating Centre Annual Report 2023

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¹UK WHO-FIC Collaborating Centre, NHS England and ²Office for National Statistics

Abstract

The UK WHO-FIC Collaborating Centre was redesignated for a new four-year period from July 2022. The Collaborating Centre continues its involvement in the WHO-FIC Network, Committees and Reference Groups. This enables the UK to contribute to the products benefitting both the UK and the international community for classifications. This poster outlines some of those activities since the last WHO-FIC Annual Network meeting in October 2022.

Introduction

Since 2014 NHS Digital in Leeds, England has hosted the WHO-FIC UK Collaborating Centre and redesignation was achieved for a further 4-year period 2022 to 2026. In 2023 NHS Digital merged with NHS England which now hosts the UK WHO-FIC Collaborating Centre. NHS England collaborates with the four constituent countries through the Information Representation Services Strategy Board and the UK Classifications Technical Advisory Board.

In implementing the activities of the Collaborating Centre NHS England also collaborate with the Office for National Statistics (ONS) to ensure the ICD mortality use cases are represented. This report focuses on work activities completed against the WHO Collaborating Centres generic work plan from October 2022 to October 2023.

1. Support ICD-11 implementation strategy and guidance

In April 2023 NHS England produced a draft high level plan ICD-11 implementation for morbidity purposes in England identifying specific work packages that need to be completed. The draft is with constituent countries for initial feedback, informant, prioritisation and identify areas for potential joint working.

NHS England published ICD-11 information to engage with users on a cloud-based digital collaboration platform: https://nhsengland.kahootz.com/t_c_home/view?objectID=36254864

ONS gave a presentation to the MRG on the 'Implementation of ICD-11 for mortality at ONS' and this has been published on the WHO-FIC Implementation Forum.

NHS England have supported Scotland in their adoption of ICD-11 for mental health clinicians by providing the ICD-11 to ICD-10 MNDN look-up table built using the cloud-based digital collaboration tool. It uses information provided by Public Health Scotland and is maintained by the Terminology and Classifications Service at NHS England.

Through the various committees and reference groups we have:
- Completed 800+ ICD-11 line coding exercises and evaluated each in relation to level of difficult, scope and topics on the ICD-Fit platform
- Maintained the collaboration workspace on behalf of the WHO-FIC Education and Implementation (EIC) Committee.
- Prepared the final ICD-11 Implementation Forum for EIC launch in May 2023.
- Participated in the revision of cause of death coding rules for ICD-11 and preparation of materials for ICD-11 Reference Guide and WHO’s DORIS web-based coding system prototype
- Shared ONS plans for ICD-11 implementation with various groups

2. Support for ICD-11 maintenance and tooling environment improvements

The UK Centre has submitted five ICD-11 proposals for consideration and completed the review, research and voting for Round 1 and 2 on WHO ICD-11 proposal platform.

We have contributed to:
- Submitted detailed answers for the cancer coding exercise and mortality coding exercises.

3 & 4 Support for ICHI implementation and development / maintenance

As a member of the WHO-FIC Education and Implementation Committee participated in the review of the ICHI Reference Guide.

The UK has a country procedure classification (OPCS-4) that is implemented across the four constituent countries therefore participation in this activity has been limited.

5 & 6 Support for ICF implementation, maintenance and modernization

This year there have been no ICF related activities as efforts are concentrated on ICD-11.

7. WHO-FIC cross-cutting activities

The UK CC representatives participate in the Advisory Council, Committees and Reference Groups as voting members/members/observers:
- WHO-FIC Network Annual meetings
- WHO-FIC Advisory Council
- WHO-FIC European Network
- Classifications Statistical Advisory Committee
- Morbidity Reference Group
- Informatics and Terminology Committee
- Family Development Committee
- Mortality Reference Group
- Functioning and Disability Reference Group
- Mapping Taskforce.

In addition:
- Co-Chaired WHO-FIC Education and Implementation Committee from Nov-22 and held monthly EIC management calls

A vision for a common ontology

The UK supports the joint efforts between WHO and SNOMED International linking ICD-11 and SNOMED CT to create a common ontology. The successful adoption of ICD-11 depends on our ability to integrate in our health information ecosystem linking rich point of care information in patient records to ICD-11 and getting the best out of the both standards for the purpose they are designed.

NHS England have also participated in the WHO led calls with a steering group of collaborating centres that have a similar interest in a common ontology as a means of moving from one standard to the other and potential synergies for maintenance and translation of two different terminologies.

Other activities

NHS England provided a mapping resource (map lead) for a WHO and SNOMED International collaborative pilot mapping exercise between ICD-11 and SNOMED CT. Although the exercise ran from Sep-2021 to Aug-2022 the Map Lead continued to finalise and collate documentation and guidance during Oct to Nov 2022.
Activities

1. Development of Quality and Safety related projects for global advancement of ICD-11

- Virtual meetings have been held (2) related to Q&S indicator work.
- Mapping of codes from historical PSIs is completed
- Categorisation of event types and planning of rating exercise underway

2. Design and conduct research to facilitate use of ICD-11

- Manuscript supplement series related to reference guide, objective being to provide short briefs on sections of the reference guide that highlight the strengths of ICD11. Nine papers currently published: https://bmcmedinformdecismak.biomedcentral.com/articles/supplementseries/volume-21-supplement-6
- Draft manuscript of Comorbidity Index algorithm for ICD-11

3. Leveraging utility, refining, and validating ICD-11 algorithms

- Ongoing work on EMR NLP to identify conditions for field testing of implementation of ICD-11
- Comorbidity algorithm improvement in hospital mortality prediction

4. Promoting WHO FIC products to local and global community

- Collaborative work with CIHI
- Collaborative work with colleagues at UC Davis related to field testing for ICD-11 use in US
- Hosted & funded meeting with US stakeholders to promote ICD-11 Q&S and begin discussions related to adoption/implementation
- Sending newsletter to local network related to new publications on ICD-11 or webinars.

Summer student projects:

Cody Brown - Bachelor of Applied Health Information Sciences (Honours)
Capstone project:
- Examining ICD11 chapter 23 causes of harm procedure codes against ICHI interventions
- Summarized key differences in these codes and suggestions for refinement

Jiyeon Sung – Health Information Management Diploma Summer studentship:
- Concept mapping of AHRQ QSRS (Quality and Safety Review System) and ICD-11 Q&S concepts
- Summary of overlap of coding concepts and terms

Washington DC Meeting for Q&S outcomes:
- Curricular development
  - Webinars – presentation to AHRQ technical developers outlining Q&S in ICD-11
  - Dissemination and implementation
- Knowledge Translation
  - Articulate the goals of ICD-11 Q&S
  - Develop research opportunities for collaboration
- Support national implementation of ICD-11

Future Plans

- Translation of PSI work in ICD10 by the Q&S group to ICD11 to continue
- Knowledge translation activities in collaboration with CIHI regarding implementation & use of ICD-11
- Research support for key stakeholders assessing implementation

- Development of International Indicators for Assessing the Quality of ICD-coded Administrative Health Data
- Early discussions related to NLP and ICD-11 grant possibilities
- Dissemination of primary care grant results with stakeholders

Acknowledgements or Notes

Canadian WHO-CC for Classification, Terminology & Standards Heads: Dr. Hude Quan/Dr. William Ghali

WHO-CC is supported by the University of Calgary and Canadian Institutes of Health Research (CIHR)
Abstract
The aim of this work is to present a summary of the activities carried out over the last year (July 2022-July 2023) by the Italian WHO-FIC CC according to its workplan and the WHO-FIC Network Strategic Work Plan.

Introduction
In July 2023, the Central Health Directorate – Classification Area – Friuli Venezia Giulia Region was re-designated for the fifth time as a WHO-FIC Collaborating Centre. The new quadrennium started under redefined TORs (Table 1, Figure 1). Lucilla Frattura was confirmed as Centre Head. Nenad Kostanjsek was confirmed as the responsible officer for WHO. In this post, much activity and ICF implementation was carried out according the old TORs (see 2019-2022 annual reports).

Methods & Materials
In its forth year of activity of its fourth quadrennium, the Italian WHO-FIC CC was mainly active on 4 lines of work:
(i) Support ICD-11 implementation
(ii) Management of the WHO-FIC maintenance process
(iii) Support ICD and ICF implementation in Italy;
(iv) Supporting WHO-FIC cross-cutting activities

Results
Support ICD-11 implementation:
Italian experts participated in the work on WHO-FIC harmonization by designing a harmonized content model and by building a software to extract and compare candidate concepts for harmonizing ICD-11 and ICF.

Management of the WHO FIC maintenance process
ICF update process 2022: The 2021 was a transition year for ICF as the ICF was moved to a new environment/platform. Therefore, no discussion on ICF update proposals and voting rounds were organized in 2022. The Italian CSAC ICF secretariat together with the CSAC ICF Co-Chair worked on the preparation of the CSAC poster and other documents to be presented at the 2022 WHO-FIC Network annual meeting, coordinated and participated in the CSAC ICF session at the 2022 WHO-FIC Network annual meeting, and also participated in the CSAC ICF/FDRG joint session. Minutes were prepared for the CSAC ICF session.

ICF update process 2023: In the first part of the 2023, the CSAC ICF activity was focused on integration of 2019+ approved updates into the new platform. 69 update proposals that CSAC ICF had discussed, voted on, and approved between 2018 and 2020 still need to be integrated into the new platform. A screening by the CSAC ICF Secretariat (CSAC-ICF Co-chair, CSAC ICF Secretariat, and WHO) of the 69 updates identified some issues discussed during five teleconferences and email sharing in order to organize discussion with CSAC ICF voting members. A document was prepared and three teleconferences were organized to discuss the open issues, clarify concepts, and revised by members and conclude on the proposed solutions.

Support ICD and ICF implementation in Italy:
Under an agreement with the Italian Ministry of Health, the Italian WHO-FIC CC supports ICD and ICF implementation. A new translation of ICF into Italian was completed, to be aligned with the 2018 ICF updates.

Support ICD and ICF cross-cutting activities:
In the last year, Italian CC experts served as Co-Chair of FDRG (Andrea Martinuzzi, from October 2022, second term), CSAC Secretariat for ICD and ICF (Paula Tonel) and participated in the ICF and ICD update process with two voting members (Lucilla Frattura and Simone Navarra). Italian experts are also members of CSAC, FDRG, MRG, ITC, MbrG, EIC and ICHI Task Force.

Supporting WHO-FIC cross-cutting activities: In the last year, Italian CC experts served as Co-Chair of FDRG (Andrea Martinuzzi, from October 2022, second term), CSAC Secretariat for ICD and ICF (Paula Tonel) and participated in the ICF and ICD update process with two voting members (Lucilla Frattura and Simone Navarra). Italian experts are also members of CSAC, FDRG, MRG, ITC, MbrG, EIC and ICHI Task Force.

ICHIC functioning intervention review
Since 2020, the Italian WHO-FIC CC has been covering the position of the ICHI technical working group Co-Chair participating in the activities related to the ICHI finalization. After the WHO-FIC annual Network meeting in October 2022, work has continued on the final steps for ICHI finalization. Contribution to the alignment and harmonization of the WHO-FIC Foundation has continued. Where applicable, some extension codes used in ICHI became the same as those in ICD-11 e.g. laterality and relational, anatomy and topography, and substances, to ensure consistency across the three reference classifications. A review of the ICHI Reference Guide was undertaken with updates being made to the guidelines based on the feedback received. The linkage of WHO’s Package of Interventions for Rehabilitation to ICHI was reviewed and contributed to enrich the ICHI content with the addition of some new stem codes and index terms.

Harmonization of entities among the WHO FIC reference classifications: work proceeded concentrating on matching ICF body structure and ICD anatomy. Similarly, in collaboration with FDC, content alignment was studied and tested on critical items by members of the Italian CC specifically involved in these activities.

Acknowledgements
To: Friuli Venezia Giulia Regional Administration for funding the CC activities; ISTAT, University of Udine, Fondazione IRCSS Carlo Besta (Milano), IRCCS Nostra Famiglia (Coneggiano) for their collaboration.
Czech WHO-FIC Collaborating centre activities 2022-2023

Authors: Miroslav Zvolský, Šárka Daňková, Kateřina Hanušová, Václav Pecka, Dana Krejčová, Linda Medková
Institute of Health Information and Statistics of the Czech Republic (IHIS CR), Prague, Czech Republic

Abstract: Czech WHO-FIC Collaborating Centre seats in the Institute of Health Information and Statistics of the Czech Republic (IHIS). It covers activities regarding national implementation of WHO classifications, involvement in the WHO-FIC network reference groups and committees work and collaboration with other countries without designated CC.

Introduction
The Czech WHO Collaborating Centre for the Family of the International Classifications (WHO-FIC CC) has been designated in January 2021 and supported by the grant project National Centre for Medical Nomenclatures and Classifications (NMCN) supported by the European Social Fund. However, this grant project ended in June 2023 and since then Czech WHO-FIC CC activities is financed solely by the Institute of Health Information and Statistics of the Czech Republic (IHIS) with continuing involvement of experts from the Charles University in Prague.

Czech WHO-FIC CC Activities
The Czech WHO-FIC CC completed the initial version of the Czech translation of ICD-11 in June 2023. We have launched the Czech ICD-11 MMS Prerelease with the Czech version of Coding Tool. The validation of Czech ICD-11 terminology was a huge task performed with the involvement of experts from the Czech Medical Society. This process led to many proposals on content enhancement and corrections of the original ICD-11. The intensive validation finished with the end of the grant project in June 2023, but the extensive phase continues with open process of comments to the prerelease.

We initiated a survey among several SW producers informing them about WHO ICD-11 tooling. We prepared a demo webpage using Embedded Classification Tool showing the Czech ICD-11 content.

We also started also the Czech version of ICHI with 68% of the content translated by September 2023.

The WHO-FIC CC is active among working groups and intensive collaboration with Czech MoH and healthcare insurance funds:
• maintaining the Czech ICD-10 content and tooling,
• updating the Czech DRG (CZ-DRG) Classification based on ICD-10,
• discussing the future implementation of ICD-11 and ICHI.

The ICF e-learning is also in Czech translation. We provide a basic support for ICF users in Czech.

We organized the KlasifiKon conference in October 2022 including discussion about ICD-11 implementation activities on the European level and several seminars for clinical coders and healthcare information managers.

Eighth edition of the KlasifiKon conference 11th and 12th October 2023 has the implementation of ICD-11 as a main topic together with European and national EHR content standards. KlasifiKon 2023 also introduced an online webinar with information about WHO online tools for ICD-11 publication, implementation, and support.

Acknowledgements or Notes
IHIS, specifically the NCMNC has been entrusted by the Ministry of Health to manage the implementation of the ICD-11 in the Czech Republic. Development of the Czech version of ICD-11 was funded by the European Social Fund within the project of National Center for Medical Nomenclatures and Classifications, CZ.03.4.74/0.0/0.0/15_025/0016089.

Conclusions
ICHI with 68% of the content translated by September 2023.

Czech WHO-FIC CC performed consultations with institutions from Slovakia and Poland regarding mainly ICD-11 translation processes and implementation plans. Wider consultations took place in the framework of WHO-FIC European Network organized by the WHO EURO Office.

The Czech WHO-FIC Collaborating Centre for the Family of the International Classifications (WHO-FIC CC) has been designated in January 2021 and supported by the grant project National Centre for Medical Nomenclatures and Classifications (NMCN) supported by the European Social Fund. However, this grant project ended in June 2023 and since then Czech WHO-FIC CC activities is financed solely by the Institute of Health Information and Statistics of the Czech Republic (IHIS) with continuing involvement of experts from the Charles University in Prague.

We initiated a survey among several SW producers informing them about WHO ICD-11 tooling. We prepared a demo webpage using Embedded Classification Tool showing the Czech ICD-11 content.
ANNUAL REPORT FROM THE ARGENTINA WHO-FIC COLLABORATING CENTRE (CACE) 2022/2023

Authors: Argentina Centre for Classification of Diseases (CACE), Directorate of statistics and information in health (DEIS). Ministry of Health, Buenos Aires-Argentina

Abstract
Argentina Centre for Classification of Diseases (CACE) was redesignated in 2023 as WHO Collaborating Centre on the Family of International Classifications in Argentina and in the Latin American Region, with the support and coordination of the Pan American Health Organization (PAHO/WHO). This poster describes the main activities developed by the Centre during 2022/2023.

Introduction
Since its designation as Collaborating Centre, CACE has developed multiple activities aimed at promoting the use of the Family of International Classifications both in Argentina and in Latin American countries. A number of projects have been implemented in collaboration with PAHO/WHO, involving training activities, participation in the translation into Spanish of ICD-11, and in the transition and implementation processes of ICD-11 in the region. All this projects involved an active cooperation with other reference centres of the region. The Centre has been redesignated in March 2023.

This poster describes the main activities developed during 2022/2023.

Activities

Training activities

In 2023, CACE adapted and launched all courses in a self-administered mode, in order to achieve a greater scope of participants. The courses are available on the Virtual Health Platform, with free access. Spanish-speaking countries in the region were invited to participate. These training activities were complemented with synchronous webinars.

• Self-administered Course on Introduction to ICD-11 - 2nd Edition (April to December 2022), with 259 approved participants (Argentina, Colombia and Paraguay).

• Self-administered Course on Introduction to ICD-11 - 3rd Edition (June to December 2023) with 246 participants (Argentina and Chile).

• Self-administered Course on Medical Terminology and use of the ICD - 3rd Edition (July to December 2022), with 355 approved participants (Argentina and Chile).

• Self-administered Course on Medical Terminology and use of the ICD - 4th Edition (June to December 2023), with 482 participants (Argentina, Bolivia, Chile, Paraguay, Uruguay and Venezuela).

• Virtual course with tutorials on Steps for the selection of the cause of death. Advances in the implementation of ICD-11 - 1st Edition (November to December 2022), with 65 approved participants (Argentina and Chile).

• Self-administered course on Steps for the selection of the cause of death. Advances in ICD-11 implementation - 2nd Edition (June to December 2023) with 95 approved participants (Argentina, Chile and Paraguay).

• Self-administered course on Introduction to Mortality Analysis - 2nd edition (May to December 2023), with 134 approved participants (Argentina and Chile). This course was developed within the framework of the PAHO and Vital Strategies project.

Three webinars were held during the months of June (157 participants), July (175 participants) and August (179 participants) 2023, on ICD-10 and ICD-11 coding with real morbimortality examples. These were transmitted through virtual and streaming video platforms. Exercises were proposed and solved synchronously. Doubts and queries from participants were answered after each webinar.

Other activities

CACE is also part of the WHO Mortality Rules Digitalization Work group. The objective is to facilitate the conversion of the Reference Guide rules into digital rules for the development of underlying cause-of-death selection software DORIS.

With the aim of expanding the search terms in the Spanish version of ICD-11 Coding Tool, the opportunity to conduct a research on synonyms and commonly used abbreviations was proposed at the region. Chile and Argentina collaboratively undertook the initial development of a proposal on abbreviations based on those frequently used in both countries. The methodology and results are presented in another poster.

Meetings

CACE participated in the WHO Family of International Classifications Network Annual Meeting (WHO-FIC 2022) and, in virtual mode, in the mid-year meetings of the committees and reference groups.

The head of Argentina’s CC, as co-chair of the Education and Implementation Committee, participated in all its regular meetings.

CACE also participated in the virtual meetings of the PAHO/WHO Network of Collaborating Centers for the FIC in the region. It collaborated in the activities coordinated by PAHO. This involved joint working with other collaborating centres from regional Spanish-speaking countries and national reference centres.

Acknowledgements

CACE wishes to thank all staff members of WHO, PAHO, and PAHO-Arg for their continued assistance to achieve its activities.

www.argentina.gob.ar/salud/deis/cace/
Abstract
This poster outlines the activities of the French Collaborating Center (French WHO-CC) during 2022-2023 about the different classifications of the WHO-FIC classifications.

**ICF**

The EHESP participated in the -WHOFCIC annual meeting (WHO-HQ): last CSAC-ICF session as co-chair, FDRG and FDRG-EIC sessions, -CSAC-ICF teleconferences: about pending updates to be integrated in the ICF in the new online platform, -FDRG teleconferences, mid-year meeting (May 2023, online): FDRG, FDRG-EIC sessions, ICF Symposium. The EHESP also -updated the French version of the WHODAS 2.0, -continued ICF training for Master students and professionals in the disability field.

**ICD**

French versions

ATHI continues integrating translation of new concepts into the French version of ICD-11 and ensures the quality maintenance and control process on the platform.

On July 2023, the French version of ICD-11 Reference Guide was completely translated, including 2023 updates, diagrams and schemes, with the contribution of CépiDc (Inserm, France) and CIHI, Statistics Canada (Canada).

Promotion

ATHI continues its missions to promote the use of ICD-11 and the WHO-FIC through its contributions to the CSAC ICD, MBRG, FDC and EIC working groups.

Mortality

Concerning mortality, CépiDc still leads a francophone working group (quarterly meeting) in the Francophonie. The group enhances collaboration on issues of mortality coding to improve and standardize coding practices.

**Interoperability**

Regarding interoperability uses cases, ANS is maintaining up to date the publication of ICD 11 under interoperable format (RDF). ANS is also actively participating to mapping task force.

**Improvement**

ANS also went on with the Hospital of Montpellier to the development / Integration of an allergen value set to enrich Description of allergy disease in ICD-11. The value set is ready to be implemented in ICD 11. The process must be defined with WHO classification team. Orphanet is going on Working on Orpha codes mapping to ICD11

2023 also corresponds to the initiation of ICD 11 deployment. The French CC defined several work areas (technical tasks, change management and governance) (see below).

In the governance area, first step is passed: awareness of French MOH and agreement on governance proposal. The latter will include a Strategic committee to validate roadmap, promote dissemination, and allocate resources.

A steering committee will validate and monitor the project plan. An operational committee will ensure liaisons with the ecosystem of users and software vendors.

High Priority actions are identified 1) qualified Mapping ICD10 to ICD11 to ease transition and 2) setting-up an impact study of transition on morbidity coding process in French hospital (main use cases).

Responsibilities within Fr CCOMS are distributed as follow:

Current actions linked to ICD deployment are the following:
- Transition for chronic diseases coding (preparation of operational value set for reimbursement use case).
- Organization of awareness webinars

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Kuwait WHO-FIC collaborating center annual report

Abstract

WHO FIC collaborating center, MOH Kuwait was designated on 10 December 2013. It has fulfilled all the allocated terms of references at time. The center was re-designated twice: on 9 January 2018 and on 4 January 2022. The center is acting to implement the agreed work plan (TORs) between WHO, Ministry of Health represented by WHO-FIC collaborating center and Ministry of foreign affairs in a timely manner and to the highest possible standard of quality. This poster summarizes the work plan activities of the center during the period from January 2022 to January 2023.

Introduction

In coordination with EMRO/WHO and as a part of National Center for Health Information, Ministry of Health, the WHO FIC cc, Kuwait supports efficient utilization of classifications and proper certification of causes of death in EMR countries, GCC countries and Kuwait. The center continues its active participation in WHOFIC network committees and reference groups. After re-designation of the center, the center is acting on the terms of references in different ways through providing technical support in the implementation of the global ICD-11 in the implementation strategy and implementation guidance, providing support for ICD-11 maintenance and improvement of the ICD-11 tooling environment, planning for providing support in the implementation of the International Classification of Health Interventions (ICHI) and supporting WHO-FIC cross-cutting activities.

Providing technical support in ICD-11 implementation

Providing on-site support to clinicians in Farwaniya hospital to cover the first three months post implementation of ICD-11 in outpatient and inpatient departments (first three months of 2022) Delivering several series of 5-hour workshop for physicians in Farwaniya hospital (N=230) for "Writing cause of death on e-death notification forms". These included theoretical and practical sessions (Mar 24, 2022) Participation in the MbRG mid-year meeting. Talk about ICD-11 implementation in Kuwait (May 2, 2022) Kuwait experience on ICD11 implementation in Farwaniya hospital was shared in using two presentations (Mortality & morbidity) during - EMRO intercountry meeting on ICD11 and ICHI implementation in Muscat (December 2022).

Contribute to development and maintenance of ICD-11

Prepared and uploaded part two of ICD-11 workshop on our YouTube channel about introduction to multiple parenting, residual categories and the foundation (Jan 21, 2022) Participated in the first cancer coding exercise. We coded 34 cancer terms using the ICD-11 coding tool (blue browser) (September 2022) Throughout 2022, the center contributed to content of ICD-11 by submitting more than 20 proposals using WHO proposal mechanism on ICD-11 maintenance platform. Prepared and uploaded a video on our YouTube channel on demystifying ICD-11 URIs. In the video we can find out what is a URI and how useful it is for ICD-11 users (November 14, 2022) Networks concerning “Release of WHO Excess mortality estimates associated with the COVID-19 pandemic”. By Dr Samira Asma, Assistant Director-General, Data, Analytics and Delivery for Impact, WHO (On May 6, 2022) Sending Kuwait COD dataset to prepare for (DORIS) (Oct 10, 2022) Attending the DORIS workshop held in Geneva (October 2022) There are 21 correspondences with the “MRG”. There are 24 correspondences with the “CSAC”. There are 48 correspondences with the “Mortality Forum”

Effective participation in WHO-FIC network

Attending ICD-11 webinar for dermatology organized by the WHO Classifications and Terminologies Unit in collaboration with the International League of Dermatological Societies (ILDS) (January 25th, 2022) Participation in the MbRG mid-year meeting (Talk about ICD-11 implementation in Kuwait) Participation in joint meeting MbRG with EIC (May 3, 2022 and May 4, 2022) Participating in iMINT “Implementation and Information Tracker”. Zoom meeting (July 6, 2022)

Providing support for ICHI development

Participated in NCSP+ to ICHI mapping through multiple zoom meetings with WHO. The team successfully completed two chapters: chapter B (endocrine system) and chapter H (mammary gland) (May and June 2022)

Contribution to mortality data improvement

Reviewing the estimated Maternal Mortality Ratio for Kuwait for 2000 – 2022, sent by WHO/HQ (Aug 25, 2022) We were invited to share this with networks concerning “Release of WHO Excess mortality estimates associated with the COVID-19 pandemic”. By Dr Samira Asma, Assistant Director-General, Data, Analytics and Delivery for Impact, WHO (On May 6, 2022) Sending Kuwait COD dataset to prepare for (DORIS) (Oct 10, 2022) Attending the DORIS workshop held in Geneva (October 2022) There are 21 correspondences with the “MRG”. There are 24 correspondences with the “CSAC”. There are 48 correspondences with the “Mortality Forum”

Future plans

In cooperation with EMRO, an ICF workshop will be held during the period of 2023 winter (Oct-Dec) A plan will be set to implement ICF in Kuwait with cooperation of several governmental bodied this will be achieved through planned discussion for ICF capacity building workshop. A plan was set to introduce ICHI during next year to Farwaniya general Hospital after completing ICD-11 analysis in OPD (December 2022) In collaboration with EMRO, an initial agreement was reached to translate ICD-11 updates, the final agreement is to be set next year after consultation with MOH Kuwait higher authority to finance the process (November 2022) A plan was set to introduce ICD-11 to Jahra general Hospital (1055 beds) and (31556 discharges) In collaboration with EMRO, a plan was set to host and conduct a week workshop for ANACOD3 (October-December 2023) to build local and regional capacity in analyzing COD using ICD-11.

Acknowledgements & notes

The achievement of the center are made possible by the valuable contribution and collaboration of all WHO-FIC members Demystifying ICD-11 URIs: https://www.youtube.com/watch?v=oZ0PhXv8pVg ICD-11 workshop (Part 2): Introduction to multiple parenting, residual categories & the foundation: https://www.youtube.com/watch?v=W_D_PrAf4-ds&t=3s
Abstract

The WHO-FIC Collaborating Centre for the United States of America (USACC) continues to contribute to the work on the development, dissemination, maintenance and use of the Family of International Classifications and to support national and international health information systems, statistics and evidence. Education, outreach and collaboration are major foci.

Introduction

The Collaborating Centre for the WHO Family of International Classifications (WHO-FIC) for the United States of America originated from the WHO-FIC Collaborating Centre for North America which was established in 1976. The WHO-FIC Collaborating Centre for the United States of America was most recently re-designated for four years on March 21, 2020. The USA Collaborating Centre (USACC) is located at the National Center for Health Statistics (NCHS) of the US Centers for Disease Control and Prevention.

Mortality Data

NCHS promotes the use of ICD-10 for mortality statistics in the U.S. through production of national data and publication of reports.

- Improvements in timeliness have also allowed NCHS to publish provisional mortality data on a weekly or monthly basis, including:
  - Weekly COVID-19 death counts
  - Weekly excess deaths
  - Monthly drug overdose death counts
  - Monthly maternal death counts
  - Quarterly estimates for selected indicators
- NCHS recently implemented (beginning with 2022 data) a new automated mortality coding system for ICD-10 called MedCoder. MedCoder uses machine learning and natural language processing along with rules-based programming (ACME) to code terms reported on death certificates and select the underlying cause of death. Medcoder is capable of correctly processing 85% of records automatically with no manual intervention.
- All states in the U.S. have implemented electronic death registration systems. NCHS continues to work to promote fully electronic registration and cause of death certification and to explore interoperability with EHRs and medicolegal case reports.

ICD-11

NCHS is promoting the implementation of ICD-11 for both mortality and morbidity.
- NCHS has begun planning for implementation of ICD-11 for mortality.
- NCHS is working with the Iris Institute and the Iris Core Group to develop an ICD-11 version of the Iris software for automated mortality coding.
- The Workgroup on Timely and Strategic Action to Inform ICD-11 Policy was convened by the U.S. National Committee on Vital and Health Statistics in December 2022 to identify implementation issues, policy recommendations and to develop a collaborative plan for transition to and implementation of ICD-11 for morbidity use cases.

Functioning and Disability

Researchers at Bradley University in the US have been working on incorporating the ICF into the educational curriculum for physical therapy, social work and dietetics. The ICF framework is used to conduct assessments and structure presentations.

Education, Technical Assistance

NCHS provides higher level learning opportunities for experienced mortality coding staff in the form of targeted training modules.
- NCHS provides basic ICD-10 cause of death coding training for new in-house staff.
- NCHS provides international technical assistance on issues related to civil registration, cause-of-death classification and automated coding.

Morbidity Data

The U.S. has developed and maintains a clinical modification (CM) of ICD-10 for morbidity applications.
- The U.S. implemented ICD-10-CM and ICD-10-PCS, effective October 1, 2015. The newest updates of ICD-10-CM and ICD-10-PCS, effective October 1, 2023, were posted in July 2023.
- ICD-10-CM Coordination and Maintenance meetings are held in March and September of each year to review proposed new codes and modifications.
- ICD-10-CM Browser Tool: A user-friendly web-based query application allows users to search for codes from the International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM) and provides instructional information. [https://icd10cmtool.cdc.gov/](https://icd10cmtool.cdc.gov/)

WHO-FIC Network

The USACC has representatives on most WHO-FIC Network Committees and Reference Groups
- The Head of the USACC and an additional USACC member serve on the WHO-FIC Network Council.
- USACC members serve on:
  - Classifications and Statistics Advisory Committee (CSAC)
  - Mortality Reference Group (MRG), including as Secretariat
  - Verbal autopsy Reference Group (VARG), including as co-chair
  - Morbidity Reference Group (MbRG)
  - Functioning and Disability Reference Group (FDRG)
  - Informatics and Terminology Committee (ITC)
  - Education and Implementation Committee (EIC)
Abstract
This poster presents the annual report of the WHO-FIC Network Collaborating Centre in Canada and highlights some of activities related to mortality and morbidity statistics, including evaluating the impacts of adopting ICD-11.

Introduction
The Collaborating Centre is hosted by the Canadian Institute for Health Information (CIHI) in strategic partnership with Statistics Canada.

Contributions to the WHO FIC Network
Canada provides active membership on all WHO-FIC network Committees and Reference Groups:
- The Head of the Collaborating Centre serves on the WHO FIC Network Council.
- Canada serves as:
  - Co-Chair of the Mapping Task Force
  - Co-Chair and Secretariat of Morbidity Reference Group (MnRG)
  - Co-Chair of Family Development Committee (FDC)
  - Co-Chair of Mortality Reference Group (MRG)
- Canada participates actively on:
  - Classification Scientific Advisory Committee (CSAC) for ICD and ICF
  - Education and Implementation Committee (EIC)
  - Functioning and Disability Reference Group (FDRG)
  - Informatics and Terminology Committee (ITC)
- Mid-year meetings were attended for all the listed committees.

Mortality data:
Statistics Canada promotes the use of ICD-10 for the classification and tabulation of Canadian mortality statistics through production of national data files and publication of reports such as:
- Co-response to the COVID-19 pandemic, continuing to release provisional 2020, 2021 and 2022 deaths and cause of death data monthly, along with analyses of excess mortality and COVID-19 with co-existing conditions
- Releasing preliminary annual 2020 deaths and cause of death data, and analyses, summary list tables and leading causes of death, in January 2021
- Planning for the release of preliminary annual 2021 deaths and cause of death data and analyses, summary list tables and leading causes of death, in November 2022
- Statistics Canada promotes the quality of national mortality statistics with related activities such as:
  - Supporting initiatives to implement Electronic Death Registration Systems (EDRS), including electronic cause of death certification, in provincial and territorial vital statistics systems
  - Providing training to mortality classification (Cause of death coders) staff at Statistics Canada and in provincial vital statistics agencies

Morbidity data:
ICD-10-CA, the Canadian clinical modification, is used in Canadian hospitals. ICD-9 continues to be used by ministries of health across Canada for physician reimbursement. ICD-coded hospital and physician data are used for ratio are used for national disease surveillance. ICD-10-CA is used in clinical assessments for home and continuing care, and for rehabilitation reporting. ICD-10-CA codes are used from the IFR system and publicly reported health system performance indicators.
ICD-0-3 is used for national cancer registration.

Recent work to support the application of ICD-10-CA in Canada includes:
- Version 2022 of ICD-10-CA and CCI were released for use, effective April 1, 2022, and the next version will begin use commencing April 1, 2025.
- CIHI provides client support via an electronic coding question service.
- CIHI participated in mapping activities with WHO-FIC.

ICD - 11
Canada supports WHO-FIC efforts in maintaining, updating and promoting implementation of the International Classification of Functioning (ICF) through:
- Membership and participation in the Functioning and Disability Reference Group (FDRG) work plan
- Contributing expertise to international efforts to update ICF, in particular finalisation of the ICF 2020 version and through membership in the Statistical Advisory Committee for the International Classification of Functioning (CSAC)
- Participation in FDRG teleconferences and attendance at mid-year and annual WHO-FIC meetings

IHI
CIHI completed an assessment of ICHI’s public health content and discovered areas where the Canadian Classification of Health Interventions (CCCI) could be enhanced to capture interventions that would support public health surveillance (See separate poster: Utilizing the International Classification of Health Interventions to Enhance the Canadian Intervention Classification for Public Health Prevention Codes).
Part 3   International Classification of Diseases (ICD-11)
Inventory of Areas of Overlap in WHO-FIC Foundation

Kathy Giannangelo¹, Samson W. Tu², Ann-Helene Almborg³, Yunuén Sacnicté Cuevas⁴

¹IFHIMA, Virtual NGO, ²Stanford University CC, USA; ³National Board of Health and Welfare, Nordic CC; ⁴CEMECE WHO/FIC CC México

Abstract: The Family Development Committee with assistance from the Informatics and Terminology Committee are working towards ICD-11, ICF, and ICHI content alignment and harmonization in the Foundation. One of the tasks to harmonize entities from the three WHO-FIC reference classifications involves creating an inventory of possible areas of overlap in the Foundation. This work item’s overall goals are to identify areas of similarity that are potential targets for harmonization, analyze the nature of the related entities, and recommend areas and methods for further harmonization.

Introduction

The three WHO-FIC reference classifications, ICD, ICF, and ICHI, have different historical origins and, except for ICHI’s partial use of ICD-11 extension codes and ICF concepts as targets, evolve separately without much coordination. Now that the entities in the three classifications are represented in a single WHO-FIC Foundation, it is imperative that the areas of overlap be identified, analyzed, and reconciled. Separate work aligning the anatomical content of ICD-11, ICF, and ICHI is reported elsewhere. Here we describe the creation of an inventory of areas of overlap in the Foundation and preliminary analysis of some harmonization methods.

Methods & Materials

We investigated areas of overlap in the Foundation content through the following steps:

1. A protocol for developing the inventory and a spreadsheet to summarize the results were developed. The protocol included instructions along with a set of steps to follow when analyzing the possible overlap between the source and target areas, populating the template and describing the reason(s) for harmonizing the branches (e.g., putting them in consistent hierarchies because they are things of the same type or linking them). The earlier ICF “Pain” hierarchy and pain-related entities in ICD-11 as reported on in 2022 was used as a prototype.

2. An investigation of three topics to assess areas of overlap with ICD-11 as the source and ICHI or ICF as the target was performed. The chosen topics were:
   a. ICD-11 Reasons for contact with the health services and ICHI Health Interventions
   b. ICD-11 Factors influencing health status and ICF
   c. ICD-11 “Causes,” “Dimensions” and other Extension codes and ICHI Health Interventions

3. Finally, an exhaustive enumeration and summary judgement of additional areas worthy of further investigation was performed to catch any missed areas.

Results

Possible areas of overlap were found in all three topics. For example, in ICD-11’s Reasons for contact with the health services, there is an entity for fitting or adjustment of artificial leg and in ICHI there is an entity for fitting of orthosis or external prosthesis to lower leg. In the areas related to factors influencing health status, ICD-11 root node for problems associated with the environment has potential overlap with ICF root node environmental factors.

Just as in the first two areas, ICD-11’s “External causes of morbidity or mortality” chapter and “Dimensions of external causes” and other extension codes have overlaps with ICHI. Very often similar entities play different roles across classifications and even within a classification. For example, the “Surgical or other medical procedures associated with injury or harm in diagnostic or therapeutic use” branch of ICD-11 has interventions similar to ICHI’s “Interventions on body systems or functions,” but, instead of interventions to be performed, they are interventions that are causing injuries. Similarly, within ICD-11, one finds motorcycle as “Object involved in causing injury,” as “mode of transport of person injured in transport related event,” and as “Counterpart in land transport crash” while it is classified as “Assistive product and technology for mobility and transportation” in ICHI. Given the observed pattern of entities playing different roles in each classification, we explored the possibility of refactoring the relevant ICD and ICHI entities as neutral products (e.g., motorcycle) playing different roles. (Figure 1)

Discussion

Upon completion of the inventory of areas of overlap in WHO-FIC Foundation and illumination of the extent and nature of overlap in each area, the next step is to continue to investigate methods of harmonizing them. Simultaneously, clarification on the governance issues in harmonizing the content is needed. Who should be making decisions about which areas of overlap should be harmonized and how should the decisions be made? For some areas, the need for logical consistency and removal of redundancies may be important. For others it may be possible to harmonize the entities in the Foundation without making changes to the classifications. On the other hand, specific use cases and specialities may force heterogeneity in the representation of similar entities. Finally, the need for historical continuity of data collection may trump other considerations. The WHO-FIC community needs to have a conversation about these issues.

Notes

The inventory of Foundation overlap areas is available at https://tinyurl.com/foundationoverlapinventory. The exhaustive enumeration and summary judgement of additional areas worthy of further investigations is available at https://tinyurl.com/foundationoverlapoverview.
Evaluating the Impact of ICD-11 on Canada’s Health Care Information Systems

Authors: Sharon Baker, Keith Denny, Lori Moskal, William Yang
Canadian Institute for Health Information

Abstract To support the implementation of ICD-11 for health system use in Canada, we must understand the current use of hospital and clinical information systems (HIS/CIS) and the impact that ICD-11’s implementation will have on these systems. Ensuring the compatibility of ICD-11 with other health information systems, electronic health/medical records (EHRs/EMRs) and national health databases is also key. To achieve these goals, the Canadian Institute for Health Information (CIHI) consulted with stakeholders and vendors across Canada using surveys, focus groups and interviews. This poster describes the process, outcomes and recommendations.

Introduction
Since ICD-11 came into effect in January 2022, CIHI has continued to evaluate the impacts that its adoption will have on health systems in Canada. Numerous studies have been conducted to examine the implications of implementing ICD-11. These studies have focused on specific questions, such as about comparability with ICD-10-CA (the Canadian modification of ICD-10) and ICD-11’s utility in different health care settings, including primary care and mental health. The impact on data collection and reporting is an area yet to be examined, which includes analyzing how ICD-11 will affect health information systems, EHRs and national health databases.

The ICD-11 readiness assessment results were informative regarding how stakeholders manage HIS/CIS for clinical documentation and for collecting, reporting and analyzing health information at the federal, provincial and territorial levels. Vendor readiness was also assessed. Potential barriers and risks were discussed, including infrastructure and technology, timelines of implementation and corporate buy-in. 8 recommendations were proposed for consideration to support the implementation of ICD-11 in Canada.

Process
CIHI hired an external consultant to seek input from all 13 Canadian jurisdictions and from 5 health information system vendors (including 2 coding and abstracting vendors and 3 enterprise EHR vendors) in January and February 2023 (see figure). Stakeholder input was collected through surveys, focus groups and consultations, allowing for a comprehensive assessment of the benefits, challenges and readiness associated with the new classification system. The assessment results are currently being synthesized and prepared so they can be shared with participants, as well as externally.

Table Sample questions and responses from the assessment results

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current stakeholder landscape</td>
<td></td>
</tr>
<tr>
<td>Current state of HIS/CIS and EHR/EMR implementation</td>
<td></td>
</tr>
<tr>
<td>Usage of clinical terminologies (e.g., SNOMED CT)</td>
<td></td>
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<tr>
<td>Realistic time frame for moving to ICD-11</td>
<td></td>
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<tr>
<td>Current vendor landscape</td>
<td></td>
</tr>
<tr>
<td>Awareness of ICD-11</td>
<td></td>
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<tr>
<td>System accommodation of both ICD-10-CA and ICD-11</td>
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<tr>
<td>Realistic time frame for moving to ICD-11</td>
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<tr>
<td>Potential barriers and risks</td>
<td></td>
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<tr>
<td>Infrastructure and technology</td>
<td></td>
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<tr>
<td>Timing of implementation</td>
<td></td>
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<tr>
<td>Corporate memory preventing buy-in</td>
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</tbody>
</table>

Conclusions
The readiness assessment helped elucidate the benefits and challenges of adopting ICD-11 for Canadian stakeholders. The transition to ICD-11 is considered a major technical challenge by stakeholders and vendors. The state of HIS/CIS use across the country is disparate. Some sites are digital health ready, while others still rely on paper charts. EHR vendors are aware that ICD-11 is on the horizon but advised that there are many aspects that need to be addressed prior to implementation. While ICD-11 offers significant improvements in granularity, interoperability and data analytics, its successful implementation relies heavily on proper planning, training and education, and system updates. The recommendations above will help inform the development of a roadmap to ensure a smooth transition to ICD-11.

Acknowledgements
CIHI would like to express its appreciation and gratitude to all stakeholders who generously participated in the readiness assessment interviews.
The brain-related anatomical items in the WHO-FIC Foundation were investigated and examined from a clinical point of view. We focused on items related to brain parenchyma and cerebral arteries.

## Methods & Materials

A comparative study of anatomy textbooks on the brain and the WHO-FIC foundation was performed.

## Results

[Central nervous system (Brain)]

In the Nervous system, there is an “Intracerebrum” item in the Cerebrum which is thought unnecessary.

In Cerebellum, there is “Cerebellopontine angle”, which is appropriate to put this in the “Infratentorial region of brain”.

The components of the “brain stem” are confusing because the classification axes are mixed. It is recommended to first classify the “Brain stem” into “External structure”, “Nuclei”, “Reticular formation”, and “Tracts”. Further subdividing the “External structure” into “Midbrain”, “Pons” and “Medulla” (Fig.1), and under each item, subdividing the “Cerebral peduncle (midbrain)”, “Olivary peduncle (medulla)” and “Pyramid (medulla)” (Fig.2, Left). “Cerebellar peduncle (consisting of superior, middle, inferior)” is not strictly a brain stem, however, inserting it in the brain stem may be allowed (Fig.2, Right). Under the “Nuclei”, “Cranial nerve nuclei”, “Red nuclei”, and “Substantia nigra” is classified (Fig.3). The “Reticular formation” has three parts, midbrain, pons, and medulla (Fig.4), and the “Tracts” is divided into two, “Descending”, “Ascending”, which has many tracts in each.

“Choroid plexus of forth ventricle” and “Fourth ventricle” do not qualify for brain stem. Better put it under the “Infratentorial region of brain”.

ICD-11 has an item called “Cerebral ventricle“, but the “Forth ventricle” is located between the brainstem and the cerebellum, so it is not a cerebral ventricle. It is recommended to change it to “Ventricular system in Brain”.

## Conclusion

With respect to brain anatomy, we recommend a systematic revision of the ICD-11 foundation classification axis.

## Abstract

The anatomical items on the brain in the WHO-FIC Foundation were investigated from a clinical standpoint. In this presentation, we focused on items related to brain parenchyma and cerebral arteries. Regarding the brain parenchyma, there were some parts where the anatomical axis was inappropriate. In particular, the classification of the brainstem was not systematic. As for cerebral arteries, they were not related to arterial bifurcation, so we propose a classification axis based on the bifurcation.

## Introduction

The brain-related anatomical items in the WHO-FIC Foundation were investigated and examined from a clinical point of view. We focused on items related to brain parenchyma and cerebral arteries.
Foundations Content Harmonization and Alignment: Linkage Use Cases and Update Process and Criteria

Samson W. Tu, Ann-Helene Almborg, Cassandra Linton
Stanford University CC, USA; Nordic CC, Sweden; Canadian CC, Canada

Abstract
Decisions made at the 2022 WHO-FIC Network Annual Meeting determined that the current WHO-FIC Foundation harmonization and alignment work can be organized into four areas: (1) harmonization of anatomical entities, (2) inventory of areas of potential overlap, (3) use cases of cross classification linkages, and (4) evaluation of the content update process and criteria. Separate posters address the first two topics. This poster outlines the results of the last two work items.

Methods & Materials

Introduction

The integration of ICD, ICF, and ICHI in the WHO-FIC Foundation calls for the content of these classifications be aligned and harmonized. Such harmonization can be done in multiple ways (e.g., merger of consistent hierarchies). Because of the potential cost of harmonization, it is necessary to have clear use cases to justify the work. We investigate the use cases for entities of one classification to be linked to those of another classification.

The harmonization of the classifications come with the possibility that future update proposals may have impacts on multiple classifications or on the Foundation with or without changes to the classifications, the current update process will need to change to ensure that the ramifications of the proposals are evaluated properly. The governance, workflow, and criteria for changes need to be clarified.

Results

1. We found in the literature examples of the joint use of ICD and ICF, but not use cases for linkage in the Foundation. During the development of ICD-11, much effort was expended in linking approximately 100 ICD categories to ICF codes through "functioning properties," but the effort was abandoned and instead the V codes were added in ICD-11 to allow the joint use of ICD-11 and ICF. Potentially ICD categories can be linked to ICF core sets. However, given that ICF core sets are distributed by non-WHO actors, governance issues make such linkages problematic. Finally, we studied the U.S. Social Security Administration's Blue Book mental function criteria for disability benefits, which turned out to be more a joint-use case of ICD and ICF. In any case, the country specificity of these criteria make them poor linkage candidates in the WHO-FIC Foundation. As a result of this work, we established a set of necessary criteria that linkage use cases should satisfy:

   a. The linkages should be applicable across national boundaries (e.g., linkages based on U.S. Social Security disability benefits criteria may not be applicable in other countries)
   b. The linkages should have clear criteria for linkage and good scientific foundation (e.g., ICD entities linked to ICF core sets, which are vetted by domain experts satisfy this criterion for linkage)
   c. The linkages should not depend on proprietary resources (e.g., links from ICD to ICF core sets fail this criterion, as ICF core sets are distributed by a different organization)
   d. The linkages ideally should be relatively easy develop and maintain

2. In the current ICD-11 and ICF update workflow, a triage team first evaluates a submitted proposal, and, when appropriate, sends it to MSAC and relevant reference groups for advice and recommendation. The CSAC for each classification discusses and votes on the proposals. With integrated WHO-FIC Foundation and classifications, the triage teams that review update proposals need to be drawn from those who have expertise that cover all classifications as they need to evaluate of cross-classification implications of proposals. In cases where proposals suggest changes in the Foundation without making any change in the classification, we need to clarify the decision-making body and make sure that it has the appropriate expertise. In cases where more than one classifications are impacted by an update proposal, the CSACs need to establish appropriate review, discussion, amendment, and decision-making procedures (Figure 1).

Discussion

1. In addition to what WHO-FIC community may submit in the current call for contribution, some use cases may arise in the parallel work to inventory areas of possible overlap among the classifications. For example, references to interventions in ICD-11’s "Causes of healthcare related harm or injury" potentially can be replaced with links to ICHI entities.

2. In addition to governance and workflow of the update process, another topic to consider is the criteria for making changes. Criteria like logical consistency, removal of redundancies, scientific justification, and strong use cases may need to be balanced with the cost of making changes, disruption to the user community, and discontinuity in data sets. Empirical studies of past changes should further elucidate these criteria for making changes.

Figure 1: Workflow for triaging and making decisions on update proposals for ICD and ICF. In the context of integrated WHO-FIC Foundation and classifications, the triage team should have expertise in all three reference classifications. Proposals may involve only one classification (current workflow), only the Foundation with no change in classifications (subworkflow A), or more than one classifications (subworkflow B). New governance and processes for discussion and voting will be needed.
ICD-11 Planning in Australia

Authors: Breanna Harnetty, Filippa Pretty, Brooke Macpherson & Vicki Bennett
Australian Institute of Health and Welfare, Australia

Abstract

Australia has been working towards a decision regarding implementation of ICD-11 across multiple use cases. This poster presents an update on the activities undertaken and progress towards implementation.

Introduction

The Australian Institute of Health and Welfare (AIHW) is leading the work to identify and undertake activities (in liaison with our governmental agencies and jurisdictions) to enable a decision on the implementation of ICD-11 in Australia.

Currently in Australia, ICD-10 and ICD-10-AM (Australian Modification) are used in mortality statistics, admitted health care statistical reporting systems, and in Activity Based Funding arrangements. Australia does not yet have a firm implementation date but is working on the basis of ICD-11 becoming a standard across the Australian health system in 2031.

Stakeholder newsletter

Part of the ICD-11 communication strategy is to publish bi-annual stakeholder update newsletters. Four issues have now been published with the most recent in July 2023.

Newsletters contain updates on ICD-11 activities, both Australian and international, and news of the other classifications in the WHO-FIC family.

#4th newsletter published July 2023

Exploring ICD-11 in different use cases

The AIHW is actively exploring potential uses of ICD-11 in use cases outside of traditional areas where ICD-based health classification occurs. The following outlines five of the projects being undertaken to explore the use of ICD-11 in these areas.

DEMENTIA DATA

The AIHW has held internal discussions with its Dementia Unit to discuss the utility of ICD-11 to capture items within the National Dementia Data Improvement Plan. This would include assessment in areas such as Aged Care and Primary Care.

EMERGENCY DEPARTMENT DATA

A multi-stakeholder project to improve injury surveillance data capture in Emergency Departments has recently been submitted for a research grant. A component of this project is to use machine learning methodologies on unstructured data fields to auto-code cause of injury information, using ICD-10-AM and ICD-11.

AT CLINICAL CODING

Discussions are underway with University of New South Wales regarding a potential AI-Driven Clinical Coding Project machine learning on EMR admitted patient care records to derive ICD-11 codes.

SUICIDE MONITORING

This project is in response to a recognised data gap within Australian admitted patient datasets for patients with suicidal ideation and intent. The aim is to assess whether ICD-11 can better capture this information than ICD-10-AM. This project is in the early stages of development.

GENDER INCONGRUENCE CODING

The intent of this project is to re-code a cohort of patient admissions using ICD-10-AM (without applying Australian coding standards) and ICD-11 to compare both classifications in their ability to capture admissions when gender incongruence is contextual to the admission.

The AIHW will continue to provide updates, not only on the national implementation of ICD-11 but also on work to build capacity for using this new classification.
Abstract
The ICD-11 includes a comprehensive classification of chronic pain. Chronic pain is a highly prevalent non-communicable disease that contributes significantly to the global burden of disease. The ICD-11 chronic pain classification was evaluated with various international field tests, including assessment of the patient perspective. Results indicate the high clinical utility, reliability, and global applicability of the diagnoses as well as patient endorsement.

Introduction
• Chronic pain (CP) persists or recurs for longer than 3 months.1
• CP affects about 20% of the global population.2,3
• CP is associated with high individual burden and societal costs.4,5
• The ICD-11 includes 7 main chronic pain categories (5-digit level) with more specific sublevels (6-digit level) in section MG30.5
• Diagnostic classifications need to meet a variety of quality standards, e.g., clinical utility, global applicability, reliability, correct and easy code assignment.6,7
• 3 field studies are presented here that evaluated different aspects of the new ICD-11 CP diagnoses:
  1. Web-based study as part of WHO’s official field tests
  2. Ecological implementation field test in LMIC and HIC
  3. Web-based survey among people with the lived experience of chronic pain

Methods 

1. Web-based WHO field test8
• 177 pain specialists completed the survey.
  • The participants received a brief training regarding ICD-11 and the new chronic pain codes.
  • The participants assigned ICD-10 and ICD-11 codes to clinical terms (e.g., chronic post-stroke pain, chronic non-specific back pain).
  • Rating of difficulty and ambiguity of the code assignment.

2. Ecological implementation field test9
• Data collection in 4 pain clinics in Cuba, India, New Zealand.
• On-site training for clinicians.
• 21 pain specialists used ICD-11 to code 350 patients with chronic pain.
• Assessment of inter-rater reliability.
• Rating of clinical utility.

3. Web-based patient survey
• 690 patients completed the survey.
• Participants saw a brief introduction video on chronic pain in ICD-11.
• They rated the new diagnoses on 8 endorsement scales (e.g., openness, stigma, understanding).

Results

1. Web-based WHO field test
The ICD-11 chronic pain diagnoses outperformed ICD-10 with regard to
• Correct code assignment
• Difficulty of the code assignment
• Ambiguity of the codes

2. Ecological implementation field test
• Interrater reliability (Fleiss’ κ): Range from κ=0.596 (MG30.02 Chronic primary musculoskeletal pain) to κ=0.783 (MG30.3 Chronic secondary musculoskeletal pain)

3. Web-based patient survey
• Global mean rating of 1.75 ± 1.47 on a scale from 5 to 5
• All ratings were significantly higher than 0 (‘no change’)

Conclusions

• ICD-11 provides clearly defined, clinically useful, and reliable chronic pain codes.
• These new codes can be applied globally.
• The codes are not ambiguous and can be applied easily, even after limited training.
• ICD-11 outperforms ICD-10 with regard to ease of use, correct code assignment, and ambiguity.
• Clinicians rate the new codes as clinically useful, even in settings with limited resources such as, e.g., LMIC.
• People with the lived experience of chronic pain accept and endorse the ICD-11 chronic pain codes.
• This patient endorsement provides further evidence for the high clinical utility of the new diagnoses.
• It can also facilitate implementation.
• It is recommended that the ICD-11 chronic pain diagnoses are used routinely in research and clinical settings while countries prepare the implementation of ICD-11 within their healthcare systems.
• In sum, chronic pain becomes visible and accessible with the ICD-11, e.g., in international and national health registries.
• This can inform treatment access, public health decisions, and resource allocation.

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References
Introduction

As part of the activities carried out in Mexico for the transition to the ICD-11, the basic training activity has been maintained at all levels with users, coders and decision makers on the advantages of the new classification. Likewise, teams have been formed with the participation of IT personnel for the insertion of the ICD APIs and to be able to use it in real scenarios for the generation of health information.

ICD-11 in Mexico

The Mexican Ministry of Health recognizes the great advantages of ICD-11. To achieve a successful implementation, it is essential to follow a series of steps and consider the reality of health information systems. This poster shows the activities that have been undertaken by Mexican WHO-FIC CC (CEMECE) and the achievements that have been achieved until now.

Abstract

The Mexican Ministry of Health recognizes the great advantages of ICD-11. To achieve a successful implementation, it is essential to follow a series of steps and consider the reality of health information systems. This poster shows the activities that have been undertaken by Mexican WHO-FIC CC (CEMECE) and the achievements that have been achieved until now.

ICD-11 in Birth Certificate

In the birth certificate in Mexico, conditions at birth are reported. With the evolution towards ICD-11 and its insertion of the coding tool, it is now possible to code with both ICD-10 and ICD-11. With this, a comparative study can be made for the conditions reported.

ICD-11 in Disability Certificate

To obtain the Disability certificate, a methodological tool was designed that includes the interaction scheme of the ICF components, starting with the health condition, which will be coded with the ICD-11 and other conditions present in the document can be reported. time of valuation.

ICD-11 in Mortality

In the case of Mortality, a prototype of the electronic death certificate has been developed, in which the coding tool has also been inserted. In this case, it depends on the development of an automated coding tool. For this, Mexico has collaborated in the development of DORIS.

Acknowledgements

Multidisciplinary teams have participated in these activities, ranging from coders, statisticians, medical personnel and professionals related to the production of health information. We thank all of them and their collaboration is anticipated for future activities.

Implementation plan

The ICD-11 implementation plan in Mexico considers five different stages in which basic, intermediate and advanced knowledge is sought, in theory and practice. It is expected that the development of the activities will take two and a half years, in which the need will be identified in the places of use and, when the comparative analyzes with historical data and the impact on health statistics begin.

ICD-11 in Mortality

In follow-up to the activities for DORIS, Mexican WHO-FIC CC carried out a comparative study with the mortality database of Mexico for the year 2022 coded with ICD-10 and using the mapping to ICD-11 to adapt the format to enter it and process in DORIS system. WHO has been developing the automated coder for mortality. This is a digital solution and support all countries on their path towards the implementation and use of ICD-11 for mortality. As a result of this activity, the mortality database of Mexico for the year 2022 has been processed with DORIS, which have been analyzed with the results. The results have been given ongoing review to identify differences between those results and coding acts on mortality. Similarly, with this analysis, Mexico currently participates in the group for digitalization of mortality rules coordinated by the WHO. The candidate version of DORIS is currently being reviewed and the results have been improving in the last year. Within Mexico, the electronic death certificate model is still being developed, which will be the basis for working with the ICD-11 in mortality.

Personnel involved

Healthcare professionals, Coding and statistical staff, IT staff, Decision makers
ICD-11, Coding Activity Analysis with Computerized Tool

Authors: Byung Kwan Choi 1, Bok Hee Im 1, Young Mi Han 2, Yeojin Lee 3, Sung Hong Kang 4, Soo Yeon Seo 4
1 Pusan National University Hospital 2 Visual Terminology, 3 Statistics Korea 4 Inje University

Abstract
The computer program was created to evaluate ICD-11 coding task. This program can check the number of mouse clicks, wheel scrolls, and time spent by users. We showed 20 diagnoses to 20 clinicians, and we evaluated the work loading for coding ICD-11 and ICD-10 objectively. Computerized evaluation tools provide a standardized and consistent evaluation process, ensuring that all items are evaluated using the same criteria. This tool helps in maintaining fairness and reducing bias when collecting quantitative data in the various evaluation processes of ICD-11.

I. Introduction
ICD-11 is a comprehensive and intricate classification system that covers a wide range of diseases, conditions, and health-related topics. Its complexity can make it challenging for users to navigate and understand the hierarchy, structure, and coding principles. Since ICD-11 employs specific terminology model, it may be unfamiliar to users without understanding of ICD-11 foundation and linearization scheme.

Also, learning and becoming proficient in using ICD-11 requires time and effort. Users need to familiarize themselves with the structure, coding rules, conventions, and specific guidelines for each category. Hence it may take time to develop a good understanding on how to navigate and apply the classification effectively.

Additionally, ICD-11 introduced post-coordination, which allows users to combine multiple codes to create a more specific diagnosis or condition. Performing post-coordination can be challenging as it requires the users to understand the appropriate linking phrases, qualifiers, and rules for combining codes accurately.

To overcome these challenges and promote spread of ICD-11, we tried to evaluate some parameters that may be related to work loading, learning curve, and coding efficiency when using ICD-11. To collect the data objectively, we created computerized tool to assess coding activity or parameters, which are mouse click numbers, wheel rotation and the length of coding time.

II. Method
The computer program was created with Visual Studio Windows Forms Application project. Graphic user interface forms were created with visual studio form designer. The program is designed to count the mouse clicks, wheel rotation and time spent for coding activity (Figure 1).

20 questionnaires were given and tested for both ICD-10 and ICD-11. They were collected from a hospital. They were collected randomly and cleansed to be searched in browsers. Abbreviations were allowed only when they are available in ICD-11 browsers. Also, full term were also given to provide understanding of questionnaires.

While testing the results mouse clicks, mouse wheels, coding time were objectively measured. The number of active window change was also measured to check out users response on searching web sites for domain knowledges.

The instruction include accessing ICD-11 MMS browser:
All results were reviewed statistically.

Results
The number of clicks were 14.05 for ICD-11 and 12.25 for ICD-10. The number of scrolls were 5.28 for ICD-11 and 4.28 for ICD-10 (Figure 2). The average time lapse for each questionnaires were 47.79 seconds with ICD-11 and 44.20 seconds with ICD-10 (Figure 3). Average windows change was 4.49 for ICD-11 and 4.50 for ICD-10.

<Table 1>
<table>
<thead>
<tr>
<th>Time Lapse</th>
<th>ICD-11</th>
<th>ICD-10</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 sec.</td>
<td>36</td>
<td>28</td>
<td>64</td>
</tr>
<tr>
<td>Z-score normalized value</td>
<td>20</td>
<td>27</td>
<td>47</td>
</tr>
</tbody>
</table>

<Figure 1>
This system was tested by 20 clinicians. Each participant had more than 3 years of clinical experience including terminological coding activity.

<Figure 2>
The results were reviewed with non-parametric statistical tests. However, there were no statistical difference between ICD-11 and ICD-10. Additionally, the number of instances where it took longer than 100 seconds for each questionnaires was 36 in ICD-11 whereas it was 28 in ICD-10.

<Figure 3>

IV. Conclusions
Computerized evaluation tool offers potential benefits compared to traditional manual evaluation methods. All parameters were collected as quantitative and objective data such as the number of clicks and scrolls and coding time; this provides a standardized and consistent evaluation method to review the coding process. This helps maintain fairness and reduce bias in the evaluation process. This computerized tool can be used to evaluate the difference between browsers, educations, coding rule changes which are related to work loading, efficiency and accuracy of coding-related work.

V. Acknowledgements or Notes
This research was done as part of the project by Statistics Korea on revising KCD-10 based on ICD-11. We hope this research can contribute to the spread of usage of ICD-11, which has maximised (expanded) receptivity and extensibility. We want to acknowledge and thank the researchers who have contributed to this research and Statistics Korea for supporting this research.
The Office for National Statistics (ONS) are responsible for processing and reporting mortality statistics for England and Wales, based on death registrations data. ONS have developed an implementation plan for ICD-11, which comprises multiple workstreams. This poster presents an overview of the scoping work and implementation plan.

**Abstract**

The Office for National Statistics (ONS) are responsible for processing and reporting mortality statistics for England and Wales, based on death registrations data. ONS have developed an implementation plan for ICD-11, which comprises multiple workstreams. This poster presents an overview of the scoping work and implementation plan.

**Introduction to ONS mortality statistics**

The Office for National Statistics (ONS) have designed a detailed implementation plan for transitioning from ICD-10 to ICD-11 for cause of death coding and statistical analysis of mortality data, based on England and Wales death registrations.

Implementation of ICD-11 will support ONS's statutory duty to report on deaths in England and Wales. We produce a suite of mortality statistics that provide data on cause of death including annual, monthly and weekly deaths as well as topic-based statistics on child and infant mortality, suicides, alcohol-specific deaths, drug-related deaths, avoidable mortality, excess winter mortality and deaths in the care sector. Cause coded mortality data are linked to other data sources such as our in-house Public Health Data Asset which enables bespoke health analysis published on the ONS website and in academic articles. ONS mortality data are also uploaded to a Secure Research Service where it is used by a range of external stakeholders.

Since 2018 there have been between 530,841 and 607,922 deaths registered each year in England and Wales. The cause of death coding software used by ONS automatically assigns ICD-10 codes to approximately 90% of death records, with the remaining 20% requiring manual intervention by a team of six coders (currently including two trainees).

ONS provides external cause of death coding services to Northern Ireland, Isle of Man, Guernsey and Jersey. Consequently, implementation of ICD-11 at ONS will affect these other UK countries.

ONS is working to an estimated implementation date of 1 January 2027. Specific objectives include:

1. Transition from using ICD-10 to ICD-11 for all cause of death operational coding at ONS by January 2022.
2. Transition from using ICD-10 coded data to ICD-11 coded data for all ONS statistics involving cause of death by the end of 2028 (i.e., for the reference period 2027 onwards)
3. Conduct and publish results from a bridge coding study to quantify the impact of changing from ICD-10 to ICD-11, prior to the first statistical releases using ICD-11 coded data

**ICD-11 implementation plan**

The ICD-11 implementation plan comprises seven interconnecting workstreams (Chart 2). These workstreams have been treated as projects in their own right due to the overall size of the implementation project. There is a dedicated lead for each workstream and detailed workplans have been devised for each one.

**ICD-11 implementation activities**

ICD-11 implementation activities to date include:

- Presenting a business case for ICD-11 implementation
- Regular collaboration with the Iris Core Group to contribute to development of new cause of death coding software: Iris-11 (WS1)
- Redeveloping dictionaries for use with ICD-11 (WS1)
- Scoping of requirements for the development of internal IT systems to be used for bridge coding study and live cause of death coding (WS2)
- Internal discussions of ONS perinatal coding (WS3)
- Conducting a stakeholder mapping exercise to identify a wide range of internal and external stakeholders (WS7)
- Conducting a short stakeholder questionnaire to help us understand the extent to which our users have begun thinking about ICD-11; identify what questions users might have, and how best we can engage with users (WS7)
- Developing a stakeholder engagement strategy, informed by the findings of the stakeholder questionnaire (WS7)
- Scoping out training needs for ICD-11 covering different groups in ONS including: cause of death coders, system managers, data engineers and automation officers, customer services team, and analysts. Have also considered potential methods and resources to facilitate learning (WS4)
- Ongoing stakeholder engagement with: internal stakeholders, WHO, national and international statistical institutes, Iris Institute, NHS England (WS7)

**Scoping work**

A number of initial scoping activities took place before a full implementation plan was created. In August 2021, a kick-off workshop brought together colleagues with different areas of expertise in mortality data and analysis to identify key level project requirements and questions. This group became the ICD-11 project team (Chart 1).

This group identified the need for an ICD-11 implementation lead to plan and coordinate the project. This role has been in place since January 2022 and through regular collaboration with the ICD-11 project team an implementation plan and business case have been developed.

Activities in these workstreams overlap with each other and therefore milestone planning and close monitoring of risks and dependencies are important. Broadly, this implementation plan can be divided into 3 stages (Chart 3):

1. Pre-implementation: pre-bridge coding study period
2. Pre-implementation: bridge coding study period
3. Post-implementation

Some workstreams such WS4: Staff and training needs and WS7: Stakeholder engagement and dissemination have long timeframes, with stakeholder engagement in particular spanning the duration of the project.

The start of dual coding for the bridge coding study (stage 2) represents a “pinch-point” for the project because multiple milestones and dependencies must be reached beforehand. This is to ensure that the bridge coding analysis can accurately measure the impact of transitioning to ICD-11 by using the cause of death coding software, internal IT systems and ICD-11 classification version that will be used post-implementation.

**Acknowledgements or Notes**

With thanks to all ONS colleagues involved in ICD-11 implementation for their continued hard work and engagement on the project, whilst also managing the challenges of delivering live processing operations and mortality statistics.
Implementation of ICD-11 in the Czech Republic and information sharing in the European Region

Authors: Daňková, Š., Zvolský, M.
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Abstract. In 2019 the Czech Republic has started activities towards the Implementation of ICD-11. In 2021, an Inter-ministerial Working Committee for Implementation of ICD-11 in the Czech Republic was officially established and a Detailed Implementation Plan was developed. So far, 2027 has been set as a tentative date for the start of ICD-11 use.

Current state
At present, the Czech Republic has taken the crucial step to implementing ICD-11 in the Czech environment: a preliminary Czech version of the classification was published in mid-2023 and is now open for public comments. This is a major step, especially with regard to the possibility of distributing the information to a wider range of users, now with a specific Czech version and tools.

Use of ICD in Czechia
National use of ICD-10 is very wide. Within the health sector, it is used e.g. in following areas:
• National health registers – collection of data and monitoring basic areas of health statistics
• reporting system for the purposes of health care reimbursement / Czech DRG system
• patient medical records
• transfer of data between health service providers and health insurance companies
Within other sectors, ICD is used, for example, in the social care:
• when registering as part of the social benefit Care Allowance
• when assessing disability for the purpose of awarding the Disability Pension benefit
• in the Incapacity for Work evidence

Inter-ministerial committee
The implementation of ICD-11 will affect a number of areas that need to be identified and mapped, as ICD has a very wide range of uses. Related to this, the identification of individual institutions, which must be included in the implementation and decision-making process is crucial. Therefore the Inter-ministerial working committee for the preparation and coordination of the introduction of ICD-11 in the Czech Republic was set up. It is composed of representatives of the institutions concerned, especially:
• Ministries (Ministry of Health, Ministry of Defence, Ministry of Labour and Social Affairs)
• Czech Statistical Office
• Public Health Institute
• Czech Statistical Office
• Public Health Institute
• Association of Health Insurance Companies
• Association of hospitals / private hospitals
• Czech Stomatological Chamber
• Czech Medical Chamber
• Czech Social Security Administration
• Association of Outpatient Specialists
• Czech Medical Association
This Committee is primarily tasked with ensuring distribution of information about ICD-11, creating personnel capacities and ensuring the training of experts from individual institutions, identifying the specific needs of individual institutions for the transition to ICD-11, discussing steps towards the implementation of ICD-11 in practice.

Implementation plan
The Committee meets twice a year and thanks to its activities the national Implementation plan was developed and regularly updated. Within the discussion with representatives of institutions, activities and assumptions necessary for implementation of ICD-11 were gradually identified. Firstly, the basic steps to be done by Ministry of Health were defined:
• Declaration of intention to introduce ICD-11 in the Czech Republic
• Decision on publication of the 1st Czech version of ICD-11
• Decision on the method of deployment of ICD-11 in the Czech Republic (MMS/national linearization/Foundation)
• Decision on the method of distribution of the Czech version of ICD-11
• Decision to modify data interfaces
Finally, the decision on the date of the planned start of use of the Czech version of the ICD-11 should be made at the end of 2024. So far, 2027 has been set as a tentative date for the start of ICD-11 use in the Czech Republic.

Subsequently, activities in several key areas (Preparation and translation, Methodology of using ICD-11, Presentation and publication/Education and training /Legislation /Practical implementation/Coordination with other classifications) were developed and scheduled. The full timetable starts in 2021 and ends in 2027.

Distribution of information
Information on ICD-11 is distributed to relevant stakeholders not only via the inter-ministerial committee, but also via the regular Klasifikon conference. This focused exclusively on ICD-11 in 2023. In addition, potential users are informed through regular presentations at professional medical conferences and, last but not least, on the website www.uzis.cz/mkn-11 .

Crossborder collaboration
At the European level, the Czech Republic is actively participating in the activities of WHO-FIC Euro, currently sharing in particular a wealth of experience in translation. It is cooperating more intensively with Poland and Slovakia, and joint educational activities are planned. During the last edition of Klasifikon in 2022, an on-line seminar WHO-FIC Standards and their implementation in Europe was held and brought an occasion to discuss possible next steps leading to better harmonisation and sharing of implementation activities.
Abstract

Stepwise approach for the selection of allergens based on technical aspects and real-life data contributes to enhancements to the Extension codes chapter of the ICD-11 and post-coordination of allergic and hypersensitivity conditions. The building block of the construction of the proposal supported the interoperability between ICD-11 and other classifications.

Introduction

- Allergies and hypersensitivity conditions are among the fastest growing group of disorders in the world. It is estimated that 50% of the EU population will be allergic in 2025. Therefore, these conditions are recognized public health problems.
- Pioneer “Allergic and hypersensitivity conditions” section has been consolidated in the ICD-11, parented by the “Diseases of the Immune System” chapter.
- Accurate diagnosis of triggers or causative allergens related to allergic or hypersensitivity conditions is essential for appropriate management of patients. However, allergens have never been well represented in the ICD.
- ICD-11 is under worldwide implementation, but the online framework can receive proposals, which undergoes WHO-FIC evaluation and validation.

Aim

To present the process of selection of allergens to better fit the ICD-11 structure and the and the interoperability with other classifications.

Methods & Materials

- The Logical Observation Identifiers Names and Codes (LOINC) database, was used as the basis for the selection process.
- Selection process: expert technical criteria and real-life relevance.
- Second step: preparing the content model of each allergen.
- Content model for each allergen
- Terminology: based on sources (and not on molecules)
- Alignment with:
  - ICD-11 framework
  - the WHO/ IUIS platform (inclusions)
  - Submission as ICD-11 MMS proposal (Foundation)

Results

- 1 444 allergens
- 1 109 allergens
  - Group of allergens: plant (46%), animal (25.7%), mold and other microorganisms (8.8%), drugs (8.7%), occupational allergens (6.5%) and miscellaneous (4%)
- 297 more relevant allergens worldwide
  - Group of allergens: plant (46%), animal (25.7%), mold and other microorganisms (8.8%), drugs (8.7%), occupational allergens (6.5%) and miscellaneous (4%)

Following steps:
(I) To optimize the interoperability between the ICD-11 drug allergens to the French VIDAL drug list and MedDRA
(II) To identify possible missing excipients in the ICD-11 related to A/H to prepare the proposals.

Conclusions

- The building block of the construction of the proposal supported the interoperability between ICD-11 and other classifications, such as LOINC, WHO/ IUIS platform
- Aligned with the achievement in the consolidation of the pioneer section addressed to the A/H in the ICD-11, the introduction of a classification for allergens can be considered timely and much needed in clinical practice.
Status Report on the Czech Version of ICD-11

Authors: Dana Krejčová, Linda Medková
Institute of Health Information and Statistics of the Czech Republic (IHIS CR), Prague, Czech Republic

Abstract
The Institute of Health Information and Statistics of the Czech Republic (IHIS CR) within the project of the National Center for Medical Nomenclatures and Classifications (NCMNC) is working on the translation and implementation of the ICD-11 into the Czech health care system. In 2019, the IHIS CR joined the project "Translation and implementation of the Czech version of ICD-11". The composition of the team was changed, and the team have now 13 editors.

Introduction
A team assembled by IHIS of internal experts from the Department of Clinical Classifications had originally 12 editors. The team grew up to a total of 13 editors of employees with different expert backgrounds (doctors, biomedical engineers, etc.). The team cooperates with language experts from Charles University and clinical experts from various medical specialties to ensure the correctness of used terminology.

Methods & Materials
For the needs of unification and functioning of translation work, the Methodology of Translation of the ICD-11 and dictionaries of preferred terms for translation and synonyms were created. The team uses the Translation Platform from WHO for the translation, filled with the title names from the Czech ICD-10. The Translation team has the possibility to manage the personal translation rights in the platform for each member of the team. The aim is to translate every item in the platform necessary for the optimal use of the ICD-11 in the Czech Republic, including descriptions and synonyms. The NCMNC organizes regular workshops for translators to discuss complicated terms with language experts from the Charles University. Translators share their approaches to translation, suggest standard procedures and discuss problems to achieve the most consistent translation of ICD-11. Following the activities related to the ICD-11 in the Czech Republic, close international cooperation with other countries (Poland, Slovakia, etc.) was initiated.

Results
An internal team including 13 editors of the Department of Clinical Classification has been working on the translation since summer 2020 and is cooperating with experts from the Institute for History of Medicine and Foreign Languages to ensure the correct terminology and language consistency. In terms of translation, 96% of the content has been translated into Czech, 73% of the content has been validated by clinical experts and 49% of the content has been reviewed by language experts (see Chart 1). Incompleteness of translation in the Translation platform is caused by continuous updates and additions to the Foundation (e.g. Module II Traditional Medicine), partly also by inconsistencies in the Czech terminology in specific areas (e.g. chemical substances), where the English terminology has been left temporarily as default. On the website https://www.uzis.cz/ext/mkn-11-nahled/ of the IHIS CR there is a pre-release version with data from April 2023, which is intended for internal purposes or for demonstrations for the professional public and will be updated with new data in September 2023. The preview of the Czech version of ICD-11 after initial content validation by clinical experts presents the ICD-11 content using two online tools from the World Health Organization, the "MMS Browser" and the "MKN-11 Coding Tool" (see Picture 1 and 2). This version of ICD-11 is for now being published for the wider professional society, and as part of this, opposition and commenting on the content of these tools has been initiated. For these purposes, NCMNC created questionnaire for comments of experts (see Picture 3). A limited number of editors have access to the comment database of this questionnaire, who will then review and process the comments, or start a discussion with comment authors or expert groups to resolve these change requests in the most accurate and high-quality form possible.

Conclusions
The team of editors is constantly working on improving the content of ICD-11, gradually updating and incorporating settled proposals from WHO into the platform. Residual Translations are currently being added to the Czech version of ICD-11. However, the editors encounter the problem of finding these items, as they are not part of the data export from the translation platform, which slows down the finalization work.

At the same time, the team also updates the content following the WHO edits. In the future, it will be necessary to set up the update process, determine how often and to what extent updates will be carried out. ICD-11 is a huge database that will evolve over time and there is a need to ensure that it is updated as accurately as possible to provide the best support to all user institutions.

The implementation of ICD-11 will require further steps. In the near future, we are planning targeted testing of the Czech content of the ICD-11 Foundation and the Czech versions of the WHO online tools.

Acknowledgements or Notes
IHIS CR, specifically the NCMNC has been entrusted by the Ministry of Health to manage the implementation of the ICD-11 in the Czech Republic. Development of the Czech version of ICD-11 was funded by the European Social Fund within the project of National Center for Medical Nomenclatures and Classifications, CZ.03.4.74/0.0/0.0/15_025/0016089.
The transition from ICD-10 to ICD-11 poses challenges, especially for France's unique healthcare scenarios. This poster presents a dual strategy for this shift. We refine the WHO's untyped mapping using categories like exact, broader, and narrower relationships. Additionally, we present the initial results of our approach using Deep Learning and ontologies for creating mappings between ICD-10 and ICD-11.

**Introduction**

The shift from ICD-10 to ICD-11 poses significant challenges, especially for France with its unique healthcare scenarios. To address this, we present a dual strategy. The first leans on the WHO's existing ICD mapping, enhancing its untyped nature. We employ three complementary techniques: String-Based Matching, UMLS-Based Approach, and Substring-Based Approach, aiming for a detailed and nuanced mapping. The second strategy delves into modern computational methods, harnessing Deep Learning and ontologies called BertMap that we applied to map ICD-10 to ICD-11.

**Methods & Materials**

1. **Utilizing Existing Mapping:**

   The existing mapping between ICD-10 and ICD-11, provided by the World Health Organization (WHO), serves as the foundational basis for the transition. However, the WHO-provided mapping comes with a limitation in that the relationships between the codes are untyped, meaning they lack specific categorizations or labels defining the nature of the relationship.

1.1 **Proposed Approach to Address Untyped Nature:**

   Without specific categorizations or labels defining the relationships between codes, there's a potential gap in understanding the intricate connections between them. To bridge this gap and provide a richer, more nuanced understanding of these relationships, we have employed a triad of complementary approaches: String-Based Matching, UMLS-Based Approach and a Heuristic-Based and Substring Matching Approach.

**Results**

1. **Classifying the Untyped Existing Mappings:**

   The WHO provided a total of 15,509 mappings between ICD-10 and ICD-11. Applying our triad of approaches yielded the following results:

   a. **String-Based Matching:** Direct comparisons resulted in 2,214 (14%) of the mappings being classified as exact matches between ICD-10 and ICD-11 codes.

   b. **UMLS-Based Approach:** Using the Unified Medical Language System, we classified an additional 1,861 (11%) as exact matches not identified by string-based matching, 1,154 (7%) as parent, and 2,012 (12%) as child relationships.

   c. **Substring-Based Approach:** A structural analysis of the codes revealed that 1% of the mappings have broader or narrower relationships.

**Overall Impact:**

In total, these strategies classified 47% of the provided mappings.

2. **Automatic mapping approach:**

   We conducted an experiment using two ontologies: ICD-10 and ICD-11 (in English), both in OWL format. The evaluation showed that BertMap achieved an F-measure of 0.64 when compared to exact mappings from the WHO dataset.

   Currently, this marks the initial endeavor to align ICD ontologies, laying the foundation for further refinement across various dimensions:

   1. Enhancing training data quality.
   2. Incorporating hierarchical mapping capabilities.
   3. Extending the algorithm's application to map the French version of ICD.
   4. Addressing post-coordination relationships more effectively.

**Conclusions**

In conclusion, this poster presents a dual strategy for mapping medical codes from ICD-10 to ICD-11, it introduces the innovative BertMap powered by deep learning. This work sets the stage for future enhancements and contributes to a seamless transition between code systems.
Rare diseases in ICD-11: advancement of the collaborative project with the Orphanet database

Julie Tahraoui1, Tayeb Merabti2, David Lagorce1, Caterina Lucano1, Valérie Serrière-Lanneau1, Nadia Bougacha2, Marc Hanauer1, Yann Briand2, Ana Rathi1

1: INSERM, US14 - Orphanet, Rare diseases platform - Paris, France, 2: Agence du Numérique en Santé - Paris, France

Abstract: Orphanet has developed and maintains the only nomenclature specific to rare diseases (RDs), a unique and multilingual standardised system, populated from literature and validated by international experts. Each clinical entity is assigned a unique and time-stable ORPHAcode, around which all the data in the Orphanet knowledge base are structured. Orphanet and the Agence du Numérique en Santé, under the auspices of the French WHO Collaborating Center, have developed a combined approach to align ORPHAcodes/ICD-11 codes. The purpose of this collaboration is to achieve an exhaustive representation of RDs in the WHO-FIC Foundation. Completion and maintenance of the ORPHAcodes/ICD-11 alignment is crucial to providing a common language across healthcare and research systems for effective monitoring and reporting on RDs, and to offering a global standard for health data, clinical documentation, and statistical aggregation.

Introduction
The Orphanet nomenclature of rare diseases is a unique and multilingual standardised system providing a specific terminology for RD. Each clinical entity is assigned a unique and time-stable ORPHAcode, around which all the data are structured (Figure 1). There are currently 9496 active ORPHAcodes, classified as either Group of disorders (2156), Disorder (6320) or Subtype of disorder (1020), which are aligned with other international terminologies enabling interoperability between different information systems.

Methods & Materials
In order to perform the ICD-11/ORPHA codes alignment, we developed two complementary approaches:

1. Lexical mapping: based on term comparison
   - A lexical-based approach was deployed to investigate correspondence between Orphanet disease labels and ICD-11 terms.
   - This lexical approach is based on Natural Language Processing (NLP) tools in French and English combined with a TF-IDF based relevance ranking to find the most lexically similar term.

2. Semantic mapping: based on concept equivalence
   - Manual analysis of the previously aligned ICD-10/ORPHA codes and retrieval of the concepts in the ICD-11 allowed us to align concepts in the three terminologies and identify the differences in RD representation between ICD-10 and ICD-11.
   - Analysis of the other RDs present in ICD-11 for which there is no equivalent in the ICD-10 will next allow to identify the gap between the two terminologies.

Results
Advancement of the collaborative project to map ORPHAcodes to ICD-11 terminology:

1. Qualification of ORPHAcodes-MMS ICD-11 codes mapping
   - ORPHAcode MMS ICD-11
     - ORPHAcode MMS
     - NBT
     - IBT
     - Exact

   Figure 2: Graphical representation of relationships defined between ORPHAcodes and ICD-11.

2. Results of the semi-automatic alignment using the complementary approaches
   - The lexical "automatic" approach defined 5 cases depending on the correspondence made on the ORPHAcode’s preferred term, its synonyms or both. The intersection between the lexical and the semantic approach has validated the lexical mapping and will resolve possible conflicts between ORPHAcodes and ICD-11.

   Number of validated mappings:
   - Total: 2023 2022
   - Case 1: (totally mapped) the preferred label and synonyms are mapped to the same ICD-11 code (not all synonyms labels must be mapped).
     - 1728 out of 1873 467
   - Case 2: the ORPHAcode contains one or multiple synonyms labels nevertheless only the preferred label is mapped to an ICD-11 code.
     - 1445 out of 1538 285
   - Case 3: the ORPHAcode contains one synonym label and the preferred and synonym labels are mapped to different ICD-11 codes.
     - 31 out of 81 10
   - Case 4: the ORPHAcode contains multiple synonyms labels mapped to a same ICD-11 code different to the ICD-11 code mapped to the preferred term. In this case, not all synonyms labels are mapped.
     - 88 out of 184 33
   - Case 5: the ORPHAcode contains at least one synonym label, and only these synonyms are mapped to at least one ICD-11 code and not the preferred term.
     - 427 out of 527 73

   Table 1: Analysis of the intersection between lexical and semantic approaches.

3. Progress of ORPHAcodes/ICD-11 mapping:
   A) Current ORPHAcodes/ICD-11 alignment coverage:
       - Following the semi-automatic approach, we have started to manually align ORPHAcodes; when the RD was no present in ICD-11, we attributed a broader ICD-11 code according to Orphanet’s alignment guidelines.

   B) Representation of rare diseases in ICD-11:
       - One of the aims of this work is to evaluate the representation of rare diseases in ICD-11 (as of July 2023).

Conclusions & Perspectives
The work led by Orphanet and Agence du numérique en Santé plays a major role in an exhaustive representation of rare diseases in the WHO-FIC terminology.

The semi-automatic approach is now completed and the next steps will consist:

- To solve issues detected related to the different cases.
- To end the mapping of ORPHAcodes with ICD-11 focusing on the disorder level by attributing manually a broader ICD-11 code.
- To transmit to WHO a list of concepts to review.

Reference
IFHIMA’s ICD-11 Education and Implementation Support

Authors: Kathy Giannangelo & Mary Stanfill
IFHIMA, Virtual NGO

Abstract
The International Federation of Health Information Management Associations (IFHIMA), a Non-Governmental Organization (NGO), is committed to helping the healthcare industry prepare for ICD-11. This work supports the WHO-FIC Network Strategic Framework and Work Plan priority areas of Education and Implementation, with a focus on ICD-11.

Introduction
IFHIMA has been in official relations with the WHO for 44 years and has committed to working closely with WHO on specific projects of particular concern or interest to WHO in the field of health records and health information. IFHIMA also supports the WHO-FIC Network Strategic Framework and Work Plan priority areas of ICD-11, including Education and Implementation.

IFHIMA now has 33 nations represented in Associate/Individual, National, Educational Intuition and/or Corporate categories. Those added in 2023 include Bangladesh, Bermuda, Ireland, Malaysia, South Africa, and the United Arab Emirates.

IFHIMA’s purpose is to
(a) promote the development and practice of health information management (HIM) in all countries
(b) advance the development and use of international HIM standards
(c) provide for the exchange of information on HIM education requirements and training programs
(d) provide opportunities for education and communication between persons working in the field of HIM in all countries
(e) promote the appropriate and effective use of technology and the electronic health record

Methods & Materials
IFHIMA’s ICD-11 education support for the past year has been focused on the upcoming 20th IFHIMA Congress held in conjunction with the 40th Health Information Management Association Australia (HIMAA) National Conference.

Implementation support has focused on the launch of Communities of Practice (CoPs). During the IFHIMA virtual general assembly in November 2022, participants were polled on 10 topics and the two having the highest priority were ICD-11 Planning and HIM Educators. IFHIMA launched these two CoPs to provide opportunities for members to engage on a regular basis, and to provide more benefits for IFHIMA membership.

Results

Advancing global health: in pursuit of high quality digital information

Several ICD-11 sessions and two workshops are part of the program.

- The African Perspective – assessing readiness and preparing the workforce for ICD-11 (Nigeria)
- Fostering Global Health: Introducing ICD-11 MMS Structure and Content in Comparison to ICD-10 Modifications (workshop)
- Using ICD-11 in practice – the where’s, why’s and why nots (workshop)
- Preliminary study of patient safety and quality use cases for ICD-11 MMS (United States of America)
- Implementing ICD-11: Tipping Point for Change (Australia)
- Eight Pacific Island Countries will present on the improvements achieved in their Health Information Systems and their use of coding and classification systems: ICD-10 and plans for ICD-11.
- ICD-11 Training: New Classification... New approach (WHO-FIC Collaborating Centre, Kuwait)
- What Stroke Doctors Should Know When Introducing the ICD-11 (Japan)
- Building a Roadmap to Deliver ICD-11 in Australia (Australia)

IFHIMA’s ICD-11 Community of Practice held their inaugural meeting on 25 July with representatives from several countries. The CoP is led by Kathy Giannangelo (Chair), Gowri Sriraman (Deputy Chair) and Michelle Badore (Secretariat) and focuses on a wide range of topics related to the adoption of ICD-11 across the globe. During the virtual meeting, the group provided great information on current status of ICD-11 planning for Australia (AU), Canada (CA), and the United States (US).

AU: No decision yet on adoption of ICD-11 for morbidity or mortality. On the mortality side, planning for field testing has begun. On the morbidity side, a mapping project for ICD-10-AM is underway. An in-country task force to develop a roadmap for activities to inform decision on ICD-11 has been formed.

CA: No decision on morbidity, though mortality adoption will likely occur before morbidity. An ICD-10-CA to ICD-11 map has been developed and a reverse map is under development. An implementation task force has been created.

US: Currently in the early stages of discussion regarding adoption. A Workgroup on Timely and Strategic Action to Inform ICD-11 Policy has been formed and is being guided by subject matter experts.

Conclusions
IFHIMA continues to support WHO-FIC Network’s priority areas with ICD-11 outreach and education using a variety of channels and individuals.

Acknowledgements or Notes
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Gowri Sriraman
Michelle Badore
IFHIMA Executive Board
ICD-11 TRANSITION TASKS IN AMERICAS REGION

Authors: Dyer, D., Notzon, S., Kontio, K., Joos, O., Gerger, A., Barranco, A., Yañez, M.

Ministry of Health of Mexico, CDC Foundation, Pan American Health Organization WDC

Abstract
Currently, at the global level, countries are designing strategies for the implementation of ICD-11. In the region of the Americas, the Pan American Health Organization (PAHO), CDC Foundation and Collaborating Centers for the World Health Organization Family of International Classifications (WHO-FIC CC) are providing technical support to countries for ICD-11 planning and implementation.

Introduction
WHO has recommended to Member States the implementation of this new classification in 2022. One of the main challenges to successfully carry out the transition is to consider all the factors that are linked to the new perspective: dissemination, training, general knowledge of its use, adjustment of the countries, health information systems and identification of the impact of its use in vital statistics, hospital records and health statistics in general, to generate evidence that contributes to its optimal future implementation.

Methods & Materials
The Ministry of Health in Mexico, through the General Directorate for Health Information (DGIS, by its Spanish acronym) and CEMECE (WHO-FIC CC in Mexico), in collaboration with the CDC Foundation, carried out the First National Course for the Training of Trainers of the International Classification of Diseases, Eleventh Revision (ICD-11). The training began in March 2022, with fortnightly teleconferences. At the end of the course, an in-person course was held from March 22-31, 2023, in Puerto Vallarta, Jalisco, with financing from the CDC Foundation. The course focused on the comprehensive use from a technical perspective of the ICD-11, generalities, and mortality and morbidity coding. Forty-two ICD-11 master trainers graduated, who will replicate the training in their states, institutions of the health sector, and the National Statistics Institute (INEGI, by Spanish acronym). They will also collaborate in the training of coders and users in the Region of the Americas. In collaboration with PAHO, CEMECE is re-designing and implementing this course to train instructors at the regional level. This poster shows the strategy to train ICD-11 master trainers in Mexico which can serve as a model for building ICD-11 training capacity in other countries and regions. 165 aspiring instructors responded to the call. Over the course of the sessions until November 2022, the most motivated, dedicated, and perseverent participants were selected.

Results
The forty-two participants successfully completed the course, with their certification as ICD-11 instructors for the federal and state Ministries of Health, IMSS, IMSS-Bienestar and INEGI.

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<tr>
<th>STATE</th>
<th>ICD-11 instructor</th>
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<tbody>
<tr>
<td>Mexico City</td>
<td>10</td>
<td>Colima</td>
<td>1</td>
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<td>Jalisco</td>
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<td>Durango</td>
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<td>3</td>
<td>Guerero</td>
<td>1</td>
</tr>
<tr>
<td>Oaxaca</td>
<td>3</td>
<td>Hidalgo</td>
<td>1</td>
</tr>
<tr>
<td>Puebla</td>
<td>2</td>
<td>Nayarit</td>
<td>1</td>
</tr>
<tr>
<td>San Luis Potosi</td>
<td>2</td>
<td>Nuevo León</td>
<td>1</td>
</tr>
<tr>
<td>Yucatán</td>
<td>2</td>
<td>Querétaro</td>
<td>1</td>
</tr>
<tr>
<td>Chiapas</td>
<td>1</td>
<td>Quintana Roo</td>
<td>1</td>
</tr>
<tr>
<td>Chihuahua</td>
<td>1</td>
<td>Veracruz</td>
<td>1</td>
</tr>
<tr>
<td>Coahuila</td>
<td>1</td>
<td>TOTAL</td>
<td>42</td>
</tr>
</tbody>
</table>

Lessons learned
These practices have had a high impact from a technical perspective. For example, because of the exercises that were carried out during the course year, CEMECE identified the absence of some instructions in the 2019 version of the ICD-11 Reference Guide, which affected the selection process of the basic cause of death, specifically step M1. This evidence and an analysis of a representative sample were presented at the annual meeting of Collaborating Centers for WHO-FIC in Geneva, contributing to the corrected version in Spanish of the Reference Guide. A generational change is identified among expert coders in the use of the ICD. The group that completed the course and obtained recognition as ICD-11 instructors is varied in terms of time of experience. Some participants were long time coders who were involved in the transition from ICD-9 to ICD-10 in 1998 in Mexico and, more recently, with the development of ICD-11 and its digital evolution. Some participants were new to coding and had only been introduced to ICD through Mexican WHO-FIC CC webinars on the topic. It is necessary to take advantage of the experience of experts over the years and simultaneously identify the new generation of coders so that they join the technical line of the use of the ICD-11.

Acknowledgements
Thanks to the CDC Foundation, PAHO and WHO for their continuous support during the development of this technical activity, and to all the participants that are now ICD-11 instructors in Mexico.

With representatives from 21 of the 32 states, it is expected to have a significant, positive impact in the country. Part of the commitments assumed by the representatives of the institutions of the National Health System
Abstract

The ICD-11, allows standardized communication between healthcare professionals globally, with an impressive reach of over 1.6 million codifiable clinical situations. With a digital and multilingual approach, the ICD-11 is a crucial tool for cataloging and describing health statistics and its updates reflect the medical progress and scientific advances. The ICD-11 improves the clarity of terminology and facilitates the coding of important details. It enables the collection of data on safety in healthcare, with the identification of unnecessary events that may cause harm, such as hazardous workflows in hospitals.

ICD-11 has enabled the evolution into a clinical classification and terminology database with a wide range of uses when recording and describing health statistics and its updates reflect the medical progress and scientific advances. The ICD-11 improves the clarity of terminology and facilitates the coding of important details. It enables the collection of data on safety in healthcare, with the identification of unnecessary events that may cause harm, such as hazardous workflows in hospitals.

ICD-11 requires an official translation into Portuguese to be used by all Portuguese-speaking countries. Despite the translation to Brazilian Portuguese, there is an urgent need to discuss and adapt this translation into Official Portuguese Language, based on the most recent Portuguese orthographic agreement.

The main objectives of the meeting were:
1. To define a strategy to revise and adapt the translation of ICD-11 to be used by the Community of Portuguese Language Countries (CPLP).
2. To discuss the feasibility and strategic opportunity for the creation of a WHO Collaborating Centre regarding the National Family of Classifications for the Official Portuguese Language.

Methods & Materials

A qualitative research method was used, with 4 focus groups with representatives from 7 Portuguese-speaking countries.

All focus groups were composed of 7 participants, with the discussion being facilitated by a trained moderator. A total of 27 participants were selected based on expertise in classification systems and ICD.

All focus groups were composed of, at least, three participants from different Portuguese-speaking countries.

Results

The consensus action proposals included:
1. The constitution of an executive group composed of one representative from the Ministry of Health from each Portuguese-Speaking Country, consequently coordinating the efforts and ensuring cooperation between these countries.
2. The creation of a working group with representatives from all Portuguese-speaking countries, dedicated to reviewing and adapting the translation of the ICD-11 carried out by Brazil. This group is expected to complete its work by December 2023, with the following stages:
   a) Accessing and exploring the WHO ICD-11 translation platform;
   b) Technical and scientific stabilization of the official ICD-11 translated version into Portuguese Official Language;
   c) Orthographic stabilization;
   d) Creation of national groups in each country to identify synonyms.
3. The creation of a dedicated group to develop a unique capacity for ICD-11 implementation in Portuguese-speaking countries, ensuring a standardized and consistent approach.
4. The need for another group dedicated to raising funding for the development of the activities was also discussed, approaching potential donors and defining strategies to ensure the necessary funding for the successful implementation of ICD-11 in the Portuguese-speaking countries.

Conclusions

The Meeting of the Portuguese-speaking countries on the World Health Organisation’s International Classification of Diseases was successful in defining a strategy to standardise the translation of the ICD-11 into Portuguese, thus benefiting all Portuguese-speaking countries. This event fostered the technical cooperation between the countries involved, seeking to include the synonyms from various nations, which is still an ongoing process. ICD-11 offers significant advances in the classification of diseases and its applications, providing simplification, digitalisation, increased efficiency and improved quality health information.

However, translating the ICD-11 into Portuguese faces complex challenges, such as linguistic, orthographic and structural variations in these countries. In this context, the delegations attending discussed the specific features and expressed their willingness to find inclusive solutions.

The event showed the intense international cooperation needed for the implementation of ICD-11 in the Portuguese-speaking countries. Relationships between institutions and countries were strengthened, and the meeting represented an opportunity to advance in the challenging work of its translation.

Although much remains yet to be done, the willingness of the delegations to seek joint solutions evidenced the collaborative spirit of the Community of Portuguese Language Countries (CPLP), working in synergy to address the challenges and ensure the successful implementation of ICD-11 in these countries.

Acknowledgements

The event was sponsored by the CDC Foundation.

The Meeting was organised in partnership with the DGS, the Brazilian Ministry of Health and the Portuguese Association for Hospital Development (APDH) and benefited from the collaboration of partner institutions such as the Statistics Institute (INE), Vital Strategies and the General Secretariat of the Ministry of Health.
CODING DEATH CERTIFICATES WITH ICD-11 AND DORIS

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Mexican WHO-FIC CC, MoH, ISEM, MoH San Luis Potosí, MoH Jalisco, MoH Veracruz, MoH Colima, MoH Oaxaca, INEGI

Abstract

WHO had developed and are working in the Digital Open Rules Integrated Cause of Death Selection (DORIS) that is an automated mortality coding system. Currently, it is possible to work with an improved version and in Mexico the tests were carried out with databases of the death system. This poster shows the main findings.

Introduction

In follow-up to the activities for the Digital Open Rules Integrated Cause of Death Selection (DORIS), Mexican WHO-FIC CC carried out a comparative study with the mortality database of Mexico coded with ICD-10 and using the mapping to ICD-11 to adapt the format to enter it and process in DORIS.

Since September 2022, Mexico has been involved in the database process and in the Development of DORIS. The first database that was processed:
1. A representative sample 1283 for death certificates in Mexico (2019) was taken. The first part with 498 cases and second part 785 cases.
2. That data base were coded “manual” with ICD-11 (coding tool & browser) and we selected the Underlying Cause of Death (Reference Guide, officially Spanish publication, Nov. 2019). Five coders participated.
3. WHO provided us the DORIS software beta version.
4. We processed the data base with DORIS and compared the results.

Then, the Mexican team made a second coding database with a small sample, taken from the official mortality in 2020 with 400 cases, the results were similar, and it was because we used the same version and with the same findings.

After the first workshop convened by the WHO, Mexico has participated in the workshops for the Development of DORIS, Mortality Rule Digitalization (MRD), in which it has contributed to the Development and improvement of the System. With the candidate version, the Mexican team shared their progress on testing the DORIS release candidate. They utilized ICD-10 to ICD-11 mapping tables to code around 4000 death certificates. The results were promising, with a 70% match as compared to Iris results. The remaining 30% mismatches are being carefully reviewed to identify the reasons, which may include classification changes, use of non-terminal codes, and mapping issues.

Acknowledgements

Thanks to all Mexican WHO-FIC CC that have collaborated in this tasks and WHO for the technical support.

Reasons for difference and contribution.

In some cases, the note about Conflicting durations, DORIS accepted a condition with a stated duration as due to a condition with a shorter duration. And, in other cases, DORIS did not apply Step SP8 – Conditions unlikely to cause death. In that days, the most important finding found with this analysis, was that M1 contained in the Reference Guide in Spanish (2019) was incomplete (mainly M1, where are missing some linkages). This issue was so important and WHO gave a correct solution, making the necessary changes in the Reference Guide in Spanish with the support of PAHO.

Results

Currently, the ICD-11 Reference Guide in Spanish (2023 version) is published for users. With this version, the differences that had been found in the previous processes have been solved. A notable point is the expansion of the database of the trials. The evolution and improvement that the DORIS System has had is recognized and the differences are now concentrated in the mapping tables between the ICD-10 and the ICD-11. On the other hand, it is a reality that no automated coding system is 100% effective. The manual review is maintained, and the WARNINGS that are in the results, are related mainly to maternal deaths, from external causes and perinatal deaths. Technical monitoring will be provided.

Acknowledgements

Thanks to all Mexican WHO-FIC CC that have collaborated in this tasks and WHO for the technical support.

Chart 1: Results using DORIS. First study bridge coding.

Chart 2: Second study bridge coding: December, 2022

DORIS & MRD in 2023

After the first workshop convened by the WHO, Mexico has participated in the workshops for the Development of DORIS, Mortality Rule Digitalization (MRD), in which it has contributed to the Development and improvement of the System. With the candidate version, the Mexican team shared their progress on testing the DORIS release candidate. They utilized ICD-10 to ICD-11 mapping tables to code around 4000 death certificates. The results were promising, with a 70% match as compared to Iris results. The remaining 30% mismatches are being carefully reviewed to identify the reasons, which may include classification changes, use of non-terminal codes, and mapping issues. Then, mortality data base in Mexico 2022: 841,904 deaths, were mapped in multiple causes, giving a good result 741,115 and these cases were processed with WHO help and compared the UCD (mapping) and the DORIS results. The entire database were coded in 22 minutes.
CODING RULES FOR UNCERTAIN AND "RULED OUT" DIAGNOSES IN ICD-10 AND ICD-11

Authors: Oluseun O Atolagbe, Patrick S Romano, Danielle A. Southern, Wachira Wongtanasarasin, William A. Ghali
University of California Davis, Center for Healthcare Policy and Research, and University of Calgary Collaborating Centre

Introduction

In clinical medicine, the primary focus of an encounter is often to rule out certain conditions, or uncertainty may remain about the patient’s diagnosis at the end of the encounter. Therefore, it is desirable for a modern classification system to have features that provide unambiguous coding guidance for such situations.

Practical steps have been taken in the design of ICD-11 to mitigate challenges in coding uncertain or unconfirmed diagnoses. ICD-11 has new features that unlock mechanisms for capturing uncertain or unconfirmed diagnoses, including post-coordination or clustering of relevant concepts and improved tools to support more consistent clinical documentation and coding practices. In this poster, we review the current situation with ICD-10 and explore related opportunities and challenges presented by ICD-11.

Methods & Materials

To evaluate historical and proposed coding rules with respect to uncertain and “ruled out” diagnoses, we undertook a careful review of current practices in ICD-10 and all English-language modifications thereof:
1. International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM), used in the USA and United Arab Emirates.
2. International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Canada (ICD-10-CA), used across Canada.

We then explored how the design of ICD-11 is intended to improve reporting of uncertain and “ruled out” diagnoses, with specific attention to the need for additional clarity in WHO’s instructions.

Results

We identified extensive variation across countries in current practices for coding and reporting unconfirmed or “ruled out” clinical concepts in ICD-10 and modifications:

- WHO’s ICD-10 Instruction Manual on morbidity coding states that diagnoses qualified as "possible," "questionable," or "suspected" should be coded to “the greatest degree of specificity and knowledge of the condition that necessitated care or investigation... by stating a symptom, abnormal finding or problem.” However, if “after an episode of health care, the main condition is still recorded as 'suspected', 'questionable', etc., and there is no further information or clarification, the suspected diagnosis must be coded as if established.”
- South African ICD-10 Coding Standards do not recognize the WHO exception for the main condition: any "diagnosis recorded as "possible" or "suggestive of" or "probable" or prefixed with a "?” or "query" will not be coded as if the given diagnosis is confirmed...
- Standard Coding Guidelines for ICD-10-TM also instruct users to code the sign or symptom “rather than giving the diagnosis R/O disease.”
- ICD-10-CM Official Guidelines state that any condition documented at the time of discharge from a hospital “as probable," ‘suspected,’ 'likely,’ 'questionable,’ ‘possible,’ or 'still to be ruled out,’ 'compatible with,’ 'consistent with,’ or other similar terms indicating uncertainty” should be coded "as if it existed or was established.” However, for outpatient services, uncertain or “rule out” diagnoses are not coded.
- Australian Coding Standards for ICD-10-AM advise that if “a single condition is suspected, assign a code for the suspected condition... However, if “more than one suspected condition is documented as the differential diagnosis, assign code(s) for the documented symptom(s) OR if there are no symptom(s) documented, assign codes for all suspected conditions.”
- Canadian Coding Standards (CCS) for ICD-10-CA advise that for unconfirmed diagnoses, an ICD-10-CA code is assigned as if it were established, with a prefix “Q” denoting provider-documented uncertainty. When 2 or more unconfirmed diagnoses are recorded with no further information or clarification, the first-listed unconfirmed diagnosis is reported as the main problem, with the prefix Q.
- UK’s National Coding Standards authorize coding of any diagnosis “recorded in the medical record as ‘working diagnosis,’ ‘treat as’ or ‘suspected’” However, diagnoses described in the context of “a differential diagnosis whilst working to determine which one of several diseases may be producing the symptoms...” (using terms such “likely” or “likelihood”) are not reported.

Discussion

The design of ICD-11 is intended to mitigate these coding challenges by introducing post-coordination and expanding the range of codable clinical concepts, and offering clearer guidance in the ICD-11 Reference Guide.

For example, through post-coordination with type 2 extension codes, users may identify any condition as a “provisional diagnosis” (XY7Z), as part of a “differential diagnosis” (XY7S), or as pursuant to medical observation or evaluation for a suspected disease or condition, ruled out (QA02.Y). Suspected diagnoses “ruled out” prior to discharge can be further specified by post-coordination with an extension code from another chapter, to describe the condition that was ruled out. However, there are no clear guidelines to explain the difference between a "provisional" and a "differential" diagnosis.

Conclusions

More precise coding of uncertain and “ruled out” conditions in health information systems is of value to health care organizations, policymakers, and researchers, particularly if there is interest in why and how much resources are being expended.

To realize the full potential of ICD-11, the Reference Guide should provide clearer instructions about how to code uncertain diagnoses that are not the main condition, and about when to use post-coordinated codes for “diagnosis certainty” (XY7Z or XY7S). Clarity is also needed around whether ICD-11 should retain the ICD-10 convention (in most country-specific guidelines) of coding “ruled out” diagnoses only when further investigation is not required, and another underlying condition is not identified.

Acknowledgements or Notes

This work was supported by Canadian Institutes of Health Research (CIHR) Foundation Grants and a US Agency for Healthcare Research and Quality (AHRQ) meeting grant (R13HS027288).

Poster Number 318
ICD-11 digital end-to-end solutions for mortality reporting

Authors: M.H. Popescu1, M. Donada2, C. Celik2, C. Alsokhn2, E. Krpelanova2, V. Della Mea3, R. Jakob2
1 University of Udine, Italy, 2 WHO-HQ, 3 Italian WHO-FIC Collaborating Centre

Abstract As part of ICD-11 end-to-end solution for mortality reporting, WHO developed a suite of digital tools for cause or death that consists of programs that assist in coding, selecting the underlying cause of death and assessing the quality of the coding or the quality of the data. These digital tools are designed to enhance accuracy and efficiency in mortality reporting, ensuring standardized and reliable cause of death information.

Introduction

The ICD-11 end-to-end digital solution is nearing completion. Currently, ICD-11 and several of its components are fully digital. One noteworthy aspect that had remained incomplete was the inclusion of rules for determining the underlying cause of death, which is essential for both national and international cause of death reporting.

As a first step, WHO developed a suite of digital tools for cause of death that consists of programs that assist in coding, selecting the underlying cause of death and assessing the quality of the coding or the quality of the data. These digital tools are designed to enhance accuracy and efficiency in mortality reporting, ensuring standardized and reliable cause of death information.

Among the tools, three important components are DORIS, eMCCD and the ICD-11 digital mortality rules platform.

Methods & Materials

DORIS (Digital Open Rule Integrated cause of death Selection tool) is a software solution designed to facilitate the identification and selection of the underlying cause of death. It offers both online functionality (Figure 1) and an offline mode (Figure 2) to cater to various user needs.

The web-based application applies the ICD mortality rules on individual death certificates for cause of death selection. Users can interactively fill out the death certificate, utilizing helpful tools like the embedded coding tool for coding single condition.

The offline version was designed to allow effortless batch processing of large volumes of death certificates which can accommodate free text and ICD-11 coded versions. This version is capable of handling diverse input formats, Excel, CSV, and JSON. The free text is coded to ICD-11 using the automatic coding functionality of the eMCCD.

Figure 1: DORIS web version.

Figure 2: DORIS Desktop Version for batch processing.

Figure 3: Digital mortality rules platform

The technical specifications for a digital death certificate form are made available as eMCCD (electronic Medical Certificate of Cause of Death), in JSON format. An example can be found in Figure 4. These specifications serve to standardize input in line with the 2016 WHO international Medical Certificate of Cause of Death form and include a data dictionary for field names and content encoding that allows processing the content with the API for coding, as well as with software for selection of the underlying cause of death.

Finally, to enable processing by the software, the ICD mortality rules were transformed into a digital format, resulting in the ICD-11 digital mortality rulebase (Figure 3). Like all ICD-11 tooling environment, the latter will allow transparent editing and maintenance of the digital mortality rulebase.

Outputs

The release candidate of DORIS tool was publicly released in July and is available as an integral component of the ICD-11 suite of tools on the WHO platform icd.who.int/doris.

Figure 1 shows an overview of the web version of DORIS, whereas Figure 2 showcases the Desktop version that can be used for batch processing.

The digital mortality rules platform is illustrated in Figure 3. The platform allows editing the rules together with the value sets used by these rules which are then used by the DORIS.

Conclusions

After several years of development, the release candidate of DORIS has been published. The value set domain, although still in the development phase, has demonstrated significant potential in its role as an ICD-11 value sets editor in general and a digital mortality rulebase editor in particular. This platform is user-friendly, facilitates updates to the mortality rulebase, and will be automatically linked with the reference guide in the coming updates.
ICD11 translation to the Portuguese language

Authors: Elisabeth França, Juan Cortez-Escalante, Ana Carolina Prata, Fatima Marinho, Marli Rocha

UMFG, PAHO/WHO - Brazil, MoH/BRA, Vital Strategies – Brazil, MoH/BRA

Abstract

The ICD-11 translation to the Portuguese language carried out is presented here. It was promoted by the Ministry of Health of Brazil and the Pan-American Health Organization with technical support from the Federal University of Minas Gerais-UFMG. A process of discussion with Portuguese-speaking countries is ongoing. At the end of 2023, the ICD-11 Portuguese version will be released and get contributions from country professionals.

Introduction

The 11th International Statistical Classification of Diseases and Related Health Problems (ICD-11) represents a breakthrough in the focus on knowledge and approaches to new diseases. In Brazil, the ICD-11 implementation process is being coordinated by the Technical Advisory Chamber for the Management of the Family of Classifications (CTA BR-FIC). In March 2021, the CTA BR-FIC was established within the scope of the Ministry of Health of Brazil (MoH) with the aim of working to become a WHO-FIC collaborating center. The first step of the ICD-11 implementation is the translation to Portuguese. The translation process carried out is presented here to discuss challenges and prospects for its improvement for implementation in Portuguese-speaking countries. The goal is to publish the first ICD-11 in Portuguese at the end of 2023.

Conclusions

The technical competence and responsibility of the translators ensured completion in 17 months and the quality of the translated version. By the end of 2023, the Portuguese language version of ICD-11 will be released. Revisions and adjustments are planned to build a single classification guided by the "Portuguese Language Orthographic Agreement" of 1990 and with the addition of similar terms as synonyms used by these countries. The outcome of this process will be the key to improving the on-screen version ahead of its planned use in Brazil in 2025.

Methods & Materials

The Ministry of Health of Brazil in partnership with the Pan-American Health Organization promoted the translation process, with the Federal University of Minas Gerais responsible for the technical coordination. The coordination group invited doctors and professors of medicine to work on the translation. The criteria to select them involved a high level of knowledge and experience in a specialized clinical field, academic work, and fluency in English. The translation group comprised of 50 physicians, one physiotherapist, one pharmacist, and one dentist. For training, specific instructions were created, and weekly meetings and activities were held to address the proper use of the electronic platform, the basic principles of ICD-11, and doubts that arose in the translation process. A commission of senior ICD-10 medical specialists was instituted to develop agreements to standardize the translation of recurring acronyms, expressions or abbreviations of the ICD-11 text.

Results

The translator specialists used the Portuguese translation of ICD-10 and various sources of information:
- Technical-scientific publications
- Abstract or text available in Portuguese and English

Acknowledgements or Notes

This work was completed in a relatively short time due to the partnership established by the Ministry of Health of Brazil and Brazil’s Office of the Pan-American Health Organization, the dedication of the doctors and professors of medicine, by the technical coordination of the Federal University of Minas Gerais, and senior coders.
ICD-11 pilot results on mortality in Chile

Authors: Paulina Vera Montecinos*, Daily Piedra, Andrés Fuentes, Marcela Carmona, Alejandra Landabur, Pamela Suárez, Jorge Pacheco

Ministry of Health, Chile

Abstract
Within the context of the international commitment to advance ICD-11 implementation, Chile carried out an ICD-11 mortality coding pilot, whose main objective was to establish the methodological framework to continue with its future implementation. Results showed that agreement on the assignment of codes on the four lines of the MCCD form across was, on average, 86%. Agreement of the underlying cause of death across the three coding samples was 73%.

Introduction
Medical record systems are heterogeneous in Chile. In some medical facilities, handwriting records are used, and, in other ones, electronical records are used, but they are not designed to interoperate. To improve medical service’s quality and to obtain statistical data, always ensuring personal data protection, ICD-11 offers a unique opportunity to unify medical records and move to a digital environment, according to contemporaneous scientific knowledge and keeping data traceability. Due to all mentioned above, Chile decided to step forward to ICD-11 implementation, carrying out and ICD-11 mortality pilot during the first semester of 2023, in which the main objective was evaluate usability of the coding-tool when used in Spanish and also evaluate the regulatory framework to continue with the staggered ICD-11 implementation in mortality and morbidity.

Methods & Materials
First, the Data Analysis Team obtained a representative and stratified sample of 2000 medical certificate of cause of death (MCCD) forms, whose was drawn from the validated database of 2020 deaths. Second, a team in charge of this coding pilot was selected and it was composed of 2 expert mortality coders and a “gold standard” team, which included a statistician and a general practitioner who are both members of the National Reference Center for Classifications. All people involved in the pilot were required to participate in a virtual ICD-11 training prior to the start of coding. Each coder received an anonymized sample consisting of 1250 records, of which 500 were common to both and 750 were different. In parallel, the entire sample was coded by the “gold standard” team. The sample was coded using the ICD-11 Coding Tool and the data were recorded in Microsoft Excel.

Results

<table>
<thead>
<tr>
<th>Cause of Death</th>
<th>Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line a: Disease or condition leading to death</td>
<td>86%</td>
</tr>
<tr>
<td>Line b: Chain of events in due to order</td>
<td>86%</td>
</tr>
<tr>
<td>Line c: Chain of events in due to order</td>
<td>86%</td>
</tr>
<tr>
<td>Other significant conditions contributing to death</td>
<td>77%</td>
</tr>
</tbody>
</table>

Chart 2: Agreement in assigning codes and in selecting the Underlying Cause of Death between the 3 coders.

When analyzing the medical certificate of cause of death, agreement between coders was 86% average in part I, and 73% in part II. On the other hand, the Underlying Cause of Death Selection (UCOD) obtained a 73% of agreement between coders. When comparing between ICD’s versions, many changes were identified using ICD-10 as starting point: “Certain infections and parasitic diseases”, “Diseases of the nervous system”, “Diseases of the circulatory system”, “Diseases of the musculoskeletal system and connective tissue” and “Injury, poisoning and certain other consequences of external causes”. Furthermore, best performance was obtained in the UCOD selection of certificates related to COVID-19, diseases of the circulatory system, diseases of the respiratory system, infectious diseases, and neoplasms. Among coding discordances, it was observed that the lowest percentage of agreement at the time of UCOD selection was in the certificates related to external causes of mortality, diseases of the digestive system, and diseases of the nervous system. The team referred difficulty assigning codes to concepts like sepsis, some neoplasms of unknown behaviour, external causes of mortality and development anomalies.

Conclusions
High agreement between coders was observed, including the UCOD, according to values reported on academic literature. Chapter's variations between ICD-10 and ICD-11 were expected due to modifications in ICD-11 structure. Chapter's numbers incremented from 22 to 26 and some diseases were redistributed. For example, strokes were classified on “Diseases of circulatory system” on ICD-10 but were moved to “Diseases of the nervous system” on ICD-11. Due to this, tabulation lists are recommended, to keep the comparability of statistical series between ICD versions. On the other hand, when specific causes of death were analyzed, it was showed a high agreement on UCOD selection in all diseases causing most mortality in our country, with consistence on mortality profiles between ICD versions. The new ICD version offers greater granularity when coding and it’s developed to work on digital environment. Next implementation’s steps include mortality pilots with selected causes of death and dual codifying, and morbidity pilots in a local level.

Acknowledgements or Notes
The Statistics Department of the Ministry of Health - Chile it’s organized in 5 teams, all of them collaborated in this pilot: Data Gestion, Data Analysis, Data Designation and Control, FIC Center and Sanitary Intelligence.

No conflict of interest was declared.

Our special acknowledgment to Adolfo Césped, MD, for his notable collaboration with this project.
A search for abbreviations in health records in Argentina and Chile and their inclusion in the ICD-11 Coding Tool

Paulina Vera(1), Emanuel Adrián Cardozo(2), Daily Piedra(1), Lucía Sabina Gallardo(2), Carlos Gustavo Guevel(2), Jorge Vargas(1), Jorge Pacheco(1)

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Abstract

Within the context of ICD-11 implementation in Latin America, work was carried out between March and July 2023 on the search for frequently used abbreviations in Argentina and Chile with the aim of improving the search quality of the ICD-11 Coding Tool. Both countries share many abbreviations in their official statistical records in morbidity and mortality, but further investigation on other Spanish speaking countries is needed.

Introduction

Considering the joint construction of the ICD-11 and the possibility of feedback on its coding tool, Argentina and Chile have carried out a search for frequent abbreviations in Spanish in their countries in official medical documents, such as medical death certificates, hospital discharge reports and interconsultation documents for the resolution of highly complex medical pathologies, called “waiting list”. By collecting the commonly used abbreviations, it is possible to recognize that: the same abbreviations are not necessarily used for the same medical concept, as well as a concept may have different abbreviations given the linguistic differences and common use between countries. It is also necessary to highlight the use in both countries of abbreviations in English, as well as the confusion in the transition to 2-letter abbreviations instead of 3, such as Tuberculosis. (from TBC to TB).

Methods & Materials

Argentina

A request was made to the representatives of the Jurisdictional Statistical Offices (OPES) for a list with the frequently used abbreviations or acronyms found in the different statistical data collection instruments. Intra-jurisdictional duplicates were removed from this list, spelling and writing were corrected, and events were coded in ICD-10 and ICD-11. In a second stage, the OPES were asked to indicate the usual use of this smaller group of abbreviations in their jurisdictions.

Chile

The abbreviations frequently used in their daily practice during the clinical record were collected by 15 specialists. After that, the ICD-10 and ICD-11 code was assigned to each of the concepts.

The search was carried out in the databases in Chile analyzing a total of 3,952,262 official statistical records, searching for the ICD-10 codes in multiple causes, to then estimate the total number of mentions, how many corresponded to an abbreviation of those previously documented.

Results

Argentina

After several stages of research, 239 frequent abbreviations were found, which were divided into quartiles according to the frequency of appearance.

Table 1: Frequency of abbreviations used by jurisdiction distributed by quartiles. CAE. Argentina 2023 (n=239)

<table>
<thead>
<tr>
<th>Quartile</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>57</td>
</tr>
<tr>
<td>2</td>
<td>59</td>
</tr>
<tr>
<td>3</td>
<td>71</td>
</tr>
<tr>
<td>4</td>
<td>52</td>
</tr>
<tr>
<td>Total</td>
<td>239</td>
</tr>
</tbody>
</table>

DEIS. Argentina. 2023. The terms are expressed in Spanish because that is how your search was carried out.

Conclusions and Discussion

The search for the most used abbreviations in health documents is complex due to the different sources of information available in each country and despite the suggestion to professionals to avoid their use. In the case of Chile, Anglo-Saxon terms are used daily, together with their abbreviations, so it would be possible if these abbreviations were visible in the Spanish version of the coding tool, understanding that this is probably repeated in other countries. In the case of these two Latin American countries, there is no universal glossary of abbreviations, this being a difficulty when selecting the most frequent ones. In addition, when reviewing only the abbreviations by mentioning a group of medical specialists or jurisdictional statistics referents, the search is biased, being an important methodological point in a proposal between countries. Twenty-seven concepts with the same abbreviation were detected between Argentina and Chile, this being an important point of convergence due to its representativeness, which is why it is suggested to include them in the Spanish version of the ICD-11. The other hand, more than 130 terms were also found among the abbreviations that, according to the expertise of the authors, are in common use in the current health field.

Finally, our recommendations are:

1) To expand this work to other Spanish-speaking countries so they can be represented in the ICD-11 coding tool, since concepts widely used in one country are not necessarily the same in one others.

2) Propose abbreviations in other languages, mainly English to capture abbreviations used frequently on daily practice.

3) Carry out a review in the fundamental component looking for the presence or absence of the abbreviations.

4) It is important to mention when searching in ICD-11 the full description of the abbreviation in square brackets for clarity.

Acknowledgements or Notes

No conflict of interest was declared.

The results are shown in Spanish to represent the search terms used in the research.

Table 2: Abbreviations within quartile 4 (19-24) with maximum frequency in all jurisdictions (241, CAE. Argentina.

<table>
<thead>
<tr>
<th>Abrev.</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALV</td>
<td>Accidente Alveolar</td>
</tr>
<tr>
<td>ITA</td>
<td>Insuficiencia Cardíaca</td>
</tr>
<tr>
<td>TEC</td>
<td>Técnica Endovenosa</td>
</tr>
<tr>
<td>EPOC</td>
<td>Enfermedad Pulmonar Obstructiva Crónica</td>
</tr>
<tr>
<td>ITU</td>
<td>Insuficiencia Tubal</td>
</tr>
<tr>
<td>CIU</td>
<td>Insuficiencia Cardíaca</td>
</tr>
<tr>
<td>TAC</td>
<td>Técnica Accidental</td>
</tr>
<tr>
<td>CA</td>
<td>Cáncer</td>
</tr>
<tr>
<td>DIAB</td>
<td>Diabetes Mellitus</td>
</tr>
<tr>
<td>EPOC</td>
<td>Enfermedad Pulmonar Obstructiva Crónica</td>
</tr>
<tr>
<td>DM2</td>
<td>Diabetes Mellitus Tipo 2</td>
</tr>
<tr>
<td>DM1</td>
<td>Diabetes Mellitus Tipo 1</td>
</tr>
</tbody>
</table>

DEIS. Argentina. 2023. The terms are expressed in Spanish because that is how your search was carried out.

Table 3: Frequency of abbreviations used on Death Certificates: Jan 2018-Mar 2023. DEIS. Chile. 2023 (n=3,425,515)

<table>
<thead>
<tr>
<th>Abrev.</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPOC</td>
<td>Enfermedad Pulmonar Obstructiva Crónica</td>
</tr>
<tr>
<td>ITU</td>
<td>Insuficiencia Tubal</td>
</tr>
<tr>
<td>CIU</td>
<td>Insuficiencia Cardíaca</td>
</tr>
<tr>
<td>TAC</td>
<td>Técnica Accidental</td>
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<tr>
<td>DIAB</td>
<td>Diabetes Mellitus</td>
</tr>
<tr>
<td>EPOC</td>
<td>Enfermedad Pulmonar Obstructiva Crónica</td>
</tr>
<tr>
<td>DM2</td>
<td>Diabetes Mellitus Tipo 2</td>
</tr>
<tr>
<td>DM1</td>
<td>Diabetes Mellitus Tipo 1</td>
</tr>
</tbody>
</table>

DEIS. Chile. 2023. The terms are expressed in Spanish because that is how your search was carried out.

Table 4: Frequency of abbreviations used in Waiting Lists. Jan 2018-Mar 2023. DEIS. Chile. 2023 (n=3,308,747)

<table>
<thead>
<tr>
<th>Abrev.</th>
<th>Expression</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPOC</td>
<td>Enfermedad Pulmonar Obstructiva Crónica</td>
</tr>
<tr>
<td>ITU</td>
<td>Insuficiencia Tubal</td>
</tr>
<tr>
<td>CIU</td>
<td>Insuficiencia Cardíaca</td>
</tr>
<tr>
<td>TAC</td>
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<td>EPOC</td>
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<td>Diabetes Mellitus Tipo 2</td>
</tr>
<tr>
<td>DM1</td>
<td>Diabetes Mellitus Tipo 1</td>
</tr>
</tbody>
</table>

DEIS. Chile. 2023. The terms are expressed in Spanish because that is how your search was carried out.
Clinical implementation of ICD-11 MMS Chapter 6 Mental, Behavioural or Neurodevelopmental Disorders in Scotland

Authors: Tim Varley¹, Janice Watson¹, Sarah Couper¹, Hazel Brear²
Public Health Scotland¹, UK WHO-FIC Collaborating Centre²

Abstract
As part of their Mental Health Transition and Recovery Plan, the Scottish Government recommended the public health adoption of ICD-11 Chapter 6 Mental, Behavioural and Neurodevelopmental Disorders (MBND) as part of the diagnostic process in the psychiatric specialties, with a recommended implementation date of November 2022. However, Scottish national data collection processes could not be upgraded to accept ICD11 codes in time to support the clinical implementation of ICD11 Chapter 6 MBND. This poster describes an interim solution which has been implemented to allow the continued collection of national mental health data.

Introduction
Scotland has become one of the first countries worldwide to implement and promote ICD-11 MBND for diagnostic purposes. The aim is to ensure an approach for supporting mental health services which is based on the most up to date understanding of mental illness. To support this aim, the Scottish ICD-11 MBND Implementation Group was established in April 2021 chaired by Dr John Mitchell CBE. Membership included representation from the Royal College of Psychiatrists (RCPsych), Public Health Scotland (PHS), health boards, public bodies, related mental health professions, lived experience organisations and WHO representatives.

To support the continued collection and publication of ICD10-coded national MBND data in the interim period until ICD-11 can be fully implemented in its systems, PHS classification and public health experts, supported by technical experts at the WHO-FIC UK Collaboration Centre, developed and implemented a pragmatic, interim mapping solution. This solution requires that clinician-selected ICD11 MBND codes would be recorded in the clinical material (e.g., discharge letters) available to clinical coders.

Methods & Materials
The WHO "Crosswalk from ICD-11 MBND to ICD-10 for Clinician Use" was used as the basis for the pragmatic mapping solution. The purpose of the pragmatic map was to allow continued production of Public Health Scotland’s high level national MBND statistics, which are based on the ICD10 blocks:
- Organic, including symptomatic, mental disorders (F00-F09)
- Mental & behavioural disorders due to psychoactive substance use (F10-F19)
- Schizophrenia, schizotypal, & delusional disorders (F20-F29)
- Mood (affective) disorders (F30-F39)
- Neurotic, stress-related, & somatoform disorders (F40-F49)
- Disorders of adult personality & behaviour (F60-F69)
- Other selected diagnoses principally affecting children & young people (F50-F59, F70-F99)

The mapping required all ICD11 MBND codes to be mapped to four-character ICD10 codes (including those three-character ICD10 categories where Scotland uses a filler fourth character ‘X’) or to dagger-asterisk pairs. The mapped ICD10 codes could then be entered into current national systems. Some ICD11 MBND codes had been mapped by WHO to an ICD10 block (91) or to an ICD10 three-character category (266).

In these cases, the ICD11 code title was coded into ICD10 using the most appropriate ICD10 index trail. The object was to map all ICD11 MBND codes to an ICD10 code which would register in the appropriate block. Mappings were checked clinically.

After the pragmatic map was completed and checked, colleagues from NHS England developed a web-based solution in the form of an online mapping tool (link below).

Example of search on ICD11 code '6D70' in mapping tool:

ICD-11 to ICD-10 MBND Map

In addition to the lookup tool, other outputs from the Implementation Group comprised webinars created by RCPsych, a Scottish-specific NHS developed learning module and an animation commissioned by Scottish Government for public and patients. WHO specialist training modules for clinicians were also signposted. These were made available prior to the clinical implementation date of 1st November 2022. Initially they apply to mental health practitioners involved in diagnosis.

Results

A number of NHS Scotland Health Boards that have psychiatric specialties have started using ICD11 in their diagnostic processes.
- Feedback from clinical coders is that they have found the mapping tool easy to use. There has not yet been any negative feedback.
- Quality Assurance of the recorded ICD10 data will have to be done in future when more data have accumulated.
- Usage statistics for the online mapping tool show that the tool is being accessed on a regular basis – see Chart 1.

Conclusions
Our initial conclusion is that the mapping tool, and the process for clinical coders to use it, seems to be working smoothly.

When sufficient data have accumulated it is our intention to assess the impact of the mapping process on the national data by looking at trends in the diagnostic groups used in the national MBND statistics.

Acknowledgements or Notes
The authors would like to acknowledge and thank the following:
- Dr Geoffrey M Reed Professor of Medical Psychology, Department of Psychiatry Columbia University
- Dr John Mitchell CBE Mental Health Advisor Scottish Government
- Dr Dirk Maliepaard Consultant Psychiatrist, Psychology, Department of Psychiatry
- The authors would like to acknowledge and thank the following:
  - Dr Geoffrey M Reed Professor of Medical Psychology, Department of Psychiatry Columbia University
  - Dr John Mitchell CBE Mental Health Advisor Scottish Government
  - Dr Dirk Maliepaard Consultant Psychiatrist, Psychology, Department of Psychiatry

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- Dr Dirk Maliepaard Consultant Psychiatrist, Psychology, Department of Psychiatry

Mapping tool: ICD-11 to ICD-10 MBND Map - NHS England (kahootz.com)

Further information on the project and links to training materials can be found at:
Mapping SNOMED CT Mental Health disorder concepts to ICD-11 MMS Chapter 6 Mental, behavioural or neurodevelopment disorders

Author: Hazel Brear
UK WHO-FIC Collaborating Centre, NHS England

Abstract
This poster describes an in-progress exercise to map SNOMED CT concepts from the mental health disorders hierarchy to target codes in ICD-11 MMS Chapter 6 Mental, behavioural or neurodevelopment disorders. It describes the scope, purpose and driver for the exercise, the resources used (specialists, tooling, browsers etc.), the potential utility of the map and summarises the results of the exercise to date.

Introduction
The International Standard ICD-10 is an NHS England approved NHS Information Standard for reporting of diseases and cause of death for health statistics and is fully implemented in the UK four constituent countries (England, Scotland, Wales and Northern Ireland). The data and statistics support payment systems, service planning, administration of quality and safety and health services research. The international Standard SNOMED CT is an NHS England approved NHS Information Standard for use in Electronic Patient Record (EPR) systems for the direct care of the patient by point of care recording and facilitates electronic communication between healthcare professionals and providers.

Adoption of EPR systems in the UK with respect to SNOMED CT are increasing but the pace of SNOMED CT adoption is variable across England and the other UK constituent countries. Currently NHS England provides SNOMED CT to ICD-10 mapping tables to system suppliers to incorporate into their systems to support semi-automation for the derivation and reporting of classification codes from the SNOMED CT terms.

Scope, purpose and output
We worked with one of our technical experts to produce a candidate map from SNOMED CT Chapter V Mental, behavioural or neurodevelopment disorders in the SNOMED CT to ICD-10 to ICD-11 mapping tables. Once the candidate map was available, we filtered on those maps which contain an ICD-11 Chapter 6 Mental, behavioural or neurodevelopment disorders code. This returned a cohort of 2,334 unique SNOMED CT concepts with maps to ICD-11 Chapter 6 codes. This cohort defined the scope of the exercise.

The purpose of the exercise is to produce a map from SNOMED CT Mental Health concepts to ICD-11 MMS Chapter 6 Mental, behavioural or neurodevelopment disorders codes. The utility of the maps to support the coding process from the electronic health record and the quality of resulting data has yet to be investigated.

On completion of the exercise, we will generate an output file with draft maps (map agreed, new map proposed) for which we will seek validation by relevant NHS England teams.

Additionally, the exercise will provide statistics on how many of the draft maps agree with the original candidate map.

Assumptions
ICD-11 will operate alongside SNOMED CT and the expectation is that there will be efficiencies in the process of producing statistical data using ICD-11 MMS.

There will be instances over the implementation period where ICD-11 MMS, ICD-10 and SNOMED CT operate together e.g., pilot implementations using ICD-11 MMS, but national returns still require ICD-10 codes or where there is a period of dual coding as the service familiarises itself with ICD-11.

For ICD-11, ICD-10 and SNOMED CT to operate together efficiently and to minimise the burden on system developers, there will need to be maps between SNOMED CT and ICD-10 MMS.

Driver
One of our NHS England internal teams asked for our assistance in producing a look-up table from SNOMED CT concepts in the Mental Health hierarchy to codes in Chapter V Mental and behavioural disorders in ICD-10. They use the table to assist with high-level currency grouping and in piloting studies. They have indicated that a future requirement for them would be a similar lookup table between SNOMED CT Mental Health Hierarchy and ICD-11 Chapter 6 Mental, behavioural or neurodevelopment disorders. This became the driver for this mapping exercise.

Other resources
Other resources used includes the ICD-11 MMS (Blue) Browser, the ICD-11 Coding Tool - updated version including Foundation URL, ICD-11 Reference Guide and some evolving guidance notes specific to this exercise.

Team and methodology
A team of four expert map specialists are reviewing/editing the maps. This work must fit in and around business-as-usual activities and at the time of editing this poster, the exercise is ongoing. The methodology calls for each candidate map to be reviewed and where necessary, post-coordination is added to fully reflect the concept.

Where a candidate map is rejected the map specialist proposes a new map. Also, when a map specialist agrees with a candidate target code/codes but feels that the map requires an additional code/codes, the map is rejected and a fully developed new map is proposed.

Other benefit of the exercise
The mapping team are growing their knowledge and understanding of ICD-11 business rules and conventions, in particular the use of post-coordination. Decisions will be made on a national level about the use of post-coordination. Maps developed with post-coordination to fully reflect the concept can have the post-coordination rolled back, depending on decisions made.

Summary to date
The mapping team have completed the mapping of 1,449 unique SNOMED CT concepts to ICD-11 MMS codes.

To note
WHO-FIC have implemented a Mapping Task Force to provide advice to Members on use cases and validation of maps, encouraging collaborative mapping efforts between members.

Acknowledgements
With thanks to the Terminology and Classifications Delivery Service Mapping Team for their hard work and commitment to this exercise.
India’s preparedness for adopting ICD-11 & implementation of WHO Family of International Classifications (FIC) in different Health Facilities all across the country

Raikwar Madhu, Sharma RK, Atul Goe
1, 2 - CBHI, MoHFW, 3- DGHS, MoHFW

Abstract
Central Bureau of health intelligence (CBHI), Ministry of Health and Family Welfare(MoHFW), Government of India as WHO CC for FIC in India has a mandate to implement ICD Coding in different Health Facilities all across the country for Strengthening of Health Information System in the country.

Introduction
WHO Family of International Classifications (WHO-FIC) is to describe various aspects of health and the health system in a consistent manner. The purpose of the Family is to assist the development of Reliable Statistical Systems at local, national and international levels, with the aim of improving health status and health care. The WHO-FIC provides standardized building blocks for health information systems and consists of three broad groups: Reference classifications, Derived classifications, and Related classifications. (WHO-FIC Content Model Reference Guide).

Since, ICD – 11 was adopted by the 72nd World Health Assembly in 2019 and India has agreed in World Health Assembly to adopt ICD-11 and to implement across the country.

ICD-11 is legally mandated for health data standard which is in effect from January 2022 and CBHI being WHO Collaborating Centre for India acknowledged that transition from ICD-10 to ICD-11 is the immediate step

This poster explains the strategy for implementation of ICD – 11 all across the country.

Methods & Materials

Plan for Implementation:
- Assessment
- National Level Sensitization Workshop
- National level advocacy for importance of ICD and declaration of migration from ICD-10 to ICD-11
- To bring on board different stakeholders especially Registrar general of India who is responsible for maintaining Birth and Death data of the country.

Operational Mechanism

Activities:

(a) Advocacy
➢ National level meeting of various stakeholders conducted to impress upon the need to adopt ICD – 11. Finally, it is agreed by the competent authority.

(b) Preparedness
➢ Workshop for brain storming conducted by inviting master trainers on ICD – 10, academicians, Researchers from Public and Private Sector for identifying the way forward.
➢ Course curriculum for ICD – 10 is modified as per the need of ICD – 11.
➢ National level workshop for Master Trainers is planned.
➢ Various Medical Colleges and Major Hospitals identified for sensitization workshops.

Results

➢ Various Medical Colleges and Major Hospitals identified for sensitization workshops.

Limitations

India is a big country with around 10 lacs health care establishments, implementation of ICD – 11 may take some time because of limited resources.

Conclusion

As per the designed plan, it is apparent that there is a need for substantial resources to effectively and efficiently implement ICD – 11 all across the country.

As per the assessment study conducted, there is a need to strengthen various aspects of the health information management process in health facilities at all levels, to enable WHO FIC implementation.

Acknowledgements

1. Field survey units of CBHI
2. All the master trainers, academicians
Abstract

The Ministry of Health (MOH), Malaysia, commenced the transition to ICD-10 to ICD-11 in 2019. Activities in the early phases included introductory workshops and training sessions, securing top management approval, forming a work group and realistic goal setting. Lessons learnt range from utilizing existing international policies and passed resolutions, interwoven with national policies, and inclusion of members from different backgrounds in the national-level work group.

Introduction

The Health Informatics Centre (HIC) is a government agency under the Planning Division in the MOH, Malaysia. HIC spearheads the ICD-11 transition activities in Malaysia. We have been using ICD-10 for mortality and morbidity statistical reporting since 1999. At the same time, procedural coding uses ICD-9-CM 2014 Edition. We adopted the ICD-11 Implementation or Transition Guide for the overall ICD-11 transition plan.

<table>
<thead>
<tr>
<th>Tasks</th>
<th>PIC</th>
<th>2020-2022</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority 1: Human Capital Development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify champions and organizing relevant committees and work group</td>
<td>HIC</td>
<td>Completed</td>
<td></td>
</tr>
<tr>
<td>ICD-11 training workshops and stakeholder engagement</td>
<td>HIC/WHO</td>
<td>Completed</td>
<td></td>
</tr>
<tr>
<td>Training modules development for different types of user groups (AMRO, WHO, Doctors, Clerks etc)</td>
<td>HIC/Champions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certification of Codes</td>
<td>HIC/Champions</td>
<td>Completed</td>
<td></td>
</tr>
<tr>
<td>ICD-11 Awareness course</td>
<td>HIC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MoU on training collaboration with UN</td>
<td>HIC/FTCC</td>
<td></td>
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</tr>
</tbody>
</table>

The national-level ICD-11 & ICHI Implementation Committee’s aims ranged from planning and executing the transition, ICD-11 promotion in Malaysia, ICD-11 coding quality, and funding application. Members of the Implementation Committee include various stakeholders from the MOH and non-MOH agencies like the Information Management Division and the Department of Statistics Malaysia (DOSM). The Implementation Committee convene every two months for transition progress updates and deliberates feedback from the ground level.

The Implementation Committee planned based on short-term and long-term goals. The short-term goal (Phase 1) is to fulfill the resolution in the 72nd World Health Assembly in 2019, which is to start reporting health statistics in ICD-11 from 2022 onwards (Figure 3).

Therefore, it involves systems directly involved in health statistics reporting, the Malaysian Health Data Warehouse (MyHDW) and its related data collection systems. In comparison, the long-term goal (Phase 2) is for other systems in the MOH to transition to ICD-11, like the Hospital Information Systems. Approval of funds for the commencement of Phase 1 under the 12th Malaysia Plan (2021-2025) aligns with the MOH’s Digitalisation Strategic Plan 2021-2025.

Activities

The ICD-11 transition in Malaysia commenced with the attendance by the MOH representative at the ICD-11 Training and Implementation Workshop in Tunis, Tunisia, in February 2019. Subsequently, in the same year, a working paper was submitted and approved by the National Health Informatics Committee (NHIC) chaired by the Director-General of Health. The NHIC also mandated establishing the ICD-11 Implementation Committee (now: ICD-11 & ICHI Implementation Committee) chaired by the Deputy Director of HIC (Figure 2).

![Figure 1: Example of adapted transition tasks (Priority 1)](image)

1. Benefits and justifications must be clear with supporting documents or resolutions made in the past for top management approval.
2. Existing policies at the national level align with the ICD-11 transition effort.
3. Representatives from different backgrounds as members of the Implementation Committee
   a. Representatives with formal background or training in IT
   b. Clinical coders
   c. Other related agencies in the MOH or non-MOH which are involved in ICD disease reporting

Acknowledgements or Notes

We would like to thank the Director General of Health Malaysia for permission to publish this document.
Preparation for ICD-11 Transition in Malaysia

Authors: Erwyn CWO\textsuperscript{1,2}, Zaleha M\textsuperscript{2}, Mohd Rizal AM\textsuperscript{2}, Ahmad SAF\textsuperscript{1}, Mimi NM\textsuperscript{1}, Azman A\textsuperscript{1}, Shahidah AS\textsuperscript{1}, Nuraidah MM\textsuperscript{1}

\textsuperscript{1}Health Informatics Centre Planning Division MOH, \textsuperscript{2}Department of Public Health Medicine, Faculty of Medicine, Universiti Kebangsaan Malaysia

Abstract

Upon securing stakeholder approval and the necessary funding, preparations included human resources training, identifying suitable use case, improving existing mapping tables and preparing ICD-11 reference files. Lessons learnt include practical training by emphasizing daily life analogies for technical terms and formulating an adequate policy given the financial implications of the ICD-11 inter-version transition.

Introduction

Before starting the ICD-11 systems’ transition, we undertook some preparation to ensure a smooth transition process. The widespread use of IT systems in data capture at various levels in the MOH required intense scrutiny of the existing mapping tables and preparation of related materials necessary for the transition in complex IT systems transition. However, some factors were anticipated based on previous ICD-9 and ICD-10 transition exercises, such as training and preparation of use cases.

Human resource training

WHO Geneva, WPRO and WHO Country Office organized the ICD-11 Virtual Workshop in Malaysia in November 2020 (Figure 1). This workshop was the precursor of the subsequent training activities with the attendance of various stakeholders at the MOH. After that, we identified and trained the first group of highly motivated clinical coders, forming a core group of nationally certified ICD-11 expert coders.

Use cases and Coding manual

We set up a Learning Management System (LMS) consisting of ICD-11 learning materials in Malay to allow for self-directed learning among the clinical coders. Link to LMS platform – pik\_lms.moh.gov.my/moodle

We extracted two thousand everyday use cases from the Malaysian Health Data Warehouse (MyHDW). The used cases comprised all the properties in the ICD API. For example, properties like ‘causality’ and ‘laterality’. We made several suggestions and clarifications from the used cases to improve the ICD-11 application and related tools.

Furthermore, with the used cases, we prepared the Manual Rujukan Pengekodan Diagnosis ICD-11 document. The document comprises common diagnoses with gold-standard ICD-11 codes and step-by-step coding designed by nationally certified ICD-11 Expert Coders (Figure 3).

Lessons learnt

1. Emphasis on new ICD-11 coding concepts and the usual coding rules from the training sessions. Using analogies and examples in daily life aided understanding concepts like Foundation URI, secondary parenting, etc.

2. A national policy of using updated versions of ICD-11 at regular intervals. For example, every five years, due to financial implications. Depending on existing system complexity, with the flexibility of updates based on the per-need basis to capture information related to emerging public health diseases.

Acknowledgements or Notes

We would like to thank the Director General of Health Malaysia for permission to publish this document.

Mapping tables

Introduction

Data submission is primarily via the Health Management Information System (HMIS), or Sistem Maklumat Rawatan Pelanggan (SMRP). The system captures visit data from Outpatient, Inpatient, Daycare, Clinical Support, Procedure, and Cancer notification.

Data source (Front-end)

We embedded the ICD-11 Embedded Coding Tool in the respective modules' electronic forms. Per the ICD-11 Reference Guide, the system captures the diagnosis documented by the treating doctor in free text and ICD-11 codes. The system captures the Foundation URI data but it is not visualized (Figure 1).

Abstract

For the systems’ transition in Malaysia, it involved the end-to-end processes. We used the readily available applications by WHO from data collection to reporting and effective communication with the IT team and vendor. Suggestions for improvement includes an 'Additional code' field in addition to the fields per ICD-11 Reference Guide and clarification on the multiple parenting feature on reporting of specific indicators.

Lessons Learnt

1. Need for an 'Additional code' field to capture the diagnosis while national focal points actively submit post-coordination proposals based on local diagnosis documentation and scientific justifications.
2. The utilization of the 'Playground' function in the ICD-API Homepage as a bridge between the subject matter expert and IT personnel/vendor involved in the system's transition
3. Need clarification on including multiple parenting codes for international disease-specific indicators/reports like SDG indicators.

Malaysian Health Data Warehouse (MyHDW) (Reporting and analysis)

Per the data warehousing processes, the system identifies the first ICD-11 stem code (Figure 2) from the data source for reporting to avoid double counting. The system loads the first stem code via the Extract, Transform and Load (ETL) processes into structured Data Mart of the Business Intelligence tool to tabulate and report information on the ICD-11 codes for the respective visit.

Abstract

For meaningful storage in the backend, the system also loads the ICD-11 codes into the ICD API-Reference (swagger) application (Figure 3). Example as in (Figure 4).

Acknowledgements or Notes

We would like to thank the Director General of Health Malaysia for permission to publish this document.
Introduction

In 2019, Malaysia commenced the transition to the new ICD-11 classification. Therefore, with close cooperation from WHO HQ, WPRO and the WHO Country Office, the ICD-11 Virtual Workshop was organised in November 2020, involving the main stakeholders in the country. Subsequently, this workshop kicked off a whirlwind of awareness programmes and certification training in Malaysia. In general, awareness sessions consist of a full-day talk with Q&A sessions in between (Figure 1).

Methods & Materials

The planning of the training and awareness sessions depended on the goals and targeted audience. We organised sixteen awareness sessions (one virtual and 15 face-to-face sessions) and three training certification sessions up until this date.

Results

A total of 151 MOH personnel have undergone certification training. By profession, most of the trainees were Medical Records (MRO) and Assistant Medical Record Officers (AMRO) (n=132, 87.4%). Followed by Medical Officers (n=14, 9.3%), Statisticians (n=4, 2.6%) and Pharmacist (n=1, 0.7%). Refer to Chart 1.

Acknowledgements or Notes

We would like to thank the Director General of Health Malaysia for permission to publish this document.

Conclusions

The awareness and training sessions have an overall aim of introducing and familiarising ICD-11 to the MOH, Malaysia personnel. Future plans include organising targeted awareness and training sessions based on measures such as data quality at the specific localities.
Introduction
Transition to ICD-11 is expected to cause changes in existing ICD coding processes at MOH, Malaysia facilities. Planning and communication of changes to allow for the necessary preparation before using ICD-11. This is because changes to the workflow may cause anxiety and reorganisation of existing resources.

The different coding scenarios depend on the status of the facilities, whether it is a manual or facilities equipped with Hospital Information System (HIS). The majority of the facilities in the MOH, Malaysia, are manual facilities. Approximately 20% of the facilities are equipped with HIS.

In general, ICD coding scenarios at MOH, Malaysia facilities differ by the type of facilities. Upon patient discharge, doctors will document the necessary forms at manual facilities. Then, the clinical coders will assign an ICD code to the diagnoses recorded in the discharge form. Next, the administrative clerk will key in the coded diagnoses and proceed with the form submission (Figure 1).

At facilities with HIS, ICD coding is optional at the HIS. The clinical coders perform ICD coding if the doctors do not do coding. If the doctors do coding, the clinical coders will validate the coding done (Figure 2).

Methods & Materials
Information was gathered during the 16 ICD-11 awareness sessions organised for the MOH, Malaysia personnel nationwide.

Results
Upon patient discharge, the doctor will document the diagnosis physically as per the existing flow. The administrative clerk keys in all other information in the form except the ICD-11 code information into the HMIS system and save it. The clinical coder will retrieve the saved data and assign suitable ICD-11 codes. Lastly, the clinical coder submits the form (Figure 3). The workflow at HIS facilities is expected to remain as it is.

Conclusions
In conclusion, the transition to ICD-11 has a higher impact on the workflow at manual facilities than HIS-equipped facilities. This is due to the nature of the ICD-11 Embedded Coding Tool, which only allows searching diagnostic terms. Hence the trained clinical coder will perform coding in the system with the ICD-11 ECT and subsequently submits the form. Early engagement with the clinical coders before the transition is essential to improve readiness at the facility level.

This study does not include the coding workflow for other MOH, Malaysia services such as the Outpatient and Daycare services.

Acknowledgements or Notes
We would like to thank the Director General of Health Malaysia for permission to publish this document.
Part 4  International Classification of Functioning, Disability, and health (ICF)
Towards an ICF Core Set for communication disability: The state of play

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Abstract

In the absence of any official ICF Core Set for communication disability, this study examined the level of agreement across existing peer-reviewed shortlists. A systematic literature search and comparative statistical analysis revealed four such shortlists. Inter-rater agreement among codes was calculated using Fleiss’ kappa and percentage agreement. Fleiss’ kappa = 0.244. This study reveals a lack of agreement among the shortlists and invites further consideration of a formal ICF Core Set.

Introduction

• Communication disability has been a difficult construct to holistically describe and define, which poses challenges for research, policy, and practice.
• A number of shortlists of ICF codes have been published, each of which have attempted to capture communication disability. However, none have used the established methodology for developing an ICF Core Set; that is: “a purpose-tailored shortlist of ICF categories from the whole ICF classification for describing functioning and disability” (Selb et al., 2015, p. 105).
• This study surveyed the literature to aggregate all such shortlists and examined the level of agreement across these lists, to evaluate and inform the current state of scientific progress in the development of an ICF Core Set for communication disability.

Methods & Materials

A systematic literature search was performed. Ten databases were searched using the following search terms: (TITLE (“communicat*”)) AND (ABS (“ICF” OR “international classification of functioning”) OR (KEYWORD (“icf” OR “international classification of functioning”))). To assess the level of agreement among shortlists, Fleiss’ kappa and percentage agreement were calculated to evaluate: a) the overall level of agreement between sources (referred to as the global Fleiss kappa score); and, based on this, b) the level of agreement across the ICF at the levels of: i) Component; ii) Domain; iii) Category; iv) Subcategory and v) Sub-sub category. Data were prepared by recording each included ICF code contained within each shortlist as “1” and excluded code as “0” into an Excel spreadsheet. The data were then analysed using the Statistical Package for the Social Sciences (SPSS, version 27).

Results

Seven hundred and eighty-five articles were retrieved. After duplicates were removed, this reduced to 180. A title and abstract screen eliminated 22 articles. A full-text review of 158 articles revealed four articles containing shortlisted, capsule inventories of ICF codes for communication disability in an alphanumeric form retained for analysis (see Table 1).

Global measure of agreement

The overall agreement across the four sources, as determined by Fleiss’ kappa value, was .244, 95% CI [0.216, 0.272], which equated to only fair agreement among the four sources.

Measurement of agreement across levels of the ICF

At the highest Component level of the ICF, poor agreement was found across Environmental Factor codes; slight agreement among Body Structure codes; fair agreement among Activities & Participation codes; and moderate agreement among Body Function codes.

Conclusions

• This study aggregated all four peer-reviewed shortlists in existence which describe communication disability in the published literature and examined the level of agreement across these lists.
• Statistical analysis indicated a relatively low level of agreement about the concept of communication disability.
• The four sources agree much more about what communication disability is not, rather than what particular ICF codes are needed to describe what it is.
• These inconsistencies have serious implications for research, policy and practice. For example, research, policy and practice based upon Schindler et al. (2010)’s shortlist would recognise people who experience hearing and/or vision impairment do experience communication disability. Whereas worked based on Borges et al. (2018) would not include these two populations.
• We conclude the current shortlists in the peer-reviewed literature are insufficient to support research, policy and practice in the field of communication disability. We recommend the development of a formal ICF Core Set using a more rigorous methodology (e.g., Selb, et al., 2015).

References


Table 1: Papers presenting ICF shortlists for communication disability

<table>
<thead>
<tr>
<th>Article</th>
<th>Title</th>
<th>Related Structures (s2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simeonsson et al. (2012)</td>
<td>Characterisation of communication disorders according to the categories of the International Classification of Functioning, Disability and Health – Children and Youth (ICF-CY).</td>
<td></td>
</tr>
<tr>
<td>Borges et al., (2018)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Related Structures (s2) Domain, Simeonsson (2003) and Simeonsson et al. (2012) determined that the ‘Structures of the ear [s240–s260]’ are relevant, yet the ‘Structures of the eye [s210–s230]’ are not. Schindler et al. (2010), however, included both eye and ear structures. In contrast, Borges et al. (2018) excluded both.
Who experiences communication disability?
A critical interpretive synthesis using the WHO-ICF

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Abstract: This study examined communication disability’s universal applicability as per the World Health Organisation (WHO) International Classification of Functioning, Disability and Health (ICF)’s biosympchosocial model. A critical interpretive synthesis of published literature found widespread understanding deviates from the ICF’s universal intent. However, some evidence suggests universality could be tied to Body Structure/Body Function impairment/s and/or the existence of Personal Barriers.

Introduction
The WHO’s ICF is informed by the biosympchosocial model, which upholds that disability is experienced by every human being: it “is a matter of more or less, not yes or no” (WHO and World Bank, 2011, p.5).

The WHO (2001) observes: “[I]t is widely held misunderstanding that ICF is only about people with disabilities; in fact, it is about all people... [the] ICF has universal application” (p.7).

Despite this, disability is much more commonly understood in research, policy and practice to be a ‘minority experience’ for a defined subsection of the global population.

Using communication disability as a test case, we explored if evidence exists to support the claim that communication disability is a universal experience.

Methods & Materials
A critical interpretive synthesis (CIS; Dixon-Woods et al., 2006) of definitions of communication disability presented in published literature was conducted, using the ICF as an analytical framework.

Eligibility criteria
All peer-reviewed literature focused on human studies and written in English were considered eligible for review. In order to consider how the theoretical view of communication disability may have changed and evolved over time, no time limit was applied.

Search strategy
Ten databases were accessed. Titles, abstracts, and keywords were searched using the term ‘communication disability’. A total of 2,539 articles and one book were found. This number reduced to 734 after duplicates were removed. A title and abstract screen excluded 246 articles which were deemed irrelevant. The full text versions of 493 articles and one book were retained for further analysis using NVivo (v12.6.1).

Subsequently, 6,449 instances of communication disability were located. Each instance was read and inductively coded for inclusion if it contained a definition which described the concept (e.g. ‘people with communication disability are defined as...’). 796 units of data were exported to a Word Document and informed the CIS. Meaningful units from definitions were deductively linked to the ICF’s coded classification. Using this process, the theories, paradigms, models and principles informing the communication disability construct were exposed.

Results
The prevailing understanding of communication disability in the published literature does not always align with the biosympchosocial universal model of disability, as the ICF intends.

The majority of the literature defined communication disability as a phenomenon applicable only for a minority subsection of people, and not universally relevant for all people.

The literature reflected an understanding that it is only a minority of people with Personal Factors, Body Structure and/or Body Function Communication-related impairment/s, International Classification of Diseases and Related Health Problems-11 [ICD-11] Health Condition origin, who experience Communication-related Activity Limitation/s and Participation Restriction/s due to the presence of Environmental Barrier/s.

Despite this, some evidence was found to support the claim that communication disability could be universally relevant.

Universal Body Structure and Body Function communication impairment/s
Some sources were found to provide evidence to suggest that all people experience communication impairment/s, as a human’s Body Structures and Body Functions are vulnerable to the effect of Environmental Barriers which result in Activity Limitation/s and Restricted Participation.

For example, Duchan (2006, p. 185) provides a list of Environmental Barriers that are experienced by ‘everyone, every day’ (i.e. all people, not a minority), which pose ‘Communication Activity Limitation/s’ [d310-d349] and have ‘Restrictive/Participatory consequences (see Figure 1)’. Universal Personal Barrier/s
Evidence was also found to indicate that communicatively disabling Personal Barriers exist for a potentially wider population of people than a minority with Body Structure / Body Function communication impairment/s of ICD-11 Health Condition origin alone. That is, it may be asserted that a society that introduces and tolerates attitudinal Environmental Barriers which sustain Personal Barriers related to cultural and/or linguistic diversity, education level, sexual orientation, socioeconomic status, race, gender, class and/or third-party disability, create Participation Restrictions that impair the communication of a society and communicatively disable us all from living and operating in an inclusive society.

Conclusions
This study investigated the theoretical positions that have informed definitions of communication disability over time in relation to the ICF and its universal biosympchosocial position. Early evidence in support of the ICF understanding was found: we may all experience communication disability through the existence of Personal Barrier/s, and thereby the universal impairment of communication-related Body Structure/s and Body Function/s.

Figure 1: ‘Communication Activity Limitation/s [d310-d349]’ and Participatory Restrictive Environmental Barriers as Identified by Duchan (2006, p. 185).

‘Communication barriers are everywhere, and experienced by everyone, every day. Familiar examples include the following:

- Captioned signs to museums that are too small to read, and that contain information that is skimpy, and not helpful.
- Medical information that is provided in technical language, conveyed quickly, and in complex, dismissive ways.
- Legal information that is not only difficult to see, but full of jargon, and difficult to understand.
- Restaurant menus that are complicated and contain vocabulary that needs translation.
- Cashier receipts that are printed in faded ink with items insufficiently indicated.
- School subjects that are taught in disjointed, nonengaging ways, and in a punitive atmosphere.
- Web sites that are difficult to find, difficult to interpret, poorly linked, and poorly organized.’

References
Developing an ICF-aligned Process Model of Communication (ICF-PMOC) to identify who experiences communication disability

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1 School of Social & Political Sciences, The University of Melbourne, 2 Communication and Inclusion Resource Centre, Scope Australia Inc., Melbourne, Australia, 3 School of Audiology and Speech Pathology, The University of Melbourne, College of Health and Biomedicine & Institute for Health and Sport, Victoria University

Poster Number 402

Abstract
This paper introduces an ICF-aligned Process Model of Communication (ICF-PMOC). Using a multi-method multi-grounded approach to theory generation, the ICF-PMOC was constructed out of a content analysis of six general and five communication disability-specific process models. Meaningful units of information from each model were aligned to the ICF classification using established linking rules to construct an aggregate view. Future intended uses of this model are described, including its contribution to the development of an ICF Core Set for communication disability.

Introduction
An ICF Core Set for communication disability is yet to be established (Burn et al., 2023).
The WHO’s ICF Research Branch has an established methodology to develop Core Sets: the first step being a systematic literature review (Selb et al., 2015).
We predict challenges realising this first step, in terms of constructing a comprehensive and all-inclusive search strategy to inform the review.
We propose a novel addition to the established ICF Core Set methodology: an examination of commonly-used conceptual models of human communication, to inform the search strategy.
This additional step actualises a previous recommendation made by Walsh (2011, p. 348), who suggested examining “commonly-used conceptual models of human communication [to develop] a classification system for communication disabilities”.
This study describes the development of an ICF-aligned Process Model of Communication (ICF-PMOC).

Methods & Materials
Using a multi-method multi-grounded approach to theory generation (Lind & Goran, 2005), the ICF-PMOC was generated from a content analysis of six general and five communication disability-specific process models (see Table 1). Meaningful units of information from each model were isolated and aligned to the ICF classification using established ICF linking rules (Cieza et al., 2019) to construct an aggregate view (see Figure 1).

Results
The ICF-PMOC presents the first attempt to explain how the ICF conceptualises communication, and in turn, the ICF-PMOC provides a framework which may be used to inform a comprehensive and all-inclusive search strategy during the first stage of developing an ICF Core Set for communication disability.

Conclusions
The ICF-PMOC puts forth the first ICF-aligned visualisation of communication, and in doing so, offers a unique and defensible set of ICF codes which can be used to inform the ICF Core Set development process (i.e. inform a systematic literature review search strategy).
The multi-grounded theory method used in this study to develop the ICF-PMOC has engaged only with theoretical works (i.e. it is a construct developed out of an amalgamation of existing general- and disability-specific theoretical process models). In order to remain true to Lind and Goran’s (2005) method of theory generation, the ICF-PMOC must also be tested using empirical studies, which the authors anticipate will occur in a future study that tests the construct validity of this model alongside people with lived experience.

Table 1: Process models included in ICF-PMOC development

<table>
<thead>
<tr>
<th>General process models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lasswell (1948)’s Construct</td>
</tr>
<tr>
<td>Shannon &amp; Weaver (1949)’s Transmission Model</td>
</tr>
<tr>
<td>Berlo (1960)’s Sender-Message-Channel-Receiver (SMCR) Model</td>
</tr>
<tr>
<td>Dance (1970)’s Communication Helix</td>
</tr>
</tbody>
</table>

| Interactive Process Model (see: Tyler et al., 2005) |
| Barnlund (1970)’s Transactional Model of Communication |

<table>
<thead>
<tr>
<th>Communication disability-specific process models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanders (1971, 1976)’s Communication Cycle</td>
</tr>
<tr>
<td>Lloyd et al. (1990)’s Augmentative and Alternative Communication Model</td>
</tr>
<tr>
<td>Hartley (1997)’s Communication Disability Model</td>
</tr>
<tr>
<td>Baker (1998)’s Communication Disability Model, aligned to ICIDH-1997</td>
</tr>
<tr>
<td>MacDonald (2017)’s Model of Cognitive-Communication Competence (CCC)</td>
</tr>
</tbody>
</table>

References

Figure 1: ICF-aligned Process Model of Communication (ICF-PMOC)*

*For larger image: QR code or via: https://doi.org/10.6084/m9.figshare.24038937.v1
Developing a Rating Reference Guide for the ICD-11 V Chapter and ICF: Japanese Experience

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Abstract
In this study, the development of a rating reference guide for the utilization of the ICD-11 V chapter Generic Functioning Domains and the International Classification of Functioning, Disability, and Health (ICF) was conducted. The guide was developed through a series of steps: Clinician rating session, Cognitive interviewing and expert review. The interrater reliability was assessed for the entities within the ICD-11 V chapter on Generic Functioning Domains. Additionally, another study on interrater reliability for all ICF second-level entities is currently being prepared.

Introduction
Implementing the International Classification of Functioning, Disability, and Health (ICF) in clinical practice is crucial for fostering patient-centered care and addressing global challenges related to functioning. To promote the use of the ICF and the generic functioning domains of Chapter V in the 11th revision of the International Classification of Diseases (ICD-11), which is a digest version of ICF, set of tools has been developed by a series of ICF research projects funded by Health and Labour Sciences Research Grants from the Japanese Ministry of Health Labor and Welfare. Here we detail the development of a rating reference guide for the domestic use of the generic functioning domains in ICD-11 Chapter V, along with its extension for ICF.

Development of the rating reference guide
In collaboration with the ClinFIT project led by the International Society of Physical and Rehabilitation Medicine (ISPRM), the project team initially developed a rating reference guide. This guide was developed for the ICF-generic 30 set—also known as the ICF Rehabilitation set (Prodinger et al., 2016). Subsequently, the project was expanded to include the generic functioning domains of Chapter V in the ICD-11. The initial step to develop these reference guides was based on cognitive interviews (1, 2; Figure 1). Briefly, the development process started with a rating session by the clinicians who rates several patients based on the Annex 2 (“coding guidelines for ICF”) of the ICF book. Then, cognitive interviewing was conducted.

Development of the rating reference guide

Figure 1: The process for developing a rating reference guide

Inter-rater reliability
Inter-rater reliability studies were conducted for body function entities (2; four raters rated 123 patients) and activity and participation entities (1; four raters rated 100 patients) of ICF generic-30 set, and then for the entities in the generic functioning domains of ICD-11 V chapter which are not covered by the ICF generic-30 set (four raters rated 84 patients). The multiple pairs of raters who were experienced rehabilitation professionals evaluated the patients’ functioning. The weighted kappa coefficients with the linear weight ranged 0.53–0.88.

Refinement of the guide and establishment of core rating rules
A field test of the newly developed guide was conducted with 1102 patients from 20 hospitals (reported in poster in the meeting 2021). After this study, refinement of the guide was conducted based on the feedback by the participants of the study and subsequent research group discussion. After the modification of the guide for 16 entities, interrater reliability was conducted (four raters rated 60 patients). The weighted kappa coefficients with the linear weight ranged 0.72–0.96.

Based on the study, the core rating principles for ICF was developed as the extension of those reference guides by the research group (Figure 2). In total, seven patterns (for chapter b1-8, s1-8, d1/2, d3, d4/5, d6/8/9/d7) of core rating rules were developed.

Conclusions
The projects conducted in Japan to develop a rating reference guide for the use of ICF in clinical practice was introduced.

References
The regulation on disability certification has changed in Mexico. Currently, an assessment must be made based on the ICF and the Convention on the Rights of Persons with Disabilities. In addition, the use of the ICD-11 for this task is being promoted. This work shows the advances and next steps that have been taken in this regard.

### National Legislation

From the Reform to the General Health Law and the modification so that Mexico would have a regulation for the certification of disability based on the ICF and the international treaties to which Mexico is a party, the technical tasks have continued to be developed. One of them is the creation of a methodological tool that contains the components of the ICF, their interaction and their weighting to determine the percentage of disability and to be granted a certificate of disability. This task has been related to a complementary use of the ICD-11 and the ICF, where the health condition is the component with which the interaction begins, bearing in mind the deficiency in body functions and structures, activity and participation, environmental factors and personal factors (through sociodemographic data). Until now, the tool has been developed as part of the National Health Information System in which the weighting is within each component and how it participates in determining disability and its percentage.

### Methods & Materials

For the activity and participation components, the Disability Information Subsystem (SIDIS, by its Spanish acronym) incorporates the WHODAS instrument in its 36-question version, which is a generic assessment, this means that regardless of the disease, injury or disorder, you can obtain a common measurement of the impact of any health condition in terms of functioning. For children and youths, we are using an own instrument call CAPIA, to identify problems related with Activity and Participation component.

<table>
<thead>
<tr>
<th>ICF qualifier</th>
<th>Numerical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 No impairment</td>
<td>0</td>
</tr>
<tr>
<td>1 Mild impairment</td>
<td>0</td>
</tr>
<tr>
<td>2 Moderate impairment</td>
<td>1</td>
</tr>
<tr>
<td>3 Severe impairment</td>
<td>4</td>
</tr>
<tr>
<td>4 Complete impairment</td>
<td>10</td>
</tr>
<tr>
<td>8 Not specified</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table 1. Values per rater in each category of body functions and structures, as well as their maximum contribution in that component.

### Body Functions and Structures

Regarding the component of body functions and structures, as well as the health condition, it is for the exclusive use of medical professionals and health professionals, who base their identification and qualification on the specific elements contained in the evaluations. Previous medical-clinical studies, their experience and knowledge, and the identification of the domain(s) that are affected.

### Official Mexican Standard

The medical professionals or person authorized by the health authority responsible for issuing the Electronic Certificate of Disability must notify the National Health Information System for the purposes of the National Registry of Population with Disabilities, since the Ministry of Health and the Governments of the federal entities, within the scope of their respective powers, will capture, produce and process the information related to disability statistics, in order to integrate them into the planning, programming, budgeting and control process of the National Health System and, with This will contribute to the consolidation of the national health information system. To make the provisions of this Standard effective, an assessment will be made based on an integrative biopsychosocial approach, from which the disability is certified, in an objective and homologated manner. The objective is to establish the criteria, processes and methodology for the certification of disability under the biopsychosocial integrative approach, aligned with the international treaties to which Mexico is a party in terms of human rights, and the International Classification of Functioning, Disability and Health, as well as the granting of the printing of the Electronic Certificate of Disability.

### Acknowledgements

PAHO is thanked for supporting the technical tasks in this activity. To the institutions within Mexico that have contributed to the development of this work. Also, to health and health-related professionals, people with disabilities and their families who have supported this technical work.
Abstract: The evaluation activities of the Activity and Participation component for the certification process of persons with disabilities under 18 years of age in Mexico require an evaluation tool that responds to various needs, for which reason it was built and validated, by content, appearance and relevance, the Activity and Participation Questionnaire, for children and adolescents (CAPIA, by its Spanish acronym).

Introduction

The certification of people with disabilities is a process used by different countries to support public policies. The Activity and Participation component of the ICF-CY offers the opportunity to comprehensively assess the individual and their environment. For which you must consider growth, neurodevelopment, educational interventions and habilitation and rehabilitation. Although there are various instruments to evaluate this component, they do not cover the necessary characteristics to be part of the certification process in Mexico; Therefore, the need was determined not only to translate and validate, but also to build an own instrument. The main limitations of the available instruments were not covering the entire spectrum of age ranges, being aimed at specific health conditions, and having reserved rights. Therefore, the objective of this work was the construction and validation of a questionnaire for the Mexican population under 18 years of age, which included the 9 domains of the Activity and Participation component, based on the ICF-CY.

Methods & Materials

The construction and validation began with the integration of the panel of experts, with training and work experience in clinical and educational fields. The first activity was the systematic bibliographic review of instruments to evaluate and certify disability in children under 18 years of age. Based on the ICF-CY in its Activity and Participation component, domains were selected by consensus, considering age ranges, cultural aspects, neurodevelopment and the National Educational System. The questions were written based on the ICF-CY description for each domain. The concept of participation that best described the objective of the instrument was discussed and defined, the standard question was elaborated, and corresponding adjustments were made. The results issued by average, are exemplified in table 2.

Results

1. relatives of people with disabilities, 2. public policy makers, 3. Health professionals and 4. Educational professionals. A total of 18 external experts, who through a Likert scale, rated the relevance. Subsequently, the relevance for certification was evaluated using the Delphi methodology with the group of experts, during the process responses were analyzed according to scale, averages, and comments by domains. In cases of discrepancy, consensus was reached, and corresponding adjustments were made. The results obtained are shown in table 2.

Table 1. Total domains selected, by age range

<table>
<thead>
<tr>
<th>Age</th>
<th>Domain</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>3-5</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>6-12</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>13-15</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>16-18</td>
<td>9</td>
<td>45</td>
</tr>
</tbody>
</table>

Table 2. Extract of domains validated by relevance and average. Age 2-3 years.

<table>
<thead>
<tr>
<th>Code</th>
<th>Question according to domain</th>
<th>Reference (by external experts)</th>
<th>Reference (to ICF-CY components)</th>
<th>Average relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>4500</td>
<td>Compared to other children of the same age, how much difficulty do you have standing and moving around?</td>
<td>3.65</td>
<td>3.71</td>
<td>3.69</td>
</tr>
<tr>
<td>4501</td>
<td>Compared to other children of the same age, how much difficulty do you have hearing sounds such as the human voice, music, or the radio?</td>
<td>3.65</td>
<td>3.71</td>
<td>3.69</td>
</tr>
<tr>
<td>4502</td>
<td>Compared to other children of the same age, how much difficulty do you have looking at other people?</td>
<td>3.65</td>
<td>3.71</td>
<td>3.69</td>
</tr>
</tbody>
</table>

Conclusions

The diversity of the population under 18 years of age corresponds to the large number of instruments that assess functioning. The design and validation of the questionnaire based on the ICF-CY that we call CAPIA responds to an emerging need to have a tool applicable to the Mexican population under 18 years of age, to evaluate the component of activity and participation in the certification of disability in our country. A better understanding of the concept of "participation", including for the search in the literature, makes it necessary to consider further studies on it and its interpretation both by researchers and by the population in general. From these first discussions, it was proposed to expand this concept considering aspects of sense of self, involvement and assistance, both for the present study and for Mexican regulations. CAPIA allows people to assess their activities and participation, based on interaction and involvement, regardless of parameters such as health condition, IQ, visual acuity or hearing profile, as examples. Derived from the validation of the tool, CAPIA is a robust instrument that is added to the comprehensive certification process in the Mexican population under 18 years of age. Since it allows the assessment of the person from the activities, sense of self, interaction and involvement with others. The need to standardize the application in population samples and greater depth in the investigation of the component of activity and participation in the disability certification processes is recognized.

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Computization Approach for the Utilization of ICF as a Global Protocol

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Abstract
By adopting ICF as a protocol for computization, it serves as a component to facilitate communication and understanding among various experts, organizations, and countries in the medical and public health fields. This utilization of ICF as a computization component can lead to improved assessment, communication, and decision-making among the medical and health-across-field or multidisciplinary and transnational. It provides a standardized language and framework that encompasses concepts related to function, disability, and health. To maximize the utilization of ICF, 6 computerization components are proposed. By utilizing ICF as a protocol and integrating it across various fields and data, significant progress can be expected in diverse social, physical, and cultural contexts.

Introduction
The International Classification of Functioning, Disability and Health (ICF) was published by the World Health Organization (WHO) in 2001 as one of its international standard classifications. Whereas disability was previously viewed from a medical and biological perspective, the ICF interprets disability as a combination of social and physical environmental factors and categorizes a wide range of information related to health. As the ICF provides a standardized code system for the concept of disability as a combination of various factors, communication between various standards and disciplines in health and health-related fields, as well as between people in different languages and different cultures, is facilitated by using a standardized code system. In other words, classifying and describing an individual's functioning, functional impairment, health status, activity level, social participation, etc., provides useful guidance for research and clinical studies related to health information collection using the standard protocol of the ICF. In modern healthcare, advances in information technology are being utilized as a key tool to improve the quality and efficiency of healthcare services. In particular, the standardization and management of health information is an important part of the patient care and management process, and various information systems and technologies have been developed and applied for this purpose. In this context, the ICF, an informational tool for classifying and describing an individual's functioning, functional impairment, health status, activity level, social participation, etc., provides useful guidance for research and clinical studies related to health information collection using the standard protocol of the ICF.

Methods & Materials
This study analyzed 14 papers that combine the medical field and information technology, which means to activate the ICF through computization. Distinctive advantages from these papers were extracted to propose six computerization elements and for their validation, 52 papers were reviewed through citation.

Results
1) Existing Computization Strategy Elements
The use of the 6 computerization elements, the Computational ICF Platform Development, Education and Training, Data Security and Privacy, and Collaborative Network elements have a high degree of maturity in existing IT technologies, and in particular, when applying existing systems to ICF. The technology maturity is an indicator of how well an organization or individual can understand and utilize technology in a context. The technology maturity of the ICF system can be assessed by four indices: reliability, cost-effectiveness, maintainability, and Collaborative Network. For the IT environment, the ICF elements of the ICF system through the literature review shows that most of them are classified as Moderate, High, and Very High, and therefore, their maintainability is also High. This indicates that there is a high availability of ICFs that can be quickly modified and adapted to ICFs as needed at a low cost. There are significant efficiencies to be gained by using existing IT skills and adapting them to ICFs. Modularity promotes specialization and can improve efficiency and innovation, while integration of modules is needed. How to integrate these is another challenge. The current trend is the development of a Collaborative ICF Platform, Education and Training, Data Security and Privacy, and Collaborative Network technology, which can be applied to various fields. In particular, the cost-effectiveness of the Collaborative ICF Platform, Education and Training, Data Security and Privacy, and Collaborative Network, as well as the development of these technologies, have been improved. The technology maturity of the ICF system can be enhanced by linking them to the ICF computer system.

2) Newly developed dedicated strategy elements for ICF
An element of the computization strategy for ICF utilization that needs to be developed specifically for ICF is the ICF Coding Standardization and EHR Integration. Previous studies have led to the conclusion that the most essential ICF codes and developing a core set through their expertise, but in Korea, a systematic development of ICF standards has been proposed to improve its utilization. The development of core sets can define the terms and classifiers used in ICF coding, and extract ICF codes in clinical natural language so that codes can be easily searched and utilized by each field that is not the exclusive domain of experts or even the general public, and the stage has been reached where medical experts and researchers are involved to discuss and verify the appropriate coding system. With clinical natural language, ICF code extraction systems can be widely used. It is based on the ICF Coding Standardization, applications envisioned to integrate ICFs into dedicated EHR systems can easily record and manage ICF coding information for medical staff or related fields. This integration of EHRs and ICF applications will ensure interoperability by defining standardized data exchange formats for data exchange. With the development of core sets for EHRs and core sets for ICF coding, and application to EHRs/EMRs with open APIs, the use of ICFs will become more effective, and data-driven information and decision-making will be used in various fields. Studies have shown that the use of ICF as a global standard protocol, regardless of various fields, heterogeneous cultures, and physical distances, can generate more diverse health information as the amount of data increases, and effective benefits from its utilization.

Conclusions
The ICF is utilized in a variety of fields and is used to accurately record and assess a patient's functional status. This leads to a lack of correlation related to the computerization of ICF. This study aims to recognize the ICF as a standardized tool that is a global standard, explore how to utilize ICFs to implement the concept of protocols, and maximize the efficiency of the ICF by actively utilizing existing IT technologies. The study proposed 6 strategic elements for computization, analyzed the maturity of existing IT technologies, developed ICF-specific technological elements, and suggested ways to further expand the computerization use of ICF.

Methods & Materials
This study analyzed 14 papers that combine the medical field and information technology, which means to activate the ICF through computization. Distinctive advantages from these papers were extracted to propose six computerization elements and for their validation, 52 papers were reviewed through citation.

Chart 1: ICF as a transactor for cross-disciplinary communication

Chart 2: Standardization of 6 Computerization Elements for ICF Utilization

Chart 3: Analysis results of strategic elements through a literature review

Chart 4: The role of ICF as a global protocol for health and health-related issues

Acknowledgements or Notes
This study was conducted as part of the Korean Standard Classification of Functioning, Disability and Health (KCF) revision study conducted by Statistics Korea. A previous study was conducted to establish the KCF as a standard by introducing the ICF to Korea and to revitalize the KCF through computerization. We hope that ICF will be utilized in various fields by incorporating IT and health-across-field or multidisciplinary and transnational. This study was conducted to Statistics Korea for providing support for the study and to the researchers for their dedication to the study.

- KCF Laboratory, Silla University
- Statistics Korea
Natural language terms coming from ICF real world use as enrichment to ICF index terms: protocol and pilot experiences.

Andrea Martinuzzi1,2, Stefanus Snyman3, Vincenzo della Mea1,2, Catherine Sykes3, Masahiko Mukaino6

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Abstract
The diffusion of ICF as the preferred way to exchange functioning information in electronic health systems depends on its easy searchability using natural language. This goal would benefit from an enrichment of the ICF index starting by linking terms from real world ICF data collections to ICF categories. After a pilot test with an Italian dataset of natural language descriptions linked explicitly to ICF categories, the FDRG launched a broader initiative that included the delineation of the required steps in the process and the collection and curation of English language terms coming from experiences in Australia, Japan and South Africa. The results of these preliminary experiments will be presented and discussed.

Introduction
The task of enriching the ICF with terms originating from its use in the real world and its contamination with natural language is a defined priority for the WHO-FIC Network. After a pilot experiment based on an extended collection of rehabilitation projects where NL was connected explicitly to ICF categories (Roitero et al. 2023), the working group proceeded as follows:
- It defined the formal process to be applied to this task;
- It called for ICF users of the network to contribute datasets in English language usable towards this end;
- It collected on a single platform (mICF function mapper) the available material;
- It developed the piloting work here described.

Methods & Materials
As a feasibility exercise, candidate index terms for ICF d4 entities (Mobility) were identified as follows:

- South Africa set:
  - 2017/18: mICF member workshops of FDRG partners - first round of related terms
  - 2019/20: health linguists from Stellenbosch University added and refined the related terms
  - 2020: a team of language students from the Centre for Community Technologies at Nelson Mandela university added more terms
  - 2022/23: two language-gifted persons further refined the list
- relevant terms were added from a New Zealand community-based stroke rehabilitation dataset
- Terms provided by Japan WHO-FIC Collaborating Center originating from health professionals proposals.

The description of terms was done in a compact way according to a specific syntax to enable their automated management (with variants separated by ‘|’ for sentences and ‘/’ for terms).

The list of entities was then processed with an ad-hoc Python script, to explode the compact expressions to individual index terms.

Finally, a sample of index terms was manually evaluated by two experts to estimate the expected amount of synonyms and narrower terms.

The ICF entities considered for this exercise were 103 in total, of which 29 were residuals. Among them, for 73 out of 74 non residual entities and for 1 out of 29 derived terms were found. A total of 5058 derived terms were identified, corresponding to 49 on average per each entity, or 68 if only those with index terms are considered.

An example of entity with index terms is as follows, before explosion:

**d4.5 Going up and down stairs**

Terms:
- ‘To walk up/down stairs’
- ‘To move up/down stairs’
- ‘To march up/march down stairs’
- ‘To amble up/down stairs’
- ‘To amble up/march down stairs’
- ‘To waddle up/waddle down stairs’
- ‘To climb up/climb down stairs’
- ‘To mount stairs’
- ‘To come up/down stairs’
- ‘To step up/step down stairs’

The exploded index terms from this set are 58 in total:

- To walk up stairs, To walk down stairs, To move up stairs, To move down stairs, To march up stairs, To march down stairs, To amble up stairs, To amble down stairs, To stagger up stairs, To stagger down stairs, To tramp up stairs, To tramp down stairs, To trot up stairs, To trot down stairs, To stride up stairs, To stride down stairs, To trudge up stairs, To trudge down stairs, To waddle up stairs, To waddle down stairs, To climb up stairs, To climb down stairs, To saunter up stairs, To saunter down stairs, To hike up/down stairs, To lumber up/lumber down stairs, To travel up/down stairs, To ambulate up/down stairs, To ambulate down stairs, To foot up stairs, To foot down stairs, To go up, To ascend, To descend, To go down, To go on foot up stairs, To go on foot down stairs, To hike up/down stairs, To wobble up/wobble down stairs, To slide up/slide down stairs, To go step by step up stairs, To go step by step down stairs, To trot up/down stairs, To wobble up/wobble down stairs, To ambulate up/down stairs, To ambulate down stairs, To stagger up stairs, To stagger down stairs, To tramp up stairs, To tramp down stairs, To trot up stairs, To trot down stairs, To step up stairs, To step down stairs, To saunter up stairs, To saunter down stairs, To walk up/walk down stairs, To waddle up/waddle down stairs, To stagger up/stagger down stairs, To stride up/stripe down stairs, To trek up/trek down stairs, To trudge up/trudge down stairs, To ambulate up/ambulate down stairs, To ambulate up/march down stairs, To march up/march down stairs, To waddle up/waddle down stairs, To climb up/climb down stairs, To mount stairs, To come up/down stairs.

The estimate of the number of synonyms and narrower terms was based on 103 ICF entities; most of the index terms can be considered narrower terms and thus they will become autonomous entities under the shoreline in the ICF Foundation. In the previous example, at least two children can be individuated: all the expressions related to going up stairs, and all those related to going down.

Furthermore, some difference could be found in verbs.

The list of entities was then processed with an ad-hoc Python script, to explode the compact expressions to individual index terms.

The exploded index terms from this set are 58 in total:

- To walk up stairs, To walk down stairs, To move up stairs, To move down stairs, To march up stairs, To march down stairs, To amble up stairs, To amble down stairs, To stagger up stairs, To stagger down stairs, To tramp up stairs, To tramp down stairs, To trot up stairs, To trot down stairs, To step up stairs, To step down stairs, To saunter up stairs, To saunter down stairs, To walk up/walk down stairs, To waddle up/waddle down stairs, To stagger up/stagger down stairs, To stride up/stripe down stairs, To trek up/trek down stairs, To trudge up/trudge down stairs, To ambulate up/ambulate down stairs, To ambulate up/march down stairs, To march up/march down stairs, To waddle up/waddle down stairs, To climb up/climb down stairs, To mount stairs, To come up/down stairs.

- To walk up stairs, To walk down stairs, To move up stairs, To move down stairs, To march up stairs, To march down stairs, To amble up stairs, To amble down stairs, To stagger up stairs, To stagger down stairs, To tramp up stairs, To tramp down stairs, To step up stairs, To step down stairs, To saunter up stairs, To saunter down stairs, To walk up/walk down stairs, To waddle up/waddle down stairs, To stagger up/stagger down stairs, To stride up/stripe down stairs, To trek up/trek down stairs, To trudge up/trudge down stairs, To ambulate up/ambulate down stairs, To ambulate up/march down stairs, To march up/march down stairs, To waddle up/waddle down stairs, To climb up/climb down stairs, To mount stairs, To come up/down stairs.

Conclusions
Datasets of ICF use as well as exercises of linguistic enrichment of ICF are all exploitable sources of possible novel ICF index terms.

A mixed methodology of machine led and manual curation allows the identification of various categories of terms that could be proposed through the update & revision ICF process. This pilot work should now be expanded to:

- Include the other ICF chapters
- Add new datasets in English
- Harvest more datasets in other languages and replicate this work in those idioms

A separate topic to be dealt with is the process of submission of such a large number of new putative index terms following the procedure defined for evaluation by CSAC.

References

Acknowledgements
Part of the dataset was developed within the research project "Research for Building a Center of Excellence for the Development and Dissemination of Assistive Devices.", funded by the Japanese Ministry of Health, Labour and Welfare.
**Introduction**

In the selection and implementation of assistive products, there are no standard guidelines for use by rehabilitation professionals or others, and it is currently left to the knowledge and skill level of the individual. On the other hand, in the health service space, the importance of ICF is now widely recognized. A survey on ICF education in colleges and departments training allied health professionals in Japan showed that 78.4% of respondents used ICF in clinical practice [Suzukiraka, J., WHO-FIC Network Annual Meeting, poster presentation, 2021]. This study aims to develop standard guidelines for the selection and implementation of assistive products using ICF coding.

**Methods & Materials**

The concepts of these guidelines are as follows:
1. The guidelines are intended to enable many medical and welfare professionals to select and implement assistive products using a common language, without being greatly influenced by their own knowledge and skill levels.
2. The main purpose of these guidelines is to provide a method for rehabilitation professionals to select and implement assistive products based on body functions, activities and participation of persons with disabilities, using ICF concept with coding and assistive technology list (Chart 1). “The Guide for the Selection and Implementation of Assistive Products” developed under the project was distributed to 48 rehabilitation professionals. Based on this, they were then asked to select possible assistive products according to three scenarios envisaged specific users.

Subsequently, a questionnaire survey was conducted. There were six closed questions with (1) satisfaction, (2) usefulness, (3) difficulty, also background questions with knowledge about ICF, (4) components of functioning, (5) health condition and contextual factors and (6) use for understanding characteristics of the clients. There was a open question included.

**Results**

Chart 2 shows the results of the closed questions. The results revealed that more than half of the respondents found the guide useful. On the other hand, more than half of the respondents stated that the guide was difficult and almost one third respondents stated dissatisfaction on this guide.

Chart 3 shows the results of the Spearman’s rank correlation coefficients between satisfaction and usefulness, and between usefulness and difficulty. A positive correlation was found between satisfaction and usefulness. A negative correlation was found between usefulness and difficulty.

Chart 4 shows the results of the Spearman’s rank correlation coefficients between knowledge and difficulty. There positive correlation on these three items for ICF knowledge.

**Conclusions**

The study developed guidelines for the selection and implementation of the assistive products based on ICF concept and coding. The results of the field tests with rehabilitation professionals indicated that the guidelines were useful in the provision of assistive products. However, more than half of the respondents stated the difficulty of the guide and a third stated dissatisfaction with them. The level of difficulty was correlated with knowledge of ICF. Successful dissemination of the ICF to the clinical practice may help to resolve these problems. Based on the results of this study, attempts are being made to improve this guide. In addition, educational and dissemination programs will be developed.

**Acknowledgements or Notes**

This work was supported by MHLW Disability Policy Comprehensive Research Project Program Grant Number JPMH21GC2003, JPMH23GC2003.
The ICF Facilitators course on the ICF Education Portal is a comprehensive online program that empowers participants to use the ICF for recording and monitoring functioning data. It offers a deep understanding of the ICF’s language, structure, and philosophy, equipping graduates to teach its application. This course, designed for a diverse audience, emphasizes practicality in healthcare contexts and addresses current educational requirements in the field.

**Abstract**

The ICF Facilitators course on the ICF Education Portal is a comprehensive online program that empowers participants to use the ICF for recording and monitoring functioning data. It offers a deep understanding of the ICF’s language, structure, and philosophy, equipping graduates to teach its application. This course, designed for a diverse audience, emphasizes practicality in healthcare contexts and addresses current educational requirements in the field.

**Introduction**

The ICF Facilitators course, originally developed by the Dutch WHO Collaborating Centre, has been reimagined to meet the evolving educational requirements in healthcare. As awareness and adoption of the ICF have grown, this revised course goes beyond mere introduction, offering elective modules that explore its integration into data sets. Participants, representing a broad spectrum of healthcare professionals, can now teach others about the ICF, enhancing its adoption in their respective contexts. The course’s online format spans six months and concludes with a final assignment that demonstrates ICF application within each participant’s unique setting.

**Methods**

The authors developed this online course with a primary objective: to empower participants to develop and utilize functioning information through the ICF and to teach colleagues and students how to apply the ICF in their own contexts. The course’s overarching aim is to leverage the ICF for the benefit of individuals and populations.

**After completing the course, participants will:**

1. Gain a comprehensive understanding of the ICF’s language, structure, and philosophy.
2. Be proficient in applying the ICF across various healthcare applications.
3. Create a repository of functioning data informed by the ICF.
4. Promote the ICF as a universal language for interdisciplinary communication.

**Core Modules:**

1. Introductions & Reflection on ICF Knowledge
2. Introducing the ICF and Navigating It
3. Coding with ICF
4. Initiating the Use of ICF in Clinical Settings
5. WHO Family of International Classifications (WHO-FIC)

**Elective Modules:**

6. ICF as a Catalyst for Interdisciplinary Collaborative Practice
7. ICF in the Context of Ethics, Human Rights, and Legal Frameworks
8. ICF in Measuring Instruments
9. Contextualizing ICF Health Records and Data Collections

**Course Evolution and Pilot:**

The course was developed using an agile iterative approach, with an initial pilot phase using the free version of Teachable as the learning management system and Google Forms for assignment submission. Thirteen students completed the course in 2022, followed by eleven in 2023. Participants in the course have diverse objectives related to the ICF, including improving knowledge, applying it in various healthcare contexts, fostering interdisciplinary collaboration, using it for research and policy influence, enhancing teaching and curriculum development, advocating for its adoption in healthcare, and promoting its use in resource-constrained settings.

**Course Benefits and Impact:**

Participants praised the course for its interactive group sessions, assignments with practical applications, and engagement with professionals from diverse healthcare settings. The international perspective, expert input, and online accessibility were also commended. The course facilitated knowledge progression and practical ICF application while fostering interprofessional collaboration and holistic care.

"Thank you for a well-presented course. This course is an eye-opener and an excellent tool for clinical planning, informed decision-making, and policy development in rehabilitation services. The ICF, as a universal language, can solve the problems of scattered and fragmented data collection, surveys, and questionnaires used. It’s a lot of work and reading but worth the effort. Healthcare practitioners must find new ways to deliver healthcare services to all who need it, and the ICF provides a starting point for better healthcare by offering a common language for communication and collaboration." – Participant A (2022)

**Conclusions**

Participant feedback has informed improvements to the course, and funding has been secured to integrate the ICF Facilitators course into the ICF Education Portal using LearnDash as the learning management system. More about next course: www.ICFeducation.org

**Acknowledgements or Notes**

This course’s development was funded by the Besta Institute in Italy, with valuable assistance from Michelle Janse van Rensburg in student support and Anzelle.com in website development.
Muscular dystrophies (MD) are a heterogeneous group of neuromuscular diseases, caused by an alteration of synthesis of muscular proteins, either structural or functional. Clinically, there is a progressive loss of muscular force; usually, there are other symptoms present. The assessment of the patient’s problems is paramount in designing an intervention plan and subsequently evaluate the results. The objective of this systematic review is to identify the outcome measurement instruments reported in clinical studies in MDs and to provide a content comparison in the framework of the International Classification of Functioning, Disability and Health (ICF). To date, there is no universally accepted measurement instrument that incorporates the full spectrum of problems in functioning associated with MDs. ICF offers a comprehensive contextual framework suitable for both daily practice and research, in focusing on “what” should be measured and leaving the “how” to measure to the professional.

**Introduction**

The patients affected by MD have a progressive evolution over time, with different functional needs in different moments. To design effective rehabilitation plans, the functioning status of the affected person should be described. Clinicians must identify measures of physical and psychological impairment that are valid, reliable, repeatable and correctly evaluate changes in the functioning status over international classification time or with specific interventions. The ICF was designed and already proven to be an efficient tool for describing the functioning of persons with different pathologies (see ICF-research-branch.org).

**Methods & Materials**

We conducted a systematic literature review to identify the outcome measure instruments for MDs reported in clinical studies and provide a content comparison in the framework of the ICF. We searched PubMed, Scopus, and Cochrane databases, according to PRISMA guidelines. Inclusion criteria: cohorts of patients with >5 years over 18 years, 50% diagnosed with MDs; assessment of functionality (muscular force, gait, balance, object manipulation, activities of daily living, aerobic capacity), original research studies (longitudinal, cross-sectional and controlled trials were all considered).

**Results**

The research identified 116 suitable articles from which a great variety of outcome measures instruments were extracted, most of them unspecific for MDs; only 8 MDs specific instruments were identified, referring on 2 MDs entities (facioscapulohumeral dystrophy and myotonic dystrophy). All meaningful concepts were identified (regardless of its frequency) and translated to ICF language. The identified concepts were muscular force and tone, gait function, transferring oneself, upper extremity and hand function, respiratory muscle function, emotional functions as most mentioned, and higher-level cognitive function, sensory functions, body image and vestibular function with less representation; referring to body functions (n=20) (table 1).

**Discussion**

The systematic review of the literature has revealed a wide variety of measurement instruments. This study provides a content comparison among outcome measurement instruments in MDs. With the help of the ICF classification as a reference and the ICF linkage rules as a practical guideline, the items in the different instruments were translated into a universal and neutral language on functioning and disability. Subsequently, we can design a list of domains that should be evaluated in each patient affected by MD. By using it, we can detect problems in functioning, plan an intervention and evaluate the results (the concept of RehabCycle). Also, the exact role of each profession and implicated can be established, avoiding redundancies and also vacancies in the treatment.

ICF illustrates itself as a complete, flexible instrument that can be used for monitoring outcome and defining goals for rehabilitation process of the patient with MDs. It helps to collect detailed information on aspects to be studied or treated, and prevents gaps as well as redundancy of data in the instruments used in the clinical studies.

**Conclusions**

To date, no measurement instrument incorporates the full spectrum of problems in functioning associated with MDs. Here is where the ICF proves its superiority over the existing instruments and ability to obtain a holistic view of functioning centered in the person and not in the pathology. It fills the gaps and prevents redundancy in existing outcome measure instruments used in the clinical studies. The identification and use of a set of ICF domains offer a comprehensive contextual framework suitable for use both in daily practice and in research; it focuses on “what” needs to be measured, leaving the choice of “how” to measure to the professional.
Research on Rehabilitation Guidelines Using WHO-FICs: Framework and Approaches

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Abstract
This study to use World Health Organization Family International Classifications (WHO-FICs) to explore the framework and approaches of development and research of guidelines of rehabilitation. The framework and systematic approaches of ontology, classification, terminology, coding, diagnosis and description of diseases and functioning, interventions and evaluations for the development and implementation of rehabilitation guidelines had been developed.

Introduction
To study the theoretical framework and methodological system of clinical guidelines for rehabilitation based on the World Health Organization's Family International Classifications (WHO-FICs).

Methods & Materials
The WHO Family International Classifications (WHO-FICs) includes three health reference classifications: International Classification of Diseases (ICD-11), International Classification of Functioning, Disability and Health (ICF) and International Classification of Health Interventions (ICHIβ-3).

According to WHO handbook for guideline development – 2nd, the development of clinical guidelines requires a scope and areas, including the applicable practice or policy area, the intervention, approach, or dissemination of subject (i.e., priority topics), the target audiences and/or groups (including subgroup populations) for which the recommendations are intended, and the likely important outcomes (including benefits and harms).

It is importance to use WHO-FICs theoretical framework and knowledge management system of health to develop rehabilitation clinical guidelines and to improve the quality of rehabilitation clinical guidelines using a model for the joint use of WHO-FICs in rehabilitation contexts. According to PRISMA, we use WHO-FICs to define, code, and construct framework of clinical guidelines in rehabilitation setting using evidence based research.

Results
(1) A theoretical framework for the systematic application of the WHO-FICs (ICD-11, ICF and ICHI) in the rehabilitation context was constructed, and the theoretical basis, classification system, health knowledge management system, terminology system, coding system, intervention classification and functional assessment based on the three WHO-FICs classifications were discussed. Based on the bio-psycho-social theory of health, functioning and intervention, a unified health knowledge management system concerning disease, functioning and intervention is established. The main assessment indicators for clinical rehabilitation services involve mortality, morbidity, health status (disease), functioning, quality of life and well-being. (2) In the clinical rehabilitation context, a joint application model of WHO-FICs is constructed for the clinical guidelines of rehabilitation, i.e., ICD-11 is used for nomenclature, terminology, diagnosis and coding of diseases, ICF is used for nomenclature, terminology, description and coding of functioning, ICHIβ-3 is used for describing and coding of rehabilitation interventions, and ICD-11 and ICF are jointly use for the evaluation of unmet needs and outcome of rehabilitation. The joint implementation model of WHO-FICs in the development of rehabilitation guidelines is as follows: first, ICHIβ-3 is used to assess rehabilitation needs, then ICD-11 and ICF are used to diagnose diseases and describe functioning, then ICHIβ-3 is used to classify interventions, and finally, ICD-11 and ICF are used jointly to assess rehabilitation outcomes. (3) We proposed to use standardized clinical rehabilitation assessment tools and criteria based on ICD-11 and ICF for the guideline development. The WHO Disability Assessment Scheme Version 2.0 (36-items version), the WHO Model Disability Assessment Form (simplified version), and the General Functional Domain are the recommended main assessment tools of functioning in ICD-11 in clinical context.

(4) We proposed to joint use of ICD-11, ICF and ICHI to rehabilitation clinical information systems and electronic medical record systems, to build a national information architecture and data system for functioning, disability and rehabilitation based on ICF, to establish rehabilitation big data standards, and a standardized clinical rehabilitation performance assessment system, and to integrate into national health big data (medical rehabilitation statistics and rehabilitation-related health insurance system).

This will provide standardized data support for the development of evidence-based rehabilitation scientific research. (5) We elaborated the development of policy guideline approach with WHO rehabilitation guideline Rehabilitation in Health Service Systems, and the process of joint use of WHO-FICs with the example of autism rehabilitation.

Conclusion
It is necessary to conduct evidences based research and to develop a PICOs framework for the development of clinical guidelines. We can construct a framework and methodological system for the joint use of WHO-FICs in clinical rehabilitation contexts. We proposed to develop clinical guidelines of rehabilitation using WHO-FICs to systematically implement of WHO-FICs framework and approaches to the fields of ontology, terminology, disease diagnosis criteria and coding, description and coding of functioning, rehabilitation interventions and coding, and comprehensive evaluation of functioning based on WHO-FICs. This will improve the quality of rehabilitation clinical guidelines and ensure the quality and safety of implementation of clinical rehabilitation guidelines.
The biopsychosocial approach and cognitive evaluation of neurosurgical outcome of patients with brain tumors.

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Background

The outcome assessments of brain tumors (BT) has gained importance to provide data on the patient’s clinical course and evaluate health system efficacy. The influence of factors such as social relationships, economic situation, family, and social support on the patient’s perception of their postoperative health status has not been investigated yet. Outcomes assessment of BT surgery is usually performed using clinical and surgical variables (e.g., age, sex, tumor type, tumor location, extent of resection). However, clinical outcome scales are not neurosurgical patient-specific and they usually underestimate the role of cognitive and biopsychosocial factors and the disease's complexity. We aim to collect cognitive and psychological data as well as consider social factors, using shared measures since the use of a standardized battery can improve the quality of research and of patients’ assistance.

Methods & Materials

A previous consensus study performed by IRCCS Istituto Neurologico “Carlo Besta” selected a battery of clinical, cognitive, and psychological tests from a list of instruments identified through a literature search. The biopsychosocial assessment investigates patient's anxiety, depression, subjective perception of illness, perception of patients’ clinical status, and patient’s quality of life (QoL), social relationships, family status, socioeconomic situation. The cognitive assessment evaluates global cognitive functioning, attention, memory, language, and visuospatial functioning. We are using this battery to collect data on patients with BT at different time points (before surgery, after surgery, and at follow-up after 3 and after 12 months) depending on the tumor type (e.g. meningioma, gliomas).

Questionnaires measures:
- Phonemic Verbal Fluency
- Semantic Verbal Fluency
- Token Test
- Digit Span Forward & Backward
- Rey 15 Word List
- Rey Figure Reproduction / Taylor Figure
- Trail Making Test
- Corsi Span
- Stroop Test
- Picture Naming of Objects
- Clock Drawing TeST
- Mini-Mental State Examination
- Frontal Assessment Battery
- Line Bisection Test
- Eyes Test
- EORTC QLQ C30
- HADS

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<th>Assessment timing for glioma:</th>
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<td>- T1: Before surgery</td>
</tr>
<tr>
<td>- T2: At discharge</td>
</tr>
<tr>
<td>- T3: 3 months after surgery</td>
</tr>
<tr>
<td>- T4: 1 year after surgery</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assessment timing for meningioma:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- T1: Before surgery</td>
</tr>
<tr>
<td>- T2: 3 months after surgery</td>
</tr>
</tbody>
</table>

Table 1: Questionnaires measures

Table 2: Assessment timing

Results

The expected results will allow us to better define the set of cognitive and biopsychosocial neurosurgical outcome measures. Furthermore, this study will contribute to a global understanding of the patient’s health status, considering also the patients’ perspective. The inclusion of a social, psychological and cognitive evaluation will allow clinicians to have better outcome monitoring, improve neurosurgery care, and introduce innovative care pathways for patients with BT.

Discussion

The inclusion of a shared standardized biopsychosocial and cognitive assessment could be a precious tool for clinicians because it allows them to speak a common language within the clinical practice, to create a multidisciplinary network of professionals experts on different clinical, cognitive, and biopsychosocial aspects of BT, and to simplify and standardize patients’ care pathways and their management over time.
Investigation of ICF Code Utilization and Coding Consistency - Evaluation of ICF Codes Using Rating Scale

Masayo Komatsu*1, Emiko Oikawa*2, Zha Ling*1, Masahiko Mukono*3, Shin Yamada*4, Tetsuhisa Kitamura*1, Tomotaka Sobue*1

*1 Osaka University, *2 Japan ICF Association, *3 Hokkaido University, *4 Kyorin University

Abstract
There are several challenges in the utilization of the ICF. These include the large number of existing rating scales for health status assessment and the low reliability of ICF scores. Therefore, it is necessary to evaluate the compatibility with existing rating scales. In this study, existing rating scale items were recoded with ICF codes by multiple raters, and the agreement rate between each rater was calculated to clarify issues in the recoding of ICF codes and rating scales.

Introduction
One way to utilize ICFs is to code the life functions that occur in each disease to enable comparisons by disease and internationally through descriptive statistics. However, due to the large number of ICF codes and the complexity of selecting and discarding codes, the consistency of coding among assessors is not fully evaluated.

In this study, existing rating scale items were recoded by multiple raters with ICF codes, and the agreement rate between each rater was calculated to identify issues in the recoding of ICF codes and rating scales.

Methods & Materials

Chart 1: Target Rating Scales and Questionnaires

Rating scales related to ADL, QOL, degree of symptoms and disease, and sense of burden of caregiving, which have been evaluated for reliability and validity in previous studies, were extracted. A total of 1911 items of questions from each rating scale were extracted. A total of 1911 items of questions from each rating scale were extracted into ICF codes by following the discussions and disagreements by multiple evaluators.

Table 1 Rating Scale Aggregation

<table>
<thead>
<tr>
<th>Rating Scales</th>
<th>n</th>
<th>Number of items</th>
<th>%</th>
<th>kappa coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Inter-rate agreement</td>
<td>51</td>
<td>1906</td>
<td>---</td>
<td>0.763</td>
</tr>
<tr>
<td>QOL</td>
<td>15</td>
<td>709</td>
<td>37.2</td>
<td>0.747</td>
</tr>
<tr>
<td>ADL</td>
<td>11</td>
<td>216</td>
<td>11.3</td>
<td>0.798</td>
</tr>
<tr>
<td>Degree of clinical symptoms</td>
<td>13</td>
<td>185</td>
<td>9.7</td>
<td>0.794</td>
</tr>
<tr>
<td>Care giver burden</td>
<td>3</td>
<td>41</td>
<td>2.2</td>
<td>0.601</td>
</tr>
<tr>
<td>Others</td>
<td>755</td>
<td>755</td>
<td>39.6</td>
<td>0.772</td>
</tr>
</tbody>
</table>

Table 2 Comparison of inter-rater modification rates on rating scales

<table>
<thead>
<tr>
<th>Number of items</th>
<th>%</th>
<th>95%CI</th>
<th>Number of items</th>
<th>%</th>
<th>95%CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>174</td>
<td>9.1</td>
<td>7.8-10.4</td>
<td>606</td>
<td>31.8</td>
</tr>
<tr>
<td>QOL</td>
<td>131</td>
<td>15.7</td>
<td>13.0-18.3</td>
<td>254</td>
<td>35.8</td>
</tr>
<tr>
<td>ADL</td>
<td>113</td>
<td>6.0</td>
<td>4.8-9.2</td>
<td>57</td>
<td>26.4</td>
</tr>
<tr>
<td>Degree of clinical symptoms</td>
<td>13</td>
<td>11.1</td>
<td>0.0-23.3</td>
<td>53</td>
<td>28.6</td>
</tr>
<tr>
<td>Care giver burden</td>
<td>5</td>
<td>14.6</td>
<td>3.8-25.5</td>
<td>25</td>
<td>61.0</td>
</tr>
<tr>
<td>Others</td>
<td>42</td>
<td>5.6</td>
<td>3.9-7.2</td>
<td>217</td>
<td>28.7</td>
</tr>
</tbody>
</table>

The agreement rate (kappa coefficient) of the recodes between each rater was calculated, and the consistency of the recodes was analyzed. In addition, the evaluation scale was classified into five categories: Activities of Daily Living (ADL), Quality of life (QOL), Clinical Symptoms (CS), Care giver burden (CGB), and Others, and the agreement rate between the groups of raters was calculated.

Results

Table 3 Mismatch Items

<table>
<thead>
<tr>
<th>Rating scale</th>
<th>Questionnaire</th>
<th>1st Evaluation</th>
<th>2nd Evaluation</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QOL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 Mismatch Items

Conclusions

We believe that ICF recoding for question items that include multiple contents or that assess psychological aspects may result in abstract judgments on the codes to be selected, which may reduce the agreement rate. It is possible that evaluators' judgments about the recodes may differ due to differences in their knowledge and experience. Therefore, in order to improve the consistency and validity of the ICF code recodes, it is necessary to analyze the reasons for the discussions and disagreements by multiple evaluators.

Discussions

We believe that ICF recoding for question items that include multiple contents or that assess psychological aspects may result in abstract judgments on the codes to be selected, which may reduce the agreement rate. It is possible that evaluators' judgments about the recodes may differ due to differences in their knowledge and experience. Therefore, in order to improve the consistency and validity of the ICF code recodes, it is necessary to analyze the reasons for the discussions and disagreements by multiple evaluators.

Conclusions

It is suggested that in order to improve the consistency of the recoding of ICF codes, it is necessary to keep in mind the characteristics related to the question items and to take into account the possibility that changes may occur due to the background of the evaluator who conducts the recoding.

Acknowledgements

This work was supported by JSPS KAKENHI Grant-in-Aid for Challenging Research Pioneering Grant Number JP 21K18290.
The application of the WHO Disability Assessment Schedule (WHODAS) 2.0 in clinical settings: A scoping review

**Abstract**

The World Health Organization’s (WHO) Disability Assessment Schedule (WHODAS) 2.0 is WHO’s recommended generic assessment instrument to collect evidence on functioning and disability at population level and in clinical settings. The aim of this scoping review is to provide evidence on the implementation of WHODAS 2.0 in clinical settings and to report experiences about its use. Results show that WHODAS 2.0 was reported mainly in studies performed in European Region (35%) and the Americas (30%) and it is applied, in clinical settings, to treat patients with mental health conditions and neurological disease (50%). The application of the WHODAS 2.0 in other health conditions should by strengthened by providing information and teaching materials and programmes to highlight the advantages and usefulness of the WHODAS 2.0 especially in light of the implementation of the ICD-11.

**Methods & Materials**

This scoping review is based on the framework of Arksey and O’Malley (3) and incorporates suggestions for improvement from Levac et al.(4) and Daudt et al. (5). Additionally, the preferred reporting items of the PRISMA checklist for scoping reviews (PRISMA-ScR) (12) will be taken into account. The scoping review was conducted through the main electronic databases (CINAHIL, Medline, Embase, PsycINFO) by using various spellings of the WHODAS, such as: “whodas or who-das” or “who disability assessment schedule” or “world health organization disability assessment schedule” in the literature and avoiding “2.0” in the search strategy. Articles will also be included manually by scanning the reference lists of identified reviews and articles (snowballing). In order to obtain clarity for the further steps of the scoping review process, title, objective and research question are constructed using the Population/Concept/Context (PCC) framework (7) as shown in Table 1. The screening process was divided into two phases: first a title and abstract screening and second a full text screening with all included studies from the first phase. Data was extracted, from the included studies, using an Excel spreadsheet. The following information was selected: study reference, study type and objective of the study, information about the population (age, sex, characteristics, sample size), methods and key results, as well as reports on experiences (limitations and strengths) of the use of the WHODAS 2.0 if available.

**Results**

A total of 2,144 records were identified through databases searching and 305 papers were included in qualitative synthesis (See Table 2). In total, 344 studies used the WHODAS 2.0 version; either 156 studies reported the use of WHODAS II. Most studies using the WHODAS 2.0 were performed in the European Region (n=120; 35%) and the Americas (n=102; 30%). Diagnoses of patients included in the studies using the WHODAS 2.0 include mental or neurodevelopmental disorders (n=177; 50,5%) followed by diseases of the nervous system (n=52; 15,1%), and infectious or parasitic diseases (n=22; 6,4%). Nearly half of the studies (n=154; 45%) used the 12-item version of the WHODAS 2.0 while one fourth (n=89; 26%) used the 36-item version; 90 studies (26,2%) did not report which version had been used while 11 studies (3,2%) used another version (not official) version of the WHODAS 2.0.

**Conclusions**

The WHODAS 2.0 was mainly used in clinical settings to treat patients with mental and neurological health conditions. The application of the WHODAS 2.0 in other health conditions should by strengthened by providing information and teaching materials and programmes to highlight the advantages and usefulness of the WHODAS 2.0 especially in light of the implementation of the ICD-11. The survey results show how the implementation of WHODAS 2.0 was heterogeneous, highlighting an urgent need of information and courses about its use, either for clinicians, for researchers and all the scientific community.

**References**


**Acknowledgements**

We kindly thank all the collaborators who contributed, with their work, to the realization of this review.

**Table 1: PCC framework used in the review**

<table>
<thead>
<tr>
<th>Category</th>
<th>Determinants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>Persons with health conditions</td>
</tr>
<tr>
<td>Concept</td>
<td>Use of the WHODAS 2.0</td>
</tr>
<tr>
<td>Context</td>
<td>Clinical settings</td>
</tr>
</tbody>
</table>

**Table 2: Results from data extraction**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Version of WHODAS used</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WHODAS</td>
<td>344</td>
<td>68%</td>
</tr>
<tr>
<td>WHODAS II</td>
<td>156</td>
<td>32%</td>
</tr>
<tr>
<td><strong>Regions in which WHODAS was used in studies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>European region</td>
<td>120</td>
<td>35%</td>
</tr>
<tr>
<td>Americas</td>
<td>102</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Diagnosis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental/behavioural neurodevelopmental disorders</td>
<td>177</td>
<td>50.5%</td>
</tr>
<tr>
<td>Nervous system diseases</td>
<td>52</td>
<td>15.1%</td>
</tr>
<tr>
<td>Infectious/parasitic diseases</td>
<td>22</td>
<td>6.4%</td>
</tr>
</tbody>
</table>

| WHODAS form | | |
| 12-item version | 154 | 45% |
| 36-item version | 89 | 26% |
| Not reported | 90 | 26.2% |
| No official version | 3 | 3.2% |

**Table 1: Chart of studies selection**

| Records identified from: | | |
| Databases (n=2144) | | |
| | | |
| Records screened (n=2144) | | |
| Full-text screened (n=614) | | |
| Study included (n=220) | | |
Using the ICF to Structure an Inter-Professional Educational and Clinical Training Program

Patricia Welch Saleeby, PhD, MSSA1 and Carey Dahlquist Donlan, PT, DPT, NCS2
1Department Chair Sociology, Criminology and Social Work, Bradley University, USA
2Physical Therapy and Health Science, Bradley University, USA

Abstract
This poster will describe an innovative inter-professional educational program for students delivered at Bradley University in the United States. Students at undergraduate and graduate levels have participated in the program from multiple disciplines including physical therapy (physiotherapy), social work, and dietetics. The program is centered around the ICF - specifically, the ICF framework is used both in the classroom and in the patient clinic.

Clinic for Fitness and Function
Bradley University is a top-ranked private institution in Peoria, Illinois, USA, that provides an integrated approach to learning and experiential learning environment for students.

One unique university-community partnership is an on-campus, pro-bono clinic that provides physical therapy services at no cost to individuals from the local community who are uninsured, underinsured or need supplemental therapy.

While the program’s main focus is physical therapy, it has been expanded over the years to include dietetics and social work. Students and faculty from these respective professions have worked with these clients in addressing their dietary and social care needs. Consultation was provided from occupational therapy, as well. Multiple aspects related to personal and environmental factors have been identified as part of the more comprehensive assessment process.

The inter-disciplinary nature of the program aligns with the emerging trends in health care, rehabilitation, and social services.

Inter-disciplinary Program
Under the supervision of Bradley faculty, students conduct assessments of clients at the beginning of the program, identify areas for intervention, work on treatment goals, and conduct evaluations at the end of the semester long program.

At the end of the academic semester following termination of client therapy, students present their patient cases in a "Grand Rounds" format. Grand Rounds is a common method used in medical education that involves the presentation and discussion of clinical cases. The format of our Grand Rounds is structured using the ICF framework.

ICF Integration
As noted, the ICF framework is used to structure the presentations on clinical cases. Over the semester, the ICF is integrated into the educational curriculum within these respective disciplines at Bradley University.

For example, social work students learn about the ICF in their SW353 Practice III and SW355 Social Welfare Policy courses.

Physical therapy students who participate in the pro bono clinic are enrolled in the KHS300 course, Experiential Learning in Healthcare. This course is framed using the ICF and involves ICF readings, lectures, discussions.

GRAND ROUNDS FORMAT
Student teams provide an introduction to their client case (Demographics, neurologic diagnosis, health conditions, comorbidities)

ICF Model is presented
Students report on identified body structures/functions, activities/tasks, environmental factors, and personal factors using their client case

Outcome measures, goals, and performance are explained
Students from other disciplines present their part on the client case to showcase the value of inter-disciplinary collaboration

*Questions are permitted throughout the presentations to engage student learning and participation.

Program Overview
The “Clinic for Fitness and Function” is operated primarily by faculty and students in the Doctorate of Physical Therapy program.

The program runs for 10 weeks in each semester with clients attending the clinic for 2 sessions each week on Tuesdays and Thursdays.

Services are provided to patients of all ages including those with the following diagnoses: brain injury, cerebral palsy, CVA (stroke), multiple sclerosis, neuropathies, spinal cord injuries, and Parkinson’s Disease.

Acknowledgements
We would like to thank the following faculty who have participated in the inter-disciplinary program:

Rachel Borton, PhD, MSN, Department Chair, Nursing Program
Amanda Newell, Ph.D., RDN, LDN, Director of the MS in Nutrition and Dietetics Program
Jessica Nigg, PhD, MS, Director of Didactive Programs in Dietetics
An Experimental Approach to Developing a Data Transfer Table from Existing Scales to the ICF

Masahiko Mukaino1, Shu Umemori1, Masayo Komatsu2, Emiko Okawara3, Shin Yamada4, 1) Hokkaido University Hospital; 2) Osaka University; 3) General Incorporated Association, Japan ICF Association; 4) Kyorin University

Abstract
In this study, we experimentally tested the integration of established clinical scales into the ICF framework, including the translation of scales into ICF qualifiers. By developing structured rules and conducting a survey with rehabilitation professionals, we linked items from the Functional Independence Measure (FIM) to ICF entities and developed a data conversion table between FIM scores and ICF ratings.

Table 1: FIM items and ICF codes

<table>
<thead>
<tr>
<th>FIM Items</th>
<th>ICF Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eating</td>
<td>d520</td>
</tr>
<tr>
<td>Grooming</td>
<td>d560</td>
</tr>
<tr>
<td>Bathing</td>
<td>d520</td>
</tr>
<tr>
<td>Dressing (upper body)</td>
<td>d540</td>
</tr>
<tr>
<td>Dressing (lower body)</td>
<td>d530</td>
</tr>
<tr>
<td>Toileting</td>
<td>d530</td>
</tr>
<tr>
<td>Bowel management</td>
<td>b125</td>
</tr>
<tr>
<td>Transfers chair/wheelchair</td>
<td>b126</td>
</tr>
<tr>
<td>Transfers seated/chair</td>
<td>b126</td>
</tr>
<tr>
<td>Walk/wheelchair</td>
<td>d450</td>
</tr>
<tr>
<td>Stairs</td>
<td>d451</td>
</tr>
<tr>
<td>Comprehension</td>
<td>d315</td>
</tr>
<tr>
<td>Expression</td>
<td>d330</td>
</tr>
<tr>
<td>Social interaction</td>
<td>d710</td>
</tr>
<tr>
<td>Problem solving</td>
<td>b144</td>
</tr>
</tbody>
</table>

Table 2: FIM items and ICF codes

<table>
<thead>
<tr>
<th>FIM items</th>
<th>ICF Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self care</td>
<td>b150</td>
</tr>
<tr>
<td>Transfers/Locomotion</td>
<td>b150</td>
</tr>
<tr>
<td>Cognitive score</td>
<td>b150</td>
</tr>
</tbody>
</table>

Table 1: FIM items and ICF codes

<table>
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</thead>
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</tr>
<tr>
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<td>d560</td>
</tr>
<tr>
<td>Bathing</td>
<td>d520</td>
</tr>
<tr>
<td>Dressing (upper body)</td>
<td>d540</td>
</tr>
<tr>
<td>Dressing (lower body)</td>
<td>d530</td>
</tr>
<tr>
<td>Toileting</td>
<td>d530</td>
</tr>
<tr>
<td>Bowel management</td>
<td>b125</td>
</tr>
<tr>
<td>Transfers chair/wheelchair</td>
<td>b126</td>
</tr>
<tr>
<td>Transfers seated/chair</td>
<td>b126</td>
</tr>
<tr>
<td>Walk/wheelchair</td>
<td>d450</td>
</tr>
<tr>
<td>Stairs</td>
<td>d451</td>
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<tr>
<td>Comprehension</td>
<td>d315</td>
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<tr>
<td>Expression</td>
<td>d330</td>
</tr>
<tr>
<td>Social interaction</td>
<td>d710</td>
</tr>
<tr>
<td>Problem solving</td>
<td>b144</td>
</tr>
</tbody>
</table>

Figure 1: Response Ratios from the Survey

<table>
<thead>
<tr>
<th>FIM Items</th>
<th>ICF Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self care</td>
<td>b150</td>
</tr>
<tr>
<td>Transfers/Locomotion</td>
<td>b150</td>
</tr>
<tr>
<td>Cognitive score</td>
<td>b150</td>
</tr>
</tbody>
</table>

Translating the scores of the scales to ICF Qualifiers

While there are number of studies that discuss the linking of existing scales to ICF entities, there are not many studies discussing the translation of scores into codes (qualifiers). The research team firstly discussed the method to determine corresponding ICF entity for each scale items. The agreed-upon method was as follows:

1. Group the items with similar scoring logic
2. Conduct a survey to clinicians who are using the corresponding scales to ask which ICF qualifiers is appropriate for each response options.
3. Calculate median and mean value of the response of the clinicians

Then, an exercise to link the response options of FIM items to ICF entities was conducted through a clinician survey.

A clinician survey to develop translation formulas

We distributed a survey among 458 professionals in the rehabilitation field. The purpose of this survey was to identify the perceived equivalences between specific Functional Independence Measure (FIM) scores (ranging from 1 to 7) and ICF ratings (on a scale of 0 to 4), thus creating a comprehensive cross-reference system between the two scales. The distribution of the answers of the rehabilitation professionals are shown in Figure 1. After the survey, we calculated both the median and mean values from the collected data sets, to develop the data transfer table (Table 2).

For each item, the median showed: FIM 1 = ICF 4; FIM 2-3 = ICF 3; FIM 4-5 = ICF 2; FIM 6 = ICF 1; FIM 7 = ICF 0. The mean values differ across the item groups. Although this preserves the granularity of response options, there's a concern: the scales used aren't interval scales, which don't support accurate averaging. The specific method for data transfer requires further discussion.

Conclusions
This initiative to integrate data from established scales into the ICF framework may contribute to a more unified and systematic method for collecting data on functioning issues.

References
Scoring of disability-related events using the WHODAS 2.0 12-item version in a population of Japanese individuals or family members with disabilities

Takahashi Hideto1, Otaka Masaaki2, Shigeta Fumie3, Yamaguchi Koari2
1) Teikyo Heisei University, JAPAN, 2) National Institute of Public Health, JAPAN, 3): Rikkyo University, JAPAN

Abstract
This study focused on disability-related events (the deviance from health, working status, need for assistance in daily life, the possession of disability certificate, Washington Short Set (WG-SS) and Minimum European Health Module (MEHM), and the responses of National Life Survey "Health Questionnaire, Household Questionnaire"). Using WHODAS2.0 (0-100 points), the optimal WHODAS2.0 threshold was estimated from the ROC curve as a score.

Introduction
In Japan, the Convention on the Rights of Persons with Disabilities (hereinafter referred to as the Convention on the Rights of Persons with Disabilities) came into force in 2014 (hereinafter referred to as the Convention on the Rights of Persons with Disabilities). We undertake to collect appropriate information (including statistical data and research materials) to enable the formulation and implementation of policies for persons with disabilities, etc., based on the Basic Plan for Persons with Disabilities, etc., Statistics and materials are being enriched. Based on this, the Cabinet Office conducted the 2020 Survey and Research Project (Internet Survey) Related to Enhancing Statistics on Persons with Disabilities in 2019. The aim of this study was to consider questions that could be used to capture people with disabilities that could be introduced into statistical surveys. Among them, the Washington Group Short Set: WG-SS and the European Bureau of Statistics were used as questions to capture people with disabilities. The Minimum European Health Module (MEHM) is being considered. On the other hand, the WHO has developed a system for activities in daily life12 based on the concept of the International Classification of Functioning, Disability and Health (ICF). Regarding the items, WHODAS 2.0 (12-item version) (hereinafter referred to as WHODAS 2.0) has been devised, which evaluates the degree of difficulty on a five-level scale.

Regarding these, this study examines disability-related events (health deviations, presence of work, need for assistance in daily life, recognition of disability), WG-SS and MEHM, National Living Survey (health questionnaire, household questionnaire), presence of work. The purpose of this study is to estimate the optimal WHODAS 2.0 threshold from the ROC curve using WHODAS 2.0 (0 to 100 points) based on the possession of a disability notebook, etc.

Methods & Materials
The data were used with permission from the Cabinet Office's "Research and Research Project for Enhancing Statistics on Persons with Disabilities in 2020 (Internet Survey) 2020" (N=23210). The indicators used are as follows. As per [1] to [8]. [1] National Survey of Living Conditions Health Sheet Question 5 (Q12, Q1251 in this questionnaire) Are you currently affected by any health issues? 1=Yes, 0=No Supplementary question 1: Activities of daily living (waking up, putting on and taking off clothes, eating, bathing) 2: Going out (limited time, amount of work, etc.) 3: Work, housework, schoolwork (limited time, amount of work, etc.) 4: Exercise (including sports) 5: Others [2] National Survey of Living Conditions Health Sheet Question 7 (Q5 in this questionnaire) Please tell us about your current health condition. 1=good, 2=fair, 3=average, 4=not so good, 5=not good • A score of 4 or above is defined as a health deviation. • 5 or more is defined as a deviation from consideration [3] National Survey of Living Conditions Household Survey Question 9 (Q11 in this questionnaire) About the need for help and supervision in daily life 1=Needed 0=Not needed Supplementary question 1: Although he has some kind of disability, he is mostly independent in his daily life and can go out on his own. 2: Mostly able to live independently indoors, but unable to live without assistance 3: Requires some kind of assistance to live indoors and lives in bed during the day but maintains a sitting position 4: Spends all day in bed and requires assistance with toileting, eating, and dressing, [4] Whether or not you have a job (Q16_1 to Q16_7 in this questionnaire) 1: working 1-1: Working 1-2: Mainly housework and work 1-3: Mainly commute to school and work 1-4: Others 2. Not working 2-1: Commuting to school 2-2: Housework 2-3: Others [5] Whether or not you have a notebook (Q15_1 to Q15_11 in this questionnaire) #1. Possession of a physical disability certificate #2. Possession of a rehabilitation notebook #3. Possession of a judgment letter from a child guidance center, etc. #4. Possession of a mental disability certificate #5. Receiving disability pension #6. Receiving independence support benefit #7. Receiving support from an employment center for persons with disabilities or an employment/living support center for persons with disabilities.

Results
For "persons with disabilities," both the WG-SS definition and the MEHM definition had a score of 1.0 on WHODAS 2.0. For "persons who are not in good health," "Not very well", 1.0 for "Not well", 3.2 for "Not well", Supplementary question 1: Activities of daily living (waking up, getting dressed and undressing, eating, bathing), 2: Going out (time, amount of work, etc.) 3: Work, housework, schoolwork (limited time and amount of work, etc.), 4: Exercise (including sports), 5: Other, 17.7 and 11.4, respectively. The scores were 9.4, 9.4, and 7.3. Regarding the need for help and supervision, 5.2 points were given for "Despite my disability, I am able to go out on my own," and 13.6 points were given for "Although I am mostly independent when living indoors, I cannot live without assistance." , "I need some kind of assistance to live indoors, and I mostly live in bed during the day" (17.8). was 1.0, respectively, "Having a mental disability certificate," "Receiving a disability pension," and "Receiving an independence support benefit" was 3.1, respectively. The scores for "receiving support from a living support center, " using nursing care insurance," and "receiving subsidies for medical expenses for incurable diseases" were each 7.3.

Conclusion
WHODAS 2.0 also showed slightly higher thresholds for basic activities such as activities of daily living, followed by higher thresholds for going out, work, housework, and schoolwork. These are in line with the senses. We think it is significant that we were able to suggest a gradation between "healthy" and "out of health" by estimating the optimal threshold using WHODAS 2.0.
The development of early intervention technologies required more advanced using the ICF. With the ICF as a framework, an algorithm simplifies the work of specialists significantly. However, even having the general understanding of the biopsychosocial model of the ICF, the specialists face difficulties of identifying severity of impairments, limitations and restrictions, especially in the early age, when a child grows rapidly. In addition, there is a problem of linking the development of skills and the age of a child. Skills are formed in a certain sequence.

**Methods & Materials**

The challenge is that tests, scales and methods for children often have a range of several years and do not take into account the sequence of skills. Linking the results of the assessment with the age usually depends on the specialist’s knowledge. For practice, the skills were divided into three-month intervals in accordance with the ontogeny (see an example in Chart 1). When the specialist describes one or another skill, a hint appears in the information system describing the average typical behavior of the child. Comparison of the real behavior with the hint makes it possible to determine the severity of the impairments according to the ICF and, therefore, the need for an appropriate early intervention.

**Abstract**

Development of early intervention technologies has required a more advanced use of the ICF. Algorithmizing the working flow with the ICF in the framework enables to consider characteristics of the development of the child, identify the factors influencing this development, set rehabilitation goals, form an intervention program, monitor and evaluate the outcomes.

**Results**

Digitalization of the early interventions for children and their families allows the specialists to take into consideration more factors of the development of the child and the influence of the environmental factors, while making a decision based on the evidenced approaches and techniques. The implementation of the three-month interval scale of skills (see Charts 2-3) in more 1000 cases showed optimization of the working flow process and making decisions on the interventions needed. Algorithmizing the working flow with the ICF as the framework enables to consider characteristics of the development of the child, identify the factors influencing this development, set rehabilitation goals, form an intervention program, monitor and evaluate the outcomes.

**Conclusions**

Algorithmizing of the processes of habilitation and rehabilitation, providing assistance to a family in the system of early interventions (the early care for children and their families in Russia) based on evidence-based methods allows to move on to high-tech services in the social sphere. The correlation of skills with ontogenetic tables in childhood help the specialists to determine the severity of impairments according to the ICF, set realistic rehabilitation/habilitation or early intervention goals, select interventions into an individualized program, and evaluate the outcomes and efficiency in the light of early intervention, work of specialists and an organization.

**Chart 1:** The example: a fragment of the ontogenetic scale for the ICF entity d550 (Eating).

**Chart 2:** A case description on the base of an ICF Core Set.

**Chart 3:** The example of the description activities and participation of a child who has limitations and a column with norms for each ICF entity.

**Acknowledgements or Notes**

Authors thank the specialists from rehabilitation organizations of Krasnodar Krai who participate in the pilot studies of the approach and technology, especially Mrs Tatiana Vasinyuk and Mr Igor Shulga.

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Part 5  International Classification of Health Interventions (ICHI)
ICHI – the final steps 2023
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Abstract Since the WHO-FIC annual meeting in October 2022, work has continued on the final steps for ICHI. This poster will highlight ICHI content development and progress during 2023.

Introduction
In the Progress Report to the World Health Assembly on ICD-11 implementation, WHO advised the following on ICHI:

The ICHI clinical components are stable and already used in some Member States. The section on public health interventions is being reviewed. Following that last step, the ICHI will be finalized after a Member State consultation.

During 2023 ICHI content alignment and harmonization with the WHO-FIC Foundation has continued. Where applicable, some extension codes used in ICHI are now the same as those in ICD-11 (e.g. laterality and relational, anatomy and topography, and substances) so as to ensure consistency across the three classifications, with the tooling environment for these now to be enhanced.

A detailed review of the ICHI Reference Guide was completed by the WHO-FIC Education and Implementation Committee (EIC) with updates made to the guidelines based on feedback received. The linkage of WHO Package of Interventions for Rehabilitation to ICHI has been reviewed, resulting in the addition of some new stem codes and index terms and finally review of proposals on the ICHI platform regarding content changes is ongoing.

Future governance arrangements for ICHI will be discussed at the 2023 Annual meeting following initial discussions during the mid-year meetings.

Methods & Materials
Following the 2022 WHO-FIC midyear meetings the EIC undertook a review of the ICHI Reference Guide. Comments and recommended updates to content were received and reviewed by the ICHI editorial team with changes to the Reference Guide made where appropriate.

Issues relating to licencing and caveats need to be further finalised by WHO and once complete the updated version of the ICHI Reference Guide will be available on the ICHI Platform. It is anticipated that this new version will be ready for the annual meeting. Figure 1, illustrates where the ICHI Reference Guide can be found on the WHO-FIC ICHI Browser.

A detailed review of the linked WHO Package of Interventions for Rehabilitation to ICHI was undertaken in conjunction with the WHO Rehabilitation 2030 Team.

ICHI has been designed so that users can construct ‘packages of interventions’ suited to an individual in their own circumstances and environment. ICHI includes the capacity to link or cluster interventions provided as part of a package or program.

A rehabilitation program may be constructed for a person to include a selection of interventions, performed by a range of providers and disciplines over a time period. (Refer ICHI Reference Guide, Section 12. Packages of interventions)

Results
Results from the mapping of 273 interventions for rehabilitation to ICHI is the topic of another ICHI poster, refer ‘Review of the mapping of WHO Package of Rehabilitation Interventions to ICHI’.

Figure 2, below, illustrates examples of new ICHI stem codes which are now included based on the rehabilitation mapping exercise.

<table>
<thead>
<tr>
<th>ICHI stem codes</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>JTC.AC.ZZ</td>
<td>Test of respiratory muscle function</td>
</tr>
<tr>
<td>ML1.AA.ZZ</td>
<td>Assessment of hip joint</td>
</tr>
<tr>
<td>MTB.AM.ZZ</td>
<td>Observation of joint mobility</td>
</tr>
<tr>
<td>MVD.AM.ZZ</td>
<td>Observation of control of voluntary movement</td>
</tr>
<tr>
<td>SSM.RE.ZZ</td>
<td>Provision of peer support for engaging in intimate relationships</td>
</tr>
<tr>
<td>VEA.AM.ZZ</td>
<td>Observation of eating behaviours</td>
</tr>
</tbody>
</table>

During this mapping process it was identified that ICHI content could be enhanced with approximately 45 new stem codes and a number of index terms being added to ICHI.

Further content review was also undertaken by the ICHI editorial team who continued to review proposals on the ICHI platform and where appropriate have implemented changes.

Acknowledgements & Conclusion
ICHI is nearing its final release version with the clinical components now stable and ready for use. ICHI will continue to be updated via the proposal platform to ensure currency of the intervention classification.

Once again thanks are extended to all reviewers of ICHI, ICHI development team, ICHI Task Force Group, Collaborating Centres and WHO for their ongoing support. A special thanks is also extended to EIC for their review of the ICHI Reference Guide.
Comparing the Statistical Compilation Performance of ICHI and EDI

Donggyo Shin¹, Ranhee Kim², Euisoo Choi³, Yeojin Lee⁴, Hyunah Ko⁵
¹² National Health Insurance Service Ilsan Hospital, Korea
³ NSW Ministry of Health, Australia, ⁴⁵ Statistics Korea

Abstract: For the 21 OECD statistics, ICHI outperformed EDI regarding coverage, ease of statistical compilation, accuracy, and extensibility. ICHI’s hierarchical structure and the robust combination of stem and extension codes enabled dynamic statistical generation from various perspectives. We conducted this task as part of preparing to introduce ICHI in Korea. Through this, we confirmed the benefits of using ICHI for statistical compilation.

Introduction
Korea uses KCD, based on ICD, to ensure international comparability in disease classification. However, for health interventions, the EDI (Electronic Data Interchange) designed for health insurance reimbursements needs to improve in terms of international comparability and meeting classification requirements, limiting its usability beyond reimbursement purposes. The OECD requires basic statistics on surgical procedures. Korea only meets 76% (16 out of 21 items) of it using national health insurance claim data. Statistics Korea (KOSTAT) expects ICHI to alleviate the gaps in health intervention statistics. And we tried to generate OECD healthcare surgical procedure statistics using EDI and ICHI. Through this poster, we aim to share the results of statistical performance comparisons between classifications for reporting health interventions and our first experience in creating statistics using ICHI. Concluding with Korea’s ICHI introduction preparations, these findings could serve as a reference for other countries considering ICHI adoption.

Methods & Materials
We compiled OECD-required surgical procedure statistics using data from a general hospital for 2022. The interventions were coded using the hospital’s local codes, which were mapped with EDI. We applied the EDI to the ICHI mapping database that KOSTAT had collected. Performance evaluation was conducted using local codes and statistical concepts that could not be generated solely from EDI in the billing data and were absent in the mapping database. We mapped them to ICHI to enable statistics creation.

Table 1. Subject of Statistical Compilation

<table>
<thead>
<tr>
<th>Category</th>
<th>ICHI</th>
<th>EDI</th>
<th>Local code</th>
<th>Stem</th>
<th>Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary concept</td>
<td>1.26</td>
<td>1.26</td>
<td>1.26</td>
<td>1.26</td>
<td>1.26</td>
</tr>
<tr>
<td>Secondary concept</td>
<td>1.26</td>
<td>1.26</td>
<td>1.26</td>
<td>1.26</td>
<td>1.26</td>
</tr>
</tbody>
</table>

We assessed statistical performance across three tools using the creation process and outcomes. Performance evaluation was based on 21 OECD required items, including secondary extended concepts, focusing on three aspects: ease of creation, accuracy of statistics generation, and flexibility and extensibility. Each item was rated on a 5-point scale. Coverage was determined and converted to the same scale for visualization. We also introduced additional challenging items for verifying flexibility and extensibility.

Table 2. Categories for Evaluating Statistical Performance

<table>
<thead>
<tr>
<th>Performance Item</th>
<th>Performance Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of comp</td>
<td>1</td>
</tr>
<tr>
<td>Accuracy</td>
<td>2</td>
</tr>
<tr>
<td>Flexibility</td>
<td>3</td>
</tr>
<tr>
<td>Extensibility</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>5</td>
</tr>
</tbody>
</table>

Regarding the ease of statistical compilation, we assessed the accurate definition of metadata for statistical creation and the readability of the defined information. Since EDI and Local codes lack a structured code system, we could define them by listing items. However, we recognized that managing the list might be challenging due to revisions over the years. On the other hand, once defined for Target, Action, Means, and Extension codes, ICHI is expected to entail minimal management burden due to periodic revisions.

We evaluated the results of challenging dynamic statistical compilation by grouping concepts into higher-level categories or drilling down into sub-concepts for the 21 statistical concepts to verify flexibility and extensibility.

Table 3. Coverage of the 21 OECD-required statistical items

<table>
<thead>
<tr>
<th>Statistical concept</th>
<th>Code</th>
<th>As-Is Title</th>
<th>Local code</th>
<th>Title</th>
<th>To-Be [IChI] Code</th>
<th>Title</th>
<th>no of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Cholecystectomy</td>
<td>Q7410</td>
<td>B Radical Cholecystectomy of GB Cancer</td>
<td>KCF.KJA</td>
<td>Cholecystectomy (Open)</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Q7380</td>
<td>A Cholecystectomy</td>
<td>KCF.KJA</td>
<td>Cholecystectomy</td>
<td>845</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Statistical Compilation Performance Across Classification Systems

Conclusions
ICH and EDI were notably distinct tools for statistical compilation. In compiling 21 OECD medical procedure statistics, ICHI outperformed EDI and Local codes in terms of ease of creation, accuracy in statistical generation, flexibility and extensibility, and coverage. EDI and local codes, being healthcare fee schedules, require list-based management for statistical compilation, resulting in lower ease of creation. Their lack of hierarchical structure also leads to poor readability in criterion management and limited extensibility. On the other hand, ICHI’s hierarchical structure facilitated statistical compilation, while the robust stem and extension codes allowed for dynamic statistical generation from various perspectives. Using the mapping database to generate statistics was inherently reliant on source codes, which implies that even in ICHI, concepts not present in EDI were challenging to identify without resorting to external information.

Acknowledgements or Notes
This task was carried out with support from Statistics Korea (KOSTAT), and the authors express their gratitude to all who contributed or assisted in the review process related to this work.
WHO has developed a Package of interventions for rehabilitation (PIR) consisting of 273 interventions, which have been mapped to the International Classifications of Health interventions (ICHI). The maps have been reviewed and updated. About 50% of the interventions are mapped to one ICHI stem code and the remaining to 2-12 ICHI stem codes. The results show that ICHI provides a good tool for describing rehabilitation interventions and sometimes by using a package of ICHI stem codes.

### Methods & Materials

The WHO Package of Rehabilitation Interventions consists of 273 interventions, which had been mapped to ICHI stem codes.

The maps to ICHI stem code(s) are shown in a list together with the relevant ICD-codes for the health conditions and ICF-codes for functioning. The maps do not include the use of extension codes as these are considered optional.

Two ICHI experts reviewed the maps to ICHI stem codes in relation to the titles and descriptions of the interventions for rehabilitation.

The maps and suggested changes have been discussed with the ICHI development team and WHO Rehabilitation Programme team to obtain common maps for all interventions.

### Results

The results of the updated maps show that approximately 50% of the interventions are mapped to one ICHI stem code (Table 1).

Sometimes the title and description are quite broad, e.g., assessment of activities of daily living. Such interventions are described using packages of ICHI interventions, which include several ICHI stem codes.

The cardinality (number of ICHI stem codes assigned for each rehabilitation intervention) was added. The syntax for using more than one ICHI stem code has not been used.

The results of the updated maps show that approximately 50% of the interventions are mapped to one ICHI stem code (Table 1).

### Conclusions

ICHI provides a good tool for describing rehabilitation interventions. Using packages of ICHI interventions will be useful in describing the interventions required for rehabilitation.

Note, however, there were some challenges identified:

- Some of the rehabilitation interventions are too broad in the title and description to use more specific ICHI stem codes.
- There are some few overlaps in the rehabilitation interventions.
- ICHI extension codes have not been used and would have provided added specificity to the stem codes/packages of interventions.

Coding the Rehabilitation interventions has been a good test for ICHI and has allowed for further enrichment of the content of ICHI.

### Acknowledgements

We acknowledge the valuable collaboration with Alexandra Rauch from the WHO Rehabilitation Programme team.
Other Low Hanging Fruits of Harmonization: ICHI Anatomical Targets and Update Proposals

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1Italian CC; 2Walsall Healthcare NHS Trust, UK; 3Australian CC; 4Stanford University CC, USA; 5Nordic CC, Sweden

Abstract

The common WHO Family of International Classifications Foundation from which the WHO-FIC reference classifications are derived through linearizations requires that every entity in the Foundation be uniquely and unambiguously defined. This requires a process of harmonization of concepts that share similar meanings but may or may not be identical. The process may be more or less complex according to the entities considered, but could be easier for entities already sharing strong similarities. These “low hanging fruits” of harmonization include the anatomy entities that are included in different areas in each of the core classifications of the WHO Family of International Classifications. In 2022 we ran a harmonization experiment matching anatomical entities in ICF and ICD-11 classifications using a specially developed online software. This year we repeated the experiment with ICHI and ICD-11 with a revised version of the software. Additionally, we analyzed the maps derived from these experiments to see what kinds update proposals may lead to harmonized anatomical entities in the Foundation.

Introduction

The representations of anatomical entities in ICD-11, ICF, and ICHI have been identified as a “low-hanging fruits” in the effort to harmonize the content of the WHO-FIC Foundation, where entities of the three classifications have been amalgamated. In 2022 we ran a harmonization experiment matching anatomical entities in ICF and ICD-11 classifications using a specially developed online software. The results have been published in a journal paper.

Methods & Materials

We revised the mapping software to allow mapping from ICHI anatomical targets to ICD-11 Anatomical Detail. Four experts were asked to identify, for each entity in the ICHI anatomical targets, one equivalent entity in the ICD-11 Anatomical Detail if possible; if not, one or more entities that could be considered broader than or narrower than. We first determine the set of maps whether the mappers have agreement and then try to reconcile maps where there are disagreements.

Results

A total of 381 ICHI targets were considered for mapping. A total of 1121 maps were provided by the 4 mappers; 137 maps were automatically identified by the tool as lexically equivalent. Overall, there was agreement by 2 or more mappers on 262 entities.

Among the ICHI targets with agreement, 191 were mapped as equivalent to some ICD-11 entities; 30 were broader than some ICD-11 entities; and 41 were narrower.

A further step yet to be done is reconciling mappings for which there was not an agreement.

We took maps generated from earlier ICF/ICD-11 anatomical alignment work, such as the following:

ICF:1092128842 Bones of upper arm skos:ExactMatch ICD:75952864 Humerus
ICF:1446048906 Elbow joint skos:ExactMatch Elbow joint
ICF:1867012554 Muscles of upper arm skos:BroadMatch ICD:1762048897 Brachialis muscle

and formulated update proposals to add to the Foundation the relationships:

icf:Bone of upper arm equivalent-to icd:Humerus
icf:Elbow joint equivalent-to icd:Elbow joint
icf:Muscle of upper arm superclass-of icd:Brachialis muscle

Implemented as axioms in an OWL version of the WHO-FIC Foundation, the resulting harmonized hierarchies add more granular details to ICF entities and new intermediate entities in ICD hierarchies, as shown in Figure 1.

Discussion

One problem in harmonizing ICHI anatomical targets to ICD anatomical details is that the specific ICHI targets are part of the definition of ICHI health interventions. Thus making changes in the targets forces changes in the interventions.

The harmonization of ICF body structures and ICD-11 anatomical details shows promise, as the change hierarchies can be filter out in linearizations, thus maintaining the current classifications.

References

Abstract

The Canadian Institute for Health Information (CIHI) is assessing the content of the Canadian Classification of Health Interventions (CCI) against that of the International Classification of Health Interventions (ICHI), with a focus on enhancing CCI by adding public health interventions found in ICHI.

Introduction

Public health interventions are vital components of health care systems that focus on promoting health and preventing diseases. This poster explores the public health content in ICHI and how it can be used to enrich CCI to promote better health outcomes for all Canadians.

CCI is the Canadian standard for collecting health intervention data, but it does not contain specific codes for public health interventions to support data collection and reporting. ICHI includes codes for a broad range of public health interventions to support data collection for surveillance.

Assessing ICHI public health content and Canadian public health priorities can provide insights into potential gaps in CCI. Leveraging the types of interventions included in ICHI could enhance data collection to measure, monitor, and address public health concerns in Canada.

Methods and materials

We reviewed public health content in the ICHI maintenance platform, with a focus on codes in the Action ICHI category “VC — Public health surveillance.” We also reviewed the availability of codes for public health surveillance in v2022 CCI.

Additionally, we identified a sample of key public health priorities in Canada. The review found current emphasis on physical and mental well-being, food safety, mental health (including substance use) and environmental issues. Potential arising issues in Canada were also reviewed, including technology-related youth health issues and zoonotic infectious disease surveillance.

We identified a sample of ICHI codes that could support reporting needs for the identified public health topics. The codes in ICHI were then compared with the codes in CCI to determine and compare the level of information that could be collected currently in CCI.

Results

Comparing ICHI codes related to public health priorities (VC codes) with v2022 CCI content identified gaps where no equivalent or relevant codes exist in CCI. A search of ICHI identified many options for intervention codes that can be considered for a CCI enhancement to meet the data collection requirements for each of the identified Canadian public health priorities (see Table 1).

Table 1 Sample of suggested ICHI codes for identified Canadian public health priorities

<table>
<thead>
<tr>
<th>Current Canadian public health priorities</th>
<th>Suggested ICHI codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-being of Canadians</td>
<td>VEB.VC.ZZ Public health surveillance concerning physical activity behaviours</td>
</tr>
<tr>
<td>Food safety</td>
<td>UAB.VC.ZZ Public health surveillance concerning food safety and security</td>
</tr>
<tr>
<td>Substance use</td>
<td>VAA.VC.ZZ Public health surveillance concerning alcohol use behaviours</td>
</tr>
<tr>
<td>Substance use</td>
<td>VAD.VC.ZZ Public health surveillance concerning pharmaceutical use behaviours</td>
</tr>
<tr>
<td>Environmental issues</td>
<td>UBN.VC.ZZ Public health surveillance concerning water quality</td>
</tr>
<tr>
<td>Environmental issues</td>
<td>UBS.VC.ZZ Public health surveillance concerning climate change</td>
</tr>
<tr>
<td>Environmental issues</td>
<td>UBT.VC.ZZ Public health surveillance concerning land pollution</td>
</tr>
</tbody>
</table>

An additional review of ICHI to identify intervention codes related to surveillance of potential arising issues also identified options for data collection (see Table 2).

Table 2 Sample of suggested ICHI codes for potential arising public health priorities

<table>
<thead>
<tr>
<th>Potential arising Canadian public health priorities</th>
<th>Suggested ICHI codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth health — technology</td>
<td>VAF.VC.ZZ Public health surveillance concerning digital technology use behaviours</td>
</tr>
<tr>
<td>Zoonotic disease exposure</td>
<td>UBQ.VC.ZZ Public health surveillance concerning animals as vectors of disease</td>
</tr>
</tbody>
</table>

A review of CCI yielded no relevant intervention codes for data collection to support public health surveillance. In the absence of specific codes in CCI, best-fit codes were identified — but these capture one-time assessments or counselling rather than ongoing surveillance (see Table 3).

Table 3 Sample of available CCI codes for identified Canadian public health priorities

<table>
<thead>
<tr>
<th>Current Canadian public health priorities (includes mental health)</th>
<th>Available CCI codes (v2022)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well-being of Canadians</td>
<td>6.AA.02.CM Assessment, mental health and addictions for competence (financial, legal, testamentary)</td>
</tr>
<tr>
<td>Substance use</td>
<td>6.AA.03.ZZ Observation and monitoring, mental health and addictions, using technique NEC</td>
</tr>
<tr>
<td>Substance use</td>
<td>7.SP.10.VB Counseling, promoting health and preventing disease for alcohol use (misuse)</td>
</tr>
<tr>
<td>Environmental issues</td>
<td>7.SE.02.AA Assessment, environment, of communal living space</td>
</tr>
<tr>
<td>Environmental issues</td>
<td>7.SE.02.AG Assessment, environment, of public transportation (system)</td>
</tr>
</tbody>
</table>

Conclusions

By leveraging the comprehensive public health surveillance codes in ICHI, CCI can be enhanced to support public health surveillance in Canada. Using an established intervention classification provides a standardized approach to classification enhancements, supports health policy development and helps to improve health outcomes and quality of life for Canadians.

Next steps include:

- Identifying additional public health interventions in ICHI that are relevant to Canada’s public health priorities
- Tailoring selected ICHI interventions to fit the structure of CCI at the level of specificity desired to be collected to enhance CCI
- Providing education and developing communication to support the integration and to promote awareness of public health surveillance interventions in CCI

Acknowledgements

We gratefully acknowledge CIHI’s classification specialists and co-op student for their contribution to this project.
Abstract  The development of the rehabilitation system in the Russia showed the lack of understanding the rehabilitation and habilitation in different agencies, reasoned by the absence of the common terminology. The International Classification of Health Interventions (ICHI) can be used as the framework for the classifier of rehabilitation services. The first lessons of the ICHI implementation for coding social services for persons with disabilities in three Russian regions demonstrated the difficulties in the goal-setting for services (interventions), the coding process etc.

Introduction

To systematize the variety of services for persons with disabilities (PwD), a relevant interagency classifier for comprehensive rehabilitation and habilitation, early intervention for children and their families, and living arrangements of persons with disabilities is feasible in Russia. The development of the rehabilitation system in the Russia showed the lack of common understanding of rehabilitation and habilitation in different agencies, reasoned by the absence of the common terminology. Understanding links between disease, functioning and interventions makes rational to use the International Classification of Health Interventions (ICHI) as the framework of the classifier of rehabilitation services. The aim of the project is the development of the methodology to use an interagency classifier of rehabilitation services for PwD.

Methods & Materials

The suggested rehabilitation service(intervention) code contains the extended ICHI code: three codes regarding the ICHI axes with obligatory additional information (extension codes), i.e. specialists, service receivers, way of service delivering, equipment, material, list of AT according ISO 9999.

At the ongoing stage, we analyzed the Russian legislation and studied lists of services provided by different state agencies to PwD. Several of these services can be considered as rehabilitation ones.

The technical translation of the ICHI was made. The comparison of ICHI codes of the axe 'Target' and ICF entities was made. Following the ICHI reference guide, we have initiated the process of building codes of interventions that are the sets of rehabilitation services for PwD of regional social care providers. The interventions have targets of body functions, activities and participation, and environmental factors, and also are mapped with social service types from the federal and regional laws.

Results

We collected data of 199 social services which specialists from three Russian regions delivered to PwD, adults and children (see Chart 1).

Chart 1: Organizations and specialists were involved in the study to describe the social services for PwD

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of organisations involved</th>
<th>Number of specialists involved</th>
<th>Services (interventions) described</th>
</tr>
</thead>
<tbody>
<tr>
<td>Republic of Chuvashiya</td>
<td>10</td>
<td>10</td>
<td>53</td>
</tr>
<tr>
<td>Tambov region</td>
<td>9</td>
<td>16</td>
<td>63</td>
</tr>
<tr>
<td>Krasnodar krai</td>
<td>15</td>
<td>17</td>
<td>83</td>
</tr>
<tr>
<td>Total</td>
<td>34</td>
<td>73</td>
<td>199</td>
</tr>
</tbody>
</table>

The work with specialists included a training on the basics of ICF and ICHI, the comparison of the current classifications of social services at the federal and ones at the regional levels with the proposed structure of the classifier of rehabilitation services, the coding of social services for PwD, and consultations.

The analysis of the coding experiences demonstrated the difficulties:

Chart 2: Distribution of the social services (interventions) for PwD by the 'Target' code fragment

<table>
<thead>
<tr>
<th>'Target' code fragment of a service (ICF domains)</th>
<th>Number of services (interventions)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body functions</td>
<td>63</td>
<td>31,7%</td>
</tr>
<tr>
<td>Activities &amp; participation</td>
<td>95</td>
<td>47,7%</td>
</tr>
<tr>
<td>Environmental factors</td>
<td>20</td>
<td>10,1%</td>
</tr>
<tr>
<td>Body functions AND activities &amp; participation</td>
<td>15</td>
<td>7,5%</td>
</tr>
<tr>
<td>Activities &amp; participation AND environmental factors</td>
<td>5</td>
<td>2,5%</td>
</tr>
<tr>
<td>Body functions AND activities &amp; participation AND environmental factors</td>
<td>1</td>
<td>0,5%</td>
</tr>
<tr>
<td>Total</td>
<td>199</td>
<td>100%</td>
</tr>
</tbody>
</table>

1. A number of services correspond with several 'Target' code fragments (no one-to-one correspondence, see Chart 2).

11% of the studied social services (interventions) for PwD have the several targets belonging to some ICHI domains.

2. Services can be associated with several fragments of the ‘Action’ code (no one-to-one correspondence). The codes of some services contain several different meanings of ICHI ‘Action’ code fragments (AA, AC, PG, PP), whereas despite of the conducted trainings the specialists did not find an appropriate code in ICHI ‘Action’ code fragments for some services.

3. It is assumed that there is lack of ‘Mean’ fragment codes in the current version of the ICHI. The specialists have certain difficulties in coding this fragment.

4. There are administrative services (documentation, reporting, control) that cannot be classified as a type of social service regarding the national classification.

Conclusions

Further guidance on social service coding and the ICHI adoption to the practices in Russia, as well as coding of other types of rehabilitation services for PwD, is necessary. The project is planned up to December 2024.

Acknowledgements or Notes

Authors thank the specialists from social and rehabilitation organizations for their valuable contributions to the descriptions of their work and rehabilitation interventions for persons with disabilities.

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Czech translation of ICHI

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Abstract: Although the International Classification of Health Interventions (ICHI) has not yet been officially released by the World Health Organization, the Czech WHO-FIC Collaborating Centre has started work on a Czech translation of this classification. In this work, we have based our initial mapping of the terminology of the Czech Classification of Hospital Procedures axes on the ICHI axes: goal, action, means.

Introduction
Historically since the 1990s, the Czech Republic has used the inadequate List of Health Procedures, which does not have the parameters of a modern classification, to describe health interventions.

Subsequently, the Czech national Classification of Hospital Procedures (KHP) has been developed since 2015 as a standard for terminology of health interventions and future use for coding of health care. The KHP was created based on a comparison study of foreign classifications (CCAM, NCSP+, ICD-10-PCS). From the beginning, the KHP axes were mapped to the ICHI axes available in beta version.

To further build the terminological base of health interventions and for future use of the ICHI for international comparison, we proceeded to produce a Czech translation of the ICHI in 2022 through the project of National Center for Medical Nomenclature and Classification project.

Methods & Materials
At our request, the WHO classification team created an ICHI translation environment within the translation platform. A methodology was developed for the translation of the ICHI, based on experience with the previous development of the Czech version of ICD-11.

An internal team of six editors and two language consultants was assembled and met at regular intervals to comment on the translation. Following the internal language review, a revision of the terminology by experts from professional medical societies is expected in the future, including the addition of synonyms.

In the first phase we translated the Target, Action and Means axes, a total of 1888 entities.

To ensure compatibility of the ICHI and ICD-11 classifications, it was important to use the same terminology in the Target axis.

In the next phase we translated the section Interventions on body systems or functions. This section represents the main list of inpatient and outpatient medical procedures and contains a total of 31,186 entities.

These are divided into 12 subgroups according to anatomical systems. Each of the entities contains the name of the procedure, synonyms, or the definition of the procedure.

The sections Interventions on Activities and participation domains, Interventions on the environment and Interventions on health-related behaviours have not yet been translated. In the ICD Extension Codes chapter, only the Telehealth, Anatomy and Topography and Topology Scale Values sections (which are part of the ICD-11 Extension Codes) have been translated so far.

Results

The Czech WHO-FIC Collaborating Centre has produced a translation of the ICHI core axes and the section Interventions on body systems or functions.

The translated part of the ICHI will be further subjected to professional validation of terminology and addition of terms used by experts in the Czech language beyond the original translation. The part translated so far will also serve as a comparative terminology corpus for specific sets of values used to describe the healthcare provided in healthcare data.

Acknowledgements or Notes
IHIS, specifically the NCMNC has been entrusted by the Ministry of Health to manage the implementation of the ICD-11 in the Czech Republic. Development of the Czech version of ICD-11 was funded by the European Social Fund within the project of National Center for Medical Nomenclatures and Classifications, CZ.03.4.74/0.0/0.0/15_025/0016089.
ICHI for Physiotherapy Coding in South Africa

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Abstract
This study reports on the potential use of ICHI as the intervention coding system for Physiotherapy in South Africa (as part of a national implementation program in the future). The limitations of the currently used intervention system are described, and suggestions are made as to how ICHI will address these. Suggestions are made as to the development of ICHI regarding certain interventions and as to how the implementation of ICHI in South Africa may be assisted in terms of moving from one coding system to another. The value and possibility of establishing collaboration with intentional colleagues through the WHO-FIC Network is raised.

Introduction
The implementation of accurate diagnostic and treatment coding systems is crucial for effective healthcare delivery. In South Africa, despite the evaluation of several international intervention coding and classification systems by healthcare stakeholders, the country is yet to adopt and implement a national intervention classification system (Satyadev et al., 2023). This proposal aims to explore the potential use of the International Classification for Health Interventions for coding interventions rendered to patients receiving physiotherapy services in South Africa. The system is designed to classify and code health interventions. It provides a standardized and universally applicable framework for coding interventions, allowing for improved communication, analysis, and comparison of healthcare data.

The ICHI coding system has been evaluated and found suitable for various healthcare settings, including patients receiving physiotherapy intervention. (Amundsen et al., 2021)

Potential Benefits of Implementing ICHI in Physiotherapy Diagnostic and Treatment Coding: Implementing ICHI in physiotherapy diagnostic and treatment coding in South Africa can bring several benefits. Firstly, it will improve the accuracy and consistency of coding, leading to more reliable data for research and decision-making. Secondly, it will enhance the comparability of data between different healthcare institutions and regions within South Africa. Thirdly, implementing ICHI can improve communication and collaboration between healthcare professionals by providing a common language for describing interventions.

Methods
Adapting ICHI Codes for Physiotherapy: To ensure that the ICHI codes are adapted and tailored specifically for physiotherapy interventions, we collaborated with the South African Society of physiotherapy (SASP) and experts in the field, to provide insights and input in how the ICHI codes accurately reflect the diagnostic and treatment procedures used in physiotherapy practice in South Africa. Comparison to the existing National Health Reference Price List (NHPL, 2006) was conducted to identify any gaps and ensure that the ICHI codes adequately capture all relevant physiotherapy interventions.

Results
Of these 76 codes, only 48 (63%) aligned with the ICHI codes. Many of the current physiotherapy codes that are in use are modality based and do not speak directly to the condition treated, but rather to the ‘how’.

Many of these codes are also grouped together within the ICHI system which may be challenging for implementation.

Conclusions
The findings of this preliminary study highlight the importance of further investigation of how to better align physiotherapy interventions with the ICHI coding structure.

Before fully implementing the adapted ICHI codes for physiotherapy interventions, a program of further research should be conducted.

This should include mapping from existing interventions classifications, coding of health intervention data collections, coding of vignettes or standard cases, and ‘live’ coding of interventions delivered in physiotherapy practice settings.

The purpose of the research is to identify any problems, shortcomings, or inconsistencies in the application of the ICHI codes specifically for physiotherapy interventions and to address these issues before implementing the classification system in South Africa.

Training and Education: To successfully implement the International Classification for Health Interventions for physiotherapy diagnostic and treatment coding in South Africa, it is essential to provide comprehensive training and education to physiotherapists.

Acknowledgements
The assistance of the ‘South African Society of Physiotherapy is gratefully acknowledged
Part 6   Other topics
Points to note when filling out the entry principal name of main diagnosis in Japanese patient survey from the perspective of ICD-11 codes

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¹ National Institute of Public Health, Japan, ² Shizuoka Graduate University of Public Health, Japan, ³ Medical School of Ehime University, Japan, ⁴ Ehime University Hospital, Japan, ⁵ Medical Information System Development Center, Japan, ⁶ T-Terminology Inc, Japan

Abstract
To improve the efficiency of the ICD coding of major injuries and diseases collected in the patient survey, the Ministry of Health, Labour and Welfare (MHLW) provided information on 102,875 major injuries and diseases from the 2020 patient survey. Coding was performed using a prototype ICT tool (CANDLS library was introduced in the tool: Kimura et al. 2023), which had already been developed. Factors hindering the efficiency of the survey form filling and coding using the ICT tool were identified and are outlined in this report.

Introduction
Patient survey is to obtain basic data for health policy by identifying the situation of patients that use hospitals and clinics (hereafter “medical institutions”) including their attribute, condition at the time of visit or admission, and diagnosis etc. Difficulties continue to persist for medical institution staff members in terms of filling out patient survey forms and government tabulating their results. There is also a need to consider efficiency improvements that may promote the early release of survey results. In particular, it is necessary to improve efficiency in the name of main diagnosis codes (in accordance with ICD-10), as well as in other aspects of tabulation. The extension codes for Chapter X, which will be added to ICD-11 have been raised as an issue for consideration in terms of domestic utilization.

Methods
This study aims to improve the efficiency in the coding of “name of main diagnosis” and the tabulation of the results. In anticipation of the adoption of ICD-11, the corresponding associations between ICD-11 codes and elements in the patient survey were considered. The Ministry of Health, Labour, and Welfare (MHLW) provided 102,875 name of main diagnosis from the 2020 patient survey data. Ten candidate name of “name of main diagnosis” and ICD codes were displayed on an ICT tool. Among the “name of main diagnosis” that were not indicated as “0” (exact match) in the ICT tool, 600 cases were selected, in order of their total number of occurrences (number of survey sheets).

The accuracy is classified into 0, 10, 20, 30, and 90—the lower the number, the closer the word is to the search term.
Accuracy
0: Exact match
10: Match including variants
20: Semantically close match
30: Partial match taking ambiguity into account
90: Partial match

Example:
Search term: "sepsis"
Accuracy: name of injury
0: sepsis
20: bacteremia
30: Salmonella sepsis, Salmonella bacteremia

Results
The factors hindering the efficiency of ICD-10 coding using the ICT tool were identified to be the following:
(1) Type of illness (chronic, acute, etc.; e.g., acute viral pharyngitis → viral pharyngitis [J02.8]); and
(2) Notation (left, right, both; e.g., left renal cyst → renal cyst [N28.1]).
These were considered to be the factors that interfered with improving efficiency of coding using ICT tools as a reason for not displaying "0" for certainty. When coding was performed using the ICD-11 Browser, “Acute viral pharyngitis” could be classified as “Acute viral pharyngitis, unspecified (CA02.1Z),” and “Left renal cysts” could be classified as “Cystic or dysplastic kidney disease, unspecified (GB8Z), Left (XK8G)” with an extension code.

Conclusions
This was not identified as a factor that interfered with improving the efficiency of coding using ICT tools equipped with ICD-11 codes. Further detailed investigation is needed for the future use of ICD-11 codes in the aggregation of Japanese patient survey results.

References
1. CANDLS library, Medical Information System Development Center, Japan. http://www2.medis.or.jp/candls/ (2023/08/18 accessed)

Acknowledgements
This study was supported by Health, Labour and Welfare Sciences Research Grants(21AB1001).

Conflicts of interest
The authors have no competing interests to disclose with this study.

Figure 1: CANDLS library Explanation of accuracy
Barriers and difficulties regarding the coding process for the name of main diagnosis were identified by three coders, and recorded.
Abstract

In Brazil, the National Policy for Comprehensive Care for People with Rare Disease aims to reduce the mortality and morbidity of individuals with rare diseases (RDs) according to World Health Organization recommendations. This policy uses the ICD-10 to identify and describe RDs. However, a unique ICD-10 code can aggregate several rare disorders, leading to inaccurate information. Similar behavior occurs concerning the use of the ICD-11 in the RD domain. Hence, informational barriers hinder the exact representation of clinical information. Among these limitations is the non-use of a specific complementary and standardized classification for the RDs domain in Brazil, such as ORPHAnode, developed by Orphanet and used in European health networks. Thus, this study aims to develop a complex network that maps the relationships between ICD-10, ICD-11, and ORPHAnode terminologies for the Brazilian RD policy by developing an interactive web app system based on graph theory.

Introduction

A rare disease (RD) is a condition with a low prevalence in a given population. Although each RD has a low prevalence, all RDs can affect up to 10% of the world population. In Brazil, the National Policy for Comprehensive Care for People with RD (NPCCP-RD) was established to reduce the mortality and morbidity of individuals with RDs. This policy uses ICD-10 to identify RDs. However, a unique ICD-10 code can aggregate several RDs, leading to inaccurate information. NPCCP-RD does not use a specific complementary classification for RDs, such as ORPHAnode, used in European health networks. The ICD-11 improves the RD representation but still presents gaps. Therefore, this research builds a complex network delineating the links between the ICD-10, ORPHAnode, and ICD-11. The result is an interactive web app system to support decision-making and clinical data sharing in the RD area.

Methods & Materials

This is an applied study in which we use the cross-reference map between ICD-10, ICD-11, and ORPHAnode terminologies through an algorithm developed with Pyvis, a package in Python for constructing computational complex networks based on the graph theory concepts. From the list of ICD-10 codes provided by the Brazilian Ministry of Health (Ordinance No. 199), we developed a select box where the user can query by disease nomenclature or code and thus check all their relationships with other terminologies. At the same time, complex network metrics are shown on the web app system interface according to the query performed. The relationship between ICD-10 and ORPHAnode is provided in the Orphanet repository. Then, from the ORPHAnodes, we could also retrieve the related ICD-11. Furthermore, our web app system allows disease information selection and provides calculation of clustering coefficients, the number of components, and the degree of centrality of each selected disease. Moreover, it allows users to control the view and navigate the complex network.

Results

Our complex network application can provide all relationships between the cited terminologies. Fig.1 shows the interface of the entire developed complex network. In this case, the red elements represent ICD-10 codes, the green elements represent ICD-11 codes, and the blue elements represent ORPHAnodes. Thus, a single ICD-10 code can sometimes be related to many ORPHAnodes. The same situation, but to a lesser extent, also occurs with ICD-11 codes. Even though the ICD-11 has evolved concerning the ICD-10 to classify RD diagnoses, we observe that the complementation with the ORPHAnode is still necessary to classify the diagnosis more precisely and specifically, given the great diversity of the rare conditions. For example, Fig. 2 shows the ICD-10 code Q99.8 - Other specified chromosome abnormalities in the center. This single code can be related to more than 30 rare conditions identified in the Orphanet. ICD-11 is more specific, better representing the different rare diagnoses associated with this code. It is possible to notice the presence of five main clusters, represented by the green nodes. Through this framework, we provide a consistent environment to support the performance of tasks involving these terminologies. In addition, the conversion process between these classifications generally represents an intrinsic procedure for all health units that use ICD-10 and need to update the databases and protocols of their care services for ICD-11.

Conclusions

This technical contribution aims to reduce the complexity of classification and conversion processes and terminological activities involving RDs. To facilitate the sharing of clinical data and information, offering an interactive complex network model to provide greater accuracy in RD identification and diagnoses and improving evidence-based decision-making in RD care services. Through this implementation, we aim generate benefits for patients, health professionals, and health managers.

Acknowledgements or Notes

The authors declare that there are no conflicts of interest. This study was funded by the National Council for Scientific and Technological Development – CNPq and the Ministry of Health of Brazil – MoH.
ORGANIZING A PROPER CATALOGUE TO CAPTURE AND CODE CLINICAL CONCEPTS AT HOSPITAL CLINIC OF BARCELONA

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**Abstract**

This communication presents the methodology defined for the development, evaluation and maintenance of a Health Problems Catalogue (HPC) required to support the needs of physicians from different specialties working in different care settings. To build the catalogue, a reference subset was chosen and enriched with terms commonly used by physicians, extracted from an exhaustive review of previously recorded clinical expressions in the EHR. The resulting list is both robust and flexible enough to adapt to the dynamism of the clinical environment, adjusting to our local needs.

**Introduction**

As part of the project for the implementation of a real-time patient-centered health problems list coded with ICD11, ICD10CM and SNOMED CT, we have previously developed a supervised machine learning coding system using Natural Language Processing (NLP). In this context, a predefined Health Problem Catalogue (HPC) must be established for the coding engine to focus its queries, to avoid the search through hundreds of thousands of terms, most of them not useful for clinicians in the selected scenario.

**Methods & Materials**

Before creating the HPC, an analysis process was carried out to select the vocabularies involved in this project. The final selection included ICD11, ICD10CM and SNOMED CT. The next step was to decide between three possible alternatives to have an HPC:

1. Creation of our own catalogue.
2. Adoption of a reference set created and maintained by an official body.
3. Adoption of an official catalogue and customization to our local needs.

A comparative analysis of different official vocabularies was carried out within multidisciplinary working groups in which clinicians also participated. Considering their needs, their usual way to register health problems, and the resources available, the third approach was decided as the best solution. SNOMED CT was the initial reference set followed by ICD11 and ICD10CM doing some adjustments to our specific local needs. Official mapping between SNOMED CT and ICD10 was a valuable help for the seeding of the HPL coded in the three terminologies.

**Results**

The adjustments made to the original reference set consisted in:

1. Restricting it to diseases, symptoms and other health problem references.
2. Including texts in three languages: Spanish, Catalan and English.

**Acknowledgements or Notes**

Background of this project in:

1. WHOFIC meeting 2019: “Establishing a relation-ship between ICD and SNOMED-CT” Poster Id. 327
2. WHOFIC meeting 2021: “Real time ICD-11/SNOMED CT coding of health problems in an outpatient hospital setting” Poster Id. 362
3. WHOFIC meeting 2022: “Online diagnostic coding of health problems in an EHR” Poster Id. 113

**Conclusions**

1. This project shows how this approach in the process of building an HPC enhances the coding efficiency, allowing the tool to suggest to the physician a list of coded terms better suited to the original clinical concepts in a shorter time, to not interfere with the clinical processes.

**Mapping**

1. An official mapping (NLM) has been used to identify correspondences between terms from different terminologies in a terminology server.

**Data sources**

<table>
<thead>
<tr>
<th>Strings used to record health problems</th>
<th>Terminology</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNCODED</td>
<td></td>
</tr>
<tr>
<td>Emergency Room diagnosis</td>
<td>ICD10CM</td>
</tr>
<tr>
<td>Inpatient diagnosis</td>
<td>ICD10CM</td>
</tr>
<tr>
<td>Dictionaries by specialties</td>
<td>ICD10CM/UNCODED</td>
</tr>
<tr>
<td>Primary care requests</td>
<td>CIAP2</td>
</tr>
<tr>
<td>Anato-pathological diagnosis</td>
<td>SNOMED CT</td>
</tr>
</tbody>
</table>

**Acknowledgements or Notes**

Background of this project in:

1. WHOFIC meeting 2019: “Establishing a relation-ship between ICD and SNOMED-CT” Poster Id. 327
2. WHOFIC meeting 2021: “Real time ICD-11/SNOMED CT coding of health problems in an outpatient hospital setting” Poster Id. 362
3. WHOFIC meeting 2022: “Online diagnostic coding of health problems in an EHR” Poster Id. 113


Abstract

The three coders used the ICT tool to assign the International Classification of Diseases, Tenth Revision (ICD-10 codes) to the names of the main diagnoses collected during the Japanese Patient Survey in 2000. An examination of the inter-coder agreement rates revealed very high rates, and the study results verified that coding efficiency could be improved. Future studies will require an ICT tool equipped with the ICD-11 coding library.

Background

The "Patient Survey" aims to obtain basic information for medical care management by clarifying the actual conditions of patients visiting medical care facilities both at the time of admission and visit, the name of the disease, and to estimate the number of patients in Japan every three years. This study classifies medical diseases and injuries using the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) codes. The completion of survey forms in hospitals and clinics (hereafter referred to as "medical institutions") and ICD-10 coding and tabulation within the Ministry of Health, Labor and Welfare (MHLW) are two issues that should be considered to streamline for early release using the nationwide Patient Survey. A prototype information and communication technology (ICT) tool that had already been developed was used for experimental coding work to improve the efficiency of ICD coding for the principal diagnosis of names collected from medical institutions (the CANDLS library, http://www2.medis.or.jp/candls/), was examined (Kimura, Hoshi, Sato, Takata et al., 2023), and the consistency of the coding results of the three coders was examined.

Methods

The three research coders were provided with 102,875 names of principal diseases and injuries in the 2020 Patient Survey Information from the MHLW. Among the names of principal diagnoses that did not appear as "certainty 0 (zero)=exact match" in the ICT tool, 600 names of principal diagnoses were selected from the data obtained from the MHLW in descending order of the total number of occurrences (number of survey forms). Four cases of "CANDLS not applicable = do not display 10 candidate diagnoses and codes" were also selected in descending order of the number of occurrences. Using the ICT tools, three coders independently finalized 600 principal diagnosis names and ICD-10 codes from a list of 10 candidate disease names and ICD-10 codes, each adding a manual selection of four diseases and codes. The agreement between the three coders’ coding results was checked in 590 cases with no missing results.

Results and Discussion

All three coders agreed in 507/590 cases (85.9%), which is a high rate of agreement. Of the discrepancy, two agreed in 80/590 cases (13.6%), while three disagreed in 3/590 cases (0.5%). The use of ICT tools resulted in a high rate of agreement between the coding results of multiple workers, and the results verified that coding efficiency could be improved. The ICT tool was found to be useful as the agreement rate had increased for all principal diagnosis names because the principal diagnosis name and ICD code could be determined as is for "certainty 0 (zero) = exact match." Future versions of the ICT tool should incorporate the CANDLS library of ICD-11 codes for further research.

Conflicts of interest

The authors have no competing interests to disclose with this study.

References

2. CANDLS library. Medical Information System Development Center, Japan. http://www2.medis.or.jp/candls/ (2023/08/15 accessed)

Table 1a. Coding results of the three coders. (In Japanese)

<table>
<thead>
<tr>
<th>ID</th>
<th>1: Disease name</th>
<th>2: Diagnose</th>
<th>3: Coder A</th>
<th>4: Coder B</th>
<th>5: Coder C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chronic laryngeal disease</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Chronic laryngeal disease</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Acute laryngeal disease</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Acute bronchial disease</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Acute bronchial disease</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Acute nasal disease</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Acute otitis media</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Acute conjunctivitis</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Acute tonsillitis</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Acute appendicitis</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Table 1b. Coding results of the three coders. (*Possible miscoding) (Translated into English.)
**Introductions**

In 2018 the WHO revised the 100 Core Health Indicators, and the Family Development Committee UHC Working Group explored the possibilities of mapping the indicators to the WHO-FIC reference classifications. The objective of this work was to create a reliable link between the Core Health Indicators and the reference classifications of the WHO, with the result being a comprehensive product of the WHO. Since the annual 2022 meeting, the working group reviewed, verified, and updated the maps. The results showed that the WHO FIC reference classifications can be used to identify most of the indicators.

**Results**

Overall, the vast majority of the indicators can be identified using the WHO-FIC reference classifications. 97% of the combined Core Health Indicators and health-related SDGs can be identified through codes from at least one of the WHO-FIC reference classifications, and 92% have the possibility of using more than one of the three classifications in their identification. An example of which reference classification was found relevant to each indicator is displayed in Chart 2.

**Conclusions**

The mapping of the Core Health Indicators to the individual codes and code ranges of the three WHO-FIC reference classifications has proven successful. The WHO FIC reference classifications can be used to identify most of the indicators. The additional review and map refinement improved the mapped indicators. Such mapping will serve member countries well in their preferred use of this work for measuring and tracking these health indicators. The reference classifications can therefore provide a solid foundation in building a health information monitoring and reporting framework for programs seeking to implement the Sustainable Development Goals.

**Acknowledgements or Notes**

All members of the UHC indicator working group (past and present) and Robert Jakob from the WHO are thanked for their contributions to this work.

**Notes:**

* ICD = International Statistical Classification of Diseases
* ICF = International Classification of Functioning and Disability
* ICHI = International Classification of Health Interventions
Joint use of three classifications in DRG for rehabilitation
Ann-Helene Almborg 1,2, Ralph Dahlgren 1

Abstract: The Swedish DRG for rehabilitation has been further developed and consists of 85 new DRG for 12 groups of health conditions. ICD-codes are used for the main diagnosis. Totally are 40 ICF-codes with qualifiers used (n=280 precoordinated) for nine grouping properties for functioning. Another 50 ICF-codes with qualifiers (n=360 codes) are used for an additional grouping property for functioning. Totally are 255 KVÅ-codes used. The updated DRG system supports the joint use of ICD, ICF and KVÅ. The system will improve the possibilities to describe the rehabilitation based on the functioning level, the health condition and performed rehabilitation interventions. The system can be further developed to cover other areas such in primary care.

Introduction
As a Nordic collaboration a grouping logic for rehabilitation was added in 2008 to Nord Diagnosis Related Groups (DRG) at the request of the health organizations. It contained of 33 new DRG groups based on the Nordic Assessment Score manual (NASS manual). The DRG for rehabilitation was using ICD-codes and codes for functioning. Development in Sweden resulted in increased number of codes for functioning, but the ICF-codes were not used. The DRG system also included some interventions in the Swedish Classification of Health Care Interventions (KVÅ). This version of the DRG-system was implemented 2011. However, the original grouping characteristics in NordDRG remained. DRG 2021 consisted of 11 grouping properties used for 33 DRG.

Further development 2023 aimed to:
• replace the existing codes for functioning with ICF-codes to be used for the grouping properties for functioning.
• enable the use of additional ICF codes to describe more areas of functioning than before.
• enable the use of additional health interventions from the KVÅ to describe the rehabilitation interventions.
• develop Rehab DRGs for mental health conditions.

This new version will be implemented year 2025.

Methods & Materials
The further development has been performed by review of ICF-codes from following sources:
• existing 18 modified codes for functioning in Nord DRG for rehabilitation (maps to ICF)
• Functioning entities in ICD-11 V Chapter Supplementary section for functioning assessment (maps to ICF)
• WHODAS 2.0 (maps to ICF)
• ICF core sets for Rehabilitation
• Frequently used ICF-codes in the ICF-core sets (n=40)

The original 12 grouping properties for functioning were used to identify relevant ICF-codes from the sources used for the review. The structure of the 12 grouping properties were analyzed. Relevant rehabilitation interventions from the Classification of Health Care Interventions (KVÅ) was identified. ICD-codes for mental health conditions were already identified in NordDRG, but not used for rehabilitation.

Results
ICD-codes are used as main diagnosis.

The 12 original grouping properties for functioning resulted in nine new grouping properties.

The review result in 90 ICF-codes. Totally are 40 ICF-codes used for the nine new grouping properties for functioning, mostly in mental functions (n=11) and mobility (n=8).

The ICF-codes are used with the qualifiers (0=none; 1=mild; 2=moderate; 3=severe; 4=total; 8=unspecified, 9=not applicable). This results in 280 precoordinated ICF-codes with qualifiers. The remaining 50 ICF-codes (350 precoordinated ICF-codes with qualifiers) are used for another new grouping property

Difficulties not elsewhere grouped (Table 1).

Table 1: The ten new DRG groups for rehabilitation

<table>
<thead>
<tr>
<th>New DRG groups for rehabilitation</th>
<th>DRG groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rehabilitation due to xxx, difficulties with communication, relationships</td>
<td>Stroke</td>
</tr>
<tr>
<td>2. Rehabilitation due to xxx, difficulties with movement, toileting</td>
<td>Demyelinating disease</td>
</tr>
<tr>
<td>3. Rehabilitation due to xxx, difficulties with hygiene/dressing, toileting</td>
<td>Spinal cord injury</td>
</tr>
<tr>
<td>4. Rehabilitation due to xxx, difficulties with hygiene/dressing, toileting</td>
<td>Brain injury</td>
</tr>
<tr>
<td>5. Rehabilitation due to xxx, difficulties with hygiene/dressing, toileting</td>
<td>Brain tumor</td>
</tr>
<tr>
<td>6. Rehabilitation due to xxx, difficulties with hygiene/dressing, toileting</td>
<td>Neurological disease</td>
</tr>
<tr>
<td>7. Rehabilitation due to xxx, difficulties with hygiene/dressing, toileting</td>
<td>Heart and lung disease</td>
</tr>
<tr>
<td>8. Rehabilitation due to xxx, difficulties with hygiene/dressing, toileting</td>
<td>Other traumatic injury</td>
</tr>
<tr>
<td>9. Rehabilitation due to xxx, difficulties with hygiene/dressing, toileting</td>
<td>Amputation</td>
</tr>
<tr>
<td>10. Rehabilitation due to xxx, not elsewhere classified</td>
<td>Mental health condition</td>
</tr>
</tbody>
</table>

Conclusions
The updated DRG-system consists of 85 DRG for rehabilitation for the 12 groups of health conditions (Table 3).

Table 3: DRG-groups used for rehabilitation by disease group

<table>
<thead>
<tr>
<th>DRG groups</th>
<th>Rehabilitation due to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stroke</td>
<td>Demyelinating disease</td>
</tr>
<tr>
<td>Spinal cord injury</td>
<td>Brain injury</td>
</tr>
<tr>
<td>Brain tumor</td>
<td>Neurological disease</td>
</tr>
<tr>
<td>Heart and lung disease</td>
<td>Other traumatic injury</td>
</tr>
<tr>
<td>Amputation</td>
<td>Mental health condition</td>
</tr>
</tbody>
</table>

Contact: ann-helene.almborg@socialstyrelsen.se
Abstract

Having a set of use cases for joint use of the WHO-FIC reference classifications (ICD, ICF, ICHI) supports Member States in their implementation efforts. The Family Development Committee (FDC) has raised the WHO-FIC Network’s key strategic priority of identifying and describing use cases as a task for 2023. The FDC developed a template for describing use cases and pilot tested the template. Outreach to FDC members for additional use cases has occurred.

**Introduction**

The Strategic workplan (SWP) for WHO-FIC Network 2020-2025 has following key strategic priorities/deliverables during 2022-23:

- Identify and describe use cases on the joint use of WHO-FIC focusing on the reference classifications (ICD, ICF, ICHI).

The Family Development Committee (FDC) has raised this as a task in the FDC Strategic Workplan for 2023. During the mid-year meeting this task was discussed and a plan established.

This task aims to:
- gain knowledge about current joint use of the reference classifications
- understand how the ICD-11, ICF and ICHI could be used together
- support implementation

**Methods & Materials**

Following the mid-year meeting, further discussions established an introduction to the task and a draft template. The use cases should describe joint use of:

- two or three of the reference classifications already used in practice or
- if one of the reference classifications is used in practice and there is a proposed use of one or two of the other reference classifications

Use cases involving a country’s ICD national modification or classifications of procedures/interventions are also appropriate for submission.

The template (shown below) was subsequently tested in a pilot study.

**Results**

The outcome of the pilot study were the following use cases. In addition, revisions to the template were made.

**Interoperability**

The US Office of the National Coordinator for Health Information Technology’s (ONC’s) Health IT Certification Program requires the use of the US Core Data for Interoperability (USCDI) format nationwide, interoperable health information exchange. Data elements in the USCDI represent clinical concepts across a range of data classes some of which could be identified with ICD-11, ICF, and ICHI.

**Diagnosis-Related Groups**

Under the US inpatient prospective payment system (IPPS), each inpatient hospital case is categorized into a diagnosis-related group (DRG) based on the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) and the International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS) codes. Since ICD-10-CM and ICD-10-PCS are used in the DRG casemix system, ICD-11 and ICHI have the same potential use as well.

**Patient Safety**

The US Department of Health & Human Services, Agency for Healthcare Research and Quality (AHRQ) publishes Quality Indicators (QIs). The QIs are standardized, evidence-based measures of healthcare quality. The Patient Safety Indicators (PSIs) provide information on potential in-hospital complications and adverse events following surgeries, procedures, and childbirth. PSIs use ICD-10-CM and ICD-10-PCS codes and therefore have ICD-11 and ICHI potential use.

**Provider Performance - Quality Measurement**

The US Centers for Medicare and Medicaid Services (CMS) electronic clinical quality measures (eCQMs) are measures that contain coded data elements. The codes and corresponding terms come from standard code systems such as the ICD-10-CM and ICD-10-PCS and therefore have ICD-11 and ICHI potential use as well.

**Conclusions**

The draft template was tested with six use cases and was found to only need minor revisions. Correspondence from the FCD co-chairs has been sent to FDC members requesting descriptions of use cases for joint use of the WHO-FIC reference classifications (ICD, ICF, ICHI). The joint use of reference classifications will be a FDC agenda item at the WHO-FIC Network annual meeting.

**Acknowledgements or Notes**

The authors would like to thank the FDC members for their contributions and discussions throughout the year.
Abstract: The Iris Core Group has been working on Iris-11, the new update of Iris which will work with ICD-11 codes. This is an update on the progress of this work.

Introduction

Iris is an automatic system for coding multiple causes of death and for the selection of the underlying cause of death. It can be used in code in batches or interactively. Version 6 of the Iris (Iris-11) software is being revised to be compatible with coding the underlying cause of death with the ICD-11 classification. Although the change to ICD-11 will bring structural changes to the statistics, the base of the Iris software will stay the same.

The current decision tables format derives from those developed by the NCHS (National Center for Health Statistics) for the selection of the underlying cause of death used by ACME (Automated Classification of Medical Entities). The current decision tables were originally based on ICD-10 codes. For ICD-11 the updates are done after discussion in the MRG and decision by the Classification and Statistics Advisory Committee (CSAC). More information about the update process for ICD-11 can be found in the ICD-11 Reference Guide.

Goals for Iris-11

➢ Retain all Iris-10 features
➢ Use ICD-11 for Underlying Cause of Death and Multi Causal output
➢ Iris-11 & Muse-11 software
➢ Prototype of Decision Table
➢ Prototype of English Dictionary

Challenges in development

➢ Mapping between ICD-10 to ICD-11
➢ Pending question/proposals
➢ Post-coordination
➢ Translation of ICD-11
➢ Terms indexed to non-terminal codes
➢ Common mortality terms not yet in ICD-11, unable to determine where to be coded

Tentative timeline Iris-11

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2023</td>
<td>Release of first test version for Iris-11</td>
</tr>
<tr>
<td>October 2023 - March 2024</td>
<td>First test period</td>
</tr>
<tr>
<td>Spring 2024</td>
<td>User Group meeting with reports of testing from users</td>
</tr>
<tr>
<td>From spring 2024 onwards</td>
<td>Implementation of WHO updates; Analysing user reports and add possible changes/updates</td>
</tr>
<tr>
<td>October 2024</td>
<td>Release of second test version for Iris-11</td>
</tr>
<tr>
<td>October 2024 - March 2025</td>
<td>Second test period</td>
</tr>
<tr>
<td>Spring 2025</td>
<td>User Group meeting with reports of testing from users</td>
</tr>
<tr>
<td>From spring 2025 onwards</td>
<td>Implementation of possible WHO updates; Analyzing user reports and add possible changes/updates</td>
</tr>
<tr>
<td>October 2025</td>
<td>Release of Iris version for statistical production If necessary, an additional test period (third test period) could be set-up</td>
</tr>
</tbody>
</table>

How can you give feedback?

(Potential) users are crucial for further development of Iris and ICD-11. Only if we receive feedback and ideas from the different users will we be able to continue developing and further improving Iris-11. So we welcome all feedback, from users working with data in all languages and types of populations. You can share your feedback with us in the following ways:

➢ You could share your test results and questions/remarks via e-mail
➢ You could report your test results at the next Iris User Group meeting in spring
➢ You could keep in touch through our newsletter and webinars
➢ You could of course talk to us in person

When you notice the decision tables in Iris-11 are not giving you the correct result: please use the following checklist to make sure the problem is correctly identified:

➢ Check with ICD-11 Reference Guide, ICD-11 MMS and ICD-11 Coding tool
➢ Check with the official WHO-FIC updates and proposals (access via the WHO-FIC maintenance platform) and emergency codes for COVID-19
➢ If you think this is an issue within ICD-11, you should create a proposal via the WHO-FIC maintenance platform; the issue could be reported to the Mortality Reference Group (MRG) or discussed in the Mortality Forum
➢ If the error is in the application of the ICD-11, then report to the Iris Institute
➢ In case you find a bug in the Iris software, Iris manual, tables or files then please report this to the Iris Institute.

Figure: Example user interface from Iris-11 test version
Lessons learned about implementing Electronic Death Registration Systems (EDRS)

Oluwatoyin Awotiwon, Carmen Sant Fruchman, Pam Groenewald, Daniel Cobos and Debbie Bradshaw on behalf of the working party at the capture of the medical certificate of cause of death Scoping Study for South Africa

1. SAMRC Burden of Disease Research Unit, Cape Town, South Africa
2. Swiss Tropical Institute for Public Health, Basel, Switzerland

Abstract
South Africa’s Civil Registration and Vital Statistics (CRVS) system has made considerable progress in death registration, yet challenges in quality and timeliness of cause-of-death data persist. To prepare for an Electronic Death Registration System (EDRS) aligned with global best practices, we organized a virtual workshop involving countries implementing, or piloting, EDRS or electronic medical certificate of cause of death (eMCCD). Out of 14 countries approached, seven (viz. Australia, Ecuador, Kenya, Peru, Portugal, Uganda, USA) participated, sharing insights in two stages: an online survey and a 2-hour virtual workshop. Their experiences emphasized that EDRS implementation enhanced data availability, timeliness, and quality in comparison with paper-based systems. Key takeaway insights encompassed the significance of strong leadership, legislative support for eMCCD utilization and data sharing, and comprehensive stakeholder involvement from inception. Challenges encompassed legislative barriers, user acceptability issues, electronic system variations, and infrastructure inadequacies. International experiences indicate that with meticulous planning, South Africa can strategically and feasibly adopt eMCCD. This workshop-derived knowledge will be instrumental in advancing South Africa’s CRVS system through technology-driven enhancements.

Introduction
South Africa has a well-established Civil Registration and Vital Statistics (CRVS) system. Although completeness of death registration has improved considerably since 1994, challenges remain with both the quality and timeliness of the cause-of-death information. To draw on international best practice towards developing an Electronic Death Registration system (EDRS), we arranged a virtual participatory workshop to identify lessons learned from systems in the countries that have implemented, or are piloting electronic EDRS, with a particular focus on electronic medical certificate of cause of death (eMCCD).

Methods & Materials
Fourteen countries that are either implementing or piloting EDRS or eMCCD, identified partly through the World Health Organization Family of International Classifications Informatics and Terminology Committee (WHO-FIC ITC), literature review and through reaching out to experts were approached. Seven countries (Australia, Ecuador, Kenya, Peru, Portugal, Uganda and USA) agreed to participate in the workshop. In preparation for the participatory workshop, we reviewed existing documentation and followed up with leads of country initiatives to describe, document and summarise international initiatives. This was done in two stages: (a) self-administered online survey questionnaire, followed by (b) a 2-hr virtual workshop to further engage with key stakeholders from countries that are currently using or piloting EDRS to share lessons for South Africa from their international experiences. The results were summarized using the nine principles for digital development1 as a framework.

Digital principle

<table>
<thead>
<tr>
<th>Key points from country experience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design with the User</strong></td>
</tr>
<tr>
<td>• Strong leadership and champions across key departments organized sessions/decisions.</td>
</tr>
<tr>
<td>• Need buy-in from all stakeholders and end-users e.g., doctors who can become advocates once they are convinced.</td>
</tr>
<tr>
<td>• Set up formal agreements, memoranda of understanding etc., to bring on board public and private sectors users.</td>
</tr>
<tr>
<td>• Have robust preliminary work before transitioning into electronic systems, including having everyone at the table and a business map the processes before digitization.</td>
</tr>
<tr>
<td>• There is great opportunity in having an eMCCD roll-out if it is done with all the consultations and clear milestones.</td>
</tr>
<tr>
<td>• Easy to build a centralized system. Having a decentralized system adds a level of complexity.</td>
</tr>
<tr>
<td>• Adopt a stepwise approach (e.g., from local to regional and national) to transition from paper to electronic system.</td>
</tr>
<tr>
<td>• Put in place standards across systems that allow for linkage of systems to address needs of multi-stakeholders e.g., Certification framework, Integration standards etc.</td>
</tr>
<tr>
<td><strong>Understand the existing ecosystem</strong></td>
</tr>
<tr>
<td>• Sustainability will be an issue if the needs of stakeholders are not considered when planning.</td>
</tr>
<tr>
<td>• Ensure the right infrastructures, funding, and human resources.</td>
</tr>
<tr>
<td>• Legislation is required for doctors to complete the eMCCD form.</td>
</tr>
<tr>
<td>• Training of all users to support change management. Provide adequate and timely technical support for users of software application.</td>
</tr>
<tr>
<td>• Timely and accurate information sharing e.g., real-time data for policy makers.</td>
</tr>
<tr>
<td>• Rapid data flow process to where the information is needed.</td>
</tr>
<tr>
<td>• Ensure completeness of data.</td>
</tr>
<tr>
<td>• Automatic data coding and quality checks should be built in.</td>
</tr>
<tr>
<td>• Availability of data/internet access and connectivity.</td>
</tr>
<tr>
<td>• Use of mobile application where there is no access to computers e.g., rural areas.</td>
</tr>
<tr>
<td>• Good servers are required for the sustainability of the system.</td>
</tr>
<tr>
<td><strong>Design for scale</strong></td>
</tr>
<tr>
<td>• All countries mentioned the importance of ensuring we don’t only transition to digital, but also to rethink how existing systems work and what processes can be improved to ensure improved alignment when the system becomes digitized.</td>
</tr>
<tr>
<td><strong>Build for sustainability</strong></td>
</tr>
<tr>
<td>• Data protection is critical and must be safely transferred while ensuring privacy. There are different ways of doing this, including transferring de-identified data etc.</td>
</tr>
<tr>
<td>• Creation and maintenance of users (different profiles e.g., medical doctors, civil registrar, coder, police etc.) and passwords will be necessary.</td>
</tr>
<tr>
<td>• Need to have clear data sharing protocols supported by formal agreements.</td>
</tr>
<tr>
<td><strong>Be data driven</strong></td>
</tr>
<tr>
<td>• Clarity of role is important to allow understanding of who plays what roles, in order to avoid confusion that can result in barriers.</td>
</tr>
<tr>
<td>• Need for champions in different areas to lead and support e.g., technology, how to complete the MCCD, etc.</td>
</tr>
</tbody>
</table>

Conclusions
Experiences from other countries suggest that implementing eMCCD in South Africa, with careful planning, would be strategic and feasible. Strong leadership and champions across departments are needed and it is essential to have all stakeholders on board from the beginning.

Acknowledgements
We acknowledge and thank James Eynstone-Hinkins, Erica Carvejal, Gabriela Lugmana, Samuel Cheburet, Javier Vargas, Cátia Sousa Pinto, Cathy Hazel, Daniel Murokora, Paul Sutton and Rob Anderson for their contributions to this study which has been supported by the President’s Emergency Plan for AIDS Relief (PEPFAR) through the Centers for Disease Control and Prevention (CDC), the Bloomberg Philanthropies Data for Health initiative through the CDC Foundation Civil Registration and Vital Statistics Project, and the South African Medical Research Council.

References
Family physician perspectives on replacing ICD-9 for physician billing in Canadian primary care settings

S. Garies1, D.H. Marasinghe1, K. McBrien1,2, D. Campbell1, J.A. Dickinson1,2, K. Denny4, N. Crampton6, N. Drummond1,5, M. O’Beirne1, C.A. Eastwood2, D.A. Southem3, H. Quan2, A. Singer7, T. McDonald1,2, W. Ghali8, H. Ten Napel9, K. Van Boven9, O. Olagundoye10, D. Schrans11, T. Williamson2

1) Dept. of Family Medicine, University of Calgary. 2) Dept. of Community Health Sciences, University of Calgary. 3) Depts. of Medicine & Community Medicine, University of Toronto. 4) Dept. of Family Medicine, University of Manitoba. 5) Dept. of Family Medicine, University of Western Ontario. 6) Dept. of Family Medicine, University of Alberta. 7) Vice President (Research), University of Calgary. 8) Canadian Institute for Health Information, Ottawa, Ontario. 9) Dept. of Community Medicine, Faculty of Medicine & Dentistry, University of Alberta. 10) Ghent University, Belgium.

FAMILY OF INTERNATIONAL CLASSIFICATIONS NETWORK ANNUAL MEETING 2023

16-20 October 2023

WHO - FAMILY OF INTERNATIONAL CLASSIFICATIONS NETWORK ANNUAL MEETING 2023

Poster Number

609

Introduction & Objective

• ICD-9 is still used in Canada when outpatient physicians submit billing claims to the government to be paid for their medical services.

• ICD-9 coded billing data are also used in Canada for research, policy decisions, costing and disease surveillance.

• Given that ICD-9 is over 40 years old, Canada needs to evaluate options for a replacement.

• Family doctors use the widest range of ICD-9 codes compared to specialists, but ICD-9 is not reflective of the varied scope of primary care activities & diagnoses.

• Facility-based (hospital) coding in Canada will move to ICD-11 but no decision has been made yet for physician billing requirements.

STUDY OBJECTIVE: to obtain feedback from family physicians in Canada about a future replacement for ICD-9.

Methods

• Family physicians were recruited across Canada to complete online coding exercise of 5 primary care patient vignettes (from a total of 30) using ICD-9, ICD-11 & ICPC-3.

• Participants then answered a survey asking about their experiences with the new coding systems (ICD-11, ICPC-3), preferences for a future system, adoption readiness and concerns.

• Lastly, focus groups with family physicians will help understand implementation barriers and facilitators in more detail.

Results

Demographics of participating family physicians

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Family Physicians N = 160</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, n (%)</td>
<td></td>
</tr>
<tr>
<td>Woman</td>
<td>88 (55)</td>
</tr>
<tr>
<td>Man</td>
<td>57 (36)</td>
</tr>
<tr>
<td>Age, median years (IQR)</td>
<td>38 (11)</td>
</tr>
<tr>
<td>Years in practice, median (IQR)</td>
<td>7 (10)</td>
</tr>
<tr>
<td>Urban practice, n (%)</td>
<td>114 (71)</td>
</tr>
<tr>
<td>Academic practice, n (%)</td>
<td>34 (21)</td>
</tr>
<tr>
<td>Team-based practice, n (%)</td>
<td>124 (78)</td>
</tr>
<tr>
<td>Location (province), n (%)</td>
<td></td>
</tr>
<tr>
<td>Ontario</td>
<td>59 (37)</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>47 (29)</td>
</tr>
<tr>
<td>Alberta</td>
<td>34 (21)</td>
</tr>
<tr>
<td>British Columbia</td>
<td>14 (9)</td>
</tr>
<tr>
<td>Atlantic region</td>
<td>4 (2)</td>
</tr>
<tr>
<td>Manitoba</td>
<td>2 (1)</td>
</tr>
</tbody>
</table>

After coding the patient vignettes, do you have a preference between ICD-11 or ICPC-3 for physician billing?

<table>
<thead>
<tr>
<th>System</th>
<th>Medical</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD-9</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>ICD-11</td>
<td>39%</td>
<td>29%</td>
</tr>
<tr>
<td>ICPC-3</td>
<td>39%</td>
<td>29%</td>
</tr>
</tbody>
</table>

After coding the vignettes, how well did each system describe patient medical & social complexities?

<table>
<thead>
<tr>
<th>System</th>
<th>Medical</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICD-9</td>
<td>39%</td>
<td>39%</td>
</tr>
<tr>
<td>ICD-11</td>
<td>70%</td>
<td>70%</td>
</tr>
<tr>
<td>ICPC-3</td>
<td>70%</td>
<td>70%</td>
</tr>
</tbody>
</table>

Most frequently reported features of a new classification that are important to participants

concerns reported on experience with coding ICD-9

<table>
<thead>
<tr>
<th>Concerns</th>
<th>% response</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMR vendor integration</td>
<td>60%</td>
</tr>
<tr>
<td>Time spent learning a new system</td>
<td>50%</td>
</tr>
<tr>
<td>Governments not updating ICD-9 for billing</td>
<td>50%</td>
</tr>
</tbody>
</table>

Conclusions & Next Steps

• Most participants felt that ICD-9 should be replaced in Canada.

• Both ICD-11 and ICPC-3 were seen as acceptable replacements for ICD-9 for physician billing.

• Participants indicated that both ICD-11 & ICPC-3 were able to more adequately capture medical & social complexities from the vignettes compared to ICD-9.

• Integration with EMR systems & ensuring low time & effort burdens for physicians are important aspects when replacing ICD-9.

NEXT STEPS:

• Additional analyses to assess consistency of coding vignettes & ease of use for each system.

• Focus groups with family physicians & interviews with policymakers being conducted October & November 2023.

Funding & Contact

This study is supported by the Canadian Institutes of Health Research (CIHR).

For more information, contact Dr. Stephanie Garies at sgaries@ucalgary.ca

Top concerns reported by participants about implementing a new classification system in Canada

<table>
<thead>
<tr>
<th>Concerns</th>
<th>% response</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMR vendor integration</td>
<td>60%</td>
</tr>
<tr>
<td>Time spent learning a new system</td>
<td>50%</td>
</tr>
<tr>
<td>Governments not updating ICD-9 for billing</td>
<td>50%</td>
</tr>
</tbody>
</table>

NEX STEPS:

• Additional analyses to assess consistency of coding vignettes & ease of use for each system.

• Focus groups with family physicians & interviews with policymakers being conducted October & November 2023.

For more information, contact Dr. Stephanie Garies at sgaries@ucalgary.ca
Development of an ICT tool equipped with a library of dental disease names for the ICD coding of the Japanese Patient Survey.

Authors: Yoko Sato1,2, Keika Hoshi3, Akemi Nishio3, Haruki Takata3, Eizen Kimura4, Mai Ikegawa2, Hiroshi Yamakami3, Tomoko Tashiro6
1Graduate School of Public Health, Shizuoka Graduate University of Public Health, Japan, 2 Center for Health Informatics Policy, National Institute of Public Health, Japan. (See below for 3 to 5.)

Abstract

The Japanese Patient Survey collects data from medical care institutions using the ICD-10 for general medical diseases, and a unique 16-classification for dental diseases. A corresponding library was developed to standardize the 16 dental classifications, referencing Japan's dental name master with 3,000+ titles. An ICT tool equipped with a library normalizes manual entries, connecting them to ICD codes and 16 categories. This tool enhances the Patient Survey, enables streamlined naming and easier global comparisons, and is prepared for future ICD-11 integration.

Background

The patient survey is a Japanese government statistic conducted every three years with the purpose of obtaining basic data for health policy by identifying the situation of patients that use hospitals and clinics (hereafter referred to as medical institutions) including their attribute, condition at time of visit or admission and diagnosis etc. and estimating the number of patients by region. The International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) was used to classify medical illnesses and injuries. Sixteen patient survey-specific classifications were used for dental illness and injury classification (Table 1). Patient survey statistics allow international comparisons of the estimated numbers of patients with major diseases. However, for dental diseases, a clear correspondence between the 16 classifications and ICD-10 codes has not yet been established.

<table>
<thead>
<tr>
<th>16 patient survey-specific classifications for dental disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Caries</td>
</tr>
<tr>
<td>2 Pulpa, pulp gangrene, pulp necrosis</td>
</tr>
<tr>
<td>3 Periodontitis</td>
</tr>
<tr>
<td>4 Alveolar abscess, radicular cyst</td>
</tr>
<tr>
<td>6 Gingivitis</td>
</tr>
<tr>
<td>6 Chronic periodontitis</td>
</tr>
<tr>
<td>7 Gingival abscess (gA), other periodontal diseases</td>
</tr>
<tr>
<td>8 Parodontitis of wisdom tooth</td>
</tr>
<tr>
<td>9 Other disorder of teeth and supporting structures</td>
</tr>
<tr>
<td>10 Deciduous ulcer, stomatitis, others</td>
</tr>
<tr>
<td>11 Other disease of jaws and oral cavity</td>
</tr>
<tr>
<td>12 Prosthodontics (crown prosthesis)</td>
</tr>
<tr>
<td>13 Prosthodontics (bridge, denture, implant)</td>
</tr>
<tr>
<td>14 Orthodontics</td>
</tr>
<tr>
<td>15 Dentures</td>
</tr>
<tr>
<td>16 Examination of check-up and other healthcare services</td>
</tr>
</tbody>
</table>

Table 1. Sixteen patient survey-specific classifications used in the Japanese Patient Survey.

Method

A correspondence library was built using the standard dental disease name master, which corresponds to the ICD-10 dental disease names used for medical billing in Japan. The master list contained more than 3,000 disease names. The expression of dental diseases changes during the course of treatment, and the diagnostic and procedure names are mixed. The 16 classifications of dental diseases also included a combination of diagnostic and treatment names. For this reason, the library was designed to display the candidates for the 16 classifications and wound names separately as “diagnosis coding,” “etiology coding,” and “treatment coding” for the standard dental disease names. The ICT tool that implements the library was developed to normalize the manually entered dental disease names, display the corresponding disease names and ICD codes, and display candidates for the 16 classifications. In anticipation of future compatibility with ICD-10 and ICD-11, the library was designed to hold information on disease names manually entered by medical care institutions and standard dental disease name masters selected based on these names.

Conclusion

The use of this tool in the Patient Survey is expected to provide standardized information on disease names, and also for international comparisons. It is also expected that the forthcoming introduction of the ICD-11 can be accommodated by minor modifications to the ICT tool, in conjunction with an update of the standard disease name master.

Reference


Acknowledgements or Notes

This study was supported by Health, Labour and Welfare Sciences Research Grants(21AB1001). The authors have no competing interests to disclose with this study.

Affiliation Information

1Ehime University Hospital, Japan. 2Ehime University Graduate School of Medicine, Japan. 3Medical Information System Development Center, Japan. 4Terminology Inc., Japan.

Purpose

We designed a library of correspondences between the 16 classifications and ICD-10, and developed and validated an ICT tool to implement the library.

<table>
<thead>
<tr>
<th>Manually entered disease name</th>
<th>Candidate dental disease name</th>
<th>Normalization</th>
<th>16 classifications of dental disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root fracture</td>
<td>Root fracture, K038</td>
<td></td>
<td>Root fracture</td>
</tr>
<tr>
<td>Artificial tooth root breakage, T888</td>
<td></td>
<td></td>
<td>Artificial tooth root breakage, T888</td>
</tr>
<tr>
<td>Metabolic tooth root, abutment fracture, T888</td>
<td></td>
<td></td>
<td>Metabolic tooth root, abutment fracture, T888</td>
</tr>
<tr>
<td>Fractured tooth, K038</td>
<td></td>
<td></td>
<td>Fractured tooth, K038</td>
</tr>
</tbody>
</table>

Table 1. Sixteen patient survey-specific classifications used in the Japanese Patient Survey.

Figure 1. Example of the use of ICT tool in searching for root fractures.
UNCOVERING THE DIFFERENCES: Coded Data versus Clinically Identified Adverse Event Counts

Natalie Sapiro & Cathy A. Eastwood
Centre for Health Informatics, University of Calgary, Canada

Abstract: Accurate counts of adverse events are essential to change systems and practice for prevention. This study aims to compare clinically identified adverse events in hospital charts with the ICD-10-CA coded frequency, and to evaluate if the ICD-10-CA coded frequency is lower in adverse events which are primarily documented by nurses.

Introduction
Adverse events (AEs) occur in approximately one in 10 hospital admissions in Canada [1]. To change practice or systems for prevention, accurate counts of adverse events are essential.

The true incidence of some adverse events may be higher than the ICD-10-CA coded values, particularly adverse events primarily documented by nurses. This project aims to compare the ICD-10-CA coded frequency with clinically identified adverse events in hospital charts.

Methods & Materials
Using a retrospective cross-sectional study design, data from 5044 randomly selected charts from four Calgary, Canada acute care hospitals (2017-2022) were reviewed by Registered Nurses. AE definitions were derived from literature. Five AEs were selected based on previously published ICD-10 codes and presence in electronic health records to facilitate comparison.

A list of ICD-10-CA codes for these AEs was created in collaboration with Canadian Institutes for Health Information (CIHI). The Discharge Abstract Database for the charts was analyzed for the ICD-10-CA coded frequency of the selected AEs.

Chart review data were analyzed for counts. Identified AEs were independently evaluated by a second reviewer for quality assurance.

Results
Frequency of all five adverse events was significantly higher in chart review than the ICD-10-CA coded frequency (p<0.05), as illustrated in Table 1. There was a large discrepancy between ICD-10-CA count and chart review for pressure ulcers, falls & acute kidney injury (p<0.001).

Pressure ulcers and falls were most frequently documented by nursing staff. Acute kidney injury, thromboembolic events and iatrogenic pneumothorax, were documented most often by medical staff.

Table 1: DAD ICD-10-CA Counts vs. Chart Review Counts.

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>ICD-10-CA Counts</th>
<th>Chart Review Counts</th>
<th>p-value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Ulcer</td>
<td>1</td>
<td>137</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Fall</td>
<td>8</td>
<td>177</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Acute Kidney Injury</td>
<td>16</td>
<td>108</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Thromboembolic Event</td>
<td>19</td>
<td>40</td>
<td>0.006</td>
</tr>
<tr>
<td>Iatrogenic Pneumothorax</td>
<td>26</td>
<td>52</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Conclusions
Differing definitions may explain the difference in counts for falls and acute kidney injury. Chart review definitions were broader than the ICD-10-CA codes for these adverse events. Despite similar definitions, pressure ulcers, iatrogenic pneumothorax, and thromboembolic events had differing counts.

CIHI recently updated the coding standard for pressure ulcers, and they are now mandatory to code when documented by any health professionals, including nurses. We also recommend the consideration of nursing documentation when coding falls.

The AE concepts in ICD-10-CA may not fully reflect how AEs are identified and documented. The future transition to ICD-11, with more precise clinical descriptions, may result in more congruent coding and counts of AEs.

Acknowledgements
We would like to thank all of our collaborators: Danielle A. Southern, Guosong Wu, Noopur Swadas, Hannah Qi, Jennifer Crotts, Olga Grosu, Chris King, Brittany Popowich, Shawn Xu and Hude Quan.

This study is part of a larger project funded by CIHR.

Figure 1: Document Authors

<table>
<thead>
<tr>
<th>Adverse Event</th>
<th>Medical Staff &amp; Medical Students</th>
<th>PNs/LPNs &amp; Nursing Students</th>
<th>Advanced Practice Nurses</th>
<th>Pharmacists &amp; Pharmacy Students</th>
<th>Other Allied Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure ulcer</td>
<td>4.8%</td>
<td>3.6%</td>
<td>4.9%</td>
<td>2.2%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Fall</td>
<td>62.5%</td>
<td>62.5%</td>
<td>21.3%</td>
<td>12.0%</td>
<td>64.2%</td>
</tr>
<tr>
<td>Acute Kidney Injury</td>
<td>6.9%</td>
<td>1.3%</td>
<td>6.9%</td>
<td>1.3%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Thromboembolic Event</td>
<td>4.9%</td>
<td>3.9%</td>
<td>4.9%</td>
<td>3.9%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Iatrogenic Pneumothorax</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>
ICD coding practices and guidelines vary across the world leading to variations in the quality of administrative hospital data collected. Previously, we developed indicators of Data Quality through a modified Delphi consensus panel. This study tested the global applicability of these indicators and developed a standardized scoring tool for assessing quality of data.

Using modified Delphi Consensus, we previously developed a set of 24 Data Quality Indicators (DQIs) based on the internationally recognized Information Quality Framework, consisting of 5 dimensions, from the Canadian Institute for Health Information (CIHI).

Objective:

To test global applicability of the 24 DQIs, and
Develop a standardized scoring tool for data quality assessment internationally.

Methods & Materials

- Testing global applicability of DQIs
- Environmental Scan
- Evaluated information available on Internet from Ministries of Health and other Health Information Management departments
- Administered online to health information management professionals recruited through snowball sampling
- Approached 51 countries.

- Development of Scoring Tool

  Step 1: Scoring of Indicators

<table>
<thead>
<tr>
<th>Indicator Type</th>
<th>Scoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qualitative</td>
<td>2 if indicator met, 0 if indicator not met</td>
</tr>
<tr>
<td>Quantitative</td>
<td>2 or 0 for % range 0-25% or 76-100% (depending on the indicator), 1 for % range 25-50% or 51-75%</td>
</tr>
</tbody>
</table>

  Step 2: Standardizing Scores

  We standardized the dimensions by scoring each dimension out of 4. With five dimensions, the total score was summed out of 20.

Table 1: Survey Responses from 15 countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Africa</th>
<th>North America</th>
<th>South America</th>
<th>Asia</th>
<th>Australasia</th>
<th>Europe</th>
<th>Spain</th>
<th>Norway</th>
<th>Sweden</th>
<th>Ireland</th>
<th>United Kingdom</th>
<th>Australia</th>
<th>South Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td>RELIABILITY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>Yes</td>
<td>No</td>
<td>Unsure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timeliness</td>
<td>Yes</td>
<td>No</td>
<td>Unsure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACCESSIBILITY</td>
<td>Yes</td>
<td>No</td>
<td>Unsure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLARITY</td>
<td>Yes</td>
<td>No</td>
<td>Unsure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DATA QUALITY</td>
<td>Yes</td>
<td>No</td>
<td>Unsure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Subset of the data showing sample of countries with standardized scores

<table>
<thead>
<tr>
<th>Country</th>
<th>Reference</th>
<th>Accuracy &amp; Reliability</th>
<th>Comprehensibility &amp; Coherence</th>
<th>Timeliness</th>
<th>Accessibility &amp; Clarity</th>
<th>Overall Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4</td>
<td>3.7</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>17.7</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>2.3</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>16.3</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>2.6</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>14.6</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>2.4</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>E</td>
<td>4</td>
<td>3.7</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>13.7</td>
</tr>
</tbody>
</table>

Note: Table 2 and Figure 2 show example of standardized scores of a subset of countries that completed survey.

Conclusions

The tool developed will be made available for organizations, governments, and researchers to evaluate and compare hospital-administrative data quality using the same standard across the countries. Measurable quality of ICD data promotes improved data collection practices and strengthens quality of research findings using ICD data.

Acknowledgements

We would like to thank all the team members who collaborated on this research project, as well as the international experts who completed the survey for their countries.
Abstract

The ICD-10 coding of French cause of death (CoD) data for 2018 and 2019 combines batch coding by the rule-based system expert IRIS/MUSE, predictions by deep learning algorithms, and manual coding targeted at records of particular interest. This paper presents the supervised learning approach retained, including its use in targeting records sent for manual coding, and evaluates its performance. Compared to a traditional coding campaign relying only on IRIS/MUSE batch coding and manual coding, the present campaign achieves 93.4% of accuracy for coding the underlying cause at the finest ICD-10 level and 95.5% at the European Short List level, with only 3% of manual coding.

Introduction

Causes of death (CoD) data are usually coded from death records (DR) by either humans or automated rule-based expert systems. The process can be quite time and resource consuming because expert systems may not be able to code a sufficient proportion of DRs and the implementation of underlying cause (UC) determination is complex. In France, in 2018 and 2019, 36% of DRs were not automatically coded by IRIS/MUSE and a traditional coding campaign could not be performed for these DRs. State-of-the-art deep learning algorithms are expected to perform well for coding tasks, and can be trained on previously labeled data. A novel approach to coding the uncoded DRs from these 2 years was developed based on AI predictions (32%) and manual coding, the latter targeting DRs of particular public health interest (AIDS, maternal and child deaths, panel, database for research) and those for which AI predictions have a low confidence index (3%). These CoD data and results are the final ones. They will be published in Sept. 2023. They update the preliminary ones published at the end of 2022.

Methods & Materials

Seq-to-seq transformers algorithms (k4, k5) are trained to translate the text written on the DR into a sequence of ICD codes and to predict a UC: 

$$\text{seq2seq} \rightarrow \text{ICD codes and UC prediction}$$

These models are trained using a BiLSTM (Bidirectional Long Short-Term Memory) structure. They also provide information for an individual confidence index, which is used to target DRs to be sent for manual coding. K4 and k5 differ only by their input/output sequences. K4 was used to generate preliminary data for 2018 and 2019, and k5 is an update that takes into account a new DR version from 2018 onwards. Hence, the k5 input sequence includes the manner of death for new version-based DRs. Its training set is larger (5,372,000 DRs between 2011 and 2021 vs 5,173,000).

A loop between AI and manual coding is the basis of the 3-method coding campaign (Fig2).

-Step1 - k4 predictions and their correctness at the individual level on the train set are used to estimate a confidence indicator conditional on individual characteristics. This confidence indicator is then used to target the DRs that can best be manually coded (targeted manual coding). These records are sent for manual coding with those targeted due to special public health interest.

-Step2 - training sets are updated with some of this additional manual coding, algorithms are retrained. There are 4 possible propositions for the UC: the two direct algorithm predictions (k4, k5), and the two propositions of IRIS/MUSE when applied to the multiple causes predicted by the models (iris4, iris5).

-Step3 - A classification model based on a BiLSTM (Bidirectional Long Short-Term Memory) structure is trained and used to identify only one UC among the 4 propositions. The input sequence of this latter model concatenates the UC at both the ICD-10 finest level and European short list level, the multiple causes predicted by k4 and k5, electronic/paper-back certificate, age, circumstances of death, output probabilities of the k4/k5 predicted UC for the two most likely codes, the number of multiple causes, and the count of equal propositions between k4, k5, iris4 and iris5.

Results

The performance of the 3-method coding campaign - which combines IRIS/MUSE batch, AI prediction and targeted manual coding - is assessed by evaluating the % of UC that match the observed UC on a test sample composed on selected records of 2016 to 2021 and representative of the overall population of death records (tab1). This test sample comes from already labeled records, is not used in algorithm training, and allows one to evaluate the effect of the additional targeted manual coding by targeting the records in question.

Conclusion

The final data for 2018 and 2019 were produced using the approach presented. The combination of the three coding methods, and in particular the targeting by AI of samples sent to human coders, appears to be effective. This illustrates how AI, automated and human coding methods are mutually enriching. However, limitations (risks of under- or over-estimation) appear for certain categories of ICD codes, with the advantage of being quantifiable. These limitations encourage us to increase the amount of targeted manual work that will be done for 2021 onwards. The transition to ICD 11 remains an open question.

Acknowledgements or Notes

-Reports on provisional and final 2018 and 2019 CoD data partly predicted by deep learning". French metadata on Eurostat website
-Châncet, Razakamanana, Coudin, Robert, "Les statistiques provisoires sur les causes de décès en 2018 et 2019, une nouvelle méthode de codage faisant appel à l'intelligence artificielle", FIC Méthode n°613, Poster Number 613, 2021
Inclusion of the International Classifications in a STEAM Enrichment Program for Secondary Students

Patricia Welch Saleeby, PhD, MSSA1 and Sophia Saleeby2
1Bradley University, USA, NYSCamp Alumni, Delegate from Pennsylvania
2Villanova University, USA, NYSCamp Alumni, Delegate from Missouri

Abstract
This poster describes an educational session focused on international classifications delivered within the National Youth Science Camp in the United States, a summer STEAM enrichment program for both American and international delegates. The objective was to introduce the WHO Family of International Classifications to the next generation of medical/health care providers, clinicians, and researchers.

General Overview
The National Youth Science Camp (NYSCamp) is a residential program focused on the areas of science, technology, engineering, arts, and mathematics (STEAM). The camp is supported by the National Youth Science Academy. Its mission is “to inspire lifelong engagement and ethical leadership in science, technology, engineering, mathematics, and the arts through its proven educational model for mentoring, challenging, and motivating students.” Medicine is one of the main professional fields of interest among participants in the program. The objective of these sessions was to introduce participants to the WHO Family of international Classifications.

NYSCamp Overview
Since 1963, the NYSCamp has taken place in the State of West Virginia at the Monongahela National Forest in the USA. The program is designed to “honor and challenge some of the nation’s rising leaders and provide them with opportunities to engage with STEAM professionals and participate in exciting outdoor activities.”

Up to two delegates are selected to attend camp from each state and the District of Columbia. The camp program has expanded to include international delegates in partnership with the U.S. State Department. Students have come from countries such as Argentina, Bolivia, Brazil, Canada, Chile, Costa Rica, Ecuador, Germany, Japan, Mexico, and Trinidad and Tobago.

There were 93 camp delegates this year from 44 US states, Washington DC, and 9 countries. Housing, meals, transportation, and supplies are provided to participants at no cost.

Camp educational sessions are offered in multiple formats including lectures, seminars, directed studies, panel discussions, tours, and skills sessions. This year there were over 60 presenters addressing diverse topics such as “Climate Study”, “Quantum Computing: the Math and the Code”, “Drone Use in Problem Solving”, and “Culturing Cells Remotely.”

This educational session was entitled “Getting to know the WHO international classifications for medicine and social care.” In 2022, it was held as a one hour virtual seminar due to the pandemic. This year in 2023, it was held as a 90 minute directed study over 3 consecutive days in person at camp.

Campers were given the opportunity to select their first choice for directed studies. Ten students were selected to participate in the directed study from among all campers who listed it as a choice. The directed study was limited to allow for greater interaction and critical discussion around clinical cases.

The first day of the directed study included an introduction of the facilitator and participants followed by an overview of the ICD/ICF/ICHI and how these classifications are used in health and social clinical care.

The second day involved detailed information about the ICF framework and classification. Short case examples were embedded to facilitate greater understanding of the content.

The third day covered available resources (including the ICF browser, Beginner’s Guide, ICF Checklist and WHO-DAS).

Campers were given a brief fictional case example as a small group exercise. They worked together to identify relevant ICD and ICF components using the slide materials and the ICF Checklist. Then campers used the ICF “red books” to identify associated codes. There was limited access to WIFI so campers were not able to use online resources. However, they were given links to access at a later time.

Acknowledgements
We would like to thank the current NYSCamp Director, Dr. Brian Kinhorn, as well as Assistant Directors, Kristin Fitzgerald Biondich and Kiona Meade. Special recognition to the entire NYSCamp Staff* who help make this experience memorable to all.

*Spelled intentionally due to the “infectious” nature of their staff.
**TELEPHONIC VERBAL AUTOPSY: A PILOT STUDY IN A DISTRICT HEALTH SYSTEM**

**Authors:** Natasha Kallis, Ian Neethling, Tracy Glass, Carmen Sant Fruchtmann and Pam Groenewald on behalf of TeleVA project team

**South African Medical Research Council, South Africa**

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**Abstract**

The quality of cause of death data is not optimal in South Africa, particularly amongst community-based deaths where medical records may not be available to certifiers. We investigated the use of telephonic verbal autopsy (teleVA) in a district health system in the context of the COVID-19 pandemic and reviewed electronic medical records where available to validate medical history and co-morbidities from the teleVA. Recruitment was challenging but the pilot suggests that teleVA can add robust identification of COD for community deaths with medical record reviews having limited value.

**Introduction**

- The COVID-19 pandemic highlighted the need for accurate and timely cause-of-death (COD) data to informing public health responses.
- In South Africa, the quality of COD data is suboptimal due to:
  - underreporting of HIV-related deaths
  - inaccurate injury mortality profiles
  - a high proportion of ill-defined causes
- About 45% of deaths occur outside health facilities, where medical records may not be available to certifiers.
- Long delays in processing COD data prevents timely public health responses.
- Bradshaw D et al.2020, demonstrated the feasibility of conducting verbal autopsies for a national sample of deaths in South Africa.
- The aim of this study was to pilot verbal autopsy within a district health system as a tool to collect cause of death information for out-of-facility deaths to enhance routine mortality surveillance.
- Lockdown regulations during the COVID-19 pandemic, required the use of telephonic verbal autopsy (teleVA) rather than face-to-face.

**Methods & Materials**

- Out-of-facility deaths were identified through various sources and contact details for next-of-kin were obtained.
- A convenience sample of 1570 adult decedents (≥18 yrs) was purposefully selected.
- Next-of-kin were contacted by trained VA interviewers to request an interview.
- Call logs were maintained to assess response rate.
- TeleVAs were conducted using the WHO2016 VA questionnaire with additional COVID-19 questions.
- Two independent clinicians reviewed each VA record and certified the cause of death (COD) according to WHO ICD guidelines.
- Where the COD differed, consensus was reached.
- The COD was coded using automated coding software (IRIS).
- Electronic medical records for study deaths were reviewed by clinicians to:
  - validate the medical history and co-morbidities reported in the VA
  - identify any additional information suggesting that the VA COD should be changed.
- Multimorbidity was compared between decedents who died from COVID-19 and those who died from non-COVID-19 causes.
- The proportion of valid VA responses between teleVA and NCODV face-to-face VAs to assess any differences in quality.
- High levels of multimorbidity were present in both COVID and non-COVID cases but COVID-19 cases were more likely to have diabetes as a co-morbidity (RR=1.87).
- The proportion of valid VA responses (Yes and No) in teleVA was similar to that of NCODV face-to-face VA, see Figure 1.
  - Correlation between the proportion of valid teleVA and NCODV VA responses is very high (r=0.9916).
  - The mean percentage of valid responses for face-to-face VA (57.8%) was statistically significantly higher than for teleVA (55.5%); t(378) = -4.7905; p < 0.001. This is unlikely to be clinically significant.

**Results**

- A total of 1347 next-of-kin out of 1570 were contacted resulting in 229 successful interviews (Response rate 17%).
- There were 125 females (54.6%), 103 were conducted using the WHO2016 VA in Bradshaw D et al.2020,
- The mean age was 60 years (Range: 19-98),
- A cause of death could be assigned to 96.9% (222/229) of the teleVA records.
- The assigned COD included COVID-19 (27%), HIV/AIDS (9%), diabetes mellitus (7%), stroke (7%), hypertensive disease (6.1%) and ischaemic heart disease (5.2%).
- Electronic medical records (eMR) were identified and reviewed for 185/229 of the decedents.
- 76% COD unchanged
- 18% COD changed due to additional clinical information in the eMR
- 5% difficult to differentiate between comorbidities to assign COD with certainty
- 2% it difficult to assign a COD with certainty due to conflicting/missing information in the teleVA, or an external cause involved.

**Conclusions**

- Whilst teleVA appeared to work well for producing cause of death information, however recruitment of next-of-kin was challenging. Prior community engagement would be essential before routine implementation of teleVA.
- This pilot study suggests that teleVA can add robust identification of COD for community deaths with medical record reviews having limited added value.

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  - Western Cape Department of Health
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  - GeoSpace

**References**

Abstract

The reform of medical insurance payment based on Diagnosis-Intervention Packet (DIP) and Diagnosis Related Groups (DRGs) is in full swing. The problems of imperfect diagnosis and treatment information, few dominant diseases, irregular clinical pathways, and low service value of TCM have become prominent contradictions in the reform of medical insurance payment of TCM. The International Classification of Health Interventions (ICHI) is a statistical system developed by the World Health Organization for operational coding, which aims to provide countries with a standard information platform for health intervention statistics and medical insurance payments. Its perfect classification system may provide an ideal intervention information platform for TCM medical insurance payment and also provide a reliable basis for the formulation of TCM clinical pathways and the calculation of TCM service value.

Introduction

On December 2021, the National Healthcare Security Administration and the National Administration of Traditional Chinese Medicine jointly issued a document pointing out that it is necessary to explore the implementation of Diagnosis-Intervention Packet (DIP) and Diagnosis Related Groups (DRGs) for TCM medical insurance payment. However, the problems of imperfect TCM diagnosis and treatment information system, non-standard clinical pathways and low value of TCM service have become crucial factors hindering the reform of TCM medical insurance payment. The International Classification of Health Interventions (ICHI) is a statistical system developed by the World Health Organization for operational coding, which is mainly composed of three axes: Target, Action and Means, and has an independent coding system. Together with the International Statistical Classification of Diseases (ICD), it serves the international health information statistics. The inclusion of TCM interventions in ICHI can redefine its connotation, not only generate statistical linkage of health information with ICD-11 TM model 1, improve international health diagnoses and intervention information, but also contribute to the construction of TCM diagnosis and treatment information platform for TCM medical insurance payment reform, the formulation of clinical pathways, and the calculation of TCM service value.

Situation of TCM medical payment

The clinical pathways are standardized disease treatment processes, which not only make medical activities more refined and precise, but also maximize the "cost saving and efficiency improvement" of DIP/DRG pre-payment system. However, it is difficult to implement in TCM causing the standardization of diagnosis and treatment under the guidance of the theory "Treatment based on the unified condition and "Treat according to time, place and person" for most internal diseases of TCM.

The Indistinct clinical pathways of TCM

The clinical pathways are standardized disease treatment processes, which not only make medical activities more refined and precise, but also maximize the "cost saving and efficiency improvement" of DIP/DRG pre-payment system. However, it is difficult to implement in TCM causing the standardization of diagnosis and treatment under the guidance of the theory "Treatment based on the unified condition and "Treat according to time, place and person" for most internal diseases of TCM.

The incomplete and disorganized TCM interventions in DRGs/DIP

Disease diagnosis and treatment coding are the foundation of DRGs/DIP, and the ninth Clinical Revision of the International Classification of Diseases (ICD-9-CM) is currently used in China. There are only 201 TCM interventions (almost therapeutic operation), most of which are manipulative operation items such as acupuncture and massage. The intervention information is incomplete and disorganized, and clinicians have no actual means of categorization, resulting in difficulties in obtaining relevant statistical information of TCM hospitals, which directly affects whether TCM can carry out DRGs/DIP payment reform.

The value of TCM interventions is underestimated

According to the current national medical service pricing system, the pricing method of medical service in China mainly focuses on equipment and consumables, which fails to reflect the value of professional services such as human medical and professional technology.

Implications of the ICHI for TCM medical insurance payment

Improving the joint establishment of ICD-ICHI for TCM

ICHI is closely related to ICD in the methodology, which the target of ICHI is similar to the disease position of ICD. The tri-axial structure of the classification provides a common model for thinking about and describing all types of health interventions. Applying the tri-axial structure to the TCM interventions can redefine the core connotation of TCM interventions, which not only improves joint establishment of the ICD-TCM and ICHI-TCM, but also provides the intervention information basis for TCM medical insurance payment.

Supporting the establishment of clinical pathways

As an international standard that can function as a common language and framework for communication and data capture, ICHI can provide a set of standards, with a comprehensive information and clear classification for the selection of advantageous diseases. Apart from this, the tri-axial structure in ICHI also fit in DRGs. Patients within DRGs can be classified into different groups according to different complications and disease degree. The additional target of the extension code in ICHI can be used to target groups with complications. The different actions can also reflect the degree of disease severity.

For example, "Excision, total (JK)" is much more severe than "Excision, local (JI) " in the complexity of the operation. This classification characteristic of ICHI is consistent with the formulation of clinical pathways in DRGs.

Measuring the value of TCM interventions

The three axes in ICHI can directly reflect the technical difficulty and risk of diagnosis and treatment.

In Target, there are singular Target and multiple Targets, and the operation of multiple Targets are more difficult and risky. For example, "excision, hysterectomy and "cholecystectomy", the former is more complicated. Action can directly reflect the difficulty of the operation, such as "Excision", "Acupuncture", or singular Action and multiple Actions can also reflect the complexity of the operation. Means are divided into approaches and technologies, the "Open approach" and " Percutaneous" in the approach, and the difference in the use of ultrasound and nuclear magnetic technology are all key factors that determine the technical difficulty and risk degree of the operation. By redefining TCM intervention according to the three axes of Target, Action and Means, and comprehensively evaluating the technical difficulty and risk coefficient of the three axes, it is helpful to divide the technical content and risk degree of TCM service, and provide a basis for evaluating the value of TCM service.

Conclusions

At this stage, DIP/DRGs has become the general trend of medical insurance payment reform in China. Traditional Chinese medicine is facing great challenges. The reasons for this are, on the one hand, the difficulties of standardizing clinical pathways, and on the other hand, the lack of treatment information for medical insurance payments. Some experts and scholars continue to propose strengthening the medical insurance payment policy to tilt toward TCM, and to implement the budget management policy of the medical insurance fund. More importantly, TCM needs to gradually clarify the clinical pathways and improve the diagnosis and treatment information. As an international standard that can function as a common language and framework for communication, ICHI is an important tool for health intervention statistics. The inclusion of TCM interventions in ICHI will endow TCM interventions with new connotations from the international perspective, which is more important to improve the TCM intervention information platform and jointly serve health information statistics and TCM. At the same time, it also provides a set of standards for the formulation of TCM clinical pathways so that the value accounting of TCM interventions can be followed.
Design and deployment of a tool for ICD-10 coding of referrals using natural language processing

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Abstract
The disease coding task involves assigning a unique identifier from a controlled vocabulary to each disease mentioned in a clinical document. The manual coding process is subject to errors as it requires medical personnel to be competent in coding rules and terminology. These difficulties can be addressed by developing computational systems that automatically assign ICD codes to diagnoses.

Introduction
The clinical text represents a significant proportion of patient’s health records, commonly found in a non-structured format. These texts have challenges due to the extensive use of abbreviations, the variability of clinical language across medical specialties, and its restricted availability for privacy reasons. Clinical coding involves mapping medical texts into codes using a controlled vocabulary consistent across different departments, hospitals, or even countries. The WHO International Classification of Diseases (ICD), which is used in almost every country, currently is the most widely used revision that is the tenth (ICD-10). The Clinical Coding System (SIGTE, in Spanish) contains electronic records of referrals from the Chilean Waiting List, which is the system that manages the high demand existing for consultation by specialists. This data provided by 29 health services contains information about the medical diagnoses of patients but is not standardized.

In this work, we developed an automated disease coding system, thus being able to code the entire waiting list in Chile.

Methods & Materials
To facilitate the coding, a two-step automated coding tool was developed in collaboration between academia and the government. In fact, within the text, we first detect the disease mentions using named entity recognition, a classical task of clinical natural language processing. Secondly, a search engine system based on elastic search finds the ICD-10 code that better matches the ICD-10 code description while considering the multiple ways a disease can be written.

The Chilean Waiting List comprises 25,374,491 referrals, divided into five categories: 18,716,629 correspond to New Specialty Consultations (CNE) type referrals, what was analyzed. For the analysis of the diagnoses present in the referrals, two free-text attributes representing medical diagnoses are considered: diagnostic suspicion and diagnostic confirmation.

Table 1: Specialities with a perfect MAP score.

<table>
<thead>
<tr>
<th>Specialty</th>
<th>MAP</th>
<th>Freq.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurology</td>
<td>0.68</td>
<td>210</td>
</tr>
<tr>
<td>Immunology</td>
<td>0.67</td>
<td>84</td>
</tr>
<tr>
<td>Genetics</td>
<td>0.60</td>
<td>93</td>
</tr>
<tr>
<td>Pediatric Gastroenterology</td>
<td>0.58</td>
<td>84</td>
</tr>
<tr>
<td>Cardiothoracic Surgery</td>
<td>0.53</td>
<td>84</td>
</tr>
<tr>
<td>Radiation therapy</td>
<td>0.50</td>
<td>84</td>
</tr>
<tr>
<td>Pediatric Family Medicine</td>
<td>0.46</td>
<td>84</td>
</tr>
<tr>
<td>Hematology</td>
<td>0.42</td>
<td>118</td>
</tr>
<tr>
<td>Diabetology</td>
<td>0.36</td>
<td>101</td>
</tr>
<tr>
<td>Pediatric Traumatology</td>
<td>0.29</td>
<td>93</td>
</tr>
</tbody>
</table>

Table 2: Top 10 worst scores according to the specialties

<table>
<thead>
<tr>
<th>Specialty</th>
<th>MAP</th>
<th>Freq.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermatology</td>
<td>0.52</td>
<td>84</td>
</tr>
<tr>
<td>Gastroenterology</td>
<td>0.51</td>
<td>84</td>
</tr>
<tr>
<td>Nephrology</td>
<td>0.50</td>
<td>84</td>
</tr>
<tr>
<td>Gynecology</td>
<td>0.49</td>
<td>84</td>
</tr>
<tr>
<td>Otolaryngology</td>
<td>0.48</td>
<td>84</td>
</tr>
<tr>
<td>Hepatology</td>
<td>0.47</td>
<td>84</td>
</tr>
<tr>
<td>Neurology</td>
<td>0.46</td>
<td>84</td>
</tr>
<tr>
<td>Psychiatry</td>
<td>0.45</td>
<td>84</td>
</tr>
<tr>
<td>Cardiology</td>
<td>0.44</td>
<td>84</td>
</tr>
<tr>
<td>Radiation therapy</td>
<td>0.43</td>
<td>84</td>
</tr>
</tbody>
</table>

The Mean Average Precision (MAP) metric is used to evaluate the performance of our coding system. It was computed the MAP metric over the test set at the category (e.g. K02) and subcategory (e.g. K02.2) levels. A MAP of 0.83 for the category and 0.63 for the subcategory level was achieved.

In this work, a nationwide system to improve the management of the Chilean public healthcare system was created. Specifically, the challenge of creating an automated system to code the diseases present in the Chilean Waiting List referrals was addressed. A model based on two steps: a NER model to recognize disease mentions and a search engine based on Elasticsearch to assign the codes to each disease was developed and validated. This mapping system was enriched with several terminology resources used in real life by manual coders to assign codes, thus partially simulating the pipeline followed by these professionals when solving this task.

The system allowed to assign codes to 76% of the 18,716,629 referrals, thus demonstrating its efficiency and effectiveness. The performance obtained in the experiments was 0.83 according to the MAP score, which is close to the most advanced systems currently in the coding task. The model was deployed into production in the Department of Health Statistics and Information Systems of the Ministry of Health of Chile.

We also acknowledge Daily Piedra and Marcela Carmona for their work on annotating and coding the test dataset.

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Understanding the changes in causes of deaths before and after COVID-19 may guide for future pandemics. The purpose of this study is to explore the changes in the reasons for adult deaths in Bangladesh during the pre- (2018 and 2019), during- (2020 and 2021), and post- COVID-19 periods (2022) in rural and urban context. Cause specific mortality rate per 100,000 population was reported. The major cause of adult mortality in rural area was stroke (112.5; CI: 104.4-120.6) before COVID, and acute cardiac disease was during (119.2; CI: 110.7-127.7) and Post COVID (142.3; CI:125.4-159.1). In urban Dhaka, the acute cardiac disease was the leading cause before COVID (114.7; CI: 104.7-124.7), during COVID (176.9; CI: 161.2-192.7) and post COVID (173.2; CI: 157.4-188.9). We observed higher cause specific mortality rates for these causes during pandemic in Dhaka, compared to pre-pandemic period.

In February 2021, a household survey was conducted in Sitakundu, a rural subdistrict of Bangladesh, followed by a second survey on the same sample in May 2023. In December of 2022, another survey was conducted in Dhaka, the capital city of Bangladesh. We utilised WHO standard verbal autopsy (2016) version 1.5.3 tool in 2021 and the WHO standard verbal autopsy (2022) tool in surveys conducted in 2022 and 2023. InsilicoVA algorithm was used to designate causes of death. In our analysis, we included 3,361 adult (18 years or above) deaths (1849 from Sitakundu and 1512 from Dhaka) that occurred between January 2018 and December 2022. The causes of death were reported using descriptive statistics, including the cause-specific mortality rate (CSMR) per 100,000 population with 95% confidence intervals (CI).

In the urban area, cardiac disease was the leading cause before COVID (114.7; CI: 104.7-124.7), during COVID (176.9; CI: 161.2-192.7) and post COVID (173.2; CI: 157.4-188.9) followed by acute respiratory infection in each time period (Chart 4). Overall, we observed higher cause specific mortality rates for these causes during pandemic in Dhaka, compared to pre-pandemic period and it decreased slightly afterwards.

The major causes remained similar across the region and over the period. However, the mortality rates were higher after COVID-19 onset. All these causes of deaths may have been associated with COVID-19. We recommend region-specific interventions focusing on effective respiratory infection control measures.

We are grateful to Bill and Melinda Gates Foundation for funding this study. We would like to express our sincere gratitude to the hardworking field staff as well as the participants in the study for their assistance and dedication throughout the survey.
Child mortality in Bangladesh before and after COVID-19 – findings from sub-national level surveys using verbal autopsy


Abstract

Understanding the impact of COVID-19 on mortality is paramount to provide policymakers with insights for effective decision making in future pandemics. Using verbal autopsy in household surveys conducted in both rural and urban settings, this study intends to evaluate changes in the primary causes of childhood death in Bangladesh across the pre- (2018 and 2019), during- (2020 and 2021), and post-COVID-19 periods (2022). We reported cause specific mortality rate per 100,000 population. The major cause of child mortality in rural area before COVID was prematurity (20.5; CI: 18.6-22.5), during COVID was birth asphyxia (21.8; CI: 19.2-24.5), and acute respiratory infection (40.3; CI: 30.5-50.1) in post-pandemic period. In urban Dhaka, the acute respiratory disease was the leading cause before COVID (24.4; CI: 20.6-28.2) and post COVID (56.9; CI: 45.3-68.5) and birth asphyxia during COVID (42; CI: 35.1-48.9).

Introduction

COVID-19 had fatal impacts on many people’s lives. It is important to understand the impact of COVID-19 on mortality to guide the policy makers for future pandemics. Evidence on child mortality including adolescents is scant in Bangladesh. This study aims to assess the changes in the leading causes of childhood deaths in the pre- (2018 and 2019), during- (2020 and 2021) and post-COVID-19 periods (2022) in Bangladesh using household surveys conducted in both rural and urban settings.

Methods & Materials

A household survey was conducted at Sitakundu, a rural sub-distict of Bangladesh in February, 2021 and a follow-on survey on same sample in May, 2023. Another survey was undertaken at Dhaka, capital city of Bangladesh in December, 2022. We used adapted tool from the WHO standard verbal autopsy (2016) version 1.5.3 tool in 2021 and WHO standard verbal autopsy (2022) tool in the surveys conducted in 2022 and 2023. Causes of death were assigned to each death using InsilicoVA algorithm. We included 451 child (0 to 18 years) deaths (208 from Sitakundu and 243 from Dhaka) in our analysis occurred between January, 2018 to December, 2022. Causes of death were reported using descriptive statistics includes cause-specific mortality rate (CSMR) per 100,000 population with 95% confidence intervals (CI). We present the top three causes in post-COVID period for demonstrating changes in graphs.

Results

The cause-specific mortality rate for acute respiratory infections increased almost 4-fold in post-COVID-19 period (9; CI: 6.3-11.6 in 2020-21 and 40.3; CI: 30.5-50.1 in 2022) (Chart 1). The major cause of death was birth asphyxia during COVID-19 (21.8; CI 19.2-24.5), had increased CSMR post-COVID (30.2; CI 20.5-40).

Conclusions

These findings contribute in understanding the causes of child mortality pre and post COVID context, and provide policymakers with evidence to develop targeted strategies and interventions aimed at reducing child mortality rates addressing specific risk factors in Bangladesh.

Acknowledgements or Notes

We are grateful to Bill and Melinda Gates Foundation for funding this study.
Central Bureau of health intelligence (CBHI), Ministry of health and Family Welfare(MoHFW), Government of India and WHO India undertook an assessment in selective facilities in the two states of India namely Haryana and Chhattisgarh to develop an understanding of the current challenges and enablers for the implementation of the WHO-FIC.

To enable availability of standardised data across all the member states, WHO has developed a classification system to standardise morbidity, mortality, disability, and health intervention data which is collectively known as WHO Family of International classification (WHO FIC). The assessment of WHO FIC (ICD, ICF, ICHI) was conducted in 10 primary, secondary and tertiary care health facilities in two selected districts, one each located in the states of Haryana and Chhattisgarh from 15 January 2021 to 15 November 2021 to understand the enablers and barriers for strengthening coverage and quality of FIC implementation in India.

The two states were selected based on the variation in business processes and performance of Civil Registration and Vital Statistics. The district in each state was selected based on the availability of at least one public and one private medical college in the district. One medical college, District Hospital (DH), Community Health Centre (CHC) and the (Primary Health Centres (PHC) were randomly selected in the identified district. The quantitative and qualitative assessment was conducted under four domains-existing operational mechanisms, quality and utilization coded data, and the overall preparedness.

To understand the existing operational mechanisms, a process map was developed for patients at each health facility, tracking the generation, processing and eventual closure of the case records in the health facility. Functional aspects of medical record maintenance, data coding and classification, and data submission to district, state and national level health management information systems were also assessed. Samples of medical certificates of cause of death (MCCD) and patient discharge summaries from each facility were evaluated for completeness of information, and availability and quality of ICD coding, according to standard criteria. Data utilisation was assessed through reviewing the use of coded data within annual national reports of the MCCD scheme as well as from the annual National Health Profile, among others. Preparedness was essentially evaluated from the responses to survey questionnaires as well as the key informant interviews conducted with health personnel, managers and administrators, and the observational assessments done at different health facilities.

1. Operational mechanisms- all facilities had a functional process for patient record generation and management for both outpatients as well as admitted cases, and data were being processed. However, it was observed that ICD coding of diagnoses was being done only for inpatient records and discharge summaries at medical colleges.

2. Data Quality- ICD codes were assigned for morbidity and mortality at medical colleges however, no codes for morbidity were assigned at DH, CHC and PHC due to lack of dedicated medical record section(MRD). The ICD codes for deaths reported from DH, CHC and PHC were assigned at the registrar’s office . The assessment of MCCD forms also revealed various lacunae in quality. Capturing mode of dying and incorrect sequences of causes in MCCD forms were the common identified errors.

3. Data Utilization- At the institutional level, only few departments in medical colleges (e.g. psychiatry, oncology) were directly using outpatient or inpatient data coded to the ICD for management and research purposes. The mortality data generated in national annual reports was used for policy, planning and monitoring SDG.

4. Preparedness- Several primary and secondary health care facilities were not equipped with dedicated MRD. At the tertiary level, there were gaps in the staffing of MRDs, and the staff did not possess adequate qualifications or training to perform the required functions. Further, health staff had limited awareness of WHO FIC, restricted at the most to some rudimentary knowledge of the ICD. It was encouraging to observe that the Ayushman Bharat PMJAY scheme has initiated ICHI with a long term vision of using this information as part of its transition to DRG.

As per the overall assessment, it is apparent that there is a need for substantial intervention to strengthen various aspects of the health information management process in health facilities at all levels, but particularly among peripheral facilities to enable WHO FIC implementation. ICD Classification is used for mortality recording for all deaths but coverage of morbidity coding is low especially in out patient care. ICF classification is not in use in routine health system. ICHI use has been started in Ayushman Bharat PMJAY scheme which delivers secondary and tertiary care inpatient services to the enrolled beneficiaries.

Acknowledgements
1. DGHS, Government of India, Haryana and Chhattisgarh
2. Field survey units of CBHI
3. Staff of all the selected facilities
ICD Mortality Rule Digitalization: A summary of the Mortality Rule Digitalization taskforce’s work

Authors: Robert Jakob, Carine Alsokhn, Eva Krpelenova, Fatmire Shala, Classifications and Terminologies Unit, WHO/HQ

Abstract This poster abstract provides an overview of the work conducted by the Mortality Rule Digitalization MRD taskforce between June 2022 and October 2023. The MRD taskforce was created to convert the textual descriptions of the ICD mortality rules into a digital knowledgebase that can be processed by the algorithm described in the reference guide.

Introduction
Cause of death information is one of the primary applications of ICD-11 and converting the ICD mortality rules into a digital format is a key component of the WHO digital end-to-end solution for mortality reporting.

WHO is spearheading an initiative to digitize the ICD mortality coding rules, in order to better support countries in implementing and scaling-up ICD-11.

Historically, the ICD-10 mortality rules comprised text-based epidemiological instructions for determining a single underlying cause of death. These guidelines outlined permissible sequences of diseases and conditions, as well as when the identified cause could be adjusted to provide more pertinent public health data. Additionally, they included tables and codes that were either suitable or unsuitable for selecting and reporting the underlying cause of death.

The conversion of these text-based instructions into software-processable rules necessitates several clarifications and the formulation of computational rules that will address poor death certification and pinpoint the conditions that serve as crucial starting points for public health prevention or mitigation efforts.

MRD Taskforce
Members of the taskforce consists of medical experts, Statisticians, Classifications experts, Coding experts, and WHO classification and terminologies team.

The taskforce aims to achieve the following objectives: harmonize the understanding and digital conversion of mortality rules, aid in developing the technical descriptions and interpretations of the rules, addressing any obstacles encountered during the transition, and assisting the WHO in testing the results of rule and algorithm applications.

Proposals
The MRD taskforce submitted 76 proposals for review and approval by the Mortality Reference Group (MRG) and then by the Classification and Statistics Advisory Committee (CSAC). These proposals aimed to provide clarifications on mortality coding instructions, particularly focusing on the steps followed to select the underlying cause of death. The suggestions also included updates to the ICD-11 Foundation and/or Mortality & Morbidity Statistics linearization (MMS), as well as proposals related to maternal and perinatal mortality, special instructions and the selection of the underlying cause of death for external causes.

Methods & workplan
WHO hosted several mortality rules digitalization workshops to clarify and further refine the ICD mortality rules (30-31 August 2022, 5-7 December 2022, 27 February to 1 March 2023, 18-20 September 2023). The taskforce also addressed user and country feedback. The clarifications were submitted as proposals on the online Reference Guide proposal platform.

Output
Drawing on the expertise of countries with existing electronic rule processing systems, the WHO developed the Digital Open Rules Set (DORIS) to ensure a uniform, epidemiological interpretation of the rules.

A universally compatible digital knowledgebase for algorithms, ensuring consistent and accurate application and interpretation of rules across various cause of death selection software. Essential clarifications to the current ICD-11 Reference guide by providing more specific instructions for enhanced comprehension.

Collaboration
A project collaboration agreement is under development between WHO and Iris Institute for further development and refinement of the digitized ICD mortality coding rules.

Acknowledgements
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➢ Patricia Wood (WHO-FIC Collaborating centre in Canada)
➢ Sarka Dankova (WHO-FIC Collaborating centre in Czechia)
➢ Zina Hebbache (WHO-FIC Collaborating centre in France)
➢ Kaori Nakayama (WHO-FIC Collaborating centre in Japan)
➢ Luis-Manuel Torres (WHO-FIC Collaborating centre in Mexico)
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➢ Pamela Groenewald (WHO-FIC Collaborating centre in South Africa)
➢ Myer Glickman (WHO-FIC Collaborating centre in the United Kingdom)
➢ Donna Hoyert (WHO-FIC Collaborating centre in United States)
➢ Mihai Horia Popescu (University of Udine)
Lessons in mapping KCD-8 to ICD-10

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Abstract

We created KCD-8 (the Korean modification of ICD-10) to ICD-10 mapping table as an intermediate step to map to ICD-11. 15,254 KCD-8 terminal items were semantically mapped to ICD-10, while 2,670 KCD-8 items were remain unmapped. All the unmapped items in KCD-8 were items modified in Korea. We found some logical errors in KCD-8 which hindered mapping KCD-8 to ICD-10. The logical issues found in the study is specific to Korea. However, such errors need to be checked in any national modifications for the successful introduction of ICD-11.

Introduction

International Classification of Diseases, 11th edition (ICD-11) is significantly improved from the previous version in structure, content, framework and usage. Therefore, systematic preparation is necessary to introduce ICD-11. The Korean Standard Classification of Diseases 8th edition (KCD-8) is the Korean modification of ICD-10 and used for billing and statistics. WHO-FIC Korean Collaborating Center had a conclusion that the KCD-8 to ICD-11 mapping table is essential from a focus group interview about introducing ICD-11 in 2021. As a preliminary step to create the KCD-8 to ICD-11 mapping table, we tried to build the KCD-8 to ICD-10 mapping table.

Results

<table>
<thead>
<tr>
<th>Mapping Availability</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea-Modification</td>
<td>15,254</td>
</tr>
<tr>
<td>Items (X)</td>
<td></td>
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<tr>
<td>Mapping Unavailable</td>
<td>2,670</td>
</tr>
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<td>Korea-Modification</td>
<td></td>
</tr>
<tr>
<td>Items (O)</td>
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</tbody>
</table>

Chart 1: Mapping availability of KCD-8 to ICD-10
15,254 KCD-8 codes could be semantically identically mapped to ICD-10, and 2,670 KCD-8 codes could not be mapped.
2,670 KCD-8 codes that were impossible to semantically identically map to ICD-10 codes were all Korea-modification items. As the Korea-modification items are subdivided from existing ICD-10 codes to suit Korean circumstances, there are no codes with the same meaning in ICD-10.

Discussion

Logical errors were found in some of the Korea-modification items. The inappropriate subcategories had bad effects on the integrity of KCD-8 and make it difficult to mapping to ICD-11.
Errors arising from the misunderstanding dagger(†) and asterisk(*) system were prominent. First, 24 Korea-modification items include the contents of both the dagger and asterisk codes. Because the contents of two ICD-10 codes were precoordinated as a KCD-8 code, mapping from KCD-8 codes to ICD-10 codes was impossible.
Second, the 60 Korea-modification items were not segmented based on the original code. These codes are segmented based on the codes used together with the original code. As the roles of the dagger and the asterisk system were mixed and invade each other's content, mapping from KCD-8 codes to ICD-10 codes was difficult.
The 76 Korea-modification items inherited the title from the original items. So, the titles of the code before segmentation and the code after segmentation are the same.
Because of this, a logical error occurs where these titles become both a parent and a child of themselves. Therefore, accurate mapping from KCD-8 codes to ICD-10 codes is impossible.
The way of representing laterality in KCD-8 differs within and between chapters. 277 chapter items in KCD-8 had inconsistent laterality expressions in 6 chapters. There were five types of laterality expression. The most frequent laterality expression were three elements: "Right", "Left", and "unilateral, unspecified". Bilateral was not found in some categories.

Methods & Materials

There are a total of 54,148 items in the KCD-8 master file. Of these, 32,554 items that are not titles were excluded from the mapping. 242 items for special purposes (codes in U00-U99) were also excluded. 3,428 non-leaf codes are not for actual use in clinical settings and excluded. The 17,924 items were finally selected for the mapping.
The selected KCD-8 items were mapped 1:1 to semantically identical ICD-10 codes. One researcher manually mapped them to ICD-10. Afterwards, another researcher independently reviewed it. In case of disagreement, agreement was reached through discussion. Selected KCD-8 Codes were classified into two categories: those that could be semantically identically mapped and those that could not.

Conclusions

We mapped KCD-8 to ICD-10 and found logical errors in Korea-modification items. These logical errors pose difficulty in mapping KCD-8 to ICD-10 and might cause other difficulties when connecting KCD-8 with ICD-11. The logical errors in KCD-8 should be corrected before the mapping from ICD-8 to ICD-11. The logical issues found in the study is specific to Korea. However, such errors need to be checked in any national modifications for the successful introduction of ICD-11.

Acknowledgements or Notes

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