WHO-FIC 2022 ANNUAL MEETING
POSTER BOOKLET

17 - 21 October 2022

Classifications and Terminologies Unit
## Poster Submissions & Topics

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WHO-FIC 2022
WHO-FIC Poster Booklet

Chapter 1 – Committees and Reference Groups Annual Report
Abstract

This poster presents the purpose and main activities of the Classification and Statistics Advisory Committee (CSAC) and presents a preliminary report of the work of the Committee during 2021-2022.

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 Marie Cuenot (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 e-mail, conference calls and meetings, including during the WHO-FIC Network annual meeting. Activities of the CSAC 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 virtually over three days in March to discuss the proposals for the 2022 voting rounds. 80 proposals were reviewed, with the majority going to the CSAC for voting. Most had recommendations for acceptance or rejection; only some were put to the CSAC for broader discussion without a recommendation. The outcomes of the SG are in Table 1.

ICD-11 updates 2021

99 proposals were considered by the CSAC-ICD in 2021. After voting rounds and the annual meeting, 57 proposals were accepted (7 with modification), 12 were rejected, and 15 referred to WHO (for technical editorial changes, implementation or further discussion). At the conclusion of the annual meeting, there were four unresolved proposals. An additional session was held with the voting members in November 2021 where these proposals were resolved. See Table 2 for the full 2021 voting results.

ICD-11 updates 2022

61 proposals were referred to CSAC by the Small Group for round 1 voting in 2022. Voting round 1 opened on 11 April with a virtual information session and proposal documents provided. Round 1 ended on 17 June. A number of questions were posed by voting members which were addressed for consideration in Round 2. Round 2 opened on 4 July. Although still 61 proposals for consideration, there was one new proposal added and one proposal removed (referred back to MSAC). Round 2 is due to close on 4 September. Any unresolved proposals after closure of Round 2 will be discussed by voting members at the Annual Meeting.

ICF

2021, a transition year: no ICF update cycle

The year 2021 was a transition year. ICF was moved to a new Maintenance platform (Figure 1) and thus no discussion and voting on ICF update proposals occurred.

Triage work for ICF update cycle 2022

Triage work on 9 proposals submitted in 2022 on the ICF platform was conducted by the CSAC ICF co-chair and Secretariat together with WHO. Starting from March 2022, they met virtually several times to discuss new proposals and provide recommendations for authors and CSAC ICF members.

Some issues regarding ICF update cycle

During triage work some problems emerged:
- need to have more ICF expertise in the MSAC so that clinical/functioning advice is needed in relation to ICF proposals MSAC can be consulted
- need to have an updated ICF version in the new platform (incorporation of approved updates 2018 onwards)
- need to integrate existing document on update process with examples for ICF and with some guidance on how to submit good proposals and what to keep in mind when reviewing proposals

Work with other groups or committees

During the year, the CSAC-ICF Co-Chair and secretariat participated in some teleconferences with FDRG to inform FDRG members on ICF updates and platform and to discuss ICF and V chapter of ICD-11 and classifications alignment.

Acknowledgements

The achievements of the Committee are made possible by the generous efforts of CSAC members and relative institutions. Special thanks to the CSAC-ICD Small Group for its consideration and advice.

References

Introduction

The MSAC was launched at the ICD Revision Conference in 2016 and is comprised of 19 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 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 virtually during the annual WHO-FIC Network meeting in 2021. During the period between November 2021 and September 2022, the MSAC met 10 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.

Other issues discussed

The MSAC reviews proposal 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 for the review. The introduction of a consent agenda has facilitated an effective proposal reviewing process.

Methods

The MSAC met virtually during the annual WHO-FIC Network meeting in 2021. During the period between November 2021 and September 2022, the MSAC met 10 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.

Other issues discussed

- Genomics in ICD-11

The topic of inclusion of genomics in the ICD-11 was discussed, with consideration to available coding and classification systems. MSAC members agreed that the formulation of use cases will guide the inclusion of genomics, and thus are in the process of reaching out to related experts to seek for further information around.

- Tumour stages and staging

In addition, how best to include tumour stages and staging in ICD-11 were also discussed. At present, MSAC concluded that keeping stages for cancer aligned to the TNM staging is a reasonable solution.

- Sanctioning rules

Furthermore, views on postcoordination on whether only pre-determined postcoordination is allowed or whether all meaningful postcoordination is allowed, were shared. MSAC would like to continue discussing these topics in the coming meetings, as they are essential for quality ICD-11.

Figure 1. Process flowchart of proposals addressed through MSAC

Abstract

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.

Conclusion

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

MSAC members are thanked for their valuable contributions to the ongoing development and maintenance of the ICD-11.
**Introduction**

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 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 2021 - 2022 report of the Education and Implementation Committee (EIC).

**EIC MEETINGS**

Since the annual meeting in October 2021, a mid-year meeting was held to advance the 2022 Strategic Work Plan. It took place in a hybrid in-person/virtual mode during May 3-4, with joint sessions with MbRG and FDRG, and was hosted by the Czech Collaborating Centre.

The session with MbRG focused on the presentation and discussion of a proposal for establishing an Implementation Forum.

During the EIC session, Islam Ibrahim (Kuwait Ministry of Health) presented an outline with an approach for the development of the curricula for module Fundamentals 02: Basic coding with ICD-11 coding tool.

This will be reviewed by EIC when finalized. The last session had two presentations:

Michaela Coenen (Germany) presented on the Functioning Assessment and documentation with WHODAS 2.0, and Masahiko Mukaino (Japan) presented on Functioning Assessment and documentation for the WHO Academy, specifically around Clinical documentation. It was agreed to establish a repository of exercises for WHO Academy, specifically for Chapter V, and the development of the curricula for the ICD-11 Module In-depth 10: Functioning Assessment.

**Conclusions**

The EIC made progress in fulfilling the tasks foreseen in the SWP 01. As part of its workplan, the EIC will continue to support WHO, in the development and implementation of the WHO Academy courses.

The development of iMINT will increase knowledge on the state of progress in the implementation of the Family of International Classifications. On the other hand, the launching of the Forum is considered a fundamental tool for the exchange of experiences among countries.

The EIC website is routinely updated with new content and can be found at https://hscic.kahootz.com/WHO_FIC_EIC/groupHome.

**Acknowledgements**

The authors would like to acknowledge EIC members for their contributions and discussions throughout the year. Special thanks to Katy Park (NHS Digital), for her collaboration and work on developing the Implementation Forum platform.
FDC ANNUAL REPORT
OCT 2021 - OCT 2022
1Soraya Maart, 2Coen H. van Gool, 2Ann-Helene Almborg
1FDC secretariat, 2FDC Co-Chairs

Abstract: The Family 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 has 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 2021 to October 2022. The activities are related to supporting the completion of ICHI, content alignment and harmonization across the classifications, finalization of the mapping of the UHC core health indicators to the reference classifications and development of terms of reference related to the use of terminologies within WHO-FIC.

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 FDC 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 Classifications 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 oversee the formulation of terms of reference on integrating terminologies into the WHO-FIC.

Methods & Materials
The activities have been developed through three modalities:
• Teleconferences among co-chairs and secretariat and WHO.
• Mid-year hybrid meeting held in Prague 5 May 2022.
• Dedicated small working groups and meetings with these working groups.

SWP 1 Finalising of ICHI
Work has continued towards the finalization of ICHI for implementation. Ten countries and WHO Rehabilitation Program have contributed in the Functioning review. The result from the review showed that functioning interventions are well covered in ICHI. The review resulted in added new stem codes and inclusion terms to further enrich ICHI content. The results also show the importance of having good knowledge about the ICHI Reference Guide to understand the structure of ICHI and its content (separate poster).

About 1400 interventions have been included as a result of the mapping work conducted in 2021 on the WHO draft document about guidance in health and environment. Country specific training workshops have also provided content enhancement.
An ICHI Coding tool has been developed to help search for stem codes using keywords. Work still continues on further searching capabilities in both the browser and ICHI Coding tool (separate poster ICHI 2022). Ongoing work includes the consultation with member states for the review of public health interventions.
A last part of this work area is the intended use of the ICHI interventions to support a WHO grouper for use in case-mix systems.

SWP 2 Content Alignment and Harmonisation
The overall aim of this work is to align and harmonize the content in the Foundation to promote semantic consistency and interoperability. Four case studies have been conducted. The first case study was to map ICF body structure entities to ICD-11 anatomical extension codes by using newly developed software (separate poster). The other three case studies were to show and identify what is needed to be done in further work to harmonize the content for laterality and relational entities. See poster on family relationships and pain. These efforts to harmonize entities from the three WHO-FIC reference classifications have raised some issues e.g., how much resources are available for the work, how to reorganize the committees and reference groups to evaluate and approve changes in the WHO-FIC Foundation, and what goals to pursue for the work (separate poster).
Next steps: to describe use cases, to continue describing the methods and principles for content alignment and harmonization, and to map additional areas e.g., ICHI anatomical targets and ICD-11 anatomical extension codes.

SWP 3 UHC Mapping
The mapping of the three WHO-FIC reference classification code ranges as well as the detailed individual codes, where appropriate, will serve member countries well in their preferred use of the work for tracking and measuring the 100 core health indicators and health-related SDGs.
This mapping between Reference Classifications and the WHO UHC Indicators paper had been shared internally within WHO. There are still some work to be done before finalization. WHO will make final amendments to allow publication.

SWP 4 Terminologies
Work commissioned by the WHO-FIC FDC has resulted in a number of use cases that demonstrate 1) the parallel use of WHO-FIC terminologies and other terminologies (with automated and manual approaches to mapping, both nationally and locally); 2) the potential enrichment of WHO-FIC terminologies with other terminologies; and, 3) the potential enhancement of the practical application of WHO-FIC terminologies through the use of other terminologies.
Recommendation: WHO-FIC should develop and put in place robust governance arrangements with strong strategic oversight to support the integration of recognized related classifications or terminologies with the Family, to ensure consistency in application, to prevent duplication of effort and to better coordinate mapping activities (separate poster).

Acknowledgements
The FDC co-chairs thank Robert Jakob, WHO and the FDC members for their contributions to the FDC work plan activities during the year, especially the dedicated working groups.
In 2021-2022 Informatics and Terminology Committee (ITC) worked on updates of tools and technologies that support the WHO-FIC classifications, the DORIS tool for the cause of death identification & electronic death certificate standard, applications of the iCOS in clinical data representation, the role of ClaML in disseminating WHO-FIC classifications, and harmonization of WHO-FIC Foundation Content.

ITC members worked closely with FDC on harmonizing ICD, ICF, and ICHI content in the WHO-FIC Foundation. In particular, we developed a collection of case studies to illustrate the promises and difficulties in harmonizing the three classifications.

- Case Study 1 - Entities related to “Laterality” in ICD-11, ICHI, and ICF.
- Case Study 2 - Relationships with family members.
- Case Study 3 - The ICF “Pain” hierarchy and pain-related entities in ICD-11.

The results were reported at the FDC and ITC mid-year meetings. These case studies show that, when the entities have consistent semantics, as in the “Laterality” example, it is possible to represent the superset of related entities in the Foundation and generate, through linearization, the classification-specific categories and extension codes.

Mappings in the other examples are much more complex, requiring detailed studies of the related entities and new formalisms for mapping one to the other. The sense of the participants at the mid-year meeting was that while the Foundation should not have duplicates and inconsistencies, the resource cost of harmonizing more difficult cases should be justified with the additional semantics.

ClaML and WHO-FIC Classifications

Members of the ITC worked with the German Collaborating Center to study the possibility of representing ICD-11 in ClaML. We determined that with the updated ISO 13120:2019(E) ClaML standard, it is possible to encode in ClaML the post-coordination information associated with ICD-11 categories along with classic attributes such as inclusions and exclusions. We have prepared an online survey that we are disseminating among stakeholders in July/August to gauge their needs for and readiness to support the development of a ClaML representation of the WHO-FIC classifications as a supplement to the coding tools that WHO provides. We will report the survey results at the WHO-FIC Annual Meeting.

ICOs and Validity Confirmation Studies

iCOS has a containment structural model for storing information as:
- Omics information of patient
- Clinical information of patient
- External medical knowledge such as ICD11, Disease NCK.

In the figure, iCOS is represented with nested structures as follows:
- ICD11 entity is a module that store ICD11 information with detailed semantics structure
- OML module describes omic information of patient at some point
- ICD Annotation describes time-line sequence of clinical information and patient prognosis
- Transcription module describes reference 2-way link between patient information and external knowledge. Validity confirmation studies using real patient data are in progress and some results were reported at the mid-year meeting.
**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 24th 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 24th 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, especially in relation to coding of COVID-19 in data.

This report describes the background of the MRG and its activities in the 24th year.

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**Methods & Materials**

Provisions for the MRG are described in the conduct paper of the WHO-FIC network (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 Centre Heads’ Report for 1997 (WHO/HST/ICD/C/97.39) and the Centre Heads’ Report for 1997 (WHO/HST/ICD/C/97.65). 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.

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**MRG achievements, operations and plans**

In 2021-2022, 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:
  - Review of tabulation list (WHO) and other reporting templates
  - Issues encountered through implementation projects
  - Practical implementation issues such as data structures, storage, analysis and reporting
  - ICD-11 data submission process for WHO
- COVID-19: Provided guidance around coding and vaccine mentions
- Progressed discussions on maternal mortality and perinatal statistics
- Considered proposals relating to SIDS/SUDI, noting options to progress proposals using ICD-11 structures such as extension codes.

**Facilitating online discussions**

Pre-pandemic, the MRG held a face-to-face biannual meetings, used emails, and shared & stored documents using the SharePoint workspace. The COVID-19 pandemic forced the MRG to meet virtually over the past 2 years. This has been challenging at times.

Convening small groups to focus on single-topic proved effective when working on short term projects. However, virtual meetings slowed progress, so in 2022 a decision was made to implement monthly meetings to try to better progress key topics.

**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.

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**2022 Meetings**

<table>
<thead>
<tr>
<th>Title</th>
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<tr>
<td>Mid-year</td>
<td>March 29-31</td>
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<td>Monthly</td>
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<td>COVID-19 subgroup</td>
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**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 and aspects of implementation.
## Objective of the FDRG

- To advise the WHO-FIC Network on functioning, disability and health classification and coding issues.
- To improve the quality and comparability of national and international data that describe functioning, disability and health by enhancing the appropriate use of ICF in statistics and information systems and scientific publications.
- To collaborate, through WHO and the WHO-FIC Network, with the producers and users of health and disability data to promote optimal use of ICF and, as appropriate, other WHO-FIC classifications.

## Strategic Work Plan

The following activities have been developed as part of the SWP:

- Collaboration with EIC in developing coding scenarios for ICD-11 functioning section for use in ICD-11 training tools (i.e. ICD-11 e-learning tool, WHOA ICD-11 course).
- WHODAS 2.0 within ICD-11.
- In collaboration with CSAC, the new ICF update workflow and the integration of the updates into the new platform.
- New terminology and glossary in the WHO-FIC Foundation: a multidimensional collection of all the entities.
- ICF use cases, that provided an updated overview of about 20 years of ICF implementation and use.
- ICHI functioning and public health interventions ICF.

## Training

ICF eLearning Tool has been updated. The ICF eLearning Tool is a web based, self teaching education product which has 7 chapters, each with a self-assessment quiz. It is available on [www.icf-elearning.com](http://www.icf-elearning.com) in 6 languages (English, Danish, Finnish, French, Polish and Swedish). Beta drafts are currently being developed in Arabic, Czech and Dutch, with work on German, Korean, Spanish, Japanese and Ukrainian versions also at various stages of development.

## ICHI & ICF

ICHI has implications for ICF and there is a need for alignment between ICF and ICHI especially on environmental factors/interventions. In some cases, ICF categories are not sufficient e.g. Chapter 1 products. Chapter 5 lacks detail, e.g. utilities, industries; UN classifications have been used for this detail/granularity. About 30 categories/targets have been added to the EF needs for ICHI. Update proposals for ICF EF could may stem from this work.

## New proposals

Collaboration with CSAC started with a review of proposals – as this is a transition year due to the new platform and there are new proposals on the new platform of different types: Addition, Enhancement and Complex modification.

## Terminology

Enriching terminology and glossary in the WHO-FIC Foundation is an important component and will be part of the process of automatization. The work is starting by systematic analysis of datasets containing functioning information, such as medical records, where ICF entities could be identified and then linked through natural language processing. The work on terminology and index development is ongoing.

## ICF uses cases

ICF use cases now is a paper providing information about the experiences of ICF use around the world in these last 20 years. It can be a useful starting point to reflect on ICF strengths and weaknesses and to organize targeted intervention plans.

## FDRG midyear meeting & TC

The 2022 FDRG Mid-Year Annual Meeting was held on May 4 in the city of Prague and was held in a hybrid, face-to-face and virtual manner. The attendance was very wide among members of the FDRG and benefitted from the joint presence of other Committees and Reference Groups. The objectives of the meeting were met. In addition to the formal mid year meeting FDRG held 3 Teleconferences extended to the whole group and monthly TC for the co-chairmanship, secretariat and WHO contact point.

## Acknowledgements

All the members of the FDRG are recognized for their collaboration and participation in the work and the achieved goals. The participation during the virtual sessions, the follow-up and the face-to-face meeting is critical to promote and consolidate FDRG activity.
Abstract
The WHO Verbal Autopsy Reference Group (VARG), which convened for the first time in South Korea at the annual meeting of the WHO-FIC Network in October 2018 - 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 implementation of VA. This poster presents a summary of the work undertaken by the VARG from October 2021 to October 2022.

**Introduction**
As VA is increasingly becoming 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 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**
The activities have been carried out through four modalities:
- Dedicated working groups collaborating online under the coordination of VARG workstreams;
- Regularly scheduled teleconferences among co-chairs, secretariat, workstreams and working groups;
- Workshops; and
- Virtual quarterly full VARG meetings.

**Workstream structure**
Six workstreams established to decentralize work structure and facilitate collaboration among members.
- **WS1 Questionnaire improvement & maintenance;**
- **WS2 Development and maintain resources & guidance;**
- **WS3 IT developments;**
- **WS4 Cause of death analysis;**
- **WS5 User engagement;**
- **WS6 Develop & support VA research agenda.**

**WS 1. Release of 2022 WHO Verbal Autopsy Instrument**
Based on the review of the 2016 WHO VA instrument, on April 2022, the 2022 WHO VA instrument was released (a) to resolve known issues and improve and simplify the interview process; (b) to reduce the duration of the interview and the number of questions without impairing the instrument’s diagnostic performance.

**WS 2. New Guidelines and resources**
Development of training manuals and resources for the 2022 WHO VA instrument:
- Materials updated and developed based on a review of the supporting materials for the 2016 instrument by VARG members and from a survey on feedback from users.
- Development of standardized guidelines for physician certified VA in the Civil Registration and Vital Statistics (CRVS) context
  - Guidelines are expected to be finalized within the next year’s first trimester.

**WS 3. Harmonization of VA IT environment**
Supported planning, development, and maintenance for VA IT
- Updated, continued development for openVA cause of death assignment software.
- Began development of reference architecture outlining IT standards
- Provided “help desk” for users

**WS 4. Analysis with the WHO 2022 instrument**
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.

**WS 5. VA community of practice**
Expanded engagement with VA implementation community
- Identified topics of interest across four key themes: Implementation Management, IT, Data Analysis and Use, and Implementation Research;
- Developed survey for participants to sign up to receive information about VA-related updates and to share information about their roles and experience in VA implementation;
- Developed survey to maintain a profile sites implementing VA to help understand how VA tools are being utilized (see Figure) and to maintain awareness of the needs of the VA community of users.

**WS 6. Research gap for VA**
Consultation to map out and catalogue current research efforts to advance verbal autopsy and existing gaps to be tackled by the VA research community.
- The output of this activity will be an analysis to the research priorities in order to integrate verbal autopsy in routine systems were medical certification of cause of death is not available;
- A quarterly readers digest will also be developed compiling all new peer reviewed articles in the literature.

**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.
Tasks

- 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

2021/22 Virtual Meeting Attendees

2021/22 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); James Harrison (Flinders University/ Australia, Chair of Injury and External Causes TAG); Marilyn Allen (American Acupuncture Council/ Member of Traditional Medicine TAG); Bernard Burnand (University of Lausanne/ Switzerland); Vijaya Sundararajan (University of Melbourne/Australia); 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/ France); Nenad Kostanjsek (WHO/ Switzerland); Robert Jakob (WHO/ Switzerland).

Meetings:
Zoom online meetings October 2021 and June 2022.

Topics:
- Update on PSI algorithms
  - Review of decisions taken around PSI work
  - Strategic plan for ICD-11 PSI exercise
- Update on BMC Medical Informatics and Decision Making publications
  - Several papers now published
  - ICD-11 extension codes support detailed clinical abstraction and comprehensive classification
  - Postcoordination of codes in ICD-11
- The three-part model for coding causes and mechanisms of healthcare-related adverse events
- Decision algorithm for when to use the ICD-11 3-part model for healthcare harms
- Incorporation of complementary and traditional medicine in ICD-11

Dissemination and implementation:
Emphasis of meetings activities focused on strengthening stakeholder & user engagement.

As part of a broader dissemination strategy, the Q&S TAG’s published a series of 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.

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 Canadian Patient Safety Institute (CPSI), and Canadian Institute for Health Information (CIHI)

Figure 1: Q&S TAG meeting participants
WHO-FIC 2022

WHO-FIC Poster Booklet

Chapter 2 – Collaborating Centres Annual Report
Abstract

The Australian Collaborating Centre (ACC) has continued its active involvement in the WHO-FIC Network and the Committee and Reference Groups (CRGs), allowing Australia to contribute to products benefitting both the Australian and the international health information and statistical environments. In addition, Australia has built on participation in these activities to influence strategic planning and potential adoption of ICD-11 in Australia. This poster outlines the activities against the ACC work plan.

Introduction

The Australian Institute of Health and Welfare (AIHW) hosts the WHO Collaborating Centre for the Family of International Classifications in Australia (ACC) (since 1991). The ACC is designated until 2026.

The ACC is Michael Frost, Senior Executive of the Data Governance Group at the AIHW.

The ACC comprises a broad network of Australian and New Zealand experts and organisations with an interest and experience in health classifications.

This annual report summarises the activities of the ACC during the period October 2021 to October 2022. In May, the ACC was redesignated with a new work plan for the 2022-26 period, however, this poster will report against the previous work plan.

1. Support for coordination of the WHO-FIC Network

The ACC contributes to most Network Committees and Reference Groups as well as participating in the Small Executive Group and Advisory Council.

The ACC contributes to the work of the FDRG through:

- providing input to ICD and ICF Education resources.
- regular communication with other countries for improving the platform.
- sharing ideas and learnings.
- establishing a roadmap of activities to support the FDRG.
- providing support to the WHO Classifications Unit.
- facilitating international collaboration on the ICHI.
- engaging with and keeping the committees and reference groups updated on ICHI progress.
- providing input to ICD and ICF Education resources.

2. Participation in EIC & Education

The ACC has contributed to the work of the EIC through:

- development and refinement of a morbidity repository of coding exercises to be used in ICD-FIT and the WHO Academy.
- review of the proposed modules of the WHO Academy, providing feedback and content revisions to both the Fundamentals and In-Depth modules.
- provision of implementation status reports in meetings.
- development of the prototype of a new Implementation Forum (on the EIC platform).
- updating of content and links on the EIC platform.
- providing education on mortality coding in Australia and the Pacific.
- providing education on ICF and its use, nationally and internationally.
- providing input to ICD and ICF Education resources including membership of the editorial team for the ICF Education portal: http://icfeducation.org/.

Catherine Sykes continues as one of the editors responsible for monitoring the platform.

- Sue Walker and Filippa Pretty continue to manage the EIC’s Facebook page: https://www.facebook.com/1#/groups/150.09286373939/.

Acknowledgements

Thank you to the ACC members for the 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.

ACC work plan activities (2018-22):

1. Support for coordination of the WHO-FIC Network
2. Participation in the work of the WHO-FIC EIC and support for WHO-FIC related education
3. Participation in the WHO-FIC Network’s CSAC
4. Participation in the WHO-FIC Network’s FDRG
5. Participation in work on the ICHI
6. Participation in and support of the work of the WHO-FIC MRG
7. Participation and support of the work of the WHO-FIC FDC
8. Participation in the transition and implementation work for ICD-11
9. Participation in the work of the WHO-FIC ITC
10. Participation in the work of the WHO-FIC MMRG.
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 currently hosted by the Norwegian Directorate of eHealth 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 participates in the finalization of the WHO-FIC Classification of interventions, ICHI.

The centre’s organisation and the Nordic collaboration is described in another poster submitted for this years annual meeting.

Work from September 2021 to September 2022

A delegation of 20 experts from the Centre participated in the virtual Annual WHO-FIC Meeting in October 2021. Additional contribution in CRGs are described below.

CSAC-ICD
Olafr Steinum (VM) and Øystein Hebnes (VM) have participated in meetings and discussions about ICD:
- ICD-11 updates on topics like “old age” and “alcohol intoxication”
- The need for a code for breakthrough COVID
- ICD-10 definition post-COVID-19 condition.

CSAC-ICF
- Solvejg Bang (VM) and Ann-Helene Almborg (VM) participated in virtual meetings and discussions about ICF.
- The Nordic ICF Network has submitted five proposals for ICF

FDC
- Ann-Helene Almborg contributed as co-chair and has prepared and chaired in multiple virtual meetings, including the FDC mid-year meeting May 5th, where also Solvejg Bang (VM), Marie Vikdal (VM) and Magdalena Fresk (M) attended.
- Ann-Helene Almborg has contributed to writing the “Terminologies paper”
- Ann-Helene Almborg has contributed to the functioning review and finalization of ICHI, and in the WHO-FIC content model alignment discussions.
- Ann-Helen Almborg, Ralph Dahlgren and Arna Hardardottir are the Nordics participants to the NCSP+ and ICHI mapping for the Casemix/DRG use case

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.

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WHO - FAMILY OF INTERNATIONAL CLASSIFICATIONS NETWORK ANNUAL MEETING 2022
Annual report 2021-2022
WHO collaborating centre for the Family of International Classifications in the Netherlands
Sil Brukx, Huib ten Napel, Coen H. van Gool
WHO Collaborating Centre for the Family of International Classifications, National Institute for Public Health and the Environment (RIVM), Bilthoven, The Netherlands

Abstract
The Dutch National Institute for Public Health and the Environment has hosted the WHO-FIC Collaborating Centre in the Netherlands since 1998. This poster summarizes the activities of the WHO-FIC Collaborating Centre in the Netherlands (Dutch WHO-FIC CC) that took place from October 2021 to October 2022 in relation to its Strategic Workplan.

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, 2022 marks the first full year of this designation period.

This poster highlights the activities of the Dutch WHO-FIC CC that took place from October 2021 to October 2022 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 force, and new health care standards will apply. The transition from ICD-10 to -11 in The Netherlands will happen amidst these changes. Conditions for ICD-11 implementation in the Netherlands are under study.

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. As a follow-up for the Implementation Database, the CC has provided information on national progress concerning implementation of ICD-11.

III - Support ICHI Implementation
The Dutch CC participated actively in the review and enhancement and enrichment of index terms of the ICHI functioning content, by drawing from the Dutch maintained Classification of Dietetic Interventions (CDI) (NVD; Dutch association of Dieticians, 2022).

IV - Support ICHI maintenance and tooling
Over the reporting period the Dutch CC has participated actively in the mapping of the Nordic interventions classification NCSP+ 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. One of the centre heads participates in the Initial Review Group (IRG). Also, the Dutch WHO-FIC CC contributed to the modernization of ICF by the itemization of ICF, making it ready for processing on iCAT.

VI - Support ICF maintenance and tooling
The Dutch WHO-FIC CC receives each year for using WHODAS led to the granting of WHODAS publication and distribution rights for other languages in the Netherlands than Dutch (Arabic, Farsi, Turkish, Somali) by the WHO licensing department.

VII - Support crosscutting activities
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 classification related matters. With our German colleagues we exchange on a regular basis.

Also 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.
UK WHO-FIC Collaborating Centre Annual Report 2022

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 2021.

Introduction

- Designation was due to expire for the 2018-22 four year period however NHS Digital achieved redesignation for a further 4 year period 2022 to 2026.

In implementing the activities of the UK WHO Collaborating Centre NHS Digital also collaborate with the Office for National Statistics (ONS) to ensure the ICD mortality use cases are addressed.

This report provides an update based on the UK Collaborating Centre work plan for period up to beginning July 2022. Subsequent reporting will be against the WHO generic work plan.

The Head of the UK Centre is Lynn Bracewell, Head of Terminology and Classifications at NHS Digital.

The Head of Centre participates in the WHO-FIC Advisory Council meetings to date [15-Feb-22, 17-May-22, 13-Sep-22] and has participated in the WHO-FIC European Network meetings.

Provide and coordinate UK input and advice to the development and use of ICD-11

Participated as voting members / members of WHO-FIC committees and reference groups including:
- Family Development Committee (FDC) [5-May-22]
- Informatics and Terminology Committee [03-Jun-22]
- Functioning and Disability Reference Group (FDRG) [20-Jan-22, 5-Apr-22, 4-May-22]

- contributed to the update of the terminology use case for FDC / Classifications and Terminology Subgroup Poster
- WHO led a map lead resource for a WHO / SNOMED International collaborative mapping pilot between ICD-11 Foundation endocrine chapter and SNOMED CT endocrine hierarchy. The objective was to provide an “exact match” equivalence for the purposes of information transfer between healthcare systems and to document the challenges and issues which arise.

Provision of ICD national clinical coding guidance, training support and advisory service

NHS Digital activities include:
- collaboration with 4 home nations on ICD-11 pre-implementation activities (further details are provided on a separate Poster).
- ongoing participation in the Education and Implementation Committee (EIC) [30-Jun-21, 3-4-May-22]
- review of several modules of WHO ICD-11 eLearning Tool to WHO-FIC EIC.
- hosting of the WHO-FIC EIC collaboration platform and the public-facing website. The platform was launched at the Oct-2019 annual network meeting.

Support for ICD-10 continues:
- publication of annual ICD-10 national coding standards updates incorporating COVID-19 coding guidance
- provision of 3rd line helpdesk support for ICD queries and publication of an ICD-10 online query database with 900+ resolutions
- support for 115 Approved Clinical Coding Trainers and 249 Approved Clinical Auditors

Contribute to the development and maintenance of ICD-11 (morbidity)

NHS Digital activities includes:
- Morbidity Reference Group [2-3 May-22]
- participation in the Classifications Statistical Advisory Committee (CSAC) [25-Nov-21, 11-Apr-21]
- completed review, research and Round 1 voting on WHO ICD-11 proposals platform between 11-Apr-22 to 19-Jun-22
- completed CSAC Round 2 voting on WHO ICD-11 proposals platform between 04-Jul-22 to 04-Sep-22
- contributed to the paper ‘Applying a standard approach when mapping national intervention classifications to ICHI’ to describe a standard approach to mapping between national classifications and ICHI (approved at MbrG mid-year meeting 2022, now with WHO for final checks).

Contribute to the development and maintenance of ICD-11 (mortality)

ONS activities include:
- ongoing regular participation in Mortality Reference Group through annual, mid-year and ad hoc meetings [29-31 Mar-22, 14-Apr-22, 12-May-22, 9-Jun-22] and correspondence
- active participation in formulation of codes and rules for recording COVID-19 in mortality setting and provision of regular COVID-19 mortality data for WHO monitoring
- contributed to CSAC proposals and review process.

Develop and maintain International English coding dictionary for Iris coding system (mortality)

ONS activities include:
- active member of the Iris Consortium, participated in regular meetings to develop the programme for transition of Iris to support ICD-11, with a view to the effective implementation of ICD-11 for mortality
- joint efforts have progressed planning for implementation of ICD-11 in Iris; ONS Data Science Campus have been commissioned by the Iris Consortium for technical management of the project
- regular activities for ICD-10 coding dictionary maintenance and improvement have taken place throughout the year.

Other activities:

ONS activities include:
- contributing to FDRG meetings and begun consideration of ICF and WHODAS applications for UK disability monitoring
- participating in WHO task force producing guidance on investigation and certification of deaths.

Acknowledgements or Notes

NHS Digital website: www.digital.nhs.uk
NHS Digital terminology and classification collaboration platform: https://HSCIC.kahootz.com
Office for National Statistics website: www.ons.gov.uk/ons

The Unite...
Abstract

The German Collaborating Centre is a designated WHO-FIC Collaborating Centre since 2003. The Centre is hosted by the Federal Institute for Drugs and Medical Devices (BfArM). As a WHO-FIC Collaborating Centre responsibilities included translating, promoting and using international classifications, examining relationships with other terminologies and nomenclatures, and participating in quality assurance procedures. This poster reports on the activities that took place since the last WHO-FIC Meeting in the year 2021.

Introduction

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 (ICHI). 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 2021 is presented.

Processing of classifications

ICD-10: Due to the coronavirus pandemic, additional emergency codes announced by the WHO were introduced into the ICD-10 during early spring 2021 to support specific COVID-19 vaccination related coding. Furthermore, 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 2023 release of the ICD-10-GM is scheduled for the end of September 2022, together with an updated index. Implementation is expected by January 1st, 2023.

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: Based on the need for a German version of the ICD-11, work on the ICD-11 translation on the WHO translation platform was accelerated in the year 2021. Consequently, a first German draft version could be published by the BfArM in February 2022, containing 119,250 translated entities (Fig. 1). Translation review by experts from medical societies is now being advanced but will likely be an ongoing process over the next few years.

ICF: The BfArM continued to actively support the ICF update process on the WHO proposal platform by commenting on proposals and by voting, as far as relevant. BfArM employees engaged in relevant committees and reference groups of the WHO-FIC Network on ICF proposals as well as on ICF as part of the common ontology.

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. 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

The German CC expects future synergies in the field of integrating WHO classifications as well as other terminologies and standards in healthcare as this will be crucial for the implementation of the various systems. In the year 2022, BfArM focuses its work increasingly on terminologies and interoperability, nationally (e.g. Medical Informatics Initiative) and internationally (e.g. in the EU). It also supports the joint effort of the WHO, SNOMED International and several countries in mapping ICD-11 and SNOMED-CT on the foundation level. The CC is very much looking forward to continue the cooperation with the WHO, the WHO-FIC Network and other partners.
Abstract  Peking Union Medical College Hospital (PUMCH) has been prioritizing the implementation preparation and then pilot use of ICD-11 in China, since its re-designation as the WHO-FIC Collaborating in 2019. This poster presents the annual report of the centre, highlighting ICD-11 related activities conducted between July 2021 and August 2022.

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 2019.

This is a summary of the activities of the Centre between July 2021 and August 2022.

ICD-11 Maintenance and Updates

During July 2021 to August 2022, members of the Chinese Centre submitted over 190 ICD-11 proposals on the Proposal Platform.

Along with the routine update and piloting use of ICD-11 in China, the centre has been continuously contributing to the maintenance of ICD-11 Chinese version on the translation platform.

Chinese is now available for ICD-11 MMS 202009, 202105 and 202202 release on the ICD-11 Browser.

Translation activities

The translation of descriptions of ICD-11 entities is ongoing.

A draft Chinese translation of reference guide 2019 version was ready. It needs to be updated to the most up-to-date 2022 version.

The Chinese translation of Help file in ICD-11 Coding Tool was updated for the 2022 release.

National Pilot of ICD-11 in Morbidity

A national program for pilot use of ICD-11 in morbidity was launched by the National Health Commission of P.R. China (NHC) in December 2021. A total of 59 public hospitals from 31 provinces, municipalities and autonomous regions in China were nominated by the provincial health commissions. The WHO-FIC Collaborating Center was entrusted to lead the program.

Table 1. Profile of pilot hospitals

<table>
<thead>
<tr>
<th>Hospital type</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>General hospitals</td>
<td>34</td>
</tr>
<tr>
<td>Specialty hospitals</td>
<td>25</td>
</tr>
<tr>
<td>Neoplastic diseases</td>
<td>8</td>
</tr>
<tr>
<td>Children’s hospital</td>
<td>6</td>
</tr>
<tr>
<td>Women’s and Children’s hospital</td>
<td>4</td>
</tr>
<tr>
<td>Communicable diseases</td>
<td>2</td>
</tr>
<tr>
<td>Eye diseases</td>
<td>2</td>
</tr>
<tr>
<td>Mental health</td>
<td>1</td>
</tr>
<tr>
<td>Brain diseases</td>
<td>1</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>1</td>
</tr>
</tbody>
</table>

The Center established an online communication mechanism with all the focal points of pilot hospitals, to provide immediate technical support, collect feedback, and keep abreast of the work progress. An online communication mechanism was also established between the IT experts from the Center and the informatics personnel from the hospitals and vendors, to provide training and technical support in the docking of ICD-11 Coding Software.

An online meeting was held on 21 January 2022 to kick off the program. The aim of this meeting was to deliver core information about ICD-11 and the value it would bring to the health data, to reach a common understanding on the importance of this program, and to present the tasks and requirements. Responsible officers from the NHC and 31 provincial Health Commissions as well as focal points from 59 hospitals attended the meeting.

Following that, a technical meeting was held virtually with informatics personnel from the pilot hospitals and vendors, presenting them the needs for informatics infrastructure, and how to integrate the ICD-11 Coding Software into the hospital information systems. Experiences from the PUMCH were shared.

Two-day online training courses on ICD-11 developed were conducted, with more than 800 clinical coders and physicians participating. Exams were held on the Exam platform developed by the Center.

Other Activities

The Chinese Centre has been positively participated in the activities of WHO-FIC Committees and Reference Groups during the past year. The Centre provides the CSAC co-chair and TMRG co-chair. Members participated the meetings of CSAC and MSAC, and mid-year meetings of MRG, MbRG, FDRG, EIC, TMRGG, and submitted reports or comments required by the C&RGs.
WHO - FAMILY OF INTERNATIONAL CLASSIFICATIONS NETWORK ANNUAL MEETING 2022

Activity Report from WHO-FFIC CC in Japan

Author: SAKAKIBARA Takahiro, INABA Tomoko, NAKAYAMA Kaori, YOSHIMOTO Masayo, WATARI Mika (Head)
Ministry of Health, Labour and Welfare, Japan

Abstract

The Collaborating Centre for the WHO-FFIC in Japan, at Japan ICD Office in the Ministry of Health, Labour and Welfare, began its third designation period in September 2019. On that occasion, a collaborative network was launched comprising the ministry as well as seven former member organizations including national research institutes of the Centre during the second designation period. The Japanese translation of ICD-11 is ongoing which will become the legal basis for implementation of ICD-11 in official statistics of Japan. Planned for this year is translation of the updated sections in the version released in February 2022. The Centre’s website was renewed following ICD-11’s entry into force. The ICD Advisory Committee met in June 2022 to discuss issues related to application of ICD-11 in Japan.

Collaborative Network of the WHO-FFIC Collaborating Center in Japan

The Collaborating Centre for the WHO-FFIC in Japan began its third designation period in September 2019. Whereas Japan CC consisted of multiple organizations in its second designation period, Japan ICD Office of the Ministry of Health, Labour and Welfare became the single organization to be designated as the Centre in the third designation period, following the WHO Framework of Engagement with Non-State Actors (FENSA) adopted at the 69th World Health Assembly.

Therefore, Japan CC launched a collaborative network consisting of the ministry and seven former members, including national research institutes, for discussion on ICD-11 updates and other topics. Japan CC management meetings are held regularly. This year the meeting was held in August to report on last year’s activities and share information on plans for this year’s activities.

Members of the collaborative network of Japan CC

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

Activities of the collaborative network of Japan CC

1. Support implementation of the WHO Family of Classifications
2. Contribution for the WHO update and implementation of ICD-11
3. Mortality use of WHO classifications to support WHO development of this area
4. Support WHO for Traditional Medicine classification development and use
5. Support WHO for implementation of International Classification of Functioning, Disability and Health
6. Support WHO for the development and maintenance of the International Classification of Health Interventions
7. Review use of and input to WHO on International Classification of Disease application for Oncology
8. Support WHO in education and training about the WHO Family of Classifications and its use

Japanese Translation for ICD-11 Implementation in Japan

The translation of terms in ICD-11 into Japanese is ongoing as an essential task in introducing ICD-11 in official statistics of Japan. Under a partnership with the Japanese Association of Medical Sciences and the Japanese Association of Dental Sciences, more than 50 related scientific associations in Japan are cooperating. Specifically, the MMS version released in February 2022 is used to translate terms in the chapter, block, and category levels. Challenges faced include:

- How to select a single translation when different societies propose different translations for a term in English;
- How to handle terms being updated continuously by WHO.

In addition to the MMS terms at the chapter, block, and category levels, Japanese translation is being developed for the terms in the Foundation towards releasing a version for wide-ranging uses.

Adapting Mortality and Morbidity Classification Tables to ICD-11

The Japanese government officially publishes the “Statistical Classification of Diseases, Injuries, and Causes of Death,” consisting of the Basic Classification Table as well as the Morbidity and Mortality Classification Tables, which are based on WHO’s recommended special tabulation lists:

- Basic Classification Table: 15,071 categories
- Mortality Classification Table: 133 categories
- Morbidity Classification Table: 85 categories (General List), 148 categories (Intermediate List), and 374 categories (Detailed List)

The Morbidity and Mortality Classification Tables need to be adapted to ICD-11. A tentative mortality classification table adapted to ICD-11 was reviewed in a study last year to examine the impact of the new classification on statistics in Japan. After WHO publishes the ICD-11 special tabulation lists for mortality and morbidity, the lists will be validated and a policy will be determined on adapting the Morbidity and Mortality Classification Tables to ICD-11.

Update of Website of JAPAN CC

Japan CC’s website was updated in March 2022. New contents include the activities of the third designation period, latest ICD-related information, and past events in a restructured format.

Other Activities

1. CSAC-Voting
   Japan CC’s voting on CSAC proposals was determined in consultation with related academic societies in Japan.
2. IMINT: WHO-FFIC implementation and information tracker
   Japan CC participated in the IMINT pilot study. We plan to cooperate in IMINT that is scheduled to be rolled out in 2022.
3. Survey on ICD-11 trends in Japan and abroad
   To aid ICD-11 implementation in Japan, information is collected on ICD revision trends and situation in other countries regarding ICD-11 implementation.
Colleagues associated with the WHO-FIC Collaborating Centre in South Africa are continuing their activities in support of the development and maintenance of the WHO-FIC internationally; in WHO-FIC network structures; in the development, implementation and use of ICD, ICHI and ICF in Africa; and in support of strengthening civil registration and vital statistics (CRVS) in the WHO African region.

**INTRODUCTION**

The WHO-FIC Collaborating Centre (CC) in South Africa 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 it continues to support the development, implementation and maintenance of the WHO-FIC in South Africa, across the Region, and through the WHO-FIC network. Our term as collaborating centre ended in 2020 and we are currently under designation for a further term as a WHO CC.

We have continued to implement our work plan, in close collaboration with key stakeholders in South Africa and the WHO Regional office for Africa.

**KEY RESULTS 2021-2022**

- **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.
  - We supported the efforts of the WHO regional office to promote WHO-FIC through monthly virtual meetings.

- **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 working meetings, projects, and successfully participated in the 2022 mid-year meetings of the WHO-FIC structures.

**Contribute to development and maintenance of WHO-FIC classifications aligned to needs of the region**

- A key activity in SA related to the WHO-FIC during this reporting period was the establishment of a Technical Working Group on Clinical and Diagnostic coding in South Africa (SA TWG) by the National Department of Health (NDoH). Members of the CC contributed significantly to this process through membership of the TWG and chairing of workstreams of the SA TWG (Bradshaw, Hamner, Maart, Sive, Whitehalw, and participation in workstreams.

- One of the outcomes of the SA TWG process has been an increased understanding and appreciation of the WHO-FIC among a range of stakeholders in healthcare in South Africa.

**ICD-10 & ICD-11:**

- The ongoing implementation and maintenance of ICD-10 for mortality and morbidity coding remain a core focus. Inputs to the further development of ICD-11 are essential to ensure that the classification meets regional needs.
- We continued to participate in the ICD-11 update process (Dr Oluwatoyin Awotiwon and Dr Lyn Hamner)
- We are collaborating with WHO Regional Office for Africa, in planning and supporting the development of ICD-11 online training for the region.
- An ICD-11 Roadmap support project was commissioned by the SAMRC to provide support to the NDoH in preparing a draft transition roadmap from ICD-10 to ICD-11 for South Africa. The primary outputs of the project are three papers:
  - Paper 1: A report on the key issues and challenges that the roadmap would have to consider.
- Workstream 1 of the SA TWG addressed requirements for transition to ICD-11 as the national standard for diagnosis coding for mortality and morbidity, and recommended a phased transition.

**ICF:**

- We continued to participate in the ICF Update process (Prof Soraya Maart and Dr Stefanus Snyman)
- The SA TWG included a workstream on functioning coding; an important reflection of an understanding among some key decision makers that information on functioning is an essential component of individual patient/client records.
- We are developing an ICF-based tool with the Western Cape Department of Human Settlements to assist the process of fairly prioritising the allocation of housing to persons with disability.
- 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.

**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.
- The SA TWG workstream on interventions coding recommended an in-depth review of ICHI as a potential SA national standard for interventions coding.

**Develop, deliver and evaluate education relating to the WHO classifications and Cause of Death Certification**

- An additional module on Certification of Covid-19 related deaths (Module 5) now available on the online Medical Certification of Cause of Death (MCCD) course: http://www.deathcertification.org/
- Supporting regional WHO-FIC education activities relating to Cause of Death Training
- We are collaborating with the WHO Regional Office for Africa on providing comprehensive MCCD and ICD-11 online training materials by providing content for a Regional online MCCD course, based on the SA 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.

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Facebook: WHOFICAfrica

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**SOURCE:** Foster RS. Transition to ICD-11: Key Issues and Challenges (Paper 1).
Abstract

This poster is a summary of the activities of the French Collaborating Center during 2021-2022 in relation to the different classifications of the WHO-FIC: ICD-10, ICD-11, ICF and ICHI.

Introduction

This poster outlines the activities of the French Collaborating Center (French WHO-CC) during 2021-2022 about the different WHO-FIC classifications.

By end 2021 ICD11 was fully translated by ATIH and a French version is now available online on WHO website for optimization by the whole French speaking world, starting 2022.

ANS: Works on publication of ICD for interoperability use cases, crosswalks with other reference terminologies and development of ICD with Montpellier hospital (extension chapter on allergens). ICHI activities, monitored by EHESP, focused on the promotion of ICF related tools. ICHI activities have been worked on by ATIH and CNAM and focused on ICHI mapping. CépiDc mainly focused on mortality related activities.

ICD-11 – FR Translation

The translation of ICD11 into French, coordinated by ATIH, has been completed and is now available on the web ICD platform browser since February 2022. The maintenance and quality control process are ongoing. That includes a clinical review of concepts.

The French version of the Reference Guide will also be available at the end of 2022. The Francophonie is taking part in this task as well.

ICD – development project

ANS also works with the Hospital of Montpellier to the development / Integration of an allergen value set to enrich Description of allergy disease in ICD 11 with optimized possibilities of post coordination (see dedicated poster).

The added allergens in X chapter will establish a crosswalk with LOINC terminology which is the reference Terminology of observations and biological exams.

ICD use cases have been segmented following the underneath scheme.

ICD Publication

ICD FR (RDF format) is accessible on ANS Multi-Terminology Server website: https://smt.esante.gouv.fr/terminologie-cim11-mms/ and is now available on the web ICD platform browser since February 2022.

ICD – Deployment

The French Collaborating Center is planning to initiate and validate a deployment plan of ICD in France in 2023.

ICD – Mapping projects

The ANS (e-health agency) / Health terminologies management center (CGTS) works on multiple mapping projects:

1) Between ICD and specific Medico-social Terminologies (PATHOS model); see related poster (n°133)

2) Integration of complete rare diseases catalogue into ICD-11 (on going collaboration with Orphanet/INSERM) (see related poster n°1108).

3) ANS also collaborates with Inserm / CépiDc to enrich ICD-11 index terms with lexical corpus issued from death certificates and French dictionaries. Currently, work is moving towards the use of artificial intelligence techniques to optimize treatment.

ICF

The EHESP:

- participated, as CSAC-ICF co-chair, in the triage of the 2022 ICF update proposals, in the launch of the 2022 review process based on the new platform, in the CSAC-ICD Small group and MSAC meetings, in the FDRG teleconferences and ICF related face-to-face Prague sessions,

- translated the ICD-11 V Chapter entities in French,
- published an article “Mapping of the French assessment tool GEVA to the ICF…”, in Frontiers Rehabilitation Sciences,
- trained Master students and professionals in the disability field about the ICF.

Conclusion

The French Collaborating Center 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.

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

2023 is also planned to be the year of initiation of ICD deployment in France.

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Abstract The WHO-FIC Korea Collaborating Center is jointly operated by the Ministry of Health and Welfare and the Korea Health Information Service. We contributes to the WHO-FIC network activities through experts participation in committees and reference groups, and conducts translation work and validation for domestic introduction in line with the entry into implementation of ICD-11 in 2022. This poster briefly introduces the activities of the Korea Cooperation Center.

Introduction
The Ministry of Health and Welfare was designated as the Korea Collaborating Center from July 2021 to July 2025, and operates it jointly with the Korea Health Information Service. The WHO-FIC Korea Collaborating Center is promoting activities to develop and utilize the WHO-FIC international classification system, and to this end, we continue to cooperate with related organizations. In addition, in commemoration of the redesignation of the Korea Collaborating Center in 2021, a meeting was held between the WHO Classification and Terminology Standards Team (CTS) and the Korea Collaborating Center, and future cooperation plans were discussed.

ICHI
Mapping from EDI to ICHI
The Statistics Korea is mapping the entire EDI (Electronic Data Interchange), which is the Korean national health insurance fee schedule to ICHI. The current project is built on the results of earlier projects and main focus was to test feasibility of ICHI implementation in Korea of ICHI and identify potential benefits. Immediate benefits of the mapping exercise included the identification of areas of improvement for the current EDI through conceptualisation of some of EDI codes.

ICHI Mapping of NCSP+ for WHO-FIC DRG
Sukil Kim of the Korea Collaborating Center has been mapping the EDI to ICHI for the past three years, the need to map NCSP+ to ICHI was raised in the WHO-FIC DRG development process. At a subsequent ICHI mapping online meeting, we decided to head NCSP+’s F chapter(heart and major thoracic blood departments) and G chapter(heart, bronchial, lung). It is hoped that Korea’s experience will contribute to these international activities.

ICD
Preparation for ICD-11 implementation
The Health Insurance Review and Assessment Service formed a dedicated department at the request of the MoHW for the successful introduction of ICD-11. In May 2022, they visited the WHO CTS team to understand the details of the ICD-11 amendment, and visited the ATIH Medical Information Classification and Financial Model (CIM-MF) department in France to share their experience in introducing ICD-11.

Development of ICD-11 Korean version
The Korea Collaborating Center and the Health Insurance Review and Assessment Service are promoting the development of the Korean version of ICD-11. In order to collect opinions from the field, we are operating ICD-11 translation validation advisory group consisting of several clinical societies, and are currently conducting translation and validation procedures with the aim of completion in 2023.

ICF
Research on clinical application of ICD-11 functioning properties
The National Rehabilitation Center identified the current status of WHODAS 2.0, MDS, and Generic Functioning Domains in the V Chapter of ICD-11, and developed a Korean SID (Simple, Intuitive Description) for clinical application. In 2021, in order to develop an evaluation scale for 47 items of Functioning Documents as an extension of the above study, a draft of the evaluation scale was completed in the order of patient evaluation, cognitive interview, and evaluator interviews, and then the final version was completed. A reliability survey of the existing evaluation scale was conducted, and based on this, the final manual was developed to explore the possibility of being used as medical record documentation such as function evaluation and next-generation EMR.

Conducting an ICF-based International Spinal Cord Injury Survey (InSCI) study
The National Rehabilitation Center is participating as a representative organization of Korea in an international spinal cord injury survey involving 22 countries around the world, and has completed the newly revised Korean translation of the InSCI questionnaire for the second year survey, which will be implemented from 2023. An international seminar will be held under the theme of the international spinal cord injury survey in the second half of 2022 to discuss the establishment of a database for the second year survey.

Acknowledgements
The WHO-FIC Korea Collaborating Center 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
Abstract: The aim of this work is to present a summary of the activities carried out over the last year (July 2021-July 2022) by the Italian WHO-FIC CC according to its workplan and the WHO-FIC Network Strategic Work Plan.

Introduction

In July 2019, the Central Health Directorate – Classification Area – Friuli Venezia Giulia Region was re-designated for the fourth time as a WHO-FIC Collaborating Centre. The new quadrennium started under redefined TORs (Table 1). Lucilla Frattura was confirmed as Center Head. Henad Kostanjsek was confirmed as the responsible officer for WHO.

Methods & Materials

In its forth year of activity of the 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

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 2021: 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 WHO to discuss ICF update process together with the CSAC ICF co-chair worked on the preparation of the CSAC poster and other documents to be presented at the 2021 WHO-FIC Network annual meeting (virtual), coordinated and participated in the CSAC ICF session at the 2021 WHO-FIC Network annual meeting (virtual) held on 19 October 2021, and also participated in the CSAC ICF/FDRG joint session on 20 October 2021. Minutes were prepared for the CSAC ICF session.

ICF update process 2022: the CSAC ICF secretariat participated in several teleconferences with the CSAC ICF co-chair and WHO to discuss ICF update process together with the CSAC ICF co-chair worked on the preparation of the CSAC poster and other documents to be presented at the 2021 WHO-FIC Network annual meeting (virtual), coordinated and participated in the CSAC ICF session at the 2021 WHO-FIC Network annual meeting (virtual) held on 19 October 2021, and also participated in the CSAC ICF/FDRG joint session on 20 October 2021. Minutes were prepared for the CSAC ICF session.

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.

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Italian WHO-FIC CC experts for the WHO-FIC maintenance: Lucilla Frattura acted as CSAC voting member for ICF updates, EIC and FDRG voting member. Simone Navarra (ISTAT) acted as MBRG and CSAC-ICD voting. Paula Tonel acted as CSAC Secretariat member and Chiara Orsi (ISTAT) was added as observer for ICD-11 update process Andrea Martinuzzi acted as FDRG Co-Chair and a member of the ICHI tasl force. Vincenzo Della Mea acted as ITH voting member Carlo Zavaroni acted as MBRG member. Matilde Leonardi acted as FDRG member.

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

ICD-10 2019 with COVID codes was translated into Italian, starting from the 2016 version, set up in 2017.

Supporting WHO-FIC cross-cutting activities: In the last year, Italian CC experts served as Co-Chair of FDRG (Andrea Martinuzzi, from October 2020, first 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, MRC, ITC, MMBRG, EIC and ICHI Task Force.

ICHI functioning intervention review was followed and supported by the Italian CC providing expert consultation and review of the newly proposed codes. The Italian team participated also in the finalization of the ICHI reference guide. The consistency and mapping of ICHI to existing classifications of health interventions such as NCPS+ was also accomplished with the assistance of Italian CC experts.

Enrichment in terminology applied to ICF and in descriptive capacity of the ICF codes in a real world setting was explored taking advantage of a large dataset provided by Andrea Martinuzzi. The manual and automated analyses were conducted jointly with the University of Udine and provide a proof of feasibility for similar exploitation of other datasets.

Harmonization of entities among the WHO FIC reference classifications: work provided with contrasting on matching ICF body structure and ICD anatomy producing a full comparison of entities that now is ready for analysis and action to reconcile inconsistencies. Similarly, in collaboration with FDC, content alignment was studied and tested on critical items by members of the Italian CC (Andrea Martinuzzi and Vincenzo Della Mea).

See the Italian WHO-FICO CC posters for more details.

Acknowledgements

To: Friuli Venezia Giulia Regional Administration for funding the CC activities; ISTAT, University of Udine, Fondazione IRCCS Carlo Besta (Milano), IRCCS Nostra Famiglia (Conegliano) for their collaboration.
Abstract The Argentina Centre for Classification of Diseases (CACE) was redesignated in 2019 as WHO Collaborating Centre on the Family of International Classifications. CACE continues promoting the use of 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 2021/2022.

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 2019.

This poster describes the main activities developed during 2021/2022.

Activities

Training activities

CACE continued collaborating actively with PAHO/WHO in the translation into Spanish of supporting documents for the implementation of ICD 11. It has also collaborated in the revision of the Spanish version of the ICD-11 Browser and Coding Tool, and the Reference Guide.

It has taken part in the regular virtual meetings coordinated by PAHO on advances in the implementation of ICD 11 in the region and contributed to discussions and development of strategic plans for the transition to ICD-11 in Spanish speaking countries.

CACE cooperated in the revision of the Spanish version of the modules of the ICD-11 Education Tool, in particular with Module 3. It has participated also on the discussion and proposals of strategies to develop other training materials.

Under the coordination of PAHO and in collaboration with the Mexico Collaborating Centre (CEMECE), a virtual training course on ICD-11 was designed. After the first introductory level, an intermediate virtual course was designed.

This second course, designed and taught in collaboration with CEMECE, was held in October 2021 with the participation of several Spanish speaking countries of the region.

The objectives of this intermediate course were to develop capacities in the countries in the use and coding with ICD-11 in the morbidity and mortality components; and to promote the training of multipliers at the national level of the courses on the use and coding with ICD-11.

It was aimed at professionals working in the area of health information or related areas, with knowledge in the coding of medical information based on ICD-10 2018 revision and its rules, who will serve as multipliers of the course in their countries. A total of 35 professionals responsible for statistics and coders, among others, participated.

This course was held in a virtual mode, with synchronous meetings and several training materials (Figure 1).

![Figure 1: First intermediate virtual course on ICD-11 coding. Some sample slides of the morbidity coding section of the course.](image)

In response to a request made through PAHO, CACE cooperated with the Ministry of Health of Chile for training in the use of the International Classification of Diseases for morbidity coders.

In this first stage, 20 coders were invited to participate in the virtual training course on medical terminology and basic use of the ICD through the platform of the Ministry of Health of Argentina. The course materials were also shared to facilitate local adaptations.

It is planned to continue the training during the year 2023.

Other activities

CACE participated in the pilot test of the WHO FIC Implementation and Information Tracker (IMINT) data collection tool. This tool aims to provide up-to-date information regarding the implementation of WHO classifications and the status of coded health data. The objective of the pilot was to test the usability of the IMINT data collection version, the understanding and refinement of the questionnaire and workflow. CACE also participated in a virtual meeting to discuss the results from the piloting and provide feedback to WHO.

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. Some specific coding issues need clarification and specific details.

Meetings

CACE participated in the WHO Family of International Classifications Network Annual Virtual Meeting (WHO-FIC 2021) and in the mid-year meetings of the committees and reference groups.

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

CACE also participated in the regular 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. Special thanks to Dra. Vilma Gawryszewski (PAHO) and Dra. Tamara Mancero (PAHO-Arg) for their high commitment to provide continuous support to our work.

www.argentina.gob.ar/salud/deis/cace/
WHO - FAMILY OF INTERNATIONAL CLASSIFICATIONS NETWORK ANNUAL MEETING 2022

MEXICAN WHO-FIC CC (CEMECE) ANNUAL REPORT


Mexican WHO-FIC CC; MoH Mexico, MoH Mexico City, CECACE-CDMX, MoH Colima

Abstract

During the last year, the Mexican WHO-FIC CC (CEMECE) has worked in the dissemination, promotion and surveillance of the correct use of the WHO-FIC in Mexico and supports countries in the Region of the Americas. This poster shows briefly this activities during last year.

Terms of Reference

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).

Activities

During 2021 and 2022, Mexican WHO-FIC CC have made contributions related with the improve in the Reference Guide ICD-11, mainly in the context of handle to the mortality component and selection of the underlying cause of death. The sample that were taken was useful to have evidence for the ICD-11 advantages. This is a part of the tasks related with the transition trough this new classification and in the last mounts is checking the Spanish version according with the last update.

In the frame of WHO-FIC, Mexican WHO-FIC CC have participated into the Reference Groups and Committees of the Network: Mortality, Morbidity, Functioning / Disability, Education, Implementation.

As part of the activities as a PAHO/WHO Collaborating Center and in follow-up to the study that was carried out in December 2019 where a comparative study was carried out between the International Statistical Classification of Diseases and Related Health Problems, Tenth and Eleventh Review (ICD-10 and ICD-11), specifically in the mortality component and where a representative sample of the Statistical Epidemiological Subsystem of Deaths (SEED) of Mexico was selected and with which 1,252 of the deaths that occurred in the year 2018 were obtained for this studio. As part of the follow-up and subsequent analysis and with the support of PAHO, a new review of the cases where there was no coincidence was proposed, analyzing the update of the ICD-11 Reference Guide. As a result, nowadays is reviewing details contained into the new version of the Reference Guide, as well as the terms that are missing in Spanish into the ICD-11 Coding Tool.

Into the Americas Region, Mexican WHO-FIC CC have participated in coordination with PAHO in webinar to maternal deaths and how to improve information in registration and coding. In this activities the countries have participated.

Moreover, Mexican WHO-FIC CC from October to December 2021, it supported a maternal mortality study for the Bolivian Ministry of Health. In this study, a retrospective analysis was carried out on deaths in 2017. The advice consisted of the selection of the cases to be investigated, the analysis and determination of the cases, the coding and the selection of the basic cause of death. Subsequently, the analysis of confirmed cases as maternal deaths.

In response to PAHO’s request, Mexican WHO-FIC CC participated in a webinar on the term "old age" in ICD-11. The activity stemmed from an initiative by groups seeking to change the term, considering it to be in disuse. The activity ended with the search for a proposal to change that term, but it was emphasized that it does not only depend on the ICD-11, but also on the medical part.

In May, Mexican WHO-FIC CC, participated in a webinar where the national agreements for the coding of cases related to SARS-CoV-2 were disseminated for the Region.

In June, Virtual course, given in coordination with the Argentine Center for Classification of Diseases (CACE), The components of: Generalities and Structure of the ICD-10, Morbidity and Mortality were addressed.

Physicians and coders from the Ministry of Health of Bolivia and the Dominican Republic participated in this activity.

In August and October Virtual course on Generalities, structure, conventions and basic guidelines for coding with the ICD-11. Virtual course on mortality and morbidity coding with ICD-11. It was given in coordination with PAHO and 13 countries from the Region of the Americas participated.

In December Mexican WHO-FIC CC participated ICHI Functioning intervention review meeting, where presented the summary of your review: Brief background info on functioning intervention and procedure coding in the country: What catalogues/classification are used, scope, main use cases etc.

Brief information on the methodology used for the review and content coverage analysis.

Main findings and conclusion overall and regarding missing content, problematic content index terms.

Mexican WHO-FIC CC has been actively involved in the Network for the WHO-FIC, he currently participates in the Mortality and Morbidity and Functioning/Disability committees as secretariat. In October 2021, he participated in the virtual session of the annual meeting of this network where the work of the country and the Region related to ICD-11 and ICF were shown.

At the Regional level, Mexican WHO-FIC CC has participated throughout the last year in the meetings of the WHO-FIC Network for the Americas, which are held twice a month and are coordinated by PAHO. Technical issues related to the WHO-FIC are discussed at these meetings. Mexican WHO-FIC CC have collaborated with Argentina, Bolivia, Chile, Panama, Dominican Republic, Costa Rica.

Conclusions

the Mexican Center has remained very active regarding the issues established in its Terms of Reference, in order to be of use to the countries of the Region of the Americas.

Acknowledgements

The Ministry of Health of the government of Mexico thanks PAHO for all the technical support provided during the last year. All these tasks would not have been possible without this support.
The major mission of the THAI WHO-FIC CC is to give support to WHO in developing ICD system in Thailand. The center also functions as the center of knowledge, information, experts for further references, for developing coder’s training courses, learning materials, supporting for the coding of ICD as well as continuously maintaining, improving and updating codes. Six main activities in 2021 are:

1. ICD-10 Training for Thai Coders

During 2018 to 2021, the center conducted three basic ICD-10 coding courses and six advance ICD-10 coding courses which 1,600 clinical coders attended. The basic ICD-10 training courses focused on how to use ICD-10 for morbidity and mortality coding, while the advance ICD-10 training course focused on the use of the standard coding guideline (ICD-10-TM volume 5) to solve complex problems in clinical coding. In 2021 to 2022, all training plans were temporary suspended due to pandemic situation.

2. ICD-10-TM Update and Maintenance

The center helped the Ministry of Health to update the ICD-10-TM to integrate all change until 2019, so the latest version of ICD-10-TM is now ICD-10-TM 2019. The center also updated the Thai Classification of Health Intervention to be 2021 version as well.

3. Thai Translation of ICD-11 in Foundation Database Layer

The center restarted Thai Translation of ICD-11 in January 2021 after three year suspension due to lack of manpower. However, the translation work did not include all details in the foundation layer. Only chapter, block, category and rubric titles were translated from English to Thai language. We also translate all synonyms, inclusion, exclusion notes as well. Translation was completed in August 2022.

4. Updating of the Thai Classification of Health Intervention

The Thai Classification of Health Intervention was published as volume 3 and 4 of the ICD-10 Thai Modification since 2010. The contents were updated regularly and The Thai Medical Council used the classification to monitor doctor fee charge for intervention conducted by the doctor in private hospitals. In 2020, the Thai Medical Council needed an updated version of the classification, so the Thai WHO-FIC Center working group updated the latest version (2016) to be the 2022 version. In this version all ICD-10-TM intervention codes were mapped to ICD-10-CM 2021 intervention codes. The Thai Medical Council adopted this codes for doctor fee monitoring since 2020.

5. Creation of the Standard Coding Guideline for Health Intervention

Standard coding guideline for diseases coding was published as volume 5 of the ICD-10-TM since 2010. The Thai clinical coders gave positive feedback about the usefulness of the guideline to facilitate and educate coders on complex cases coding. The demands for the guideline for coding health intervention were sent to the Thai WHO-FIC center in 2019. In late 2021 a working group for standard coding guidelines for health intervention was set. The work starts from 2020 to October 2022. This new standard coding guideline will be published as volume 6 of the ICD-10-TM book set.


The Thai WHO-FIC collaborating center helped the Strategy and Planning Division, Ministry of Public Health to start new Thailand electronic medical death certificate (eMDC) system since July 2021. This system enable the Thai physician to create death certificate for cases with death in hospitals. In this system the new ICD-11 coding tools was embedded as a coding button in the mortality coding screen. Coding cause of death in ICD-11 was closely linked with WHO-11 servers. ICD-11 coding in mortality statistics was planned to start in the year 2023. However, selecting of the underlying cause of death must be done manually by the mortality coders due to the cause that current IRIS software did not support ICD-11 mortality coding rules and cause of death selection.
### Activities

1. **Support refinement and maintenance of ICD-11 Reference Guide and knowledge Base for other members of the WHO Family of International Classifications**
   - Have attended and participated in MbRG meetings.
   - Have assigned a member to participate in areas of need for the EIC.
   - Primary Care evaluation of Canadian context (co-applicant on grant submitted to Canadian Institutes for Health Research)

2. **Pilot testing and implementation preparation of Q&S use case for ICD-11**
   - Extended meeting grant from the AHRQ around value proposition and knowledge translation around Q&S use case to 2022. Held 2 virtual meetings with plans of face to face in late 2022/early 2023.

3. **Strengthen the research work on Classifications, Terminologies & Standards and its integration in the WHO FIC Network**
   - Secured a manuscript supplement series of approximately 15 articles related to reference guide, objective being to provide short briefs on sections of the reference guide that highlight the strengths of ICD11. 3 papers in draft format to be submitted. Fourteen submitted, of which 7 have been published & 2 additionally accepted.

   - **Spotlight on ICD-11: New Features and New Opportunities**
     - [https://bmcmedinformdecismak.biomedcentral.com/articles/supplement-s/volume-21-supplement-6](https://bmcmedinformdecismak.biomedcentral.com/articles/supplement-s/volume-21-supplement-6)

- **Value Proposition of ICD-11 – Capstone Project:** 1) Building and validating the components needed for the economic evaluation; 2) Projecting the costs and benefits of the ICD-11 transition in Canada


- EMRO Health System Readiness Scan – surveys and interviews to assess countries/hospitals current health system status and readiness.

- Recurrent meetings with CIHI/Statistics Canada to share updates between Canada CC and Calgary CTS.

- **Grant co-PI (H Quan): Creation of a Standardized Protocol Tool and eLearning Programme for Research Using Routinely- Collected Health Data: A RECORD Initiative to Improve Methods**

4. **Developing, refining, validating and piloting ICD-11 based Quality and Safety indicators**

   - Received funding grant related to Adverse Event definitions in EMR systems. This will provide natural language processing algorithms to enhance index searches for ICD-11 Q&S use case.

### Future Plans

- Translation of PSI work in ICD10 by the Q&S group to ICD11 has begun. Concept coverage/evaluation stage is underway.

- Knowledge translation activities in collaboration with CIHI regarding implementation & use of ICD-11

- Development of International Indicators for Assessing the Quality of ICD-coded Administrative Health Data

### Acknowledgements or Notes

Canadian WHO-CC for Classification, Terminology & Standards Head: Dr. Hude Quan

WHO-CC is supported by the O'Brien Institute for Public Health at the University of Calgary
The Stanford University WHO Collaborating Centre (CC) has the mission to provide support for the development, maintenance, and implementation of infrastructure to author and manage WHO Classifications and the associated terminologies. The focus of the Stanford CC’s 2021-22 work included (1) Providing leadership for the Informatics and Terminology Committee (ITC); (2) Collaborating with the Family Development Committee (FDC) on WHO-FIC Foundation content harmonization; and (3) Experimenting with LinkML and OWL 2 representations of the Content Model.

### Methods & Materials

1. As a co-chair of the ITC, Mr. Tu helps to lead the ITC’s work on developing a standard format for the Electronic Death Certificate, the study of ClaML’s adequacy to represent ICD-11 post-coordination, and the development of a questionnaire to gauge the need for ClaML representations of WHO-FIC classifications. He has had monthly conference calls with co-leaders of the ITC and helped to plan for and conduct ITC activities at WHO-FIC annual and mid-year meetings.

2. Mr. Tu worked closely with the FDC on the harmonization of ICD, ICF, and ICHI content in the WHO-FIC Foundation. In particular, he developed a collection of case studies (lateness, family relationships, and pain) illustrating the promises and difficulties in harmonizing the three classifications.

3. The need to migrate iCAT to more modern Semantic Web standards led us to investigate alternative formalisms for representing the WHO-FIC Content Model and the Foundation content. We refactored the current iCAT content into seven information types: WHO-FIC entity content (e.g., titles, inclusions, exclusions), WHO-FIC entity logic (e.g., subclasses, logical definitions), classification information (i.e., linearization specification), post-coordination model (e.g., allowed post-coordination axes, sanctioning rules), terminological metadata (e.g., date released), editorial/workflow data (e.g., tasks, entity status), and iCAT display information (e.g., ordering of children).

### Results

1. On the subject of the standard format for the Electronic Death Certificate, Can Celik shared with the committee the format being used by the DORIS software to automate the definition of the underlying causes of death in terms of code sets and abstract rules. The format covers the fields of the paper MCCD almost exactly while adding some meta-data and software-related fields. At the mid-year meeting we concluded that the current format is a good starting point for the Electronic Death Certificate standard format. For the representation of ICD-11 in ClaML, we determined that with the updated ISO 13120:2019(E) ClaML standard, it is possible to encode in ClaML the post-coordination information associated with ICD categories along with classic attributes such as inclusions and exclusions. We have prepared an online survey that we are disseminating among stakeholders in July/August to gauge their needs for and readiness to support the development of a ClaML representation of the WHO-FIC classifications. We will report the survey results at the WHO-FIC Annual Meeting.

2. The first of three harmonization case studies involves entities related to “Laterality” in ICD-11, ICHI, and ICF. If we create multiparent hierarchies rooted at “Topology Scale Value” and “Anatomical location,” the second case study involves relationships with family members. ICF has the “Engaging in family relationships” hierarchy in the activities and participations domains while ICD-11 has the “Problems in Relationship with parents, in-laws or other family members” hierarchy in “Factors Influencing Health Status” chapter. To perform a proper mapping requires the use of ICF qualifiers in order to map ICF’s neutral domains to ICD-11 problem-related entities. A further issue is whether and how ICF “Support from Immediate family” and “Support from extended family” (subclasses of “Support and relationships” environmental factor) should play a role in the harmonization. Arguably if immediate family is an environmental barrier, it is a factor that affects health status. The third case study involves the ICF “Pain” hierarchy and pain-related entities in ICD-11. It raises questions about the nature of relationships between ICF pain as sensation and ICD pain-related diseases (e.g., migraine) and the cost and benefits of doing such mappings.

3. We determined that, aside from WHO-FIC entity logic, which is naturally modeled in the logic-based OWL 2 language, the schema of other information types can be easily modeled in a new schema formalism called LinkML, which not only offers rich modeling constructs, but is also compatible with json and which have sophisticated tooling, such as generators for RDF and OWL and tools for conformance checking. Using LinkML to model the WHO-FIC Content Model provides a modern substitute for the Protege-3.x frame-based metaclasses that were used in the original iCAT.

### Discussion

1. The WHO-FIC Foundation case studies shows that, when the entities have consistent semantics, as in the “Laterality” example, it is possible to represent the superset of related entities in the Foundation and generate the classification-specific categories and extension codes. Mapping in the other examples are much more complex, requiring detailed study of the related entities and new formalisms for mapping one to the other. These case studies raise the questions about entities need to be harmonized, and about the use cases and necessary resources for such harmonization.

2. Our preliminary work on the LinkML representation of the WHO-FIC Content Model suggests the feasibility of having a complete and unified specification of all information related to WHO-FIC content and to iCAT workflow in one high-level formalism and then generating data structures appropriate for iCAT implementation. Thus, the linearization and post-coordination model, for example, may be better represented in JSON instead of OWL, as they are not logic axioms. Our future work will further explore this separation of model and implementation representations.
The University of Barcelona – Hospital Clínic Academic CC has been actively working on academic and research projects as well as involved in different activities and meetings of the WHO-FIC committees. The CC is composed by members of the University, Hospital Clinic of Barcelona and external voluntary collaborators from different countries interested all of them in the field of disease coding and patient’s classification.

Methods & Materials

To carry out our activities, we created a virtual space to join efforts and develop tasks. Through a cloud application we register as outlines the summaries of the different meetings, and the tasks to be done.

In order to manage properly our activities, we have an executive committee composed by the two heads, and four permanent members.

Monthly operational meetings of the executive committee are complemented with quarterly plenary meetings. This tool also provides external references to documents and websites of interest for our members, including training courses and shared resources.

Results

The following are the activities and projects carried out between October 2021 and July 2022:

Participation in meetings and working groups
- Internal meetings of the members of the WHO-FIC Academic CC: 12 meetings
- Participation in Telco and mid-year meetings of the Committees and Work Groups: MbRG, EIC, and FDC.
- Council meetings. 2 meetings

Specific activities of Committees and Reference groups
- FDC and Terminology paper: The CC has assumed the coordination of the Terminologies paper Task Force until its final approval 1
- PAHO: Contacts with Mexican CC to get experience on how to develop training activities related to ICD11.

Dissemination activities.
- Presentation of the WHOFIC and the Academic CC to the team of Pathology Department and Clinical Epidemiology of the Hospital Clinic.
- Two pre-print papers related with the use of ICD.

Academic activities. Assignments proposals for Medical Undergraduate students:
- Evaluation of differences between versions 10 and 11 of the WHO’s IDC in Cardiovascular diseases.
- Evaluation of differences between versions 10 and 11 of the WHO’s IDC in Infectious diseases.
- Evaluation of differences between versions 10 and 11 of the WHO’s IDC in Oncology.
- Dysfunctional aspects in patients with Head and Neck neoplasms using ICF.
- Dysfunctional aspects in patients postCOVID19 using ICF.
- Use of AI to improve the communication of communicable diseases to the Healthcare System.

Acknowledgements or Notes

We would like to thank all of our members and collaborators: Josep Maria Vilaseca, Federico Matorra, Alejandro Alborno, María Antonia Varez, Elisa Asensio, Mihaela Taranu, María Jesús Bertran, Dolors Estrada, Itziar Leucona, Rosauro Varo, Natalia Rakislova.

Likewise, we would like to express our appreciation to the WHO-FIC Secretariat at Geneva for their support and assistance.
Abstract

The Canadian Institute for Health Information (CIHI) continues to assess the statistical and business implications of ICD-11 for health system use in Canada. The ICD-11 coding exploration field trials are an introduction to ICD-11 for health information management (HIM) professionals across Canada and allow participants to gradually build their ICD-11 knowledge and coding skills. The information collected during the field trials will assist CIHI in assessing learning needs, adapting the new classification and improving user experience with ICD-11 in Canada.

Introduction

In 2020, CIHI launched coding exploration field trials for ICD-11 using a multi-phase approach. In prior phases, participants were introduced to the ICD-11 browser and coding tool and to the ICD-FIT (Field Implementation Tool) platform. Each phase introduced new learnings and increased in complexity from simple introductory diagnostic terms to the capture of main and other conditions.

Results

28 participants completed the scenario-based cases in Phase 3 of the coding exploration field trials. Participants' overall scores ranged from 63% to 97%, with a mean and median score of 78%. Each case scenario was reviewed in 2 parts: main condition and other condition. The main condition was worth 70% of the participants' final score, while the other condition was worth 30%, for a total of 100%. For each case scenario, participants received scoring results comparing their answers with the gold standard and the results of other field trial participants (Figure 1).

For main condition, the participant exact match (i.e., equivalent match) for each scenario ranged from 25.0% to 92.9%, and for other condition, from 42.9% to 100%. Participants had success when coding main conditions that required a single stem code. The main challenge for participants was identifying the need for additional specificity using extension codes or multiple stem codes. Most inconsistencies in code selection were due to under-coding (i.e., not enough additional stem/extension codes) and no match results (i.e., target stem code was incorrect (with the most common reason being not choosing a more specific target stem code that was available)).

The rating of participant overall satisfaction decreased slightly compared with prior phases, at 61% (n = 17) (Figure 2). There continued to be positive feedback from participants on the use of the coding tool, with 50% (n = 14) finding the tool easy to use and 39.3% (n = 11) describing it as more user friendly compared with other electronic indexes they used. 75% (n = 21) of participants would recommend the coding exploration field trial experience as an effective approach to learning how to code with ICD-11.

Figure 1 ICD-FIT platform example with results scoring

<table>
<thead>
<tr>
<th>#</th>
<th>Code</th>
<th>Details</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Main Condition CA22.0</td>
<td>Other Condition SC77</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>Main Condition CA22.0</td>
<td>Other Condition SC77</td>
<td>100%</td>
</tr>
<tr>
<td>1</td>
<td>Main Condition CA22.0</td>
<td>Other Condition SC77</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 1 Example of Phase 3 case scenario with ICD-11 reference standard

Table 2 Participant overall satisfaction with ICD-11 coding exploration experience

For the third phase of the trials, the World Health Organization (WHO) Classifications team enhanced the ICD-FIT platform with an additional capture of main and other conditions (see Table 1 notes for definitions). The WHO updated scoring logic to support the new module. Based on feedback from CIHI trial participants, the WHO updated the platform to include descriptions of the codes and the cluster string, and added more comment fields.

CIHI identified Canadian diagnostic terms and a corresponding ICD-11 reference standard for both main and other conditions. For this phase, the following criteria were used to select the 10 scenario-based cases:

- Case scenarios that consist of a main condition and other condition requiring 2 sets of codes or post-coordination clusters per case that were identified from clinical documentation in Canada;
- Cases where post-coordination was available in the coding tool; and
- Cases where the quality and safety 3-part harm model was not required.

Each case scenario included a main condition and other condition that required 2 sets of codes or post-coordinated clusters, along with a corresponding ICD-11 reference standard (i.e., the validated answer) for each set of conditions (Table 1).

Recommendations

Based on the evaluation of participant results, the following key points will be considered:

- Further education on post-coordination when both a main condition and other condition are present (e.g., how and where to link a causation condition when 2 clusters are required).
- Further education on "perfect match" index terms and what codes are required to fully represent the clinical phrase. For example, the scenario regarding cerebral infarction describes that the infarction was due to an atrial fibrillation-related clot. Participants may not have chosen an additional code to describe the atrial fibrillation due to a matching term at 8B11.20 Cerebral ischaemic stroke due to cardiac embolism of "cerebral infarction due to atrial fibrillation related clot." Although a matching term is found at 8B11.20, an "associated with" post-coordination option is available to add an additional stem code for the unspecified atrial fibrillation to fully describe the case.
- Scheduling future trials closer together — Participants felt they would have been more successful if they had more consistent practice with ICD-11 and there had been less time between modules.

Conclusion

Overall, the ICD-11 coding exploration field trials provided a positive introduction to ICD-11 for our Canadian stakeholders. CIHI will use the field trial results to guide the development of education products and resources for implementation of ICD-11 in Canada. Future phases of the field trials will increase in complexity and focus on specialty coding (i.e., obstetrics, quality and safety), with a plan to increase participation via collaboration with the Canadian Health Information Management Association (CHIMA).

Acknowledgements

We gratefully acknowledge CIHI’s classification specialists and the Canadian NCAC participants and stakeholders for their contribution to this project.
Collaboration and status of ICD-11 in the Nordic WHO-FIC Collaborating Centre

Marie Vikdal, Solvejg Bang, Magdalena Fresk, Guðrún Harðardóttir, Bente Bull-Hansen, Mikko Harkonen

Abstract

The Norwegian/Nordic Collaborating Centre for the WHO Family of International Classifications is in its current 4-year redesignation period from November 2020. It is located to the Nordic Centre for Classifications in Health Care, NordClass. This poster aims to explain the organisation of NordClass, and give a short status on both the collaborative work performed and the implementation of ICD-11 in the Nordic Countries.

Organization and collaborative work in Nordic countries

NordClass and the Nordic Collaborating Centre was established in 1987. It is currently hosted by the Norwegian Directorate of eHealth in Oslo, under the Ministry of Health and Care Services.

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

The work force consist of governmental employees from the member countries’ Classification and Health Data Units/Departments, and experts affiliated to the Centre.

NordClass aims to create a classification expert community within the Nordic countries.

Collaborative Nordic work

- **Yearly mortality coding comparisons** together with the Baltic countries and Canada, for better coding quality and harmonisation of the between the countries.
- **The NordClass information exchange group on ICD-11**, established in 2021 where topics discussed are challenges when migrating and implementing ICD-11, future plans for ICD-11/WHO-FIC to be presented in the EHR, and using ICD-11 for Mortality Reporting and mapping of ICD-11.
- **Forum for mortality topics**, established spring 2022, the first full meeting held in June, on ICD-11.
- **Other**: NordClass representatives have yearly meetings at the Nordic level with The Nordic Casemix Centre in Helsinki and the Nordic Health and Welfare Statistics, Nomesco-Nososco.

Collaborative work in relation to WHO-FIC Global

- **Formalized dissemination of information from the Nordic WHO-FIC CRG representatives** secures that the Nordic countries are updated and can participate in requested tasks
- The Centre Head participates in task and to meetings hosted by WHO-FIC Euro, the WHO-FIC Euro Network, and by WHO-Euro.

Status on ICD-11 work in the Nordic countries

**Denmark**

- Completed pre-analysis of cost estimates focusing on the IT- and technical challenges, but more detailed information is needed
- No specified funding, but have established an internal maturing working group of classification, terminology and IT experts and a project manager, the group reaching out to external stakeholders
- Started translation of Ch. 06 incl. «Diagnostic Requirements»

**Sweden**

- Work force is well established and running
- Aims to finish the translation to Swedish in 2024. Ten chapters are translated and uploaded to the WHO-FIC platform, four have been reviewed by physicians.
- Other implementation activities: registers, IT, DRG, and communication plan.

**Norway**

- A map over important stakeholders are under development
- A comparative «option analysis», including cost-benefit estimates will be the main deliverable in March 2023
- Established a work force with classification experts, project managers, economists, IT architects and a legal advisor, but no specified funding available.

**Iceland**

- No specified funding for the translation and implementation
- Preparations to start the translation project are being made

**Finland**

- Discussions with the Ministry of Social Affairs and Health on the financing of the ICD-11 implementation project 2023-2026.
- The project includes translation into Finnish, training materials and communication in addition to project management.

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Towards ICD-11 Implementation in Australia

Brooke Macpherson, Filippa Pretty, Vicki Bennett

Australian Institute of Health and Welfare, Australian Collaborating Centre

Abstract

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 the activities needed to be undertaken to make a decision on the implementation of ICD-11 in Australia. In Australia, ICD-10 and ICD-10-AM (Australian Modification) are used in mortality statistics, hospital statistical reporting systems, and in Activity Based Funding arrangements. A decision has not yet been made as to whether ICD-11 will be implemented to replace some or all of these use cases.

Indicator Mapping project

Final year HIM students on placement at AIHW undertook a pilot project to create crosswalks from ICD-10-AM to ICD-11 for 10 national health indicators. Using ICD-11 MMS (2021 frozen version), cross walks were created for common health indicators related to Hospital Acquired Conditions, Drug and alcohol, Diabetes, Heart Failure, Chronic Obstructive Pulmonary Disorder and Delirium. Results showed that a corresponding code was available in ICD-11, with 25% requiring an extension code. Only 11% were incongruous. Initial result are below.

<table>
<thead>
<tr>
<th>1:1 Mapping</th>
<th>Extension code(s) required</th>
<th>Incongruous mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>63%</td>
<td>25%</td>
<td>11%</td>
</tr>
</tbody>
</table>

In the latter half of 2022, this pilot is being repeated using the ICD-11 MMS 2022 version, and with additional indicators added. Results will be reported to the Network at future meetings but also used to inform potential implementation.

Exploring potential use of ICD-11 in Australian green field sites

The AIHW are actively exploring potential uses of ICD-11 in use cases outside of traditional areas where health classification occurs. For example, ambulance data are not captured at a national level, mainly due to inconsistencies in data capture at the state and territory level. In addition, there are areas of public health that could have improved data capture using ICD-11, including suicide monitoring and issues relating to gender incongruence. The following outlines three of the projects being undertaken to explore the use of ICD-11 in these green field areas.

AMBULANCE DATA AND PALLIATIVE CARE

The AIHW are analysing a subset of ambulance data from one jurisdiction to identify palliative care patients in residential aged care who are transferred via ambulance to hospital. Diagnosis data is being coded using ICD-10-AM and ICD-11, to establish whether the conditions were acute or chronic and supported the need for patient transfer. Comparing the ability of ICD-10-AM and ICD-11 to capture this information will hopefully support a case for the use of ICD-11 in this setting.

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

The AIHW was approached regarding the changes in ICD-11 to the coding (and availability of codes) of gender incongruence. Of particular interest was when ICD-11 would be implemented and these new codes could be used. A project has since evolved to re-code a cohort of patient admissions using ICD-10-AM (without Australian coding rules) and ICD-11 to compare both classifications in their ability to capture admissions when gender incongruence is relevant to their admission. This project is also in the early stages of development. Outcomes will be shared with the Network when available.

Stakeholder newsletter

As part of the ICD-11 communication strategy, the AIHW have begun publishing six-monthly stakeholder update newsletters. The first two were published in January and July 2022 and have been well-received by stakeholders. Newsletters contain updates on ICD-11 undertakings involved with the ACC, and developments on other classifications as reported by WHO. A ‘Did You Know’ section has been included from the 2nd edition, highlighting features of ICD-11.

Australian ICD-11 Task Force

In June 2021, the AIHW held its third ICD-11 workshop with stakeholders from Australia and New Zealand. The aim of this workshop was to review the recommendations identified in the ICD-11 Stakeholder Review. Most, if not all of the recommendations were deemed still relevant. However, one recommendation received strong feedback indicating urgency and relevance. This was the establishment of an Australian ICD-11 Task Force (AITF). The establishment of the AITF and its Terms of Reference were endorsed by the Australian Health Classifications Advisory Committee (AHCAC), as its primary sponsor, at its December 2021 meeting. The AHAC provides oversight to AIHW’s role as the Australian Collaborating Centre.

The primary purpose of the AITF is to develop a broad, multi-year Roadmap of activities required to make a decision to implement ICD-11 in a range of contexts, particularly mortality and morbidity, using the workshop-refined recommendations from the ICD-11 Stakeholder Review.

Membership of the AITF was extended to each Australian state and territory health departments, of which 7 of the 8 accepted. Invitations were also extended to the Independent Health and Aged Care Pricing Authority (IHACPA), Australian Bureau of Statistics, Australian Digital Health Agency and Commonwealth Department of Health – all of whom accepted. The AIHW provides the Chair, an additional member and undertakes the secretariat function.

Since its establishment, the AITF has met twice, in May and August 2022. A third meeting is scheduled in September. The Roadmap has been the primary topic of discussion, with the Australian use cases of relevance identified. Potential funding streams to support the Roadmap activities have also been discussed. As not all activities are relevant to each use case, associating activities to each use case is currently being undertaken. The AITF will report its progress to the AHAC after 12 months, or prior, as required.

Plans for 2023

Most of the activities described in this poster will continue into 2023.
Pilot test for the use of ICD-11 in the registry of morbidity

WHO - FAMILY OF INTERNATIONAL CLASSIFICATIONS NETWORK ANNUAL MEETING 2022
17-21 October 2022
WHO-FIC
Poster Number 304

Ministry of health and social protection, Colombia

Abstract
Since 2019, the WHO has promoted the ICD transition process, from revision 10 to 11; a situation that requires countries to carry out preparatory activities for the adoption and implementation of this international standard for the coding and presentation of morbidity and mortality statistics. **Objective:** The aim was to test the integration of the ICD11 API and other resources provided by the WHO in hospital computer systems and explore training approaches aimed at doctors and other users for the application of the coding tool in the recording of the morbidity causes.

Introduction
The transition process to the ICD-11 implies not only the diffusion to the interested actors, but also to facilitate from the central level the integration of the computer developments carried out by the World Health Organization – WHO for the registration of morbidity by the health providers and thus advance in the automation, standardization and interoperability of health information systems.

One of the applications is the so-called ICD-API, whose main function is to allow software developers to integrate different computer tools, in order to perform searches by diagnostic terms and deliver the possible categories associated with ICD-11.

To understand the transition in the local context, in Colombia the institutions that provide health services use different software applications to register the clinical history of the patients and some institutions even still carry out the registration on paper, which is why to unify the way in which the diagnosis should be recorded.

Methods & Materials
The pilot test was conducted by the Colombian Ministry of Health and Social Protection with the Bloomberg cooperation -Vital Strategies. Steps to develop the pilot test was defined as it's shown, and some selected Health Service Provider Institutions were proposed and invited to participate.

Chart 1 shows the adaptations made to the ICD-API provided by the WHO, which aim to facilitate its use through the implementation of a service for automatic authentication, another service for dual coding that makes use of the mappings provided by the WHO and another service that facilitates the search for ICD-10 codes that have not yet been mapped.

Results
There were two possible scenarios in the participating institutions of the pilot, 1 institutions within house development, and 4 institutions with a software provider, which allowed the verification of two different routes of the procedure.

Conclusions
According to the participating institutions, the tools adapted for the test provide a clear path for the technological implementation of the ICD11 API.

Regarding the training tool provided by WHO, it was very useful for institutions that have coding teams; however, it was not for the training of physicians and other health personnel involved in the management of medical records.

Special thanks to the health institutions that participated in the ICD 11 implementation and transition pilot test, for their comments and observations that strengthen the process for the country.
For the transition to ICD-11, pilots are being developed in Colombia for the adaptation of the ICD API to the computer systems that use this standard for the recording of causes of morbidity and mortality. The results indicate that technological adaptation is easy to implement if electronic medical records systems and automated registries are available. The biggest challenge is the learning curve for users of such systems.

**Introduction**

The preparedness for the transition from ICD10 to ICD11 in Colombia began with two pilots for the adaptation of the ICD API to integrate them into the hospital medical record systems and the national death registry. The first is a local development that articulates the ICD11 API with the mappings between ICD10/ICD11 to find the correspondence with ICD10 terms and codes. This adaptation will facilitate the harmonization processes and technical-regulatory transition to ICD11, with less impact on the continuity of data series and legal reports. The adapted tool allows storing dual coding and resolves gaps in the available ICD10/ICD11 mappings, as well as allowing the optional use of ICD10 tabular lists while health personnel are trained in the use of ICD11. The other adaptation of the ICD11 API is in the medical certification of deaths application (RUAF-ND v2.0), for simple use in searching terms.

**Methods and Materials**

After characterizing the information systems in 5 hospitals, a manual of procedures and software tools for the adaptation of the ICD-API to the EHR systems was developed, taking into account different software architectures, programming languages, and forms of capture. The adapted ICD11 tool combines a service for obtaining a valid token for continuous access to the ICD-API, a service for querying and searching ICD11 terms and codes, and a mapping service for obtaining ICD10 terms and codes corresponding to the queried and selected ICD11 term and code.

With the methods and libraries adapted to consume the "Encoded Coding Tool", users can access directly to the WHO website, or through the infrastructure implemented by the Ministry of Health using the container resources, or through local installations without the need for internet connection.

**Results**

The documents and tools related to the transition from ICD10 to ICD11 to be implemented by the Health Care Providers Institutions (IPS) can be found in the Minsalud microsite https://transicioncie11.sispro.gov.co (graph 1).

The software tools integrated in the EHR systems highlight the Mapping API for easy access to the correspondence between ICD11 and ICD10 categories, facilitating the work of software developers and a better understanding of the descriptive advantages of the diagnostic categories offered by ICD11 for physicians and other professionals involved in health care. The double coding required during the transition period saves doctors' time in the choice of categories and overcomes the resistance to change generated by the ICD update and the obligatory use of new digital technologies (Graph 2).

**Conclusions**

The next step will be to merge these experiences with the national electronic health record interoperability mechanisms that are currently being implemented in the country.

**Acknowledgments and Notes**

Acknowledgements to the technical and informatics team of Bloomberg-Vital Strategies’ Data for Health cooperation; to the engineer Harold Ballen for his technical-methodological contributions for the technological adaptation; to the hospitals participating in the pilots and to the SISPRO-Minsalud team.
**WHO - FAMILY OF INTERNATIONAL CLASSIFICATIONS NETWORK ANNUAL MEETING 2022**

**IFHIMA’s ICD-11 Education:**
**Supporting the WHO-FIC Network**

Authors: Kathy Giannangelo and Mary Stanfill

*IFHIMA, Virtual NGO*

### Abstract

The International Federation of Health Information Management Associations (IFHIMA), a Non-Governmental Organization (NGO), has a commitment 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. A variety of educational formats have been utilized drawing from speakers and authors from IFHIMA’s six regions.

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>IFHIMA has been in official relations with the WHO for 43 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, Education, and Implementation.</td>
<td><strong>Position Statement:</strong> IFHIMA Endorses ICD-11 Implementation for Improved Global Health Released on World Health Day (<a href="https://ifhima.org/ifhima-endorses-the-implementation-of-icd-11/">https://ifhima.org/ifhima-endorses-the-implementation-of-icd-11/</a>) <strong>Whitepaper:</strong> IFHIMA Fosters Planning for ICD-11 Adoption with Global Case Studies</td>
</tr>
<tr>
<td>With those initiatives in mind, IFHIMA has been helping the healthcare industry prepare for ICD-11. IFHIMA’s work focuses on providing ICD-11 education using a variety of formats and channels including a position paper, whitepaper, infographic, podcasts, virtual conferences, and publications of articles in IFHIMA Global News. Speakers and authors represent individuals from IFHIMA’s six regions, Africa, Americas, South East Asia, Europe and North Asia, Eastern Mediterranean, and Western Pacific.</td>
<td>This whitepaper, along with the associated global case studies, delves into some of the specific challenges and accomplishments that countries and HIM professionals may anticipate as they embark on the journey to adopt ICD-11. Topics include benefits of ICD-11, workforce development and education, language translation, field testing and implementation strategies. It was written with collaboration among a group of IFHIMA members from countries including Australia, Barbados, Canada, Egypt, Indonesia, Japan, the Kingdom of Saudi Arabia, Republic of Korea, Nigeria, Spain, and the USA. Of particular significance is a section on unique challenges and opportunities for developing nations.</td>
</tr>
<tr>
<td><strong>Methods &amp; Materials</strong></td>
<td><strong>Podcast series:</strong> Five podcasts highlighting the progress of ICD-11 around the globe from select countries as part of the Saudi Health Information Management Association’s (SHIMA) 2nd annual conference.</td>
</tr>
<tr>
<td>Three items are helping to drive the work of IFHIMA’s ICD-11 educational plan.</td>
<td><strong>Virtual Conferences</strong> <strong>ICD-11: Improving Global Health Information through Better Data</strong> IFHIMA was the primary organizer along with co-hosts from the Institute of Health Record and Information Management (IHRIM), the UK health information association, and Sociedad Española de Documentación Médica, the Spanish Health Information Management (HIM) Association. The real-time virtual event was aimed at the European and African nations.</td>
</tr>
</tbody>
</table>
| 1. WHO-FIC Network’s strategic intent to assist “WHO in improving the level and quality of use of the WHO-FIC classifications by developing and implementing a global education, training, and certification strategy and promoting education, training, and certification in regions and the Member States.”  
2. IFHIMA’s strategic plan that includes producing educational materials for its membership and assisting developing nations.  
3. Results of IFHIMA member surveys confirming the need for continued support with educational content. | **Saudí Health Information Management Association’s (SHIMA) 2nd Annual Conference** Targeted for the Eastern Mediterranean region, IFHIMA was a co-sponsor of this event. Day two was organized by IFHIMA with a focus on ICD-11. Keynote speakers Dr. Robert Jakob and Nenad Kostanjsek, from the WHO, explored the value proposition and implementation progress of ICD-11. The program continued with panelists from Australia, Canada, Kuwait, Saudi Arabia, and the USA, on ICD-11 adoption considerations and workforce and education implications. |
| With ICD coding a major HIM practice in almost every nation and ICD-11 noted as a future trend, IFHIMA decided to formulate workgroups consisting of volunteers from its members to complete the initiatives summarized in the results section. | **IFHIMA Global News: Putting ICD-11 to the test...Does it really work?** Report on the Kuwait ICD-11 pilot. |

**Conclusions**

IFHIMA will continue with ICD-11 outreach and education using a variety of channels and individuals from IFHIMA’s six regions in support of IFHIMA’s strategy, request from its membership and the WHO-FIC Network’s priority areas. For example, IFHIMA’s revised website has a dedicated ICD-11 page and the 20th IFHIMA Congress in 2023 will include a specific stream on ICD-11.

**Acknowledgements or Notes**

None of these educational materials would have been produced without the IFHIMA Executive Board’s strategic direction and all the workgroup members’ contributions.
WHO - FAMILY OF INTERNATIONAL CLASSIFICATIONS NETWORK ANNUAL MEETING 2022

WHO-FIC CC ICD-11 transition support project: Role of WHO-FIC CCs in national decision making on ICD-11 transition

Rosemary Foster¹, Lyn Hamer², Oluwatoypin Awotiwon², Debbie Bradshaw²

¹ South African Medical Research Council
² South African Medical Research Council / WHO-FIC Collaborating Centre in South Africa

Abstract
The WHO-FIC CC in South Africa is based at the South African Medical Research Council (SAMRC); and is therefore not directly involved in decision making about national standards for clinical coding. The CC facilitates stakeholder engagement and provides expert support and information to inform decision making related to the WHO-FIC suite of classifications.

ICD-10 is the current national standard for diagnosis coding, for morbidity and mortality. The current national standard of ICD-10 for SA is defined in terms of an ICD-10 Master Industry Table (MIT), which is freely available online from the National Department of Health (NDoH). The MIT is based on the WHO standard version of ICD-10, with the addition of some WHO-recommended extension codes, and national U-codes as allowed for in ICD-10.

Project funding from SAMRC enabled specific work on requirements for transition from ICD-10 to ICD-11 as the national diagnosis coding standard for South Africa. The CC initiated a project to support the development of a roadmap for the transition from ICD-10 to ICD-11. The WHO ICD-11 transition or implementation guide was a key resource for this project.

A health information systems expert was commissioned to work with the CC between October 2021 and March 2022 on the preparation of three technical reports (papers) which are being made available to national decision makers to inform discussions and decision making related to ICD-11 for South Africa:
- Paper 1: A report on key issues to be addressed for a successful transition to ICD-11, based on the framework provided by the WHO ICD-11 transition or implementation guide.
- Paper 2: Review of literature on ICD-11 and ICD-11 transition
- Paper 3: Desktop review of stakeholders and the status of clinical coding in South Africa.

The outputs from this WHO-FIC CC project underlined the important role which can be played by WHO-FIC CCs in support of national decision making about clinical coding standards. The WHO-FIC CC in South Africa is able to provide a key link between the WHO as the custodian of ICD and other international classifications, and national departments responsible for decision making about diagnosis coding standards – the National Department of Health, and Statistics South Africa.

Introduction
The WHO-FIC CC in South Africa (WHO-FIC SA) wished to provide information to support decision making about transition to ICD-11 as a progression from ICD-10 as the current national standard for diagnosis coding.

The current status of implementation of ICD-10 for morbidity coding is highly variable across the country, in both the public and private healthcare sectors. Statistics South Africa as the National Statistical Office uses ICD-10 to support cause of death reporting at national and international levels.

Methods & Materials
The project was led by WHO-FIC SA, in consultation with key stakeholders in NDoH and Stats SA. Implementation of the project provided opportunities for orientation for stakeholders about ICD-11 as a classification, and about the requirements for ICD-11 transition as informed by the WHO ICD-11 transition guide.

This project met its goal of providing support for decision making by national departments.

Specific key outputs included:
• Identification of the wide range of stakeholders in an ICD-11 transition (Table 1), and
• Identification of key issues to be addressed in South Africa, guided by the WHO ICD-11 transition guide (Table 2).

<table>
<thead>
<tr>
<th>Lead, accountability</th>
<th>National Department of Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oversight, governance and support</td>
<td>Council for Medical Schemes Healthcare professionals’ regulatory organisations WHO-FIC Collaborating Centre Private Healthcare Information Committee (PHIC)</td>
</tr>
<tr>
<td>Vitals statistics – mortality</td>
<td>Statistics South Africa (NSO)</td>
</tr>
<tr>
<td>Public sector</td>
<td>Provincial Departments of Health Local authorities National Health Laboratory Service National Cancer Registry South African Defence Force Correctional Services</td>
</tr>
<tr>
<td>Private sector</td>
<td>Medical aid schemes (private funders) Healthcare providers: Doctors, nurses and other healthcare professionals Private health facilities Traditional healers Long term care facilities NGOs and NPOs Mining sector</td>
</tr>
<tr>
<td>Research</td>
<td>South African Medical Research Council (SAMRC) and other science councils SA universities</td>
</tr>
<tr>
<td>Compensation for injury or disease</td>
<td>Compensation for occupational injuries and diseases Road Accident Fund</td>
</tr>
<tr>
<td>Software – development, supply &amp; services</td>
<td>Software vendors Switching companies</td>
</tr>
<tr>
<td>Individuals - Public</td>
<td>Recipients of health services</td>
</tr>
</tbody>
</table>

Leadership
- Needs mandate from NDoH
- Liaison with WHO: WHO-FIC CC, WHO regional office
- Stakeholder identification and inclusion
- Advocacy and dissemination

Legal and regulatory
- Assess how legal and regulatory framework impacts transition
- Consider impact of cross-cutting issues, e.g. confidentiality

Transition project
- Needs formal governance
- Needs funding and resources
- Align with NH planning and implementation
- Align with interventions to mature national digital health
- Need to include several preparatory assessments or studies
- Change management and advocacy will be critical to a successful transition

During transition
- Maintain consistent data quality and reporting
- Keep ICD-10 MIT updated

Mortality coding
- Improve mortality coordination – NDoH, Department of Home Affairs and Stats SA
- Testing of IRIS-11 for cause of death derivation

Training
- Needs advanced planning and coordination
- Different content for different groups
- Advanced skill set required
- Need to be computer literate
- New certification requirements needed

Coders
- Increase capacity & create more formal posts for professional coders

Information systems
- Strengthen national health IS
- Improve digital health maturity
- Improve interoperability (all levels)
- Enhance software to include ICD-11

Infra-structure
- Improve ICT infrastructure and connectivity to facilities

Table 1: Stakeholders for SA in ICD-11 transition (extract from paper 3) Table 2: Summary of key issues to be addressed in SA for ICD-11 transition
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 thus far.

**Background**

Part of the activities framed in the Terms of Reference as WHO-FIC CC, CEMECE (by its acronym in Spanish) is to promote the correct use of the WHO-FIC within the country and abroad. At this time, the challenge that exists at the global level for the Ministries of Health for the successful implementation of the ICD-11 is recognized. Mexico has started with a series of activities that, without a doubt, will be fundamental pieces for the implementation and successful transition of this new Classification.

**Training**

The CEMECE’s team is convinced that initial training is one of the utmost importance, which is why it has started in mid-2021 with a series of virtual training sessions for ICD encoders and users. It is worth mentioning that basic level training has been given and staff with previous experience in coding with ICD-10 and new staff have been involved. The training begins with the basic knowledge of the ICD-11, mentioning the evolution that the WHO-FIC has had and what is the first product with the ICD-11 MMS. Subsequently, the use of the Coding Tool is taught and finally coding exercises of simple medical terms are carried out to validate the level of knowledge acquired. The activities are divided into three days of training with a duration of 5 hours per day. After this task, the same group that started with the basic activities followed up on the Mortality course (coding and selection of the Underlying Cause of Death). From the beginning during all this process, the objective was to identify key personnel in the use of ICD-11 and that they themselves could replicate these trainings.

**DAY 1:** Introduction to the WHO-FIC

**DAY 2:** ICD-11/Platform Management

**DAY 3:** Coding with ICD-11

**Contents:**

- Introduction: WHO-FIC
- Foundation Component
- What is the ICD?
- Brief history
- Why the change?
- Main changes
- Other uses of the ICD-11
- Main differences ICD-10 vs ICD-11

**ICD API use**

As part of the parallel activities that are being developed and with the support of Vital Strategies, in Mexico the integration of the ICD API has begun and the international model of the death certificate that is contained in the Reference Guide of ICD-11. With this, the first step is being taken to obtain an electronic death certificate in Mexico.

**DORIS test**

About the WHO Digital Open Rule Integrated cause of death Selection software assists in the selection of the underlying cause of death. Mexican WHO-FIC CC made the first test in a real data base. It was a sample with 498 records and the first results of the comparison of the DORIS system code: 292 records of the 498 (58.6%). We are thinking that this is quite important result.

**Acknowledgements**

All CEMECE members are thanked for their collaboration and contributions during this year of work. To PAHO and Vital Strategies for their important and permanent collaboration. The permanent participation and cooperation have been a key piece to maintain the activities as CC with a positive impact in Mexico and the Region of the Americas.
Developing a strategy to improve the quality of mortality data towards ICD-11 implementation: a review of the recent experience in Argentina

Authors: Guevel, Carlos Gustavo1, Pennini, Velén Aimé2, Gassó, Hernan Alejandro2
1 Argentina Collaborating Centre – Ministry of Health, 2 PAHO/WHO Representation in Argentina

Abstract
The Argentine Centre for Classification of Diseases (CACE) together with OPS/OMS-Argentina are carrying out a project framed in The Global Grants Program (GGP) Data for Health Initiative. It aims to improve the quality of mortality data in Argentina at subnational level, as part of the transition and implementation of ICD-11. This project involves the implementation and use of ANACoD3 at subnational level. A virtual training course on mortality analysis was carried out and an application was developed to facilitate ANACoD3 integration with provincial information systems. The project also involves ICD-10/11 bridge coding field trials for mortality, which required the implementation of an in-house computer system with integrated ICD-11 APIs. This poster briefly describes the tools and progress made on both components.

Introduction
The Argentine Centre for Classification of Diseases (CACE) together with OPS/OMS-Argentina are carrying out a project framed in The Global Grants Program (GGP) Data for Health Initiative. It aims to improve the quality of mortality data in Argentina at subnational level, as part of the transition and implementation of ICD-11. This project has been divided into two components. The first one is related to the strengthening of subnational mortality analysis capabilities. The second one involves ICD-10/11 bridge coding field trials for mortality, which has been carried out in three provinces with more than 2,200 death certificates codified so far.

Activities
Strengthening Sub-national Mortality Analysis Capabilities

The first objective of the project was aimed at strengthening subnational capabilities for mortality analysis, with an emphasis on quality analysis. To address this objective, we decided to implement ANACoD3 tool at the sub-national level because, among other similar tools, ANACoD3 is the only one that can be equally used with ICD-10 and ICD-11.

The implementation of ANACoD3 required work on its integration with various local provincial information systems. In this context, the GAMMA software (Generation of Mortality Files for Monitoring with ANACoD3) was developed.

GAMMA was developed in Python language as a desktop application available to users via a download link. It was entirely designed to be used both with ICD-10 and ICD-11 mortality data.

This tool contains two modules: The first is an ANACoD3 file generator. It allows to import death microdata in two most commonly used formats by provincial offices (.MDB or .csv files). The second GAMMA module performs a quality analysis of the data (Figure 1).

The application includes causes of death quality indicators based on different lists. New lists could be also added in both ICD-10 and ICD-11. The tool allows disaggregation at different levels: spatial (province or lower subnational level, health facility), temporal (years), sex, age group, and place of death. In this first stage, 11 provinces have participated in the training and application of this tool and ANACoD3. To date, six of them have incorporated them as routine analysis tools.

On-line Course: Introduction to Mortality Analysis

In order to support the use of the provided tools and to match sub-national capabilities in mortality analysis, an e-Learning course entitled “Introduction to Mortality Analysis” was launched. This course was entirely designed in a Moodle platform by the CACE team, including written and multimedia material organized into three units:
- Unit 1: Basic mortality characteristics;
- Unit 2: Mortality profile by causes; and
- Unit 3: Quality of cause of death data

The course is self-administered and is currently in a pilot phase with 22 participants. The final version will be launched in November 2022.

ICD-10/11 Bridge Coding Field Trials in Mortality

This study was carried out in 3 provinces with the aim to evaluate the impact of the introduction of ICD-11 on mortality statistics. It involved coding several death certificates (IED) using both ICD-10 and ICD-11 versions.

The coding task was carried out by provincial coders who had previously undergone ICD-11 training.

A web-based platform (EPSILON) was developed integrating the ICD-11 Embedded Coding Tool API (Figure 2). EPSILON is the first experience of coding real death certificates with ICD-11 in the country. More than 2,200 death certificates (pre-codified with ICD-10) were loaded into the EPSILON database. Coders had to recode all the causes of death terms with the Embedded Coding Tool. The system saves all the information provided by the API for each codified clinical term.

Preliminary results of this study identified the need to strengthen training for coders. Difficulties with coding certain diagnoses were identified. The coding of external causes and their post-coordination was highlighted. The results of this study are still under analysis. The database will also serve as a basis for testing the Digital Open Rule Integrated cause of death Selection (DORIS) tool.

Acknowledgements

CACE wishes to thank all staff members of WHO, PAHO/WHO, PAHO-Arg and Vital Strategies/ Bloomberg Philanthropies for their continued assistance and support for these activities.
Towards ICD-11 implementation in Argentina: initial diagnosis and development of training activities

Authors: Guevel, Carlos Gustavo; Cardozo, Emanuel; Gallardo, Lucía Sabina
Argentina Collaborating Centre – Ministry of Health

Abstract
Argentina has made significant progress in the implementation of ICD-11 since 2021 through different actions. This poster focuses on a situational diagnosis of the provincial statistical offices (connectivity, data collection tools, the staff and their specific training) which involves the development of training activities. Introductory courses on ICD-11 for coders from all over the country and continuous updates in medical terminology and generic uses of the ICD were carried out. The next steps involve the launching of new courses for going deeper into specific coding of morbidity and mortality with ICD-11.

Introduction
Faced with the challenge of implementing the ICD-11 in Argentina, it was necessary to establish a situational diagnosis of the local statistical systems, considering the characteristics of the system and the federal organization of the country.

Within the activities of the Argentine Plan for the Implementation of the ICD-11, the following were proposed: federal meetings, the realization of a Jurisdictional Situation Diagnosis, and a set of trainings courses related to this proposal.

Methods & Materials
A diagnosis was made on the current situation of the 24 provincial health statistics offices of Argentina, both in the areas of mortality and morbidity, carried out between May and June 2021. A digital survey was used, with closed and open opinion questions assessing different topics. The following categories were included: statistical information circuit, evaluation of information technologies, human resources, training and quality in filling out Death Certificates (DC) and Hospital Discharge Reports (HDR). The mean (Mn) and the distribution characteristics of scores based on a 1 (low)-10 (high) scale were obtained.

Results
The responses of the mortality and morbidity referents were assessed. Regarding mortality, an established statistical circuit is mostly found (Mn: 7.4), with a frequency of receiving DC monthly and in paper format.

In the evaluation of technologies, the provision of computers (Mn: 6.7), access to the Internet and local networks (8.3) were rated as high, while the lack of EMR (electronic medical record) (Mn: 3.1), coding tools (Mn: 4.4), and automated coding system (Mn: 1.2) were rated low.

In relation to morbidity, most of the provinces have an established statistical circuit (Mn: 7.6), with a monthly, digital and decentralized HDR reception frequency. The evaluation of technologies valued positively the provision of computers (Mn: 6), access to the internet and local networks (Mn: 7.1), and negatively the lack of EHR (Mn: 3.9), and the automated coding system (Mn: 2.9).

Conclusions
The installed capacity in the provincial health statistics offices of Argentina in terms of information technologies and staff trained in coding (or with a predisposition to be so), are good bases for the implementation of the ICD-11 in our country. However, it is necessary to strengthen the training of professionals in filling out DCs and HDRs, as well as to expand the implementation of the EHR and automated coding systems for mortality.

Virtual training plan
After the situational diagnosis, it was decided to carry out a virtual training plan. Considering the geographical extension of the country, the web-based training platform of the Ministry of Health was used. The contents were established in accordance with the ICD-11 Reference Guide. The courses were:

Introduction to the ICD-11: two editions were carried out. The first with 108 participants from provincial statistics offices and decentralized institutions of the Ministry of Health, with tutors and synchronous modality. It had an efficiency of 93.6% (October - November 2021).

Medical Terminology and Use of the ICD: It is a self-administered course, open to coders from all health subsystems (360 participants with 25% approval to date). It will be active from July to December 2022.

ICD-11 Mortality rules for underlying cause of death selection: This course will be launched in October this year. The first edition will be aimed at selected coders and will include synchronous activities. A second self-administered edition will follow.

The second edition is still open (until December 2022), with a self-administered modality and available to coders from all over the country. Currently, there are 500 registered participants and 20% of them have already completed it.

Medical Terminology and Use of the ICD: It is a self-administered course, open to coders from all health subsystems (360 participants with 25% approval to date). It will be active from July to December 2022.

ICD-11 Mortality rules for underlying cause of death selection: This course will be launched in October this year. The first edition will be aimed at selected coders and will include synchronous activities. A second self-administered edition will follow.

Regarding the existence of a digital HDR upload system and encoding tools, the results were mixed. The processing of the HDR is decentralized, so it was not possible to quantify the amount of the staff involved; the experience in coding (Mn: 6.7) and the motivation to train (Mn: 8.1), had positive results, recognizing the continuous need for updates of both coders (Mn: 8.7) and other professionals (Mn: 9.1). As for the training of doctors in filling out the HDRs, the opinion was diverse in terms of provinces, health subsystems, and health services.

Figure 1: Degree of motivation for new training activities between mortality (left) and morbidity (right) coders, by province of Argentina.

Figure 2: Box plot of scores assigned to different aspects related to mortality coding by the provincial statistical officers.
Abstract

CIHI is assessing the clinical, business and statistical implications of implementing ICD-11 for health system use in Canada. The work focuses on fitness for use and the statistical continuity of transitioning from ICD-10-CA to ICD-11.

Introduction

The International Statistical Classification of Diseases and Related Health Problems (ICD) is the foundation for identifying health trends and statistics worldwide. It contains thousands of unique codes for diseases, injuries and causes of death. ICD enables the capture of information from health encounters that can be used in research and policy- and decision-making. Some World Health Organization (WHO) member states are currently using ICD-10 while others have created their own clinical modifications. The national standard used in Canada for reporting morbidity statistics is ICD-10-CA. The Canadian Institute for Health Information (CIHI) developed ICD-10-CA in collaboration with an expert panel of physicians and external field reviewers to satisfy Canada’s data needs.

Throughout the development of ICD-11, CIHI has been assessing the specificity of the new classification and providing recommendations for content enhancement through comparison of the content of ICD-10-CA and ICD-11. With the international release of ICD-11 in 2022, CIHI developed a crosswalk between ICD-10-CA and ICD-11 to support the transition to and implementation of ICD-11 in Canada.

Results

Of the 15,488 codes assessed, 32.6% (n = 5,050) were found to have the same level of specificity between ICD-10-CA and ICD-11; 1.9% (n = 293) were more specific in ICD-11; 63.5% (n = 9,836) were less specific (entailing a loss of detail); and 2.0% (n = 309) of the codes did not have an equivalent ICD-11 stem code. When post-coordination was applied to the 9,836 codes identified as less specific, the ability to achieve the equivalent specificity using an ICD-11 cluster was 42% (n = 4,111), while 24% (n = 2,387) remained less specific. No additional specificity could be captured for 34% (n = 3,338), in total.

In total, 59.1% (n = 9,161) of 15,488 ICD-10-CA codes were found to be an exact or conceptual match when mapped to a single or combination of ICD-11 codes, while 37% (n = 5,725) cannot be fully represented, entailing a loss of detail.

Conclusions

Further analysis will be necessary to determine:

• The level of specificity required in Canada for case-mix and national health indicator reporting;
• Whether specificity can be enhanced through post-coordination (stem codes and/or extension codes);
• Whether foundation entities should be elevated to codeable entities; and
• Whether content enhancements are required.

This work will inform our assessment of the impacts to the statistical continuity of ICD-11 as well as any action required to support the transition to and implementation of ICD-11 in Canada.

Acknowledgements

We gratefully acknowledge CIHI’s classification specialists for their contribution to this project.

Table 1

<table>
<thead>
<tr>
<th>Outcome type</th>
<th>ICD-10-CA code</th>
<th>ICD-10-CA code title</th>
<th>ICD-11 code</th>
<th>ICD-11 code description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exact specificity match</td>
<td>A05.2</td>
<td>Pneumococcal pneumonia</td>
<td>A102</td>
<td>Pneumococcal pneumonia</td>
</tr>
<tr>
<td>Greater specificity</td>
<td>J15.0</td>
<td>Pneumococcal pneumonia</td>
<td>J102</td>
<td>Pneumococcal pneumonia</td>
</tr>
<tr>
<td>Lesser specificity</td>
<td>C49.9</td>
<td>Malignant melanoma of skin, unspecified</td>
<td>2C6Z</td>
<td>Malignant melanoma of skin, unspecified</td>
</tr>
<tr>
<td>No match</td>
<td>B95.20</td>
<td>Streptococcus, group D, as the cause of diseases classified elsewhere</td>
<td>8B52</td>
<td>Streptococcus, group D, as the cause of diseases classified elsewhere</td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Outcome type</th>
<th>ICD-10-CA code</th>
<th>ICD-11 target stem code title</th>
<th>ICD-11 post-coordination assignment</th>
<th>Rationale for outcome type after post-coordination assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Exact specificity match after post-coordination</td>
<td>C43.5</td>
<td>Malignant melanoma of skin, unspecified</td>
<td>2C30.Z, 2C30.ZA2</td>
<td>ICD-11 cluster contains same specificity as ICD-10-CA code</td>
</tr>
<tr>
<td>2 Partial specificity match after post-coordination</td>
<td>C50.00</td>
<td>Overlapping malignant neoplasm of breast</td>
<td>2C6Z</td>
<td>ICD-11 cluster remains less specific compared with ICD-10-CA code (i.e., cannot add a code for specificity of “overlapping”)</td>
</tr>
<tr>
<td>3 Not applicable to cluster</td>
<td>D25.1</td>
<td>Intrauterine leiomyoma of uterus</td>
<td>2896.0</td>
<td>Intrauterine leiomyoma of uterus</td>
</tr>
</tbody>
</table>

Limitations

These findings represent preliminary results; further analysis and validation are required, as new ICD-11 updates have been released in 2022. During the project, there were challenges with the assignment of outcome type and post-coordination; in some cases, mapping rules were implemented to ensure consistency in map assignment.
Since 2019, 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 (NCCMC) has been working on the translation and implementation of the Czech version of ICD-11. The first version of the Czech ICD-11 is planned to be released by the end of 2022. In order to implement ICD-11, an Implementation Plan was created, and an Inter-Ministerial Working Committee was established to prepare and coordinate the implementation.

### Implementation Plan

The Implementation Plan includes most of the necessary information and instructions for an implementation process. This document contains description of the ICD-10 and its use in the CR, ICD-11 and the additional tools, motivation to implement ICD-11, procedural steps required for the implementation, detailed description of the creation of the Czech version of ICD-11, estimation of the costs and benefits of implementing, SWOT analysis (Picture 1), selected fundamental decisions, international cooperation and information about the Inter-Ministerial Working Committee.

### Necessary Implementation Steps

Here is a list of main steps necessary for the ICD-11 implementation in the CR:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Partial Action</th>
<th>Responsibility</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Overview of the Czech version of ICD-11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Analysis of the need to introduce ICD-11 in the CR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Translation of ICD-11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Implementation of a new version of ICD-11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Implementation of the first version of ICD-11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Implementation of the second version of ICD-11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Implementation of the third version of ICD-11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Implementation of the fourth version of ICD-11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Selected Fundamental Decisions

In discussions with representatives of institutions involved in the implementation of ICD-11 in the Czech Republic, activities and assumptions were gradually identified. The detailed timing of the included activities is elaborated in the roadmap, which is a part of the Implementation Plan. The key actions, i.e. activities related to certain official decisions, which are then followed by the implementation of other steps are the main steps in the implementation process (Picture 2). Besides the crucial main steps, the roadmap includes list of other necessary activities and steps to ensure successful implementation. In the preparatory phase, it was needed to create Pre-implementation analysis and to map and identify the needs of users as a background pre-condition. Another necessary pre-condition is creation of the Czech version of the ICD-11, which is almost ready to be published. In connection with the publication of the classification, it is necessary to create and publish at the same time initial coding rules, codebooks, specific manuals, ICD-10 to ICD-11 mapping table, and to adapt the tools for mortality coding and selection of underlying cause of death (IRIS automated software). Presentation and distribution tools need to be set and prepared as well as educational/training tools for users. It is important to develop initial and specific training programs. It is needed to ensure the necessary legislation and be prepared for the coordination with other classifications. Practical implementation includes adaptation of information systems on the side of health care providers/facilities.

### Level of use of ICD-11

- a) Hierarchical structure in the form of a defined MMS
- b) “National” linearization created de novo or by derivation from the MMS
- c) Basic terminological layer Foundation

### Timing and coordination of the implementation of ICD-11 in different agendas

- a) Systemic one-off implementation of ICD-11
- b) Individual introduction of ICD-11

### Create custom set of tools for presentation and distribution of the Czech version of ICD-11

- a) Interactive web browser classification
- b) Coding Tool, full-text search of terms in the MNN-11 classification
- c) National API with enhanced services for easy integration into information systems

### Acknowledgements or Notes

IHIS CR, specifically the DCC has been entrusted by the Ministry of Health to manage the implementation of the ICD-11 in the Czech Republic. The implementation and translation of the ICD-11 is 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.
**Abstract**  The German Collaborating Center of WHO-FIC continued translating ICD-11 into German and has set-up related quality measures in cooperation with the medical scientific societies in Germany. This poster reports on settings and challenges of the project as well as on results. Challenges arise in both organizational and technical areas. This information may help countries to translate the ICD-11 into their respective languages.

**Introduction**  In May 2019 ICD-11 was adopted by the World Health Assembly (WHA) for implementation in member states, starting from 2022 on. A transition period of at least five years has been agreed upon for taking necessary measures to prepare for implementation in complex settings, e.g. when using the Iris software for automated mortality coding or in national morbidity use cases. Challenges of transitions in former revisions of the ICD primarily concerned mortality-related time trends, which remain a major challenge in the transition to ICD-11. The main differences to former transitions are characterized by the way documentation and coding are based and the integration of ICD in more advanced morbidity-related use cases (e.g. case mix, quality & patient safety, reimbursement, epidemiology, etc.).

National modifications of ICD-10 have been developed to address country-specific needs and IT systems have been introduced for electronic coding and data processing for various applications. This poster gives an overview of the ongoing translation of ICD-11 into German conducted by BfArM to prepare for future implementation.

**Translating ICD-11 into German**  From late 2018 onwards BfArM conducted the translation of ICD-11 with varying resources. Initially, translation focus was given on the ICD-11 MMS hierarchy until the endpoint of coding, which has been identified as a key component for further evaluation and transition. In a second step, the Foundation terms were translated.

In 2021 besides internal personnel, a cooperation with the Federal Statistical Office of Switzerland was established for the translation of chapter 22 and a substantial number of extension codes. Additional experts were commissioned to translate subsections of chapters 01, 15 and 20. Likewise, the quality assurance already started was continued with experts from the medical scientific societies.

**Challenges**  Mid of August 2022 primary translation of ICD-11 into German is almost completed with the exception of the substances part within the extension codes, chapter 26 and the special views section.

Possible further Reference Translators in the process can only indicate their approval or rejection by using the comment function, which is a significant hurdle considering the extent of the ICD-11 and the limitations to filter comments by the commenter, time, or scope (part of the ICD-11 foundation). This also means that necessary consultation and clarification between experts of the same or other fields and/or cross-chapter topics cannot really be supported by the translation tool. As a further improvement to the translation platform, we think that the implementation of a “validator” role should be considered to support validation tasks without translation rights. The ability to track changes, approvals, and rejections of a translation within the translation tool would be additionally very helpful. Issues were noted with regard to the translation of the Clinical Descriptions and Diagnostic Requirements (CDDR) that have been integrated into the ICD-11 Foundation. At the same time the CDDR are meant to be published separately as a “book” with additional content and process of approval, which creates a competitive situation of potentially different versions, handling copyrights and possible licencing agreements for translations. Clarification on this is urgent.

**Conclusion & Outlook**  The initial translation of ICD-11 including the area of Substances within the Extension Codes is expected to be completed by early 2023. Quality assurance by experts from medical societies will likely be an ongoing process over the next few years. Translating ICD-11 into German is key for further evaluation and for preparing implementation. Bridge vocabularies like ICD-10-GM Alpha-ID (alphabetical index with unique identifiers for every single entry including Orpha Codes) or SNOMED-CT might be considered to support transition and to generate additional value after implementation with regard to interoperability. Thus, harmonization between ICD-11 and SNOMED-CT should be pursued, even if this requires additional efforts.
How are the assistive products listed in WHO-APL described with ICF codes? - a Delphi survey with allied health professionals

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Research Institute, National Rehabilitation Center for Persons with Disabilities, Japan

Abstract
The purpose of this study is to determine how allied health professionals assign ICF b, s, d code to assistive products (APs). The results of the tree-round Delphi survey revealed trends in ICF coding of APs, particularly for APs for communication and wheelchairs, based on d codes; and orthoses and APs for tissue integrity, based on b,s codes. These trends may be indicative of the characteristics of the tacit knowledge about APs held by allied health professionals.

Introduction
The importance of ICF has been widely recognized in the health service space. 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 [Suzurikawa, J., WHO-FIC Network Annual Meeting, poster presentation, 2021]. Meanwhile, assistive products are becoming increasingly important to optimise functioning and reduce disability, following the publication of the WHO-UNICEF Global Report on Assistive Technology published on May 2022. In light of these trends, the relationship between assistive products and ICF will be more important shortly. The purpose of this study is to identify how allied health professionals assign ICF b, s, d code to assistive products.

Methods
The survey participants included 9 physiotherapists, 9 occupational therapists and 8 social workers. The survey method consisted of three-round Delphi surveys by e-mail. Each participant was asked to select ICF s-codes, b-codes or d-codes, assumed to be associated with the 50 assistive products listed on the WHO-APL, and further to rank each selected code and put its degree of confidence indicated on a five-point scale. In the second and third rounds, the results of the previous round were presented to the participants.

Based on the results of the third round, we analysed whether the assistive products surveyed tended to be identified as being related to the ICF “body function and structure (b)” or “activity and participation (d)”.

The calculation of bs-scores and d-scores was carried out as follows. First, the points were calculated by multiplying the ranks answered by all participants by the degree of confidence. In this calculation, the ranks were set to “11 – (the value of the rank [1 to 10])”, so that the ranks ranged from 1 to 10 points. Next, the average of all respondents was obtained. The top 10 items were then obtained for each device. Finally, the total points of the items included in b and s among the 10 narrowed-down items was calculated as bs-scores and the total points of the items included in d as d-scores.

Based on the calculated bs-scores and d-scores, a cluster analysis (hierarchical clustering) was performed to separate groups of assistive products with the same tendency. The number of the clusters was set to 4.

Results
Chart 1 shows the results of the cluster analysis with bs-scores and d-scores.

The assistive products categorised in each cluster was as follows,

Cluster 1
1: Video communication devices
20: Keyboard and mouse emulation software
3: Communication boards/books/cards
12: Ramps, portable
6: Chairs for shower/bath/toilet
10: Communication software
16: Hand rails/grab bars
18: Hearing loops/FM systems
26: Personal digital assistant (PDA)
47: Wheelchairs, manual assistant-controlled
46: Wheelchairs, manual for active use
4: Braillie writing equipment/braille
14: Gesture to voice technology
50: White canes
3: Braille displays (note takers)
49: Wheelchairs, electrically powered

Cluster 2
22: Magnifiers, optical
17: Hearing aids (digital) and batteries
3: Simplified mobile phones
44: Walking frames/walkers
5: Canes/sticks
12: Dectblind communications
7: Closed captioning displays
42: Tricycles
31: Prostheses, lower limb
21: Magnifiers, digital hand-held
11: Crutches, axillary/elbow
48: Wheelchairs, manual with postural support
34: Rollators

Chart 1: Results of the cluster analysis with bs-scores and d-scores on the assistive products listed in the WHO-APL.

Cluster 3
41: Travel aids, portable
39: Therapeutic footwear: diabetic, neuropathic, orthopaedic
33: Recorders
23: Orthoses, lower limb
25: Orthoses, upper limb
1: Alarm signallers with light/sound/vibration
29: Pressure relief cushions
24: Orthoses, spinal
38: Standing frames, adjustable
40: Time management products
19: Incontinence products, absorbent
28: Pill organizers
8: Club foot braces
45: Watches, talking/touching
15: Global positioning system (GPS) locators
30: Pressure relief mattresses

Cluster 4
27: Personal emergency alarm systems

*APs for communication coloured with orange, wheelchairs coloured with green, orthoses coloured with purple and APs for pressure relief coloured with blue.

Conclusions
The results of the Delphi survey of ICF coding with assistive products showed that assistive products for communication and wheelchairs tended to have lower bs points and higher d-scores, while assistive products for tissue integrity and orthoses tended to have higher bs-scores and lower d-scores. These trends may be indicative of the tacit knowledge characteristics held by allied health professionals for each assistive product.

Acknowledgements
This work was supported by MHLW Program Grant Number JPMH21GC2003 and JPMH19GC2002.
Correspondence between the 16 classifications of dental disease names used in the Japanese patient survey and the ICD-11 code

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Abstract
The Japanese government conducts a morbidity-related survey of patients in hospitals and clinics every 3 years. For dental illnesses and injury classification, 16 survey-specific classifications are identified. In preparation for the application of the ICD-11 and comparison of dental disease statistics internationally in the future, we proposed a correspondence between the 16 classifications in the patient survey and ICD-11 codes.

Introduction
The patient survey is a morbidity-related survey of patients in hospitals and clinics to update Japanese government statistics conducted every 3 years. This survey aimed to obtain basic information for improved medical care administration by clarifying the actual conditions of patients who visit hospitals, including their attributes, condition at the time of admission and visit, the names of injuries and diseases, and to estimate the number of patients served by region. Patient survey statistics enable international comparison for the prevalence rates of major diseases. The ICD is used to classify medical illnesses and injuries gathered in the survey. Meanwhile, for dental illnesses and injury classification, 16 survey-specific classifications are used.

However, for the classification of dental diseases, a clear correspondence between the 16 classifications and the ICD to dentistry and stomatology (ICD-DA) codes has not yet been established, and we are currently working on this. Moreover, in preparation for the application of ICD-11, we need to establish a correspondence between the 16 classifications in the patient survey and ICD-11 codes.

Methods
This study aimed to propose ICD-11 codes corresponding to the 16 classifications in the patient survey and to identify problems for the international comparison of dental diseases using statistical information from the survey.

The standard dental disease name master list used in electronic dental records and medical fee claims in Japan contains more than 3,000 disease names and corresponds to ICD-10 (ICD-DA). Therefore, we first developed correspondence between the 16 classifications and ICD-10 codes based on the standard dental disease name master list. A corresponding library of the 16 classifications is proposed to match ICD-11 codes based on ICD-10/ICD-11 mapping tables released on the ICD-11 Browser (Version:02/2022) to address the issues.

To identify issues in international comparisons of dental disease names using patient surveys, we focused on the items ‘dental caries’ and ‘gingivitis and periodontal disease’ included in an outline of the patient survey published by the Japanese government.

The use of extension codes and International Classification of Health Interventions (ICHI) codes was also considered.

Results
Figure 1 shows a correspondence between the 16 classifications and ICD-11 codes. The ICD-11 code corresponding to “01 Caries” under the 16 classifications was “DA08.0 Dental caries”. The classification of “gingivitis and periodontal disease” included in the outline of the patient survey including “05 Gingivitis,” “06 Chronic periodontitis,” and “07 Gingival abscess, other periodontal disease” were considered to correspond to several ICD-11 codes such as DA08.Z, DA0Z, 1C1H, GA34.Z, DA0C.0, and DA0D, respectively.

The extension codes “XA4GG3 Permanent dentition,” “XA7675 Deciduous dentition,” and “XA1PT3 Parts of tooth” allow a detailed representation of the tooth type and tooth surface.

The ICHI codes were expected to enable the expression of “12 Prosthodontics (crown prosthesis)” and “13Prosthodontics (bridge, denture, implant)”, “16 Examination or health check-up and other healthcare services”.

Conclusions
We proposed a correspondence between the 16 patient survey-specific classification used in Japan and the ICD-11 codes for the international comparison of dental diseases.

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.
Future application of ICD-11 codes on the diagnostic names of sickness or injury in nationwide patient surveys in Japan

Keika Hoshi¹, Akihiro Toyota², Masayuki Tatemichi³, Yoko Sato⁴, Eizen Kimura⁵, Masayoshi Tsuji⁶, Hiroshi Mizushima⁷, Hiroshi Yamakami⁸, Tomoko Tashiro⁹, Satoshi Ueno¹, Akemi Nishio¹
¹ National Institute of Public Health, Japan, ² Chugoku Rosai Hospital, Japan, ³ Tokai University School of Medicine, Japan, ⁴ Shizuoka Graduate University of Public Health, Japan, ⁵ Medical School of Ehime University, Japan, ⁶ Kindai University Kyushu Junior College, Japan, ⁷ Medical Information System Development Center, Japan, ⁸ T-Terminology Inc, Japan

Patient surveys are conducted every three years in Japan. Directly filled the ICD codes with the diagnostic names on the patient survey sheets may enhance the efficiency of ICD coding work in the MHLW. Future ICD-11 converted commercialized EMR systems are necessary to make governmental patient surveys more efficient.

Abstract

Patient surveys are conducted every three years in Japan. Directly filled the ICD codes with the diagnostic names on the patient survey sheets may enhance the efficiency of ICD coding work in the MHLW. Future ICD-11 converted commercialized EMR systems are necessary to make governmental patient surveys more efficient.

Introduction

A patient survey was used to create "Patient Statistics", which is one of the fundamental statistics identified in the Statistics Act in Japan (https://www.mhlw.go.jp/english/database/db-hss/ps.html). This nationwide survey is conducted once every three years. One of the aims of this survey is to estimate the number of diseases and injuries treated at hospitals and clinics on the dates of the surveys. Patient survey data in the questionnaire paper sheets or Excel based data sheets in CD-ROM were transfer by post mails or dataset were sent within the automatic upload system from the hospitals and the clinics to the Ministry of Health, Labour and Welfare (MHLW). Main diagnoses of each inpatient and outpatient were included in the survey items. A diagnosis should be a pathophysiological condition, which is not a diagnosis in an insurance claim, according to the guide by the MHLW. In addition, classification of diseases and injuries must comply with the International Statistical Classification of Diseases and Related Health Problems-Tenth Revision (ICD-10) (2003 version). Diagnoses are encoded as ICD-10 codes by the MHLW. Coding efficiency must improve in preparation for future application of ICD-11 codes. Therefore, surveys of hospital electronic medical record (EMR) systems and analyses of the efficiency of coding are needed.

Methods

In this study, we used the questionnaire, along with interviews of medical and assistant staff, to analyze how diagnosis data was extracted from EMRs and how the patient survey sheets were completed. Furthermore, we proposed the methods for enhancing the efficiency of patient surveys and defining the work of ICD coding.

This study was conducted with the approval of the ethics committee of the National Institute of Public Health (NIPH-IBRA #12332).

Results

Data was collected from four hospitals. Most staff felt that it was difficult to fill in the patient surveys with data extracted from EMRs. Electronic methods of extraction and filling data workflow are not automatically managed. Participants reported that more than 95% of diagnoses for outpatients were extracted from medical insurance claim data. Diagnoses of inpatients were extracted from the Diagnosis Procedure Combination (DPC) data in EMRs or from an original database of pathophysiological conditions. All EMR systems have ICD-10 codes in addition to "ICD-10 based standard disease code master for electronic medical records (Medical Information System Development Center, Japan)" authorized by the MHLW (Table1).

Figure 1. Data Transfer from the hospitals and the clinics to MHLW in Patient Survey.

Figure 1. Data Transfer from the hospitals and the clinics to MHLW in Patient Survey.

Table1. Data from the questionnaire/interview

<table>
<thead>
<tr>
<th>Hospitals</th>
<th>In or out patient</th>
<th>Percentage (% of insurance claim and/or DPC disease names used in patient surveys)</th>
<th>Have ICD codes in the EMR systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital A</td>
<td>outpatient</td>
<td>99</td>
<td>√</td>
</tr>
<tr>
<td>Hospital B</td>
<td>outpatient</td>
<td>99</td>
<td>√</td>
</tr>
<tr>
<td>Hospital C</td>
<td>inpatient</td>
<td>100</td>
<td>√</td>
</tr>
<tr>
<td>Hospital D</td>
<td>inpatient</td>
<td>90</td>
<td>√</td>
</tr>
<tr>
<td>Hospital E</td>
<td>inpatient</td>
<td>80</td>
<td>√</td>
</tr>
<tr>
<td>Hospital F</td>
<td>inpatient</td>
<td>90</td>
<td>√</td>
</tr>
</tbody>
</table>

Conclusions

Directly filled ICD codes on the patient survey sheets may enhance the efficiency of ICD coding work in the MHLW. Future ICD-11 converted commercialized EMR systems are necessary to make governmental patient surveys more efficient. Furthermore, a fully translated Japanese ICD-11 should be provided in EMR systems.

Reference


Acknowledgements or Notes

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The authors have no competing interests to disclose with this study.
ICD 11: temporality extension codes in some conditions complicating pregnancy, labour and delivery

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Central Health Directorate, Classification Area, Friuli Venezia Giulia Region, IT WHO-FIC CC

Abstract
Consistent with the state of the art, ICD-11 MMS currently lacks of a full application of the extension codes of Duration of pregnancy for the manifestations of complications of some pathological conditions. The need to use temporality extension codes is suggested to promote the correct collection of data for all the purposes for which the ICD is aimed.

Introduction
Pathologies and injuries affect the stages of pregnancy and therefore the development of the fetus. On the other hand, various anatomical and physiological changes during pregnancy can affect the presentation and progression of complications. Monitoring pregnant women is complex due to the changes in the anatomical and physiological conditions of the pregnant woman.

Methods & Materials
The application of the literature indications in temporality postcoordination of ICD-11 MMS was reviewed, also taking into account what previously done for the same conditions in the national clinical modifications of ICD-10 (in particular CM).

Results
There are two types (A and B) of ICD 11 MMS improvements.

Type A - In many cases ICD 11 MMS does not allow the application of temporality postcoordination of the according labour and delivery at different times of pregnancy during the second and third trimester of pregnancy. Table 1 shows an example of the appropriate temporality extension codes. This improvement should be applied to the majority of categories at the highest level of specification concerning: JA41 Antepartum haemorrhage; JA42 Intrapartum haemorrhage; JA61 Venous complications in pregnancy; JB04 Obstructed labour due to malposition or malpresentation of fetus; JB05 Obstructed labour due to maternal pelvic abnormality; JB06 Obstructed labour due to other causes; JB07 Labour or delivery complicated by fetal distress; JB08 Labour or delivery complicated by umbilical cord complications; JB0A Certain specified obstetric trauma; JB0B Conditions of anaesthesia during labour or delivery; JB0C Certain specified complications of labour or delivery, not elsewhere classified; ND56.9 Injury complicating pregnancy, associated with codes of specific conditions in Injuries to the abdomen, lower back, lumbar spine or pelvis (NB50-NB92).

Type B - For other categories, for example in the premature rupture of membranes, ICD 11 MMS provides temporality postcoordination only for the main category JA89 Maternal care related to premature rupture of membranes and for the two residual sub-categories JA89.Y and JA89.Z. Temporality postcoordination must also be possible on other codes JA89 - at the highest level of specification. Table 2 shows an example of the appropriate temporality extension codes in the categories JA89.0-3.

Conclusions
The use of the appropriate temporality extension codes in the considered conditions may be assumed a main improvement. Furthermore, we need to introduce the temporality extension codes of Duration of pregnancy for childbirth and unspecified episode of care during pregnancy and childbirth.

Table 1 - Appropriate temporality extension codes for Injuries in pregnancy: an example

<table>
<thead>
<tr>
<th>ICD-11 MMS</th>
<th>e.g. Postcoordination of temporality extension codes of Duration of pregnancy for childbirth and unspecified episode of care during pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>ND56.9/JB04</td>
<td>Duration of pregnancy less than 14 completed weeks</td>
</tr>
<tr>
<td>ND56.9/JB04K</td>
<td>Duration of pregnancy 14-19 completed weeks</td>
</tr>
<tr>
<td>ND56.9/JB04L</td>
<td>Duration of pregnancy 20-25 completed weeks</td>
</tr>
<tr>
<td>ND56.9/JB04M</td>
<td>Duration of pregnancy more than 26 completed weeks</td>
</tr>
</tbody>
</table>

Table 2 - Appropriate temporality extension codes for specified categories of Maternal care related to premature rupture of membranes: an example

<table>
<thead>
<tr>
<th>ICD-11 MMS</th>
<th>e.g. Postcoordination of temporality extension codes of Duration of pregnancy for childbirth and unspecified episode of care during pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>JA89.0</td>
<td>Duration of pregnancy 14-19 completed weeks</td>
</tr>
<tr>
<td>JA89.0K</td>
<td>Duration of pregnancy 20-25 completed weeks</td>
</tr>
<tr>
<td>JA89.0T</td>
<td>Duration of pregnancy more than 26 completed weeks</td>
</tr>
</tbody>
</table>

Acknowledgements

References

Abstract
Stepwise approach for the selection of allergens based on technical aspects and real-life data contributes for enhancements to the Extension codes chapter of the ICD-11 and post-coordination of allergic and hypersensitivity conditions.

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 outcomes of this process.

Methods & Materials

- The Logical Observation Identifiers Names and Codes (LOINC) database, was used as the basis for the selection process.
- First step: two independent experts were responsible for the first selection of the allergens according to specific technical criteria:
  (I) relevance in clinical practice,
  (II) prevalence,
  (III) need of simplification for non-allergists,
  (IV) number of the terms needed to fit the ICD-11 framework (letters and numbers).
- Second step: based on real-life relevance of allergens according to the frequency of requests of each allergen.

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%)
      - miscellaneous (4%)

Conclusions

- This project is the collaboration of two French WHO Collaborating Centres in order to propose enhancements to the ICD-11.
- The stepwise approach allowed us to select the most relevant allergens in practice which is the first step to build a classification of allergens to the WHO ICD-11.
- We intend to validate the results through an international academic network.

- Aligned with the achievement in the consolidation of the pioneer section addressed to the allergic and hypersensitivity conditions in the ICD-11, the introduction of a classification for allergens can be considered timely and much needed in clinical practice.
- By allowing all the relevant diagnostic terms for these conditions to be included in the ICD-11 MMS, WHO has recognized their importance not only to clinicians but also to epidemiologists, statisticians, healthcare planners and other stakeholders.
Abstract

Orphanet has developed and maintains the only nomenclature specific to rare diseases (RD), structured using ORPHAcodes. Completion and maintenance of the alignment ORPHAcodes/ICD-11 is crucial to providing a common language across healthcare and research systems for effective monitoring and reporting on RDs. To this end, Orphanet and the Agence du Numérique en Santé have developed two complementary approaches to align the Orphanet nomenclature to ICD-11, one lexical (based on term comparison) and one semantic (based on concept equivalence).

Introduction

The Orphanet nomenclature of rare diseases is a unique and multilingual standardized system providing a specific terminology for RD. Each clinical entity is assigned a unique and time-stable ORPHAcode, under the auspices of the French WHO Collaborating Center, with a special focus on RD already represented in ICD-10.

The aim of this communication is to present the preliminary results of the two complementary approaches to align the ORPHAcodes to ICD-11, developed by Orphanet and the Agence du Numérique en Santé, under the auspices of the WHO Collaborating Center, with a special focus on RD already represented in ICD-10.

Methods & Materials

In order to perform the ICD-10/ORPHA codes alignment, we developed two complementary approaches:

1. Semantic mapping: based on concept equivalence
   - Manual analysis of the previously aligned ICD-10/ORPHAcodes 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 and make recommendations for the integration of new RDs concepts in the ICD-11.

2. Lexical mapping: based on term comparison
   - A lexical-based approach was deployed to investigate correspondence between Orphanet disease labels and ICD-11 terms.

Results

Advancement of the semantic mapping:
- The adopted strategy allowed to map 1,715 (18.3%) clinical entities in the Orphanet nomenclature so far (20.7% of disorders, 10.7% of subtypes and 15.2% of groups of disorders).
- 1,204 clinical entities out of 1,715 are represented in ICD-10 and are summarized in Table 1.

Curation allows for qualifying ORPHAcodes-MNS ICD-11 codes by proximity (Exact mapping (E), Narrower term to broader term (NTBT), Broader term to narrower term (BTNT)) and specificity (Specific code, i.e. the ICD-11 MMS code is specific of the RD and mapped to the main term, Index term, i.e. the ORPHAcode corresponds to a Foundation term included in the stem ICD-11 code, Attributed, i.e. no ICD-11 codes maps to ORPHAcode, and the closest MMS code is attributed according to Orphanet’s rules). (Table 1)

Mapping cases

<table>
<thead>
<tr>
<th>Case</th>
<th>Number of validated mappings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>467</td>
</tr>
<tr>
<td>2</td>
<td>285</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>33</td>
</tr>
<tr>
<td>5</td>
<td>73</td>
</tr>
</tbody>
</table>

Table 1. Number of Validated codes (intersection between lexical and semantic approaches; classified by each case).

Conclusions

The purpose of this combined approach is to achieve an exhaustive representation of RDs in the WHO-FIC Foundation. The initial semantic alignments aimed to assess the representation of RD in ICD-11 compared to ICD-10: a significant improvement of the specificity of RD codes has been documented.

The first semantic mappings allowed for refinement of the lexical approach, in order to detect inconsistencies in both terminologies and enabling future improvements. Conversely, the lexical approach is now the basis for completion of the semantic mappings (2023 aim). In addition, lexical comparison results will improve both terminologies identifying lacking or inexact terms to both parties. Once completed, the full mapping will be maintained following the dynamic evolution of scientific knowledge.

As a result, conceptual and terminological alignment of ORPHAcodes with the ICD-11 will improve ICD-11 interoperability for rare diseases.

Acknowledgements or Notes

We plan to validate the model in clinical settings and obtain feedback from clinicians to further brush up the model.

and attempted to develop a preliminary model for the clinical use of Chapter V based on the results of the clinician survey.

The generic functioning domains of Chapter V to investigate the abilities that are important for an individual’s daily functioning, requires the development of a practical utilization model in clinical settings. In this study, we conducted a survey using the generic functioning domains of Chapter V to investigate the abilities that are important for an individual’s daily functioning.

The present study aimed to use the generic functioning domains of Chapter V to investigate those functioning abilities that are important for these individuals’ daily living.

This study consisted of: 1) a survey for healthcare professionals to determine what items in ICD-11 Chapter V are clinically important, 2) development of sets of categories based on the results of the survey, and 3) preliminary testing of the sets with an existing database.

The common set could be used to describe the severity of disease; for example, Figure 2 shows that the proportion of patients who had moderate or severer problems (rated 2 or higher in qualifiers) in any of the common set categories (toileting, eating, and mobility) was higher for stroke (n=478) than femoral neck fracture (n=199). Age-related differences in severity for each disease group could also be shown; for example, patients aged 80 or more presented with severer functioning problems.

Further, functioning profiles by disease and age groups were compared with the extended set (Figure 3). There were greater differences between stroke and FNF patients in cognitive functions than in motor functions, and greater age was related to severer problems in both motor and cognitive functions.

In this study, clinically important functioning categories differed with living conditions. These results can serve as a foundation for practical guidance in providing tailored support to the functioning of individuals with disabilities. Further investigation in real clinical practice is warranted.
In 2010, WHO started the international classification of traditional medicine (ICTM) project. A major output developed for inclusion within ICD has been the classification of the diagnostic categories used in the traditional medicine (TM) that originated in ancient Chinese medicine and are now commonly used in China, Japan, Korea and elsewhere around the world. This classification represents a unified set of harmonized traditional medicine disorders and patterns from national classifications from China, Japan and Korea, different in each country according to their specific diagnostic approaches.

Implementation, translation and education are ongoing in China, Japan, Korea, USA and UK at the beginning. For the implementation all over the world, the establishment of the education system is necessary. Module II is developing based on India traditional medicine.

### Module II Development

**SEARO countries including India, are actively contributing towards WHO ICD-11 team’s initiative for the development of Module-II covering Ayurveda, Siddha and Unani systems of medicine under Traditional Medicine Chapter as part of the Donor agreement signed in the month of February 2021.**

#### Recap of developments:
- Network/flow of TRM data in India.
- TRM Morbidity Coding, Reporting in INDIA & Usage of Ayurveda-Siddha-Unani National Morbidity Codes along with ICD-10.
- Strategy of TRM morbidity data collection in India.
- ICD-11 TM2 use cases and value proposition.
- Envisaged improvement with the ICD-11 TM2.
- High level comparison between Ayurveda-Siddha-Unani.
- Proposed ICD-11 TM2 High level structure of Ayurveda-Siddha-Unani diagnosis.

#### Ongoing work:
- Prioritization of Ayurveda, Siddha, Unani TM codable morbidity/pattern entities based on frequency analysis, essential use of an entity by Vaidya/Hakim/Siddha doctor.
- Plausible segregation of elements into proposed 24 (tentative) morbidity-based categories and patterns (up to 7 categories).
- Combining the 3 drafts together and assigning “neutral term” for effective clustering of entities and preparation of pre-alpha draft for preliminary verification by subject experts.
- To develop alpha draft based on regrouped combined entities for wider consultation.

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### Abstract

The ICD-11 Traditional Medicine Conditions Module I was included in ICD-11 as a supplementary chapter 26. There are 408 traditional medicine codes in the ICD-11, which released in February 2021 for use and training in advance of the 2022 implementation date. Implementation, translation and education are ongoing in China, Japan, Korea, USA and UK at the beginning. For the implementation all over the world, the establishment of the education system is necessary. Module II is developing based on India traditional medicine.
Introduction

In 2018, China's National Health Commission officially issued a document to promote the clinical application of ICD-11, which includes the ICD-11 Traditional Medicine Conditions - Module I. The SATCM has revised GB95 and GB97 and officially issued GB2021 as a replacement standard. GB2021 makes a good connection between GB95, GB97, and ICD-11. This research studied and tested integrating the latest Chinese national standards and the ICD-11 TM1.

Methods & Materials

Materials: GB2021, ICD-11 TM1, China version of ICD-11 TM1

Data sources: Home page of inpatient medical records from January to October 2021 from 22 hospitals in Shanghai.

Results

In general, China requires a dual diagnosis of Chinese and Western medicine, as well as a combined diagnosis of disorder and pattern. For some reasons, the diagnosis of some cases does not always meet this requirement, so the nearly 300,000 cases in this study were counted separately for disorders and patterns.

Conclusions

The China version of ICD-11 TM1, which integrates the Chinese national standards and the ICD-11 TM1, basically meets the needs of Chinese clinical practice. To reduce the disruption to clinical work, we use double coding in the backend when testing in hospitals. This approach improves the feasibility of new codes and meets different statistical needs. Of course, the research is still an attempt to implement ICD-11 TM1 nationwide, and the new China version has many details to be refined. We will gather more specific information in the next step to improve this version.
**Background**

Patient safety is a critical component in upholding high-quality health care delivery. Measurement of healthcare quality and safety mainly relies on abstracted administrative data.

Electronic medical records (EMR):
- Are widely implemented
- Contain comprehensive real-time information regarding all aspects of patient care
- Offer a valuable complement to administrative data

Harnessing rich EMR clinical data offers a unique opportunity to:
- Improve AE detection
- Identify risk factors of AEs
- Enhance surveillance of AEs

NLP algorithms have the potential to be an efficient and accurate tool to identify AEs in EMRs.

Validated algorithms can harvest information from EMRs and assist with implementing standardized coding systems (such as ICD-11).

**Methods**

**Data**

Structured and unstructured text EMR data from acute care hospitals in Calgary, Alberta, Canada will be linked with ICD-10-CA coded discharge abstract data (DAD) of patients hospitalized between 2010 and 2020 (n~1.5 million).

**Algorithm development**

1. A comprehensive list of AEs will be generated through a systematic literature review and expert recommendations
2. ICD-11 concepts used in definitions of AEs
3. These AEs will be mapped to EMR free text using Natural Language Processing (NLP) techniques
4. An expert panel will assess the clinical relevance of the developed NLP algorithms

**Algorithm validation**

- Test the newly developed AE algorithms on 10,000 randomly selected EMR
- Reviewer training and agreement assessment
- Independent review of 10,000 EMR charts to identify AEs during hospital stays.
- Assess algorithm performance using chart review as reference (e.g., sensitivity, specificity, positive predictive value, negative predictive value, F1 score, etc.).

**Discussion and Application**

- EMRs are a valuable source for identifying AEs
- For timely and accurate identification of AEs, proper methods to extract data are needed
- NLP algorithms are a way to harvest these data.
- We aim to develop and validate NLP algorithms to detect AEs recorded in EMRs
- NLP algorithms can be implemented in EMR-based healthcare systems to detect, in real-time, healthcare-related AEs providing the opportunity for immediate intervention
- These algorithms can potentially be used to develop computer-assisted coding for ICD-11 implementation

**Objective**

This study aims to develop EMR-based AE algorithms for hospital EMR data and to assess the validity of the algorithms using chart review data as reference.

**Acknowledgements**

This study was funded by the Canadian Institutes for Health Research.
Creating a foundation for harmonised clinical and diagnostic coding in South Africa – recommendations of a Technical Working Group

“Start small, learn and expand”

Authors: Wesley Solomon,1 Lyn Hanmer,2 Luisa Whitelaw,3 Soraya Maart,4 Ilse Truter,3 Warrick Sive,3 Robin Dyers,6 Milani Wolmarans,1 Mbulelo Cabuko,1 Debbie Bradshaw2 and Nicholas Crisp1

on behalf of the South African Clinical, Diagnostic and Associated Coding Technical Working Group.


Abstract

The National Department of Health, established a technical working group comprising experts and key stakeholders of the health sector to advise the National Health Council which includes all the provinces, on a harmonised approach to clinical coding. Seven working groups, including both public and private sectors, focused on different aspects of coding and agreed on the following recommendations:-

1. SA to support the migration from ICD-10 to ICD-11 for mortality and morbidity coding of diagnoses.
2. SA to conduct a full due diligence on the International Classification of Health Interventions (ICHI) to be used as a national standard for intervention coding.
3. Establish an ongoing Community of Practice related to intervention coding due to the close relationship between intervention coding and billing models.
4. Support the development of International Classification of Functioning (ICF) use-cases to establish best integration model within the SA Coding schema.
5. Adopt an expanded NAPPI code as central schema for medicines, devices, consumables and IVDs, integrated with recognised international coding/classification systems as appropriate; for example, the Anatomical Therapeutic Chemical (ATC/DDD) system, the International Nonproprietary Names (INN), the Global Medical Device Nomenclature (GMDN) and GS1 barcodes.
6. Establish an advisory structure on clinical and diagnostic coding to support activities such as Contracting Units for Primary Healthcare, Benefits package design and standards related to Patient Information Systems.
7. Professionalize clinical coding through education, development of a career pathway and a professional oversight body.
8. Collaborate with the Higher Education sector to ensure ongoing R&D to maintain appropriate regulatory function, training and contribution to continual improvement in clinical coding.
9. Focus on a user-friendly coding schema that will allow clinical services to continue without introducing an undue burden on the staff.

Methods & Materials

A Technical Working Group (TWG), including public, private, academic, and provincial stakeholders was established to investigate current coding systems and make recommendations as to the selection of an appropriate suite of coding standards to be used in South Africa. Seven workstreams were identified and leads nominated at the inaugural meeting on 12-13 Apr 2022. Each lead was responsible for sourcing the required technical expertise to fulfill their assigned deliverable within a 10-week period. The overall approach was to first unpack the ‘as-is’ state and review the merits of options in a siloed approach. Toward the maturation of the TWG term, each stream’s recommendations were reviewed within the context of the Clinical and Coding ecosystem and consolidated based on principles of pragmatism, technical capabilities, and appropriateness.

<table>
<thead>
<tr>
<th>Introduction</th>
<th>Workstream</th>
<th>Deliverable</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa has a dual health care system funded by public and private funds. It has been acknowledged that the pursuit of Universal Health Coverage (UHC) is predicated on the establishment of a National Standard of Coding, Terminologies and Classification Systems that are interoperable and facilitate an integrated patient centric health system.</td>
<td>1. ICD 10/11</td>
<td>Unpack what is required from a systems and implementation perspective for South Africa to migrate to ICD-11 including what is a realistic implementation timeline.</td>
<td>Recommend transition from ICD-10 to ICD-11 for diagnosis coding for morbidity and mortality and establish national taskforce.</td>
</tr>
<tr>
<td></td>
<td>2. Intervention Coding</td>
<td>Review of current coding systems used within intervention coding systems and highlight the technical strength and weaknesses, usage penetration, maintenance and ownership models.</td>
<td>No single coding schema identified. International Classification of Health Interventions (ICHI) suggested to undergo deep due-diligence investigations – towards implementation of WHO-FIC family.</td>
</tr>
<tr>
<td></td>
<td>3. International Classification of Functioning (ICF)</td>
<td>Identify the current status of ICF based coding systems in South Africa. Review feasibility of international standards that can be implemented in South Africa. Identify current stakeholders that need to be included in an advocacy and technical consultation process.</td>
<td>ICF should be included in the suite of coding tools – and tools need to be developed.</td>
</tr>
<tr>
<td></td>
<td>4. Medicines and Devices</td>
<td>Landscape analysis of Coding Standards used within the Medicines, Pharmaceutical classifications, consumables and medical devices.</td>
<td>Integrate coding systems that work well. Establish a central repository with visibility of all medicines, devices and IVDs. Align final recommendation with the specific requirements of the NHI (e.g., funding structure).</td>
</tr>
<tr>
<td></td>
<td>6. Western Cape Province Use Case</td>
<td>Western Cape province has implemented a matured patient information system environment leveraging the usage of clinical coding structures. Technical representative provided support to each stream based on institutional knowledge and current initiatives such as the incorporation of SNOMED.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Stakeholder Engagement</td>
<td>Though the secretariat mechanism, overall coordination of stakeholders and milestones were managed. This ensured alignment and synergies between the streams. workstreams.</td>
<td></td>
</tr>
</tbody>
</table>

Acknowledgements

Technical Working Group Members
Matthew Zylstra (PHISC); Ilse Truter (WITS); Warrick Sive (WITS); Lyn Hamner, Debbie Bradshaw (SAMRC); Khabo Mahlanru (NDoH); Molefi Mosenogi (GP PDoH); Bheki Mdlovu (MP PDoH); Anisa Lalla (NC PDoH); Robin Dyers, Tamaryn-Jade Augustyn (WC PDoH)
Online diagnostic coding of health problems in an electronic health record

Elisa Asensio-Blasco, Artur Conesa, Santiago Andrés Frid, Xavier Pastor-Duran
Universitat de Barcelona-Hospital Clinic, Spain

Abstract
This project includes two different processes: the online recording of health problems into the clinical workstation in natural language and the automatic coding of these problems. An NLP coding platform provides the corresponding codes in three terminologies: ICD-11, ICD-10 and SNOMED CT. We conclude that it is possible to apply an NLP-based tool for an online coding of the patient’s health problems from the very beginning of the clinical process. By adding relevant clinical data, this platform makes the HPL the central reference for all healthcare actions.

Introduction
For years there has been interest at Hospital Clinic de Barcelona in building a problem-oriented electronic health record (EHR), where the coding of health problems guarantees their computability, adding value for clinician’s work and paving the way for Personalized Medicine.

Methods & Materials
In this project we have defined two different processes: the recording of health problems into the clinical workstation in natural language and, subsequently, the automatic coding of these problems using an NLP coding platform and a health problems Catalog (HPC).

A specific widget has been developed in the clinical workstation to visualize and edit the health problems list (HPL), while a separate coding platform provides the corresponding codes in three terminologies: ICD-11, ICD-10 and SNOMED CT.

The platform has been trained with a corpus of available uncoded health problems and includes four servers (Coder, Reviewer, Manager and Terminology server) to ensure the quality of coding and the correspondence with the physician’s proposal.

Furthermore, our clinical workstation has been adapted so that the HPL can be applied to three frequent healthcare use cases: generation of documents related to the healthcare, orders of tests and drug prescriptions.

The definition of new workflows regarding the HPL was also a key part in the design of the project.

Results
The new workflows regarding the HPL includes:
1. Creation of a new natural language health problem in the HPL
2. Presentation of standardized proposals after initial automatic coding of the problem (Coder server).
3. Selection & validation by the clinician
4. A review process is required in case the coder server is not able to assign a code with an appropriate level of confidence (#nCode)
4. Reviewer server: Review & validation of the coding by selecting a proposal from the Catalog.
4b. Manager server: Review & validation by expanding the search to the whole of the terminology.
5. In some cases, it could be necessary to incorporate new health problems into the Catalog. It is updated by the Terminology server, which hosts the PS encoded in our three terminologies.

This review process includes two possible steps:
4a. Reviewer server: Review & validation of the coding by selecting a proposal from the Catalog.

Finally, we have a patient’s problems list with standardized descriptions at the clinical station, while the corresponding codes are stored and can be retrieved from the HIS.

From this moment, the HPL is available to the physician to carry out the usual activities in the clinical workstation, such as generating clinical documents, or justifying a request for examinations or a pharmacological prescription.

Conclusions
Our project shows that it is possible to apply an NLP-based tool for an online coding of the patient’s health problems at the beginning of the clinical process. Using our platform, the HPL will be the central reference for all healthcare processes, since it will be used to incorporate the relevant clinical data that justify different healthcare actions.

Acknowledgements or Notes
The authors wish to thank Mr. Ricardo Farreras and Mr. Toni Mas for his technical assistance.

NOTES
1. Background of this project in:
   - WHOFIC meeting 2019: “Real time ICD-11/SNOMED CT coding of health problems in an outpatient hospital setting” Poster Id. 302
   - WHOFIC meeting 2021: “Real time ICD-11/SNOMED CT coding of health problems in an outpatient hospital setting” Poster Id. 302

2. Versions of terminologies used:
   - CIE-10-ES 4th Edition 2022-01 (Spanish version of ICD-10-CM)
   - ICD-11 2022-02 version
   - SNOMED CT Spanish Edition 2022-04-30
Evaluation of the number of deaths caused by osteoporotic pathological fractures in Japan: An analysis of the ICD rules and the death certificate.

Center for Next Generation for Community Health, Department of Orthopedic Surgery, Chiba University, Japan

Abstract

The number of deaths due to osteoporosis on the government-published vital statistics was compared with that of the practical number counted based on the death certificate data of approximately 1.3 million individuals of 2018, considering the types of fractures and external causes. It was implied that the practical number of fatalities in which osteoporosis was the underlying cause of death may be 15-fold or higher than the published data, considering not only the tabulated values, but also information regarding the injury mechanism on the medical certificate, aware of the existence of fragility fractures.

Introduction

Osteoporosis is estimated to affect > 75 million individuals worldwide [1] and approximately 12.8 million in Japan [2]. Fragility fractures in the proximal femur or lumbar spine occurring combined with this condition has been reported that the 5-year survival rate deteriorates by approximately 10–20% [3]. In the technical reports, the WHO characterized osteoporosis as bone tissue deterioration and increased fracture risk. Hence, in Japan existing spine and hip fragile fractures caused by a slight external force, such as falling from the standing position regardless of bone mineral density testing, has been a diagnostic criterion for osteoporosis since 2012. The mechanism of hip and spinal fractures mentioned on the medical certificate as well as the patient's condition of disease or injury must be considered to determine the practical number of cases in which osteoporosis is an Underlying cause of death, considering the existence of fragility fractures.

Methods & Materials

Using the Japanese government-published vital statistics with ICD-10, the number of deaths due to osteoporosis (ICD-10 code; M80; Osteoporosis with pathological fracture, M81 Osteoporosis without pathological fracture), total of hip fractures (S72.0; Fracture of neck of femur, S72.1 Pertochoanteric fracture, S72.2 Subtrochoanteric fracture), and spinal fractures (S12 Fracture of neck, S22.0 Fracture of thoracic vertebra, S22.1 Multiple fractures of thoracic spine, S32.0 Fracture of lumbar vertebra) in 2018 were calculated. We compared them with the death certificate data of vital statistics in 2018 on hip fractures and spinal fractures caused by fall at the same level (W01 Fall on same level from slipping, tripping, and stumbling) of approximately 1.3 million individuals’ data of survey slips with the permission of a statistical bureau consistent with the Statistics Act of Japan.

Results

According to the government-published data, the number of osteoporosis and a total of hip and spinal fracture were identified as the underlying cause of death in 190 and 3948 (hip fractures;2827, spinal fractures;1121) cases, respectively.

Discussion

Our results indicated that the practical number of fatalities in which osteoporosis was the underlying cause of death may be 15-fold or higher than that of the published data, considering not only the tabulated values but also information regarding the injury mechanism on the medical certificate.

The ICD manual states that a Disorder of bone density and structure (M80-85) should be coded as a cause of death instead of fractures if a disease of bone density was mentioned next to or as the cause of the fractures on the certificate. Physicians should be counselled to include osteoporosis on the certificate if fragility fracture is a cause of death.

Possibly, we would want special coding instructions for the linkage between hip fracture and fall on same level in the Reference Guide, such as ‘in cases whose tentative underlying cause of death is hip or spinal fractures, if “fall on the same level” is mentioned on the death certificate, consider it a case of pathological fracture due to osteoporosis’. Since it is considered to be ‘the disease that initiated the train of morbid events leading directly to death’. Reliable treatment of osteoporosis is important for public health as well as injury prevention.

References

[3] Cooper C.1993

(This poster contains content under submission to a medical journal.)
Validation of COVID-19 death data in Czechia

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Abstract

Deaths due to COVID-19 are highly monitored indicators during the pandemic. Even though there is a definition of what is to be considered as COVID-19 death, there are large inconsistencies and discrepancies between countries as regards reporting of such deaths. COVID-19 brought new needs and possibilities for processing healthcare data. The completeness and quality of the collected data, or other qualitative parameters, come to the fore. Now, 2.5 years after the first deaths occurred, and in the context of the recorded excess mortality, it is necessary to review how much the data based on continuous surveillance during the pandemic correspond to reality.

Data sources

In the Czech Republic, there are two different data sources providing information on COVID-19 deaths.

- **Information system on infectious diseases** is intended mainly for continuous monitoring of the number of new cases, but at the same time it provides data on deaths possibly related to COVID-19. However, this data source does not distinguish the real causes of death and tends to underestimate the total number of deaths. Second data source is the **Registry of deaths**, which includes causes of death data, based on medical certification. Death certification in Czechia is in most cases (more than 80%) based on electronic death certificate and selection of underlying cause of death is performed centrally by IRIS. However, this data source must be validated and processed thoroughly and does not provide data on daily / weekly basis.

Validation process

Total death toll possibly / probably linked to COVID-19 was identified in both years – 17,235 in 2020 and 33,567 in 2021. In part of these cases, more detailed validation was performed.

In 2020, validation was very detailed, and some 4,200 cases were validated case by case by group of experts, with inclusion of information received from hospital system (discharge report).

In 2021 validation process was less detailed and was based mainly on data about treatment and care provided. Finally, where relevant, causes of death were adapted properly before being processed by IRIS. In some cases, information on COVID-19 was added into the data as a cause which attributed to death.

Validation by group of experts

Only certain cases out of a total of 17,235 deaths possibly related to COVID-19 in 2020 were selected for validation purposes. Such cases were excluded when:

- Cases where an external cause of death was listed on the certificate (n=75) and it was evaluated as the underlying cause of death.
- Only diagnosis codes that are assumed to be directly related to COVID-19 or non-specifically describe the immediate cause of death in such a case and at the same time COVID-19 was selected by the IRIS tool as the underlying cause of death were listed on the certificate. These cases were evaluated as death due to COVID-19.

Results of validation

Only such cases where validated where death occurred during hospitalization and it was possible to obtain hospitalization records with detailed data. In total, over 4,200 records were validated. Based on the DC and the hospital record, the experts had to decide whether:

- a. COVID-19 is the underlying cause of death
- b. COVID-19 is associated with death, not the underlying cause
- c. COVID-19 is not associated with the cause of death

At the same time, the experts had to decide on the underlying cause of death, whether it is necessary to modify the one obtained by the original process before validation. If so, then the entries in the cause of death statistics were adjusted and selection of underlying cause of death was repeated.

Official COD statistics

Finally, COVID-19 was selected as underlying cause of deaths by application of the ICD rules in 10,539 cases (2020) and 25,455 cases (2021).
**A PILOT MODEL DEVELOPMENT ON QUALITY IMPROVEMENT OF CAUSE OF DEATH FOR DEATH OUTSIDE HEALTH FACILITIES IN 12 HEALTH REGIONS**

Rugsapon Sanitya, Nuttapat Makka, Kanitta Bundhamcharoen
International Health Policy Program, Ministry of Public Health, Thailand

**Abstract**
This study aims to improve the quality of cause of death (COD) data on deaths outside health facilities. We have developed and piloted a model with assisting tools and a system for regular review of COD data by community health personnel in 12 pilot provinces. Mortality data from January to May 2022 were retrieved and allocated to the pilot provinces for review. The model comprises of two components: a) deaths with medical history within 365 days prior to death, and b) deaths without medical history during the same period. Between January and March 2022, there were 16,508 deaths outside health facilities, 38% of which had an associated medical history. As of July 2022, 54% of deaths with medical history were reviewed and 97% of them could be verified; 30% of deaths without COD could be assigned post-interview by interview in 3% of these cases.

**Introduction**
Quality cause of death (COD) data is a critical input for many aspects of health decision-making. The quality of COD data in Thailand, especially of natural deaths outside health facilities depends on information that the deceased’s relative give to the registrar. More than half of all deaths in Thailand occur outside health facilities, resulting in 39% of deaths being ill-defined. As such, the aims of this work is to improve the quality of data regarding deaths outside health facilities.

**Methods & Materials**
We have developed a model and an instrument based on the experience of the latest verbal autopsy study of Thailand. The model comprises of two components (Chart 1).

- **a)** deaths with medical history within 365 days prior to death; medical records (MR) are reviewed by the hospital’s medical coders to ascertain the correct COD in the data collecting program. The program to review medical records was developed by a specialist.
- **b)** deaths without medical history during the same period; a community public health officer conducts a verbal autopsy (VA) via an online tool. Nine experts were consulted to produce a short version of the 2016 WHO VA for this study. In addition, a team leader from each Public Health Province Office is responsible for monitoring, and reporting to their Chief Officer (Chart 1).

We conducted a selection meeting of 12 pilot provinces from the 12 Health Regions across the country, and a preparation meeting with the 12 selected provinces. In addition, we conducted a training program in March 2022; five cohorts of community health personnel participated including medical coders and community public health officers. Mortality data from January to May 2022 were retrieved from the Bureau of Registration Administration and allocated to the pilot provinces for review. The model will be piloted for 6 months during May-October 2022.

**Results**
Of the 16,508 deaths outside health facilities in the 12 pilot provinces between January and March 2022, 38% of deaths had an associated medical history. The proportion of deaths with medical history varied between January and March, 31-46% (Table 1), with the highest fraction in February (46%).

**Table 1: Percentage of medical record found among natural deaths outside health facilities**

<table>
<thead>
<tr>
<th>Month</th>
<th>With medical history</th>
<th>Without medical history</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>31%</td>
<td>69%</td>
<td>5,850 (100%)</td>
</tr>
<tr>
<td>Feb</td>
<td>46%</td>
<td>54%</td>
<td>5,019 (100%)</td>
</tr>
<tr>
<td>Mar</td>
<td>39%</td>
<td>61%</td>
<td>5,639 (100%)</td>
</tr>
<tr>
<td>Total</td>
<td>38%</td>
<td>62%</td>
<td>16,508 (100%)</td>
</tr>
</tbody>
</table>

**Conclusions**
The model provides an opportunity to strengthen knowledge and capacity of community health personnel and to address their obstacles in the implementation. An effective team leader, network, setting experience, and policy support were essential to the implementation’s success.

**Acknowledgements**
We wish to thank all community health personnel in the 12 pilot provinces for their work, and the Health Systems Research Institute and the Office of the Permanent Secretary, Ministry of Public Health for funding support.
Mapping Assessments Instruments for Headache Disorders

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**Abstract**
We carried out a review to map assessment instruments on disability, QoL and work-related difficulties for headache disorders. A total of 26 instruments were found in 150 papers, mostly addressing A&P and BF, whereas EF are scarcely addressed. Also, instruments developed for migraine are also used for TTH and CH. New research is therefore required for deepening our knowledge of patient-reported outcomes in TTH and CH, and to expand EF consideration.

**Introduction**

Headache disorders are among the most common disorders. In the period between 1990 and 2017, they ranked second for prevalence, and represent 98% of all neurological disorders.

The aim of this study is to map the instruments available for assessing headache disorders in relation to the International Classification of function, disability and of health.

**Methods & Materials**

We screened a total of 531 papers based on the presence of outcome on disability and impact and which dealt with primary headaches in adult patients. A total of 150 papers and 26 instruments were included. 15 instruments concerned disabilities and the impact on everyday life, 9 concerned the quality of life (QoL) and 2 dealt with problems work-related difficulties.

The most widely used assessment instruments were MIDAS (86 papers), HIT-6 (71 papers) and MSQ (28 papers).

The instruments used for assessment were linked to Body Functions (BF) Activities and Participation (A&P) and Environmental Factors (EF).

**Conclusions**

We showed that the most commonly used assessment basically include BF and A&P. Only some domains of functioning are covered, particularly with regards to daily life, school and work-related tasks, free time, relationships, as well as regarding symptoms such as pain, emotional stress, energy level and impulse control.

Scarce consideration was given to the impact of EF. Most of the instruments have been developed for migraine and may be therefore inadequate with regards to addressing disability or QoL in TTH and CH.

New research is therefore required for deepening our knowledge of patient-reported outcomes in TTH and CH, and to expand EF consideration.

**Results**

We screened a total of 531 papers based on the presence of outcome on disability and impact and which dealt with primary headaches in adult patients. A total of 150 papers and 26 instruments were included. 15 instruments concerned disabilities and the impact on everyday life, 9 concerned the quality of life (QoL) and 2 dealt with problems work-related difficulties.

The most widely used assessment instruments were MIDAS (86 papers), HIT-6 (71 papers) and MSQ (28 papers).

The instruments used for assessment were linked to Body Functions (BF) Activities and Participation (A&P) and Environmental Factors (EF). A&P was the field most widely used with 49 different categories and 320 single links, while the second most widely used field was BF with 11 different categories and 97 links. The third field, EF, included 9 categories and 15 links.

**ICF Domains and Categories**

<table>
<thead>
<tr>
<th>ICF Domains and Categories</th>
<th>Primary Headache</th>
<th>Common to the Three Disorders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Migraine</td>
<td>TTH</td>
</tr>
<tr>
<td>Energy and drive</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Attention</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Emotional functions</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pain</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Activities and Participation</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Focusing attention</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Directing attention</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reading</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Carrying out daily routine</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Washing oneself</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Dressing</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Acquisition of goods and services</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Preparing meals</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Doing housework</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Caring for household objects</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Involuntary social relationships</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Family relationships</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Higher education</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Remunerative employment</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Recreation and leisure</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Total no. of ICF categories 16 18 18 15

Notes: ✓-ICF category covered by one-third of the instruments. TTH, Tension-Type Headache; CH, Cluster Headache.

**Reference**

Abstract

Healthcare facilities for elderly dependents in France currently use PATHOS codes, which are not used in the French interoperability framework. The aim of this work was to produce an ICD-PATHOS alignment, to establish gateways between ICD-coded data in health records and PATHOS-coded data in geriatric patients’ records.

Introduction

In France, healthcare facilities for elderly dependents, which involve multiple perspectives of management, combined with poly pathological conditions, currently use the PATHOS thesaurus, maintained by the CNSA [1] to assess patient care needs (Fig. 1A).

PATHOS-coded data in geriatric patients’ records are currently not interoperable with ICD-coded data in health records (Fig. 1B). The aim of this work was to propose an ICD-PATHOS alignment, to establish gateways between these data without transcription or information loss.

Methods & Materials

To map PATHOS sections with the structured ICD concepts, a combination of semi-automatic and manual approaches was used:

1. **NLP preprocessing techniques** were used to match ICD terms to PATHOS terms, which were obtained by annotating PATHOS free-text definitions using the ECMT (multi-terminological concepts extractor) tool [2], developed by CHU Rouen (Fig. 2A).

2. These results were validated by a medical expert, and then completed with additional manual maps, established upon interpretation / manual annotation of PATHOS definitions (Fig. 2A).

3. **Semantic relations** were attributed to each correspondence, along with coding recommendations.

Results

The semi-automatic approach yielded 350 correspondences, among which 214 codes were validated by a medical expert. Additionally, the expert attributed 332 manual correspondences between ICD-10 codes and PATHOS sections, upon interpretation and manual annotation of PATHOS definitions.

Conclusions

This work succeeded at bridging patient files clinical data with admission records in nursing homes for elderly dependent patients in France (EHPAD) (Fig. 3A), paving the way for interoperability of medico-social care plans with national and international healthcare systems, both for primary and secondary uses of data: reimbursement, general production of care, coordination, cross-border care, epidemiological surveillance and medical research.

By introducing an additional use case for ICD codes in the medical-social sector, this alignment in turn unlocks a wide range of new use cases for data from this sector.

Future works will be focused on preparing the transition to ICD-11 by validating the alignment between PATHOS sections and ICD-11 codes, as well as on investigating potential alignments between PATHOS care profiles and ICHI interventions (Fig. 3B).

Acknowledgements or Notes

Comparative evaluation of methods for assigning causes of death from verbal autopsies in India

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1ICMR-National Institute of Medical Statistics, New Delhi.
2WHO, Country Office for India, New Delhi, India.
3Research School of Population Health College of Health & Medicine, ANU, Australia.

Performance of physician-certified verbal autopsy (PCVA) and three computer-coded verbal autopsy (CCVA) methods (InterVA 5, InSilico and Tariff) were evaluated using WHO 2016 VA tool on 1928 reference diagnosis cases for assigning cause of death. The PCVA method had the best performance out of all the four COD assignment methods in our study sample with highest agreement, Kappa and highest sensitivity for 15 out of 20 causes of death.

Introduction

- VA interviews were conducted for the cases identified in these five hospitals by trained field investigators using the WHO VA 2016 tool.
- VA CoD was derived using 3 CCVA methods as well as PCVA (dual review with adjudication), for comparative analysis
- Each VA interview was reviewed by two independent physicians (P1 and P2) for CoD assignment and in case of disagreement between P1 & P2 the case was referred to third independent physician (P3) for finalising the underlying CoD as per ICD procedures.
- All CoD assigned cases by P1, P2 and P3 were included for validation of PCVA and CCVA.
- Following Statistical metrics were used for analysis: Cause-specific mortality fractions (CSMF), Percentage Relative Difference, Sensitivity and positive predictive values, CSMF Accuracy, Cohen’s Kappa and agreement statistic, Cross tabulations.

Methods & Materials

- A total of 2120 cases were available for field validation. Male deaths comprised about 61% and stillbirths/neonatal deaths accounted for 15%.
- 14.63% (n=310) of PCVA, 21.33% (n=452) of Inter-VA5, 26.52% (n=562) of Tariff and 25.76% (n=546) of InSilicoVA identified some cases to an ‘undetermined’ category.

Results

- The PCVA method showed the highest sensitivity for 15 out of 20 causes of death; achieving the highest accuracy with considerable margins of difference.

Conclusions

- PCVA has the best performance out of all the four COD assignment methods.
- Most diagnostic errors in PCVA could be traced back to identify incorrect or incomplete VA data collection.
- Detailed symptoms and diagnostic information available from the VA questionnaires, along with the established reference diagnosis for each case would enable further development of the diagnostic logic of CCVA programs.

Acknowledgements

The authors acknowledge the funding support received from MOHFW Govt. of India, WHO Country Office India and thank the collaborating institutes, study investigators and the study participants.
Automated verbal autopsy in Colombia: a successful case in a rural dispersed and multicultural territory

Authors: Hurtado Kristel J., Gordillo Nelson, Álvarez Victor Hugo
Vital Strategies, Colombia

Abstract
The verbal autopsy is an effective instrument to support the medical certification and civil registry of deaths in rural dispersed areas, allowing the recognition of vital statistics in hard-to-reach communities and reduced contact with institutionality. The adoption of Smart-VA instrument in routine extramural health care activities and social mobilization in framework a community-based demographic surveillance strategy "Colombia Rural Vital" in a department with jungle topography, high rural population, multiethnic groups (indigenous, afro-descendants and mestizo communities) and background of armed conflict as Putumayo allowed its sustainable and institutional use.

Introduction
Colombia is a multidiverse country with highly rural territories and multiethnic groups. The department of Putumayo is at south of country, bordering Ecuador and Peru, near 341,513 people live Putumayo, and almost two thirds of the population lives in rural areas. Putumayo has a mixed flat and Amazonian topography, so in its location there is a presence of armed groups that control the routes of cocaine production and drug trafficking.

The history of violence and high rurality have influenced the omission of vital statistics (births and deaths), near 27.3% have been omitted in Putumayo (statistical year-book DANE – 2019). To improve this was implemented a community-based demographic surveillance strategy called "Colombia Rural Vital - CRV", which uses the instrument of verbal autopsy “Smart-VA” to determine the probable cause of deaths in deaths occurring in the community.

Methods & Materials
From 2018 to 2022, half the municipalities in Putumayo (n: 6/13) have implemented the community-based demographic surveillance strategy "Colombia Rural Vital", through which deaths and births have been certified in the population with limited access to a health service and institutionality.

Between 2018 and 2020 only the municipality of Orito operated, in the middle of the COVID-19 pandemic in 2021 it expanded to 5 additional municipalities (Villa Garzón, Valle del Guamanéz, Colón, Puerto Asis and San Miguel). In total 46 rural deaths have been certified in 5 municipalities, contributing 23.2% of overall deaths of natural causes in rural areas recorded in the RUAF-ND system, if they had not been identified and characterized by verbal autopsy would likely be omissions for health sector.

The key elements that contributed to the sustainable use of verbal autopsy in this department are listed in chart 2.

Conclusions
The verbal autopsy demonstrates be useful to certificate natural deaths at home hard-to-reach communities and reduced contact with institutionality, however, difficulties persist in the certification of external cause of death mainly in indigenous groups. The adoption of Colombia Rural Vital- CRV strategy as part of the routine activities of local hospitals and municipalities health Secretaries allows the sustainable use of verbal autopsy, favoring scaling to other territories.

Acknowledgements or Notes
Acknowledgments to Directorate of Epidemiology and Demography Ministry of Health and Social Protection, Vital Strategies, Melbourne University, the Pontifical Xavierian University and Putumayo Health Secretary this strategy would not have been possible without their presence and commitment.
The causes of adult mortality in Bangladesh – findings from a household survey in a rural sub-district


icddr, b, Dhaka, Bangladesh

Abstract

Accurate data for tracking mortality is paramount for comprehending country’s health status. A household survey was conducted to assess mortality at a southern sub-district of Bangladesh in 2021. In this analysis we present the distribution of causes of death for adult population (aged above 18 years). Stroke was found to be the leading cause of deaths.

Introduction

The ability to live a long and healthy life is an essential part of the development process. Survival is thus one of the measures of a country’s level of development. Policymakers and planners must be aware of the causes of disease and death in the population they serve, in order for interventions to be effectively implemented and tailored to the appropriate individuals. This research aims to determine the causes of deaths among adults using a sub-national representative survey based analysis.

Methods & Materials

We conducted a household survey during February, 2021 to June 2021, in Sitakundu, a sub-district of Chattogram situated in the southern part of Bangladesh to assess mortality. Tab-based Verbal Autopsy was conducted using the WHO standard Verbal Autopsy (2016) tool version 1.5.3. We used InterVA-5 algorithm to determine the causes of deaths. In our study, we considered 1661 deaths that occurred among adults (aged above 18 years). Based on the ownership of household goods, we used principal component analysis to measure wealth status (the three categories: low, middle, and high). We used descriptive statistics to determine the causes of deaths.

Results

Stroke was the leading causes of deaths (18%), followed by unspecified cardiac disease (12%), acute respiratory infection including pneumonia (10%), epilepsy (10%), and acute cardiac disease (6%) at Sitakundu in Bangladesh. 57% of deaths caused by stroke and 63% of deaths caused by acute cardiac disease occurred among males. About 40% of acute cardiac disease related deaths happened in the family with higher wealth status. 72% of deaths caused by stroke occurred at home at Sitakundu.

Chart 1: Distribution of cause of death among adults (18 years above)

Chart 2: Cause specific deaths distribution by background characteristics

Conclusions

Stroke, unspecified cardiac disease, acute respiratory infection including pneumonia, epilepsy and acute cardiac disease are responsible for more than half of all deaths among adults aged above 18 years. Adult mortality could be reduced by addressing risk factors for common causes of death, such as stroke and cardiac disease. Special regional measures need to be taken to prevent and control these emerging public health challenges among adults in Sitakundu.

Acknowledgements

We are grateful to Bill and Melinda Gates Foundation for funding this research. We are also thankful to all our study participants and field staff who worked relentlessly during this survey.
Adolescents and young adult mortality in Bangladesh - findings from a household survey in a rural sub-district


Abstract

Reliable data for tracking mortality is important for understanding a country’s overall health situation. A household survey was conducted to assess mortality at a southern sub-district of Bangladesh in 2021. In this analysis we present the distribution of causes of deaths for adolescents (aged 6-19 years) and young (aged 20-26 years) population. Road traffic accident was the leading cause of deaths for adolescents and young population of this region.

Introduction

Information regarding mortality is paramount to understand and monitor progress related to the health situation of a country’s population. In order to accelerate the reduction in mortality rates, it is important to prioritise initiatives targeting the major causes of death. This study aims to characterise the most common causes of mortality in adolescents and young adults using a sub-national representative sample in Bangladesh.

Methods & Materials

A household survey was conducted to assess mortality in February, 2021, in Sitakundu, a sub-district of Chattogram division situated in the southern part of Bangladesh. We used an adapted version of the WHO standard Verbal Autopsy (2016) version 1.5.3 tool to conduct tab-based Verbal Autopsy. The causes of death were determined by using the InterVA-5 algorithm. We included 85 deaths among adolescents and young adults aged 6 to 26 years in our analysis. From 6 to 19 years we included 43 deaths and from 20 to 26 we included 42 deaths in this analysis. We measured wealth status (the three categories – low, middle, and high) using principal component analysis based on ownership of basic household goods. The causes of death were reported using descriptive statistics.

Results

Road traffic accident was the leading cause of deaths (14%), followed by epilepsy (9%), accidental drowning and submersion (7%), obstetric haemorrhage (6%) and acute respiratory infection including pneumonia (6%) at Sitakundu among adolescents and young population. Road traffic accident (16%) was the major cause for the adolescent (6 to 19 years), and epilepsy (12%) for the young adults aged 20 to 26 years. Around 75% of road traffic accident related deaths occurred in male. 50% of accidental drowning and submersion related deaths happened in the family with lower wealth status. About 25% of deaths from acute respiratory infection occurred in the absence of care seeking.

Chart 1: Distribution of cause of deaths among adolescents and young adults (6 to 26 years)

Chart 2: Distribution of cause of deaths among adolescents (6 to 19 years)

Chart 3: Distribution of cause of death among young adults (20 to 26 years)

Conclusions

In order to prevent untimely mortality among adolescents and young adults, attention must be paid to risk factors for causes of deaths in the general population, such as road traffic accident, and epilepsy. We recommend strengthening existing adolescents and young adult health programmes to avert the majority of these preventable deaths considering the need of southern regions of Bangladesh.

Acknowledgements or Notes

We are grateful to Bill and Melinda Gates Foundation for funding this research. We are also thankful to all our study participants and field staff who worked relentlessly during this survey.
Agreement between cause of death assignment by computer-coded verbal autopsy methods and physician coding of verbal autopsy interviews in South Africa.

Authors: Pam Groenewald, Sam Clark, Oluwatoyin Aiwotiwon, Diane Morof, Tracy Glass, Monique Maungo, Mireille Cheyip, Chodziwadziwa W Kabudula, Richard Li, Jason Thomas, Debbie Bradshaw on behalf of the South African National Cause-of-Death Validation project team.

1. SAMRC Burden of Disease Research Unit and SA WHO-FIC Collaborating Centre, South Africa; 2. Ohio State University, USA; 3. Centre for Disease Control and Prevention, South Africa; 4. University of Witwatersrand, South Africa; 5. University of California Santa Cruz, United States.

Abstract

The national cause-of-death validation study conducted verbal autopsies (VAs) for a sample of deaths and assigned underlying causes by physicians (PCVA) and three computer-coded (CCVA) methods. This provided an opportunity to compare the performance of InterVA-5, InSilicoVA and Tariff v.2 to PCVA in assigning a cause of death.

Trained fieldworkers conducted face-to-face interviews using the WHO2016 VA instrument for 5,387 deaths of all ages across South Africa between 1 July 2017 and 30 April 2018. Each VA was reviewed independently by two clinicians and a medical certificate of cause of death (MCDD) completed according to WHO ICD-10 guidelines. These MCDDs were coded to ICD-10 using the automated coding software IRIS. The ICD-10 causes from the PCVA were mapped to the WHO VA cause of death list to enable comparison between PCVA and CCVA. The WHO VA cause list was mapped to a shorter cause list of 25 causes.

Differences in CSMF were seen: For HIV, the CSMF for PCVA and Tariff were close but higher than for InterVA and InSilicoVA. The inverse was true for the CSMF for tuberculosis (TB). The CSMFs for diabetes mellitus and COPD obtained from Tariff were almost double those from PCVA and the other CCVAs. The CSMFs for acute respiratory infections were higher for PCVA than for PCVA. CSMFs for digestive cancer and lung cancer also differed between the coding methods. Maternal mortality fractions were implausibly high for Tariff. The PPV and sensitivity showed some significant differences between the CCVAs particularly for TB, maternal causes and injuries. Overall agreement, kappa, and CCC were slightly higher for InSilicoVA and Tariff but there is room for improvement of all the algorithms for use in South Africa.

Introduction

The South African National Cause-of-Death validation study collected a sample of verbal autopsies with cause of death assignment by both PCVA and three CCVA methods. This provided an opportunity to compare the performance of three CCVA methods (InterVA-5, InSilicoVA and Tariff v.2) to PCVA in assigning a cause of death at the individual and population level.

Methods & Materials

Sample details and data collection methods are detailed elsewhere. VAs were independently reviewed by two trained of clinician reviewers. VA data were analysed by three CCVA methods. Comparison was undertaken at the individual level using the most likely cause of death identified CCVA methods and at the population level using the three most likely causes and their likelihoods.

Results

The cause specific mortality fractions are shown in Figure 1 and the agreement between CCVA methods and PCVA is summarised in Table 1.

Table 1. Measures of agreement (95% CI) between CCVA and PCVA, NCDVD SA 2017/18.

<table>
<thead>
<tr>
<th>CCVA Method</th>
<th>Overall Agreement</th>
<th>Kappa Statistic</th>
<th>CCC</th>
</tr>
</thead>
<tbody>
<tr>
<td>InterVA-5</td>
<td>48.4% (46.9% - 49.9%)</td>
<td>0.43 (0.42 - 0.44)</td>
<td>0.39</td>
</tr>
<tr>
<td>Insilico</td>
<td>51.6% (50.2% - 53.1%)</td>
<td>0.47 (0.46 - 0.47)</td>
<td>0.52</td>
</tr>
<tr>
<td>Tariff v.2</td>
<td>51.2% (49.8% - 52.7%)</td>
<td>0.46 (0.45 - 0.47)</td>
<td>0.38</td>
</tr>
</tbody>
</table>

The positive predictive value (PPV) for HIV/AIDS using InterVA-5 was significantly lower than for Insilico and Tariff v.2. The PPV for Tuberculosis and Transport accidents by Tariff v.2 was significantly higher than for InterVA-5 and Insilico. The PPV for Maternal causes was significantly lower for Tariff v.2 than the other CCVAs. The sensitivity for HIV/AIDS, Diabetes mellitus and Chronic obstructive pulmonary disease by Tariff v.2 was higher than for the other CCVAs. For Perinatal and Homicide, it was lower than the other CCVAs. PCVA assigned an undetermined cause to 853 records. Tariff assigned 47% of these cases to undetermined, followed by 12.3% to diabetes mellitus. InterVA and InsilicoVA assigned a large proportion of these to cardiac causes.

Discussion

A small bug was identified in the Tariff-v2 algorithm after observing an unrealistically high number of maternal deaths. This was corrected before the comparison was conducted. While CCVA can save on the costs of processing VA interviews, the results of this large study indicate considerable room for improvement in all of the methods for use in all South Africa. While efforts should be made to assess whether the symptom-cause information matrix for the CCVA can be improved for use in South Africa, feedback from the physician reviewers suggest that the narrative captured by the well-trained interviewers at the beginning of the VA interview indicate the importance of the free text information in the ascertainment of the underlying cause of death.

Acknowledgements

National Cause-of-Death Validation Project Team

PROVINCE, INVESTIGATORS: Prof Howard Naidoo, Dr Pam Groenewald, Prof Monique Maungo, Dr Mireille Cheyip, Dr Devush Ram, Ms Cherie Cawood, Dr Thaddeus Mugeyi, Prof Debby Plummer, Dr Jason Thomas, Dr Richard Li, Dr Jessica Price, Prof Johan Dempers, Dr Kassahun Ayalew, Prof Kathleen Mungai, Ms Cherie Cawood, Dr Estevão Afonso, Mr Francois Bezuidenhout, Mr Thabo Molebatsi.


References

Assessing COVID-19 mortality and its trends are critical for informing public health decision-making. Verbal autopsy, which uses the reported signs and symptoms of the deceased to determine cause of death, can be used to help fill these gaps in COVID-19 mortality surveillance. Six questions have been added to the 2022 WHO VA questionnaire (Table 1) to capture information about potential COVID-19 deaths, but these questions have not yet been tested in the field.

Additionally, the ability of VA to distinguish COVID-19 from other causes of death has not yet been determined. We are conducting a PMA to fill these gaps in knowledge surrounding VA and COVID-19.

### Methods & Materials

We have engaged 18 study collaborators from 14 countries as part of this PMA (Figure 1). The VA data from these collaborators is intended to contain over 40,000 VA deaths. Nine of the studies are using the WHO VA questionnaire and five are using customized VA questionnaires. Eleven of the studies intend to use computer coded VA and three will use physician certified VA. Seven of the studies are conducting form of COVID-19 cause of death validation, with most studies conducting postmortem PCR testing and a minority conducing postmortem minimally invasive tissues sampling or medical record review.

### Results

We search regularly in several databases using a systematic strategy around the following terms: “COVID-19” and “verbal autopsy”. We have also identified studies through the network of the WHO VA Reference Group and partner organizations. Included studies must use VA (either physician certified or computer certified) to ascertain COVID-19 as the probable cause of death in a population living in LMICs. Extracted variables include study setting, sampling process, VA process, VA questionnaire, VA-specific questions, incidence of COVID-19 at time of data collection, cause of death assignment method, reference standard (if available), and outcome measures. If reference standard data is available, the diagnostic accuracy of VA for COVID-19 will be measured using sensitivity, specificity, positive predictive value, and negative predictive value. If reference standard data are not available, response pattern analysis and excess deaths/change in cause of death distribution will be analyzed. Study bias will also be assessed using an adapted tool.

### Conclusions

Data collection and analysis for the PMA is ongoing, but formation of a group of VA study investigators has already helped establish a “community of practice”, in which VA practitioners from around the world have collaborated. The findings from this PMA will also help inform revisions of the recent WHO 2022 verbal autopsy questionnaire.

---

**Table 1: COVID-19 Questions in the WHO 2022 VA Questionnaire**

<table>
<thead>
<tr>
<th>Question</th>
<th>New Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Id10147</td>
<td>Did (s)he have a fever?</td>
</tr>
<tr>
<td>Id10153</td>
<td>Did (s)he have a cough?</td>
</tr>
<tr>
<td>Id10159</td>
<td>Did (s)he have any difficulty breathing or breathlessness?</td>
</tr>
<tr>
<td>Id10207</td>
<td>Did (s)he have a severe headache?</td>
</tr>
<tr>
<td>Id10482</td>
<td>Was there any diagnosis by a health professional of COVID-19?</td>
</tr>
<tr>
<td>Id10483</td>
<td>Did (s)he have a recent test for COVID-19?</td>
</tr>
<tr>
<td>Id10484</td>
<td>What was the result?</td>
</tr>
<tr>
<td>Id10485</td>
<td>Did (s)he suffer from extreme fatigue?</td>
</tr>
<tr>
<td>Id10486</td>
<td>(s)he experience a new loss, change or decreased sense of smell or taste?</td>
</tr>
<tr>
<td>Id10487</td>
<td>Did (s)he have any COVID-19 symptoms or a positive COVID-19 test?</td>
</tr>
</tbody>
</table>

---

**Acknowledgements or Notes**

We would like to thank all members of the COVID-19 and VA Prospective Meta Analysis Group for their commitment and contribution.
WHO-FIC 2022

WHO-FIC Poster Booklet

Chapter 4 – International Classification of Functioning, Disability and Health - ICF
Introduction
The routine use of ICF to describe functioning in a clinical neurorehabilitation in Northeastern Italy setting over more than 10 years produced 1852 ICF-based individual rehabilitation projects. These projects contain detailed descriptions attached to selected ICF codes of any level and the attached qualifiers. The records have been sequentially stored in the institutional server and as such constitute a potentially very rich minefield for the expansion of ICF index terms using natural language. Retrievable data include: ICF codes and qualifiers used; Natural language description of the item; Linkage between ICF categories and evaluation tools.

First experiment
We run a first experiment selecting all the descriptions attached to specific used categories from b7 and d4 chapters. An automated list of words used to describe the condition ordered by frequency was produced excluding stopwords. The list was manually curated by three independent judges with selection of relevant words for a specific code. The selected words need now to be assessed for their redundancy respecting the existing descriptors of ICF categories, then verified by experts. The resulting new relevant descriptive words might then be object for U&R proposal through the newly established platform.

Code | Term   | N
-----|--------|---
D450 | cammino | 883
B710 | ginocchio | 769
B710 | flessione | 748
B710 | estensione | 713
B710 | anca | 630
B710 | dx | 626
B755 | posizione | 626
B735 | tono | 625
B730 | muscolare | 618

Chart 1: Most used terms in descriptions

Second experiment: NLP
A preliminary pilot experiment probed the possibility of automatically code NL strings to the correct ICF code in 2 chapters of ICF: one from the body functions domain (functions related to movement) and one from the activity & participation domain (mobility). To do so, a language model based on BERT has been developed, starting from the pretrained Multilingual BERT model. Continual training has been carried out on a ICF-related corpus in Italian (including ICF, the ICF manual, the ICF definition in Wikipedia, etc). Then it has been finetuned for the ICF classification task using the rehabilitation dataset, for the subset involving chapters B7 and D4. A total of about 9000 descriptions have been used for training and testing (80/20 split). Accuracy of coding has been evaluated as accuracy@1 and accuracy@3 (the former good for fully automated coding, the latter for support to human expert coding). Preliminary results were encouraging: accuracy@1=0.82, accuracy@3=0.93.

Third experiment
Further work include the extraction of word sequences with high attention to obtain automated candidates for index terms, replicate the experiment on other data repositories (possibly in other languages), frame and submit U&R proposals for the candidate new index terms.

For this, a further experiment has been started to identify relevant keywords in descriptions, using KeyBERT, with two aims: one was again to support the index term extraction, this time with an automated method, and the second one was explainability of automated coding using Captum. This experiment has yet to be validated by experts. Figure 2 shows an example of what could be done: identification of the textual expressions that are most representative of the full text. A demo of this technique will be soon made available.

Figure 2: Keybert selected keywords for a list of textual descriptions.

Figure 2: basic schema of the NLP experiment.

Acknowledgements
Multilingual BERT: https://huggingface.co/bert-base-multilingual-cased
KeyBERT: https://github.com/MaartenGr/KeyBERT
Abstract
A Based on reforms in the General Health Law, Mexico through MoH must publish an Official Mexican Standard for the certification of Disability based on the ICF and aligned with the Convention on the Rights of Persons with Disabilities. This work shows the methodological tool developed for the issuance of the disability certificate up to now.

Background
The work to unify the issuance of Disability certificates in Mexico advances in its development. The challenge to achieve this objective is to harmonize them with the ICF and the CRPD, for which a multidisciplinary and inter-institutional team has been formed that has consolidated a methodological tool called COBAMEX-CIF 2.2 based on the components of the ICF, weights them to obtain a percentage of Disability, its result is the basis for the issuance of the certificate.

Methods & Materials
Part of the products resulting from the progress of the programmed activities was the consolidation of the tool called the Mexican Core Set to determine disability based on the ICF (COBAMEX-CIF), which encompasses the components of the ICF and its basic sets (Core Sets) raised in the WHO document entitled "How to use ICF" and Annex 9 of the same Classification. Likewise, it is part of the approach of the Convention on the Rights of Persons with Disabilities. Work done was on the selection of categories of the various domains within each component of the ICF to have an approximation in the identification of the deficiencies, restrictions, difficulties or barriers of a person with a health condition. This initial proposal is based on one of the recommended ways of using the classification, that is, a pre-selected list of code sets for specific configurations or uses. It was complemented with the WHO Disability Assessment Schedule (WHO-DAS 2.0) for the components of activity and participation, and the registry of sociodemographic variables that include the report of the health condition, to be coded with the ICD-11. Regarding environmental factors, a fragment of the Model Disability Survey (MDS), the Craig Hospital Inventory of Environmental Factors (CHIEF) and the Environment Quality Index (ICE, for its acronym in Spanish), a national methodology for link and identify intensity of barriers of the place where people live.

In the first part, this tool captures sociodemographic information of the person to be assessed. The variables were observed and nurtured with the contributions of the National Institute of Statistics and Geography (INEGI, by its acronym in Spanish). For the body functions and structures component, 32 and 20 categories were previously selected at the second level, respectively. For the activity and participation component, the WHODAS 2.0 instrument (36-item version) was used due to its global acceptability and validity for use in Mexico. Regarding environmental factors, the MDS extract was selected, specifically modules 3000A and 3000B, the CHIEF and the ICE, which is a summary measure developed by the National Population Council (CONAPO for its acronym in Spanish) that allows identifying through statistical inference, the intensity of the barrier represented by the locality of residence of the person, based on data from three sources of geostatistical information. The objective of having an assessment of different elements, the registration and coding of sociodemographic data and the person’s health condition, is to weigh each component and consider their interaction to determine the disability condition.

Next steps
Although at the end of 2021 there was a test in 3 states of Mexico, it is planned during 2022 to expand to a national sample to consolidate the implementation of the use of the methodological tool and the issuance of the disability certificate by 2023.

Acknowledgements
All the participants of the institutions, people with disabilities, their families and organizations are recognized for their collaboration and participation in this tasks and the strong steps that we are giving. The participation during the last three years have been critical to promote and consolidate this tool.
Abstract
This is a communication about the postdoctoral research that intends to guide the inclusion of new attributes to an electronic portal of the ICF. The aim is to increase the ability to unify language in human functioning, to allow care and statistical use, in order to support intersectoral policies and to enhance its use by health professionals and students.

Methods & Materials
This project has a propositional character and is supported by Evidence-Based Practice, with a view to producing ICF application technologies, encompassing collaborative field research and the acceptability of use. Qualitative and quantitative techniques will be used to collect, record and analyze data. Finally, the project should propose the management of data from the ICF based on existing knowledge in the structuring of health indicators. The evaluative nature of the project is aimed at identifying aspects that are considered friendly by health professionals within the scope of their professional practice. On the other hand, the propositional character considers that the use of tools based on the ICF will provide an accumulation of data on which it will be possible to structure indicators, according to methods already commonly used in Epidemiology, drawing a parallel between common sense in the analysis of morbidity and mortality for a new sense in the analysis of functioning and disability.

The inclusion criteria are:
- Professional who proves knowledge about the ICF with a course completion certificate or with experience in the use of instruments based on it;
- Proven performance in the academic, clinical or social area, whether in primary health care or worker health;
- Authorization and intention to participate in the research, all participating professionals must sign a Free and Informed Consent Term. The term will contain the objectives of the project, the stages of the research, the importance of voluntary participation, the free right to choose, the guarantee of identity preservation and the right to withdraw from the research.

Expected Results
The creation of an ICF Research Center in Brazil national reference center for the CIF. Providing permanent online courses, Identification of the acceptability of tools for the ICF application Primary Care and the creation and validation of indexes and an essential set of functioning indicators.

Acknowledgements or Notes
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Survey and Research Project for the Improvement of Statistics on Persons with Disabilities (Internet Survey) 2020 was implemented to examine the questions into a national statistical survey for capturing the people with disability in Japan, which included the questions of six items of Washington Group Short Set (WG-SS), two items of the Minimum European Health Module (MEHM) of the European Statistical Office, and WHODAS2.0 (12-item version).

WHODAS2.0 score has wide range (12-60), which might be able to grade on the disability defined by WG-SS, MEHM, and self-reported health, and related difficulty specified in a Japanese survey. The purpose of this study is to estimate the optimal thresholds for them.

Materials & Methods

We used secondary data of the Internet Survey 2020 after permission. Questions used were (1) Q4 (six items for the disability defined by WG-SS: WG-SS disability), (2) Q7 (two items for MEHM disability), (3) Q12 (the question 5 of the statistical survey in Japan, "Comprehensive Survey of Living Conditions", Do you currently have any impact on your daily life for health reasons? yes, no) in its Basic Health Questionnaire (BHQ), which can measure participants' current self-reported health and related difficulty, and (4) Q5 (the question 7 of BHQ, How is your health? 1: Good, 2: Fairly good, 3: Ordinary, 4: Not so good, 5: Bad). The question (3) has a supplementary question that "What does it influence on?" (S1. activities of daily living, S2. going out, S3. work, housework, school, S4. exercise, S5. others). For the question (4), we examined two types of response categories (4a: 4, 5 VS 1, 2, 3), and (4b: 5 VS 1, 2, 3, 4).

To determine an appropriate threshold of WHODAS2.0 scores for outcomes (1)(2)(3) (3S1)(3S2)(3S3)(3S4)(3S5)(4a)(4b), ROC curves were plotted by the range of sensitivity and specificity pairs for their scores with disability or difficulty status (yes versus not) as the classifier variable, respectively. Area under curve (AUC) was also estimated for global assessment.

Results

The optimal thresholds (OTs) of WHODAS2.0 were 13 for (1)(2) with their AUC, 0.728 (95% CI: 0.717-0.739) and 0.820 (0.813-0.827), respectively. Those of WHODAS2.0 for (3)(4a) were 13 (0.843: 0.835-0.850), and 13 (0.801: 0.793-0.810), respectively. (Q5: Response 4, 5 VS 1, 2, 3). If we considered (4b)Q5 (Response 5 VS 1, 2, 3, 4), it changed to 14 (0.843: 0.824-0.861).

For (3) the Q12 supplement of (3S1)-(3S5), each OT was 20 (0.707: 0.683-0.731), 18 (0.752: 0.735-0.769), 18 (0.682: 0.664-0.701), 18 (0.617: 0.597-0.636), 16 (0.664: 0.641-0.686), respectively.

Acknowledgements

The data for this secondary analysis, "Survey and Research Project for the Improvement of Statistics on Persons with Disabilities (Internet Survey) 2020" was provided by the Social Science Japan Data Archive, Center for Social Research and Data Archives, Institute of Social Science, The University of Tokyo.
ICF-based criteria for the development of clinical guidelines for Universal Health Coverage

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1 Occupational Therapy Association of South Africa; 2 South African Society of Physiotherapy; 3 South African Speech-Language-Hearing Association; WHO-FIC Collaborating Centre in 4 South Africa, 5 Australia, & 6 Netherlands

Abstract
ICF-based principles to facilitate person-centred, interprofessional intervention from a biopsychosocial perspective with a focus on functioning and contextual factors are an important component to strengthen the use of ICF in WHO guideline development. The physiotherapist, occupational therapist and speech-language & hearing therapist professional associations in South Africa collaborated to create 16 ICF-based criteria for developing clinical guidelines for Universal Health Coverage. They invite comment to refine these criteria.

Introduction
South Africa is in a process of introducing Universal Health Coverage (UHC), which provides a full range of essential services at a cost the country can afford. This health reform requires a review of all existing clinical guidelines to ensure they are consistent with UHC policy.

ICF-based principles to facilitate person-centred, interprofessional management from a biopsychosocial perspective with a focus on functioning and contextual factors are an important component to foster the use of the International Classification of Functioning, Disability and Health (ICF) in WHO guideline development. As a common language between professions ICF is supporting collaborative practice.

This poster reports on the process of creating ICF-based criteria for the development of clinical guidelines in UHC settings.

Methods
The physiotherapist, occupational therapist and speech-language & hearing therapist professional associations nominated delegates to complete an online course on ICF use, based on the Dutch WHO-FIC Collaborating Centre course, augmented by members of the collaborating centres in South Africa and Australia.

This project was completed as a specially-designed module aimed at exploring the use of the ICF in clinical guideline development and review. The WHO Handbook for Guideline Development (2nd Edition) and the ICF Practical Manual (Version 0.9) were used to facilitate robust deliberations.

Core criteria were identified, defined, and explained with supporting evidence from peer-reviewed literature. All steps were debated by all participants and finalised when agreement was reached.

Results
The proposed 16 ICF-based criteria for the development of clinical guidelines for UHC

Development of guideline
1. The development of the clinical guideline is consistent with the process described in the WHO Handbook for Guideline Development (2nd or subsequent editions).
2. Adequate and transparent engagement with relevant stakeholders is described in the process of the guideline’s development and evaluation.
3. The ICF framework is used to describe health and health-related states, including human functioning and social determinants of health.
4. ICF terminology is used as unified and standard language throughout the guideline.
5. The frequency and method of reviewing the guideline are stated.

Audiences and clinical settings
6. The audiences for whom the guideline is developed, are clearly explained (e.g., health professions, service users, data analysts, administrators, etc.).
7. It is explained how the guideline should be used throughout the continuum of care, in both public and private healthcare settings, including the community and households.
8. The guideline is appropriate, concise, user-friendly, free and easily accessible.
9. Training for end-users on how to apply the clinical guideline is accessible, affordable, and appropriate.

Person-centred approach
10. Service providers are required to apply the person-centred biopsychosocial approach of ICF for organising and documenting information on human functioning as a dynamic interaction between a person’s health condition, environmental factors, and personal factors.
11. Interprofessional and transprofessional teamwork is evident.

Recommended Interventions
12. Interventions in the guideline are contextually relevant and evidence-informed.
13. Interventions and outcomes are determined within the context of a biopsychosocial approach to health and are prioritised according to the service user’s needs.
14. A human rights-based approach is advocated, embracing ethical principles within equitable and just legal frameworks.

Data Collection
15. Assessment instruments selected for use are appropriately linked to the ICF by using linking rules.
16. 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).

Conclusions
The authors have completed the first draft of the proposed 16 ICF-based criteria for the development of clinical guidelines for UHC.

Experts within the WHO-FIC network are invited to comment and help to further refine these criteria.

Download the full document, containing the criteria, questions and literature review by scanning the QR code or go to http://whofic.org.za/16criteria

Please provide your feedback to:
Dr Stefanus Snyman
stef@icanfunction.co.za
The WHO-FIC Collaborating Centre in South Africa was approached by the professional organisations of Physiotherapy (SASP), Speech-Language Therapy and Audiology (SASLHA) and Occupational Therapy (OTASA) to assist them with training in the International Classification of Functioning, Disability and Health (ICF). The course was offered over a period of 26 weeks with a 2-hour Zoom session once a week. Participants were required to complete a range of assignments and a final project at the end of the course.

The course was conducted online using Teachable and Zoom. Teachable is an e-learning platform, where all the resources are located: the programme, study guide, videos, handouts and other reading materials. Zoom was used for presentations, real-time discussions and feedback sessions. This poster highlights the materials developed as group projects to improve clinical practice within the respective professions using the ICF.

**Abstract**

The WHO-FIC Collaborating Centre in South Africa was approached by the professional organisations of Physiotherapy (SASP), Speech-Language Therapy and Audiology (SASLHA) and Occupational Therapy (OTASA) to assist them with training in the International Classification of Functioning, Disability and Health (ICF). The course was offered over a period of 26 weeks with a 2-hour Zoom session once a week. Participants were required to complete a range of assignments and a final project at the end of the course.

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**Introduction**

The ICF was developed by the WHO in 2001, as a framework for understanding health and disability. It focuses on patient-centred care and facilitates interprofessional practice.

The framework has been adopted by the South African Department of Health (See Poster #167), as a key strategy for achieving universal health coverage. The South African Collaborating Centre was approached by the Professional organisations of Physiotherapy (SASP), Speech-Language Therapy and Audiology (SASLHA) and Occupational Therapy (OTASA) to assist them with training in the International Classification of Functioning, Disability and Health (ICF) as a precursor to the implementation of the National Health Insurance Scheme (NHI).

**Objectives**

The objectives of the course were for the participants to be:

- familiar with the language, structures and philosophy behind the ICF
- know about and be able to apply the ICF across a range of applications
- able to develop a collection of functioning data informed by the ICF
- able to promote the ICF as a common language between professions

**Methods & Materials**

The course was offered over 26 weeks with a 2 hour Zoom session once a week. Participants were required to complete a range of assignments and final project at the end of the course. The course was conducted online using Teachable and Zoom.

Teachable is an e-learning platform, where all the resources are located: the programme, study guide, videos, handouts and other reading materials. Zoom was used for presentations, real-time discussions and feedback sessions.

28 started the programme, with 15 completing the final assignment. The reasons for non-completion included health reasons, work commitments and personal responsibilities. The purpose of the final assignment was for the participants to demonstrate the skills to apply ICF in practice, be it a teaching, clinical, policy or research setting.

**Examples of the Final Group Assignments Presented**

**Topic 1: Analysis of the General Household Survey (GHS) and the 2022 Census in relation to ICF Classification**

Gaps identified with GHS based on ICF classification, e.g., the missing ICF categories and qualifiers pertaining to PwD, low resource and rural settings. GHS shows potential to extrapolate existing questions pertaining to D&R services and build on those to create a patient-centred database including the functioning and environmental factors.

**Topic 2: The development of a data collection tool to capture the biopsychosocial outcome of patients undergoing the Conservative Spinal Care Programme using the ICF**

**Topic 3: A summary of functioning and disability for medico-legal purposes in children / youth (under 18 years of age) with cerebral palsy**

- Instrument was developed for an interprofessional summary of present functioning and health status in a client with CP (<18 years old)
- Present functioning addressed in the instrument includes body structures and functions, activities and participation, as well as contextual factors (environmental and personal factors)
- Product is based on the Children/Youth version of ICF with Cerebral Palsy core set (comprehensive version)

**Topic 4: Using the ICF framework and language to train primary health care nurses to recognize functioning in mental health care users for referrals to occupational therapy**

The general mental health core set was used to develop a questionnaire for the OTs to determine what the OTs perceived to be the challenges and needs of the mental health service users.

**Topic 5: Alignment of the ICF terminology and its concepts with those of Occupational Therapy**

**Discussion and recommendations**

Participants of the ICF course developed excellent topics focussing on the implementation of the ICF in different settings and for various purposes.

The ICF based instruments are regarded to be of great value in the implementation of NHI for universal health coverage in SA.

During the course participants developed their knowledge of each of the professions and strengthened interprofessional collaboration.

**Acknowledgements**

The five coaches of this ICF Facilitators Course acknowledge the valuable contributions of all participants in the course, specially given the many personal and environmental challenges.

**More information**

For further information on any of these projects or the course:

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Low Hanging Fruits of Harmonization: ICD and ICF Anatomy

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1 Italian WHO-FIC CC, 2 Nordic WHO-FIC CC, 3 Sandwell & West Birmingham NHS trust, UK 4 Stanford WHO-FIC CC

Abstract
Harmonization among the three WHO-FIC reference classifications has been considered an useful process in the last network meetings. This poster presents a case study related to a first, relatively easy, task aimed at investigating similarities and differences in anatomical categories in ICF Body Structures and in ICD-11 Extension codes.

Introduction
The common Foundation from which the three reference classifications:
- International Classifications of Diseases 11th version (ICD-11)
- International Classification of Functioning, Disability and Health (ICF)
- International Classification of Health Interventions (ICHI)
are derived through linearizations requires that every entity be uniquely and unambiguously defined. This might require 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 as described in ICD-11 and in the body structure domain of ICF. We thus run a harmonization case study matching anatomical entities in the two classifications using a specially developed online software.

Methods & Materials
We considered two sources for anatomical entities: ICD-11 extension codes related to anatomy (extracted from the Foundation layer) and ICF Body Structures.

The main aim was to find a relationship from ICF categories to ICD-11 anatomic entities. Due to the different way anatomy could be represented, instead of using partonomic relationship we decided to use the more generic broader/narrower/equivalent relationships.

To simplify this task, a web-based prototype has been developed. This software includes a tree viewer (Figure 2) to show mapped entities, and a mapping editor that exploits the ICD-11 Coding Tool to find ICD-11 entities.

To find a map, 3 independent experts had to identify the closest ICD-11 entity for a ICF category. The three independent knowledgeable raters considered all the entities for which the tool did not automatically confirmed identity matches. The search for the most appropriate matching entity could result in finding synonyms, broader or narrower items or no match (Figure 1).

Results
Of 321 entities considered in the source list (ICF body structures), 113 were found to have identical corresponding entities in the ICD-11 anatomy extension.

The three mappers independently produced 476 mappings for 215 ICF entities, mapped to 341 ICD entities rated as follows: Identical/equivalent (192), narrower than (35), broader than (249) (Figure 3).

Another result is that there are different anatomical structures in ICD-11 and ICF. As example is shoulder a part of the upper extremity in ICD-11, while in ICF is structure of shoulder region a part of structure related to movement (Figure 4).

Three main issues arised from this case study:
- Different shoreline: in general, ICF is less detailed than ICD -11 (35 narrower than vs 249 broader than);
- ICF favours lumping of structures: E.g. "The eye, ear and related structures; Structures of cardiovascular, immunological and respiratory systems; Structure of vagina and external genitalia; Testes and scrotum";
- The two classifications have different anatomic models, e.g. for shoulder.

While the first two issues are not problematic, the third requires making decisions to resolve the inconsistent hierarchies in the two classifications.

The harmonization experiment now needs to be extended to ICHI and might be replicated for the examples of impairments described in ICF and found as well in ICD as symptoms or health conditions.

If there is interest, the software could be evolved to allow mapping of classifications and terminologies to ICD-11 entities, with some limitation but also providing some opportunities.
The PACIO Project – Using ICF in Health Care Interoperability and Data Exchange

Authors: Patricia Saleebey¹, Matt Elrod², Dave Hill³, Jessica Skopak³, Lorraine Wickiser⁴, and Tina Wilkins³, ³

¹Bradley University; ²MaxMD; ³The MITRE Corporation; ⁴Centers for Medicare and Medicaid Services, USA

Abstract: This poster provides an overview of the Post-Acute Care InterOperability (PACIO) Project and the development of a technical implementation guide for FHIR using the ICF as a “model of use” for sharing clinical information.

Introduction to PACIO Project

Post-acute care aims to promote the functional recovery of individuals, avoid premature admission to a long-term care facility, and prevent unnecessary readmission back into the hospital.

The Post-Acute Care InterOperability (PACIO) Project is a collaborative group of providers, policymakers, clinicians, informaticists, and health information standards engineers focused on advancing interoperable health data exchange between healthcare settings, providers, patients, and other key stakeholders in healthcare.

PACIO Project: Membership

PACIO Project’s mission is to advance interoperable health data exchange between post-acute care and other providers, patients, and key stakeholders across health care and to promote health data exchange.

FHIR IGs

The primary goal is to establish a framework for the development of Fast Healthcare Interoperability Resource technical implementation guides (FHIR IGs) and reference implementations that will facilitate the adoption of health data exchange through standards-based use case-driven application programming interfaces (APIs).

Post-Acute Care Assessments Submitted Electronically

One of the primary use cases for the PACIO project is the exchange of clinical details on how an individual interacts in their environment. This use case is focused on domains of mental function, communication, mobility, and self-care.

The initial approach for PACIO was based on a “model of meaning” where the information shared from one healthcare provider to another would use standardized questions and answers. With this approach, computer processable codes are used to share information.

Health Level 7 (HL7®)

This work is advancing in the Health Level 7 (HL7®) community. HL7 is a not-for-profit, ANSI-accredited standards developing organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery, and evaluation of health services.

HL7 is supported by more than 1,600 members from over 50 countries, including 500+ corporate members representing healthcare providers, government stakeholders, payers, pharmaceutical companies, vendors/suppliers, and consulting firms.

Using the ICF in PACIO Project

Specifically, the Logical Observation Identifiers Names and Codes (LOINC) standard is used to represent the specific questions and answers to be shared. This approach does not allow for a broader understanding or application of the concept and only applies to the observational component of healthcare.

Understanding this limitation, the PACIO community has determined a broader method to share information as a “model of use” will better serve the community. The “model of use” facilitates sharing concepts for broader applications and aligns more closely to the International Classification of Functioning, Disability and Health.

For this reason and the ability to use ICF to share a common understanding of how one function is, the PACIO community is now incorporating ICF terms within the FHIR IG. PACIO will use ICF concepts to organize and document observations, problems, and goals.

PACIO Project Resources

For additional information about the PACIO Project, visit the project homepage at: http://pacioproject.org

The PACIO Project is sponsored by the Centers for Medicare & Medicaid Services (CMS) and led by The MITRE Corporation.
Project Context

Approximately one-third of the world's population will need rehabilitation during their lifespan. This equates to nearly 2.4 billion people in the world with some type of rehabilitation need.

Low-income and middle-income countries experience higher rates for rehabilitation and an inability to access appropriate rehabilitation services.

In response to the need for greater rehabilitation education, the ReLAB-HS project was created in 2020.

Physiopedia

As part of this global partnership, Physiopedia has created a series of courses to increase the policy, technical and research capacity of clinicians and providers in the field of rehabilitation.

As a UK registered charity organization, Physiopedia is considered the largest rehabilitation resource in the world with around 3 million users every month. Physiopedia is a registered charity in the United Kingdom that was co-founded by Rachael and Tony Lowe.

As stated on its website, its mission is to "provide universal and equitable access to all rehabilitation knowledge."

And its vision is "A world where every person recognises the value of rehabilitation and has access to quality rehabilitation care."

Physiopedia Plus

The online learning platform "Plus" allows users to complete courses online at any time in any place of convenience.

Students and residents from low and middle income countries are eligible for a discounted membership. In fact, individuals from low income countries can access courses for free.

In the past year, Dr. Patricia Saleeby, FDRG Member, has worked with Physiopedia to develop a series of courses on the International Classification of Functioning, Disability, and Health (ICF) and its role in rehabilitation.

ICF Course Programme

These courses are aimed to educate rehabilitation students and professionals including physical therapists, physiotherapists, occupational therapists, speech and language therapists, rehabilitation doctors, nurses, prosthetists, orthotists, psychologists, audiologists, dietetics, and social workers.

Each course provides learning objectives or aims along with a course video, reading materials, and quiz.

Once all requirements are fulfilled and the user passes the quiz, the user can download a certificate of completion.

Course 1
Introductory course to ICF

Course 2
ICF Educational and Clinical Resources

Course 3
Overview of ICF and Clinical Practice

Course 4
ICF and Clinical Practice

Course 5
ICF, Administration and Policy

Information about ICF resources have been incorporated into these courses including the ICF Browser and Update Platform, eLearning Tool, ICF Core Sets, WHODAS, and the ICF Education Portal.

An online forum is available for information exchange between the course users and instructors.

Acknowledgements

Special thanks to the Physiopedia team for project leadership, direction, and technology development/management.

Tarina van der Stockt, PT, DPT
Physiopedia Education Director
Physiotherapist / Physical Therapist

Jacquie Kieck
Physiopedia Media Manager
Physiotherapist / Physical Therapist

Abstract

This poster provides an overview of the ReLAB-HS project and the series of ICF courses produced by Physiopedia. These courses are available through their online learning platform, Physiopedia Plus.
Introduction

ICHI content enhancements have continued to progress following the review of medical surgical interventions in 2020, functioning interventions review in late 2021, together with individual country mapping work and training workshops during 2022. An ICHI Coding Tool is now available on the platform which enables users to search for intervention codes using keyword searches.

Methods & Materials

Following the medical/surgical review the functioning interventions were reviewed during a workshop held in December 2021. A number of countries participated in this review providing invaluable comments for content enhancement and is the subject of a separate poster: 'ICHI – review of functioning interventions'.

Overall content enhancement from the functioning review included approximately:
- 44 new codes
- 98 new inclusion/index terms.

Following on from the mapping work conducted in 2021 on the WHO draft document 'Compendium of WHO and other UN guidance in health & environment', many new interventions have been included in ICHI to cover a range of environmental health topics. A further 1400 interventions have now been included covering for example:
- land forms
- bodies of water
- flora and fauna
- societal attitudes
- housing services, systems and policies

During early 2022 a number of country specific training workshops were held on ICHI. These workshops identified areas of content enhancement with inclusion and index terms being added relating to common language used for some medical/surgical terms.

During the workshops specific guidelines on how to use ICHI were discussed and highlighted the benefit for users to refer to the ICHI Reference Guide.

Results

ICHI and the ICHI Coding tool is available on the WHO-FIC Platform, see: https://icd.who.int/dev11/ichi/en

Abstract

Since the WHO-FIC annual virtual meeting in October 2021, work has continued towards the finalization of ICHI for implementation. Content enhancement has continued since the Functioning Review conducted in December 2021, see separate poster: 'ICHI – review of functioning interventions’, with additional index terms and stem codes being included in ICHI, now available on the WHO-FIC platform. Country specific training workshops have also provided content enhancement.

An ICHI Coding tool has been developed to help search for stem codes using keywords. Work still continues on further searching capabilities especially in relation to the content within the three axes of ICHI: Target, Action and Means. This poster will highlight ICHI development to date and the tooling enhancements.

Conclusions & Acknowledgements

After a number of years development ICHI is nearing its final release version.

Thanks are extended to all reviewers of ICHI, ICHI development team, ICHI Task Force Group, Collaborating Centres and WHO for their ongoing support.
EDI to ICHI mapping
for a feasibility study and gap analysis

Authors: Donggyo Shin¹, Hyeryeon Hong², Euisoo Choi³, Sangmi Kim⁴, Yeojin Lee⁵
¹National Health Insurance Ilsan Hospital, ² Wonju Severance Christian Hospital, ³NSW Ministry of Health, ⁴Junju University, ⁵Statistics Korea

Abstract
This poster outlines a part (KDRG MDC-05 Cardiovascular System) of larger project by the Statistics Korea to map entire EDI (Electronic Data Interchange), which is the Korean national health insurance fee schedule to ICHI. The current project is built on the results of earlier projects and main focus was to test feasibility of ICHI implementation in Korea of ICHI and identify potential problems. Immediate benefits of the mapping exercise included the identification of areas of improvement for the current EDI through conceptualisation of some of EDI codes.

Introduction
EDI was primarily developed for health care service payment systems and used by the National Health Insurance Service (NHIS) for health care service providers. The payment schedule is reviewed and maintained by Health Insurance Review and Assessment Services (HIRA) to ensure integrity and sustainability of the scheme. Since it was developed primarily for payments, it is not well-suited to statistical analysis purposes. As mapping to ICHI, EDI was splitted into two parts: EDI stem code and extension codes. However mapping to ICHI stem code and extension codes. However mapping to ICHI stem code has limitations because EDI concepts were proven to be broader and narrower than ICHI concepts. For gaps and increased variability in EDI to ICHI mapping between coders, the mapping direction is defined to ICHI to EDI without loss of meaning. We made ongoing efforts to map EDI to ICHI stem code for internal reporting since 2016. As the finalisation of ICHI, the Statistics Korea has developed an EDI to ICHI mapping crosswalk and mapping between EDI concepts to ICHI. We continuously pursue ideal EDI to ICHI mapping with improved through conceptualising. This will greatly improve our ability to map EDI to ICHI, which is considered the world standard of reporting health care interventions. The benefits of reporting health care services delivered using international standards are many. For example, a key benefit noted by the World Health Organisation is that international standards allow the world to compare and share data in a consistent and standard way – between hospitals, regions and countries over periods of time. It facilitates the collection and storage of data for analysis and evidence-based decision-making.

Methods & Materials
Manual mapping was performed by three experienced clinical coders, their work was reviewed and mapping was then confirmed by a study coordinator. EDI codes were assigned to one of three clinical coders sequentially to make it easier to identify variability between coders. The mapping direction for this study was EDI to ICHI. We developed EDI to ICHI mapping guidelines and they were revised after the pilot and reused for this study. These had been developed for the earlier study in 2017. There were 186 EDI codes within KDRG MDC-05 Cardiovascular system. Some of them have multiple concepts due to mentioning multiple body parts or actions within a code. We identified 239 effective concepts from 186 EDI codes.

Results
186 EDI codes were mapped to 267 ICHI stem codes and 101 extension codes.

Table 2: Summary of EDI to ICHI mapping

<table>
<thead>
<tr>
<th>EDI</th>
<th>ICHI</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of codes</td>
<td>186</td>
</tr>
<tr>
<td>No. of concepts</td>
<td>239</td>
</tr>
<tr>
<td>No. of codes</td>
<td>267</td>
</tr>
<tr>
<td>Additional target</td>
<td>31</td>
</tr>
<tr>
<td>Topology</td>
<td>14</td>
</tr>
<tr>
<td>Additional descriptive information</td>
<td>44</td>
</tr>
<tr>
<td>Therapeutic products</td>
<td>13</td>
</tr>
</tbody>
</table>

Comparison between EDI code and EDI concept in table 3 demonstrate that mapping from EDI to ICHI can be improved through conceptualisation.

Table 3: Cardinality

<table>
<thead>
<tr>
<th>Cardinality (to ICHI stem)</th>
<th>EDI Code</th>
<th>EDI Concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1</td>
<td>152(61.5)</td>
<td>211(88.7)</td>
</tr>
<tr>
<td>1:2</td>
<td>17(6.9)</td>
<td>25(10.5)</td>
</tr>
<tr>
<td>1:3</td>
<td>2(0.8)</td>
<td>2(0.8)</td>
</tr>
<tr>
<td>1:4</td>
<td>15(6.1)</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>186(100.0)</td>
<td>239(100.0)</td>
</tr>
</tbody>
</table>

As mapping to ICHI, EDI was splitted well to the clinical concept. This is a kind of conceptualisation that has been realized, and EDI needs to be improved in this direction.

Conclusions
We continuously pursue ideal classification system that allows us to collect and process clinical information without loss of meaning. As shown in Figure 1, currently EDI can be improved through conceptualising. This will greatly improve our ability to map EDI to ICHI, which is considered the world standard of reporting health care intervention.

Acknowledgements or Notes
This work was supported by Statistics Korea. We are grateful to all who have reviewed and contributed to the paper.
Mapping the Japanese Orthopaedic Association National Registry (JOANR) to ICHI

Abe K1,2, Kawase H3, Yokogawa N4, Yamashita K1, Yamashita M1, Sasaki T1, Yamaoka A1, Shiga Y2, Maki S2, Inage K2, Eguchi Y2, Orita S2, Ohtori S2
1JCHO Funabashi Central Hospital, 2Chiba Univ., 3) St. Marianna Univ. School of Medicine, 4) Kanazawa Univ., Japan

Abstract

We mapped 149 codes out of the 581 orthopedic surgical intervention codes on the Japanese Orthopaedic Association National Registry (JOANR) registration form to the ICHI using the WHO-FIC Platform (accessed on April and May 2022). Equivalent and Narrower were 27 (18.1%) and 69 (46.3%), respectively while using single stem codes alone. The rate of Equivalent rose to 120 (80.5%) with addition of other stem codes, extension codes and ICD codes.

Debatable issues found during mapping operation

1. We could not find appropriate ICHI codes for 22 (14.7%) domestic codes related to arthroscopic surgeries. If enough codes for arthroscopic surgeries were provided in ICHI, final rate of Equivalent could go up to 95.3%. (Example 1,2 in Table 2).
2. We found that 18 (12.1%) domestic codes involved diagnoses in their titles rather than concrete procedures. (Example 3,4 in Table 2)

Results

At first, there was consensus on only 98 titles (65.8%) between the two coders. However, after discussions among themselves, they achieved consensus on all 149 titles. Among the categories, Equivalent and Narrower were 27 (18.1%) and 69 (46.3%) respectively while using single stem codes. The rate of Equivalent rose to 120 (80.5%) on addition of other stem codes, extension codes and ICD codes (Table 1,2).

Table 1: The results of level of equivalence between the JOANR and ICHI codes in each condition.

<table>
<thead>
<tr>
<th>Level of equivalence</th>
<th>single stem code alone</th>
<th>with additional stem codes</th>
<th>with ICD 11 code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equivalent</td>
<td>27 (18.1%)</td>
<td>65 (43.6%)</td>
<td>120 (80.5%)</td>
</tr>
<tr>
<td>Narrower</td>
<td>69 (48.3%)</td>
<td>61 (40.9%)</td>
<td>6 (4.0%)</td>
</tr>
<tr>
<td>Broader</td>
<td>10 (8.7%)</td>
<td>9 (6.0%)</td>
<td>10 (8.7%)</td>
</tr>
<tr>
<td>Slipped</td>
<td>29 (19.5%)</td>
<td>1 (0.7%)</td>
<td>0 (0.0%)</td>
</tr>
<tr>
<td>None</td>
<td>14 (9.4%)</td>
<td>13 (8.7%)</td>
<td>13 (8.7%)</td>
</tr>
</tbody>
</table>

Table 2: Examples for mapping process indicating the level of equivalence in each condition

Example 1: K04-2 (1520925000) Arthroscopic release of hip joint
ICH: M05.1 (Arthroscopic release of knee joint) JOANR: Not available
Equivalent: Yes
Example 2: K01-2 (1520925000) Arthroscopic release of knee joint
ICH: M05.1 (Arthroscopic release of knee joint) JOANR: Not available
Equivalent: No
Example 3: K01-2 (1520925000) Arthroscopic release of knee joint
ICH: M05.1 (Arthroscopic release of knee joint) JOANR: Not available
Equivalent: No

Discussion

The current study implied that JOANR can be converted to an international comparison standard via ICHI to a certain extent, and ICHI accompanied by ICD codes has potential for deployment in the domestic medical fee reimbursement system. Using ICHI codes with adscript ICD code is one of the feasible ways to introduce ICHI in Japan. Further, we might have to prepare appropriate domestic codes for arthroscopic surgeries to accommodate the domestic condition in ICHI, because the ICHI should not have too high granularity to adapt to areas worldwide. We hope that the present trial would arouse the interest of domestic orthopedic surgeons and health information managers in ICHI and help world experts recognize the status of medical statistics in the orthopedic field in Japan.

Acknowledgements

We thank Megan Cumberlato from The University of Sydney for special advice regarding the Figure.

This poster contains content under submission to a medical journal.
**ABSTRACT**

A very attractive feature for the rehabilitation sector of the new classification of health interventions (ICHI) is its attention to the interventions on the environment, seldom considered as codable entity with the now available lists. In an adult tertiary care neurorehabilitation setting in Northern Italy where rehabilitation project is consistently described detailing needs expressed in ICF categories and objectives and type of interventions in natural language, we retrospectively evaluated in a cohort of 29 patients with a neurodegenerative ataxic disorder the frequency of interventions identifying elements of the environment as target and the ability of the ICHI codes to capture and adequately describe the intervention performed in 44 rehabilitation projects across two years. The results of this real life case study for ICHI will be detailed in the poster.

**INTRODUCTION**

The possibility to adequately describe environmental target interventions is of great interest in developing ICHI, though its use has never been tested in real-life cases. This study aims to evaluate the frequency with which interventions identifying environmental targets (e-targets) occur and the current ability of ICHI to capture and adequately describe those interventions.

**METHODS & MATERIALS**

Rehabilitation projects of young-adult patients (age ≥ 18 years) with Friedreich’s Ataxia were analyzed over a two-year period. Patients had been admitted for a rehabilitation program at the IRCCS E. Medea research Institute, in Northern Italy. The patients were divided into 3 groups according to their mobility capacity:
- **Group 1 - mild**: subjects walking independently;
- **Group 2 - moderate**: subjects walking with assistive products or physical assistance;
- **Group 3 - severe**: non-ambulatory subjects using a wheelchair.

The rehabilitation projects are stored in a computerized system based on ICF coding, named Individual Rehabilitation Project (P.R.I.), compiled by the rehabilitation team, which consists of three parts:
- **Specific Rehabilitation Project (P.R.S.)**: it describes the patient’s initial functioning, contains the rehabilitation goals and sets the hypothetical intervention modality;
- **Verification (VER)**: it reports goals and the actual interventions performed;
- **Discharge Indications (DIS)**: it describes the patient’s final functioning and provides rehabilitation indications.

Each part comprises the four ICF components and contains ICF codes at any detail needed. Only the ICF codes of Activity and Partecipation (d) and Environmental factors (e) components associated with intervention goals were taken into consideration in this study. Each code is linked to a descriptive field that was analyzed in order to find interventions with environmental targets.

**RESULTS**

The projects analysed were 44 related to 29 different patients, 23 female (79%) and 6 male (21%), aged from 18 to 49 years old (Mean 25,39; SD ±7,37). The partition of the projects according to the patient’s mobility capacity is displayed in Table 1.

![Chart 2: ICHI coverage percentage for intervention with environmental targets.](chart2)
ICHI - review of the functioning interventions

Almborg A-H1,2, Cumerlato M3, Rankin N1, Martinuzzi A4, Madden R5

1 National Board of Health and Welfare, Sweden, 2 Nordic WHO-FIC Collaborating Centre, Norway, 3 WHO Consultant, Australia, 4 IRCCS Medea Conegliano Research Centre, Italian WHO-FIC CC, Italy, 5 University of Sydney, Australia

Abstract Since the Annual WHO-FIC meeting 2021 work has continued to finalize ICHI for implementation. As a part of this work a review of functioning interventions has been performed by 10 countries and the WHO Rehabilitation Program Team during 2021. The review results showed that functioning interventions are well covered in ICHI, however there has been additional new stem codes (n=44) and inclusion terms (n=98) added to further enrich ICHI content. Importantly ICHI was found to be more granular in this area when compared to national classifications. The results of the review outlined the importance of reviewing the ICHI Reference Guide to understand the structure of ICHI and its content.

Introduction
Since the Annual WHO-FIC meeting 2021 (virtual), work has continued towards finalizing ICHI for implementation, with the next release planned for October 2022 at the Annual WHO-FIC meeting. Please refer to separate poster ’ICHI 2022’.

As a part of the finalization of ICHI a review of the functioning interventions was undertaken utilizing the same process as for the medical/surgical interventions. Note, functioning interventions can be found in all chapters in ICHI.

The main objective of the review was to compare existing country or institution specific functioning interventions and procedure catalogues (e.g. list of rehabilitation interventions performed in rehabilitation facilities in your country) with the ICHI tabular list in order to:

- identify missing and/or problematic ICHI Functioning intervention categories
- provide additional inclusion terms for ICHI Functioning intervention categories.

Methods & Materials

WHO invited the WHO-FIC Collaborating Centres or countries, which contributed in the review of medical/surgical interventions during 2020.

This review of functioning interventions (chapters 13-21) was performed by 10 countries as well as the WHO Rehabilitation Program Team during August - September 2021. The results from each country were sent to WHO and a virtual workshop (one day) was held in December 2021.

The ten countries included:

- Columbia
- Mexico
- France
- Netherlands
- Germany
- Rwanda
- Italy
- Sri Lanka
- Malaysia
- Sweden

The results of the review and the workshop were summarized by WHO and the ICHI editorial team reviewed the comments and suggestions for changes and consulted experts as required.

Results

It was noted that few countries have a specific functioning interventions classification, with most an extension of a medical/surgical classification.

The review showed that there were no major content gaps identified in ICHI, however there were some stem codes and inclusion terms suggested to enrich ICHI. Importantly ICHI was found to be more granular in this area when compared to national classifications.

Overall content enhancement from the functioning review included:

- ~44 new codes
- ~98 new inclusion/index terms.

Examples of issues raised included:

- ICHI is profession and setting neutral and does not include this information.
- Falls prevention would be described as a package of interventions in ICHI.
- Cognitive functions - are the target of several interventions in rehabilitation and refers to multiple targets. Interventions targeting cognitive functions would be described as a package of interventions in ICHI.

Conclusions and acknowledgement

Conclusions from the review of functioning interventions include:

- The functioning interventions in ICHI are covered well.
- ICHI has more granularity when compared to national classifications.
- The review resulted in adding several stem codes and inclusion terms to further enrich ICHI content.
- The results of the review also show the importance of having good knowledge about the structure of ICHI and content and also the content of the ICHI Reference Guide.

After a number of years development ICHI is nearing its final release version.

Thanks are extended to all reviewers of ICHI, ICHI development team, ICHI Task Force Group, Collaborating Centres and WHO for their ongoing support.
ICHI as a Recommended Intervention Coding Schema in South Africa

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School of Clinical Medicine, Faculty of Health Sciences, University of the Witwatersrand, South Africa

Abstract
The South African National Department of Health appointed a Clinical Coding Technical Working Group (TWG) to evaluate all ‘available coding systems and standards’ in pursuit of a recommendation for the formal adoption of a suite of clinical codes for use in South Africa.

The principles mandated for consideration included, pragmatism and feasibility, coding relevance for South Africa and sustainability in line with global trends.

The Intervention Coding Workstream of the TWG were tasked with evaluating intervention (procedure) coding schemas globally to recommend which one would be most reasonable for use in South Africa, specifically to support National Health Insurance funding. The schema should also provide an appropriate schema for data collection and analysis for relevant purposes.

Methods & Materials
A detailed grid analysis was undertaken to review 13 international intervention coding schemas against each other, using the following key factors for comparison:
1. Custodian
2. Intention, code use
3. Code length and structure
   i. Hierarchical
   ii. Expandable
   iii. Comprehensive
   iv. Mutually exclusive
4. Unique clear descriptions
5. Version control
6. Licensing costs
7. DRG implications
8. Training considerations
9. Instructions/definitions/user manual
10. Systems considerations
11. Coverage for:
   i. Radiology
   ii. Pathology
   iii. Dentistry
   iv. Allied services
12. Adaptable to electronic environment
13. Web browser availability
14. Comparability to existing schemas for historical data
15. Relative Value Units (RVU)

Results

<table>
<thead>
<tr>
<th>Measure</th>
<th>ICD 10</th>
<th>ICD 11</th>
<th>LOINC</th>
<th>SNOMED CT</th>
<th>ICF</th>
<th>ICHI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deemed Compliant with SA needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deemed Non-Compliant or will require significant R&amp;D</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Conclusions
Based on the thorough evaluation of the 13 international intervention coding systems against the stated criteria, ICHI was recommended as the intervention schema to undergo due diligence testing within the South African Healthcare environment.

An important recommendation of the Intervention Work Stream was that of the need for ‘Communities of Practice’ to be established across the different professional user groups.

These would be seen as partners in collaboratively researching and developing any future implementation of ICHI as the intervention coding system in South Africa.

The recommendation to evaluate ICHI took into consideration the simultaneous proposals for ICD-11 to be adopted as the diagnostic schema of choice, and ICF for Functioning and Disability. This in line with the approach to consider use of the WHO-FIC suite of coding systems as an important strategic factor.

Due-diligence studies will aim to stress test ICHI’s fullest applicability across the full spectrum of the South African healthcare sector by ensuring wide stakeholder engagement to explore best practice.

The proposed Community of Practice studies will seek to identify gaps and propose solutions to these gaps.

The use of a Country Extension in ICHI was discussed as a potentially valuable addition to facilitate implementation of ICHI in countries with intervention coding systems and to provide developmental feedback to the WHO-FIC on possible future improvements/developments of ICHI.

Acknowledgements or Notes
The Potential Use of ICHI for Radiological Coding in South Africa

Authors: Warrick Sive1, Faith Barter1, Luisa Whitelaw1, Richard Pierce2, Jako Calitz2

1: University of the Witwatersrand; 2: Radiological Society of South Africa.

South Africa

Abstract
Given the interest in ICHI as a possible coding system in South Africa, a high level review of ICHI was undertaken to evaluate how it might be used for Radiology coding in South Africa. This is a report on a mapping exercise of 100 Radiology Society of South Africa (RSSA) codes to ICHI and identify areas that will require further attention prior to a broad acceptance of the sustainability of of ICHI for radiology coding in South Africa. A proposal is included that the WHO-FIC allows for the use of a Country extension code to aid both implementation in particular countries where desired and to provide feedback to the WHO-FIC for future development of ICHI.

Introduction
The South African Department of Health has identified ICHI as a possible national intervention coding system.

A detailed due diligence investigation will be undertaken to determine the possible role of ICHI for intervention coding in South Africa and what adaptations or additional developments may be needed to support such an implementation. One process for undertaking this investigation would be the development of “Communities of Practice” reflecting the different Professions and Specialties that use current intervention coding systems.

Different disciplines have particular needs in clinical intervention coding. To better understand what these may be for Radiology coding, the University of the Witwatersrand’s team collaborated with the Radiological Society of South Africa (RSSA) to pilot a cross-walk of the top (by frequency of use) RSSA codes to ICHI codes. This reflects the commitment of the RSSA to collaborate in ICHI R&D. It is noted that there is no current policy in the RSSA commitment to support ICHI as an intervention coding system for South Africa per se.

RSSA procedure (intervention) codes have a 5-digit numeric structure with each code linked to a Relative Value Unit (RVU).

Digit 1 = Anatomical Region
Digit 2 = Sub-anatomic Region
Digit 3 = Modality
Digit 4 and 5 = Codes for specific procedures.

It is envisaged that the outcomes of this, and future work to be carried out as a result thereof, will be of benefit to the South African health sector. There is further a desire to provide feedback going forward to the WHO-FIC pertaining to future development of

Methods & Materials
The project team educated itself on the ICHI by reference of International Classification of Health Interventions (ICHI) (who.int) and ICHI (uniud.it). The top 100 RSSA codes were identified by way of frequency of use.

Results
53 of the top 100 used RSSA codes could be confidently mapped to equivalent ICHI codes

Cross mapping was particularly challenging in the following areas:

- The radiology intervention was not fully described
- Nuclear Medicine codes appear to be insufficient.
- Intervention takes place across a number of anatomical regions
- More than one modality is used in an intervention
- Use of pre-views without contrast are followed by contrast view
- Intervention has more than one view
- Many RSSA codes mapping to a single ICHI code and vice versa
- Descriptions of Materials, Equipment, Level of Care and Time of Intervention is included in RSSA codes and are not mappable to an intervention coding system

Conclusions
The RSSA coding system is a procedure coding system used in South Africa to code and bill for Radiological interventions. The procedure based system has been developed in response to the need to bill for services (using procedures as a basis for billing tariffs) in the absence of a nationally regulated intervention coding system. They are primarily designed to cater for tariffs.

The South African Department of Health will introduce, through an appropriate collaborative process, a suite of coding schemes that holistically provide the data required for clinical, research and tariff purposes. This is a significant challenge in an environment with legacy intervention and mixed intervention/other cost drivers-tariff systems.

Further ICHI R&D is required in relation to local Radiological coding. To this end, the inclusion of a country Extension Code would facilitate local research and implementation whilst facilitating R&D feedback to the WHO-FIC. There is appetite to trial the use of such an extension code (across the different specialties and professions) and report back to the WHO-FIC accordingly.

The disaggregation of Interventions, from Level of Care, Consumables etc that are coded in the RSSA system and generate a tariff will require significant attention if a pure intervention coding system is to be introduced.

Acknowledgements
The assistance of Dr Richard Tuft, Executive Director, RSSA, and members of the RSSA is gratefully acknowledged.
A High Level Review of ICHI as a Dental Intervention Coding System in South Africa

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Abstract

ICHI has been identified for further due diligence study in South Africa. A high-level study was carried out to better understand issues that would need to be addressed in ICHI in relation to dental intervention coding in South Africa. We studied the 104 most frequently used dental codes currently used in South Africa. The feasibility of cross walking the South African Coding system to ICHI and other lessons learnt in this process are reported on. Recommendations are made as to what may be useful in facilitating the introduction of ICHI for dentistry and associated specialties as intervention coding in South Africa.

Introduction

The South African Department of Health has recently completed a Technical Working Group study on coding systems to be recommended for national, regulated use in South Africa.

"Communities of Practice" are required in South Africa to conduct the necessary R&D into ICHI for use in South Africa across the different user groups.

The University of the Witwatersrand’s Clinical Governance Initiative (CGI) or one provider does the Cephalogram whereas a different provider carries out the tracing and analysis of the Cephalometrics image. This reflects the specific health economics of dental practice in South Africa. It provides one principle example pointing to the requirement for detailed knowledge beyond Health Classification per se in the introduction of new clinical coding systems. This highlights theappropriateness of the South African Department of Health’s "Community of Practice" approach to determining the suite of clinical codes to be used in South Africa.

Methods & Materials

The top 100 (by utilisation) of the SADA codes were selected for cross walk and review.

The SADA codes that could not be cross mapped were predominantly Clinical Governance Initiative; those codes that included materials, collaborated with the South African Department of Health and other cost drivers, and Dental Association (SADA) to conduct the codes that included definition of a high level review of ICHI and its level of specialty of the provider.

The SADA has produced a set of codes which reflect both interventions and other cost drivers such as Equipment, Dental Materials, Consumables and Medicine into single codes. This reflects the historical requirement for private sector billing in the absence of a nationally regulated suite of clinical coding systems.

Results

| Number of SADA Codes in Sample | 104 |
| Successful crosswalks | 60% |
| % of SADA Codes Successfully Crossmapped | 58% |

Conclusions

This study was the first review of the potential of ICHI as the intervention coding system for Dentistry in South Africa.

It must be noted that experience with ICHI was, prior to this study, absent in the Dental sector in South Africa. The study provided an important introduction to ICHI as a possible intervention coding system in South Africa, in this case particularly for Dentistry.

Although a 58% cross mapping is a relatively low number, this is not seen as a major stumbling block to the eventual introduction of ICHI into South Africa if such is decided by the National Department of Health in due course.

A number of the SADA codes included information that would not be captured in a pure intervention coding system. These include:
- Dental Materials
- Medicine
- Level of Specialty

However, from a Health Classification perspective, the separating out of these factors into their relevant coding systems may be welcomed given the complexity of single codes that include Interventions and other associated variable costs in a single code.

Dentists in South Africa will carry out Cephalogram Capture and Analysis in two different ways. Either the provider carries out both (which is codable in ICHI) or one provider does the Cephalogram whereas a different provider carries out the tracing and analysis of the Cephalometrics image. This reflects the specific health economics of dental practice in South Africa.

Acknowledgements

Appreciation is expressed to the SADA for the time and effort invested in this study.
The National Board of Health and Welfare (NBHW) has since 2007 collected data on patients who receive care from municipal health care to the National Register of Interventions in Municipal Health Care. Municipal health care in Sweden refers to care provided by the municipalities (n=279 000) in special forms of housing, day-to-day activities and home care in ordinary housing. About 400 000 patients receive municipal health care every year and more than 320 000 are 65 years or older.

A new regulation came into practice in 2019, which made it possible for NBHW to also collect interventions (per day) performed by licensed healthcare professionals (excluding physicians) such as nurses, occupational therapists and physiotherapists but only if the municipality is the care provider. The interventions are reported with Swedish Classification of Health Care Interventions (KVÅ) codes.

Sweden has a national e-health strategy to support structured digital information in electronic health records (EHR). The classifications are used in EHR e.g. sharing information and reporting data.

KVÅ consists of two parts: a) surgical interventions and b) medical interventions, including functioning interventions. Since 2008 the medical part includes two chapters (diagnostic and therapeutic) targeting ICF-categories mostly at 2nd level for body functions, activities and participation (A&P) and environment in the same way as ICH, but in KVÅ broader actions are used. A subset of 360 interventions in KVÅ (year 2021) (Table 1) are recommended to be used in structured documentation in EHR to support reusing the data, e.g. for local follow-up, quality improvement and reporting to the national register. The KVÅ subset is used together with a subset of 280 ICF-categories. Today 86% of the 290 municipalities are also using ICF in EHR in municipal health care.

**Results**

Approximately 12 300 000 performed interventions for around 279 000 patients were reported to the national register during 2021 (Table 1 and 2). The four most common diagnostic interventions that patients received were targeting body functions UNS (PI) (Sampling unspecific), environment (PT), mobility (PM) and medication (PU). Diagnostic interventions targeting 7 chapters of A&P together with voice and speech functions are the least performed. (Figure 1).

The proportion of patients who received at least one diagnostic and therapeutic intervention from the subset of KVÅ were 80% and 90%, respectively (Table 2). Of the diagnostic interventions 60% of all patients received at least one that targeted body functions, 43% environment and 36% A&P. For therapeutic interventions 64% of all patients received at least one intervention targeting medication, 60% environment and 52% body functions. Only 4% of the patients received at least one intervention targeting individualized planning. Almost one fourth of the patients received at least one intervention that was related to covid e.g. vaccination and sampling.

**Conclusions**

Conclusions of the national statistics of interventions in municipal health care:

- The number of patients receiving diagnostic and therapeutic interventions targeting ICF varied a lot between the sections of KVÅ.
- The sections of interventions targeting ICF present a good view of which areas are more or less received by the patients in order to improve or maintain their health.
- This data can contribute to create a more knowledge and evidence-based, efficient and equivalent municipal health care.

Source: National Register of Interventions in Municipal Health Care, The National Board of Health and Welfare, Sweden

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Standardizing medical procedure text from primary care electronic medical records in Canada

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Background
Disease classification systems are the backbone of health data worldwide. In Canada, the 10th version of the International Classification of Disease (ICD-10) is used for hospital reporting and the 9th version (ICD-9) is used by physicians and healthcare providers to submit their medical billing claims to provincial / territorial governments for payment.

The use of electronic medical records (EMRs) in Canada is widespread. The data extracted from these systems are used for health research, disease surveillance and quality improvement. However, some EMR data are entered in unstructured or uncoded formats. This creates challenges when using EMR data for secondary purposes.

The objective of this study is to develop a machine learning algorithm that will codify medical procedure text from primary care EMRs.

Data Source
The Canadian Primary Care Sentinel Surveillance Network (CPCSSN) collects de-identified patient data from 11 different EMRs across the country. Data for nearly 2 million primary care patients are available and contain demographics, past and current diagnoses, prescribed medications, medical procedures, billing, physical measurements, laboratory values and more.

Mapping Standard
We will examine several options to find the classification or terminology system that is most appropriate for mapping to Canadian primary care procedure data. This may include:

- International Classification of Health Interventions (ICHI)
- Canadian Classification of Health Interventions (CCI)
- International Classification of Primary Care (ICPC-3)
- SNOMED-CT

Machine Learning
Natural language processing methods (e.g., named-entity recognition) will be employed to develop a semi-supervised classification model to map the unstructured procedure text in the CPCSSN database to codes from a given classification / terminology system.

Validation
We will test the newly developed algorithm on a random sample of approximately 5000 records. Trained reviewers will review these records to determine whether the procedure was correctly mapped to the appropriate code. Performance metrics (e.g., sensitivity, specificity, positive predictive value, negative predictive value, F1 score, etc.) of algorithms will be assessed using the record review data as the reference standard.

Summary
We are developing machine learning algorithms to classify medical procedure text from a Canadian EMR database to codes from a reference classification system. This will provide better quality data for secondary uses, such as research & surveillance.

Discussion & Future Application
Once validated, the algorithm will be applied to the CPCSSN database to allow for easier, standardized use of medical procedure data.

The machine learning methods developed here could be modified to classify other types of free-text data within the EMR database, such as diagnoses, physician notes and sociodemographic information.

These methods could also be applied when creating EMR phenotypes (i.e., case definitions) for chronic or acute conditions.

Acknowledgements & Contact
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WHO-FIC Content Alignment and Harmonization

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Abstract

Since the 2021 WHO-FIC Annual Meeting the work on content alignment and harmonization has continued. The work includes the harmonization of ICF body structures and ICD-11 anatomical extension codes and three other case studies that help to identify and plan further work. These efforts to harmonize entities from the three WHO-FIC reference classifications have raised some issues e.g., how much resources are available for the work, how to reorganize the committees and reference groups to evaluate and approve changes in the WHO-FIC Foundation, and what goals to pursue for the work.

Methods & Materials

Since the 2021 WHO-FIC Annual Meeting, we have used newly developed software to map ICF body structure entities to ICD-11 anatomical extension codes (separate poster). The mapping software allows for direct comparison between entities in ICF and ICD-11. Three independent raters considered the mappings, including those for which the tool proposed identity matches.

We have also conducted three case studies involving laterality and relational entities, family relationships, and pain (separate poster).

Results

These efforts to harmonize entities from the three WHO-FIC reference classifications have demonstrated that, in some areas, it’s possible to create logically consistent hierarchies that combine related entities from the three core WHO-FIC core classifications in the Foundation and still recreate the classifications (through linearizations) without any modification.

It is possible to evaluate the different ways of harmonizing the Foundation content only if we consider the goals of the project and the available resources. Some possible goals are:

- Eliminate redundancies or inconsistencies in the Foundation
- Facilitate joint use of the classifications
- Suggest revisions and clarifications to the classifications
- Clarify the semantic relationships among the Foundation entities (i.e., ontologizing the Foundation to the extent possible)
- Minimize manual effort

The work also raised some issues for the further work. Questions to consider:

- Entities in ICD-11, ICF, and ICHI are represented in one Foundation. It is clear that when there is semantic overlap, as it happens with ICF body structures, ICHI targets, and ICD-11 anatomical extension codes, it is necessary to remove duplicates and create consistent hierarchies. However, when entities are related but do not have overlapping meaning, as in ICF’s neutral body function domains and ICD-11’s signs and symptoms, is it necessary to map them?
- Content alignment and harmonization require expertise in different domains, including expertise in the subject matter, knowledge about the classifications and their usage rules, and technical expertise on automated and semi-automated mappings. How much resources does the WHO-FIC Network have to do this work and how they can be motivated and organized for most effectiveness?

Conclusions

The anatomical structures mapping and the three case studies have raised not only some questions to consider but also possible goals for this work.

The Network laid down principles of how the reference classifications relate to each other in the family paper. In light of the recent unification of the entities in the Foundation, the paper may need to be updated to include discussions of how the entities relate to each other in the Foundation.

At the 2022 mid-year meeting, WHO staff commented that we need to look at the real-life use cases and not only discuss from a theoretical perspective. It comes back to use cases and how coded ICD/ICF and eventually ICHI information is used for comparisons on aggregated data.

Next steps: to describe use cases, to continue describing the methods and principles for content alignment and harmonization, and to map additional areas e.g., ICHI anatomical targets and ICD-11 anatomical extension codes.
Terminologies within the WHO-FIC

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Abstract
As part of its strategic workplan, the WHO-FIC Family Development Committee (FDC) commissioned work to better understand the relationship between WHO-FIC classifications and other health terminologies. This poster updates a series of local, national, and international use cases developed in Spain, Canada, Netherlands, United Kingdom and several countries involved in an International group of translational researchers and gives some recommendations.

Introduction
Attempts to characterize terminologies by structure or by function becomes increasingly difficult. A terminology that takes the form of a computable ontology also comprises a plethora of classifications and potential lists. A single terminology can at the same time exhibit interface, reference, and aggregating properties. A single universal terminology that can meet all the requirements of health care remains elusive, but to support information ex-change and system interoperability there remains a need to understand the interplay between different terminologies. Use-cases here presented are answers for the new requirements of healthcare professionals.

Use cases
pilot mapping exercise between ICD-11 foundation entities in the endocrine chapter and SNOMED CT endocrine hierarchy concepts to provide an “exact match” equivalence for the purposes of information transfer between healthcare systems and to document the challenges and issues which arise to inform International discussions and future approach. An international group of translational researchers is exploring the enrichment of the Foundation Layer with components of biomedical ontologies such as the Human Phenotype Ontology (HPO) and MONDO.

Conclusions

1. WHO-FIC reference classifications should be used whenever possible for reporting purposes, locally, nationally, and internationally.
2. For specific purposes, and where they exist, derived classifications could also be used for reporting purposes; Where reference and derived classifications are unable to capture point-of-care information at the level of specificity needed, other terminologies (ideally related classifications/terminologies) should be used to complement reference and derived classifications but should not replace reference and derived classifications for reporting purposes. The related classifications and terminologies need to be mapped to the reference classifications to ensure unambiguous and comparable terms, concepts and classifications.
3. WHO-FIC should determine an approach to recognizing a set of other terminologies that might serve to complement the use of reference and derived classifications, to ensure consistent use, to prevent duplication of effort, to better coordinate mapping activity
4. WHO-FIC should explore further the relationship between the Foundation and relevant content from recognized terminologies
5. WHO-FIC should develop and put in place robust governance arrangements with strong strategic oversight to support the integration of recognized related classifications or terminologies with the Family, to ensure consistency in application, to prevent duplication of effort, and to better coordinate mapping activity

6. Many of the principles that guide the governance of WHO-FIC classifications might also apply to other recognized terminologies, thereby informing any recognition process:

- Recognized terminologies should be available internationally and useful across a wide range of cultures
- While there is no requirement that recognized terminologies should be available at zero cost, the underlying business model should not exclude particular groups of users
- Recognized terminologies should be maintained regularly with a transparent and inclusive approach to governance

There should be a willingness across stakeholders to contribute to an ongoing shared mapping effort, coordinated by WHO-FIC, to prevent duplication of effort and inconsistencies in reporting

The results of any coordinated mapping effort between recognized terminologies and WHO-FIC terminologies should be made available under the same terms of the WHO-FIC reference and derived classifications (creative commons license).

The Terminologies paper is still open to include contributions of the FDC members and waiting for the final approval by the Council members.

Figure 1: Screenshot of a Telematic working session

Acknowledgements or Notes
The authors want to express the contribution in the authorship of the Terminologies paper of the following persons: Lynn Bracewell, Christopher G. Chute, Nicholas R. Hardiker and Cassandra Linton,
### Abstract
The Family Development Committee, with assistance from the Informatics and Terminology Committee, works to harmonize ICD-11, ICF, and ICHI content in the Foundation. In addition to software-assisted mapping of the ICF Body Structures domains and ICD-11’s anatomical extension codes, we developed several case studies to examine the issues involved in mappings and harmonizing WHO-FIC entities. This poster reports the results of these case studies.

### Introduction
With all of the entities in ICD-11, ICF, ICHI represented in the the WHO-FIC Foundation, it is imperative that the content of the three reference classifications be harmonized so that the entities in the Foundation are consistent, non-duplicative, and sufficient to generated the classifications as linearizations. Entities that have similar semantic meanings, such as ICD-11’s anatomical extension codes, ICF’s Body Structures domains, and ICHI’s anatomical targets, must be reconciled. It is not as obvious how related concepts, such as ICD-11’s signs and symptoms and ICF’s body functions should be mapped to each other. To investigate in detail the issues involved in harmonizing these entities, we selected three clusters of concepts as case studies. We studied possible harmonization goals and methods and reflected on the ways to go forward.

### Methods & Materials
The first case study involves entities related to “Laterality/Relational” in ICD-11, ICHI, and ICF. The second case study involves relationships with family members. ICF has the “Engaging in family relationships” hierarchy in the activities and participations domains while ICD-11 has the “(Problems in) Relationship with parents, in-laws or other family members” hierarchy in “Factors Influencing Health Status” chapter. Additionally, ICF has “Support from Immediate family” and “Support from extended family” (subclasses of “Support and relationships” environmental factor). The third case study involves the ICF “Pain” hierarchy and pain-related entities in ICD-11, including “Pain” as a child of “General symptoms,” numerous pain disorders (e.g., “Neuropathic pain”), and numerous pain in specific anatomical locations.

For each case, we studied how the entities are related to each other, issues involved in and possible methods for mapping them. We define possible goals for WHO-FIC content harmonization and evaluate the pros and cons of each method relative to each goal. The details can be found at https://tinyurl.com/whoficharmonizeC

### Results

**Figure 1: Proposed harmonized hierarchy for entities related to “Laterality” in the Foundation. Entities in red have multiple parents.**

|---|---|---|---|---|---|---|---|---|---|

For the first case study, we found that it is necessary to extend the mappings to ICF “Anatomical localization” and ICD-11 and ICHI “Relational” entities to cover all of the related entities. We determined that it’s possible to create in the Foundation multi-parents “Topological Scale Value” and “Anatomical localization” hierarchies (Figure 1) that include entities related to “Laterality” and from which we can generate, via linearization, appropriate ICD-11 and ICHI extension codes and ICF qualifiers without making any change in the existing classifications. For the second and third cases, technically there is no semantic overlap because of ICF domains do not signify problems. We identified three broad methods for mapping:

1. Use ICF’s ‘related impairment’ property and possible ICD-11 inverse pointers (e.g., functional impact)
2. Materialize in the Foundation entities composed of ICF domains and the .8 ‘not specified’ qualifier, then map the entities
3. Define a mapping language for specifying mapping expressions and store them in the Foundation

The ‘Relationships with family’ case study raises the issues of how to map environmental factors and domains qualified with performance versus capacity qualifiers. The ‘Pain’ case study highlights the complexity of mapping ICF body function impairments to semantically distinct disease/disorder (e.g., “migraine”) and signs and symptoms (“generalized pain”), each of which may have exclusions and anatomical locations that need to be harmonized.

### Discussion
The methods 1-3 are not necessarily mutually exclusive. It’s possible to, for example, add pain disorders as “related impairments” while creating mapping expressions for signs and symptoms of pain.

We can evaluate the different ways of harmonizing the Foundation content only if we consider the goals of the project and the available resources. Some possible goals are:

1. Eliminate redundancies or inconsistencies in the Foundation
2. Facilitate joint use of the classifications
3. Suggest revisions and clarifications to the classifications
4. Clarify the semantic relationships among the Foundation entities (i.e., ontologizing the Foundation to the extent possible)
5. Minimize manual effort

The “Laterality” case study is an example of eliminating redundancies and creating consistent hierarchies. It helps to clarify ontological relationships but requires significant manual effort. The ICD-11 Content Model includes a “functional impact” parameter which, together with ICF’s “related impairment” property, can link ICD-11 and ICF entities to facilitate joint use without great deal of effort. Such linkage, however, will probably neither promote revisions and clarifications nor ontologize the Foundation.

Materializing in the Foundation ICF domains with the .8 qualifier (e.g., b2800.8, Unspecified Generalized Pain) opens the possibility of mapping such augmented ICF entities with similar entities in ICD-11. Such mapping, however, will be difficult to construct, having to deal with issues described in the Results section. The last approach, defining a mapping language for mapping expressions needs further refinement, as it can mean something simplistic or a language with the full power of description logic.

Making decisions on the goals and methods of harmonization beyond having consistent and non-duplicative content ultimately depends on use cases WHO-FIC has for the harmonized Foundation. It is difficult to know what structures should be in the Foundation without knowing how they will be used. Defining such use cases must be a priority of the WHO-FIC community.

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**WHO - FAMILY OF INTERNATIONAL CLASSIFICATIONS NETWORK ANNUAL MEETING 2022**

**WHO-FIC Foundation Content Harmonization Case Studies**

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