

ICD-11 in eleven points

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Acknowledgement

Draws on presentations by Bedirhan Ustun, Chris Chute, Can Celik and Tania Tudorache

1. What, why & when?

- The World Health Assembly has given the WHO office the task of producing the eleventh revision of the ICD. Announced in 2007.
- Nearly 20 years have passed since the tenth revision was published. Much has changed:
 - Subject matter: e.g. due to better understanding of the genetic basis of some diseases
 - Context: e.g. the rise of electronic health records & terminologies (n.b. SNOMED)
- Preliminary alpha May 2010
- ICD-11 is due to be presented to the WHA for endorsement in May 2014.
 - Implementation? Some time after that...
 - But some ICD-11 developments are likely to 'leak' into ICD-10

Construction of ICD-10:

Revision Process in the 20th Century



- 8 Annual **Revision Conferences** (1982 - 89)
- **17 – 58 Countries** participated
 - 1- 5 person delegations
 - mainly **Health Statisticians**
- **Manual** curation
 - List exchange
 - Index was done later
- "Decibel" ? Method of discussion
- Output: **Paper Copy**
- Work in **English** only
- **Limited testing** in the field



Construction of ICD-11:

Revision Process in the 21st Century



- **Internet-based permanent platform**
 - All year round
 - Open to all people in a structured way
 - Content experts focus
- **Digital curation**
 - Wiki enabled collaboration
 - Ontology based
- **Enhanced discussion & peer review**
 - TAGs serve as the editorial group
- **Electronic copy** → print version
- Work in **multiple languages**
- **Planned field tests**
 - Based on Use Cases

2. Players

- WHA and the WHO member states
- WHO office: Terminology & Classifications
- Revision Steering Group
- WHO-FIC Collaborating Centres
- Topic Advisory Groups
- Special TAG-like groups
- Working parties, honorary consultants, etc
- (Interested public...)

3. The big idea

- Bring the classification up to date
- Fix problems
- Document the ICD better
 - Internally (definitions, etc.)
 - Externally (connect items to external sources)
- Prepare the ICD to operate with electronic health records
- Provide versions for additional purposes
 - Mortality and hospital admissions (of course)
 - Primary care, research, lower resource settings ...

ICD-11 Revision Goals

- Evolve an ontologically coherent classification
- Linked logically to underpinning terminologies (e.g. SNOMED)
- Rubrics “defined” by aggregation logics of associations and details
- Human language definitions will be explicit
- Incorporate genomic disease definitions
- Maintain longitudinal consistency through linear derivatives

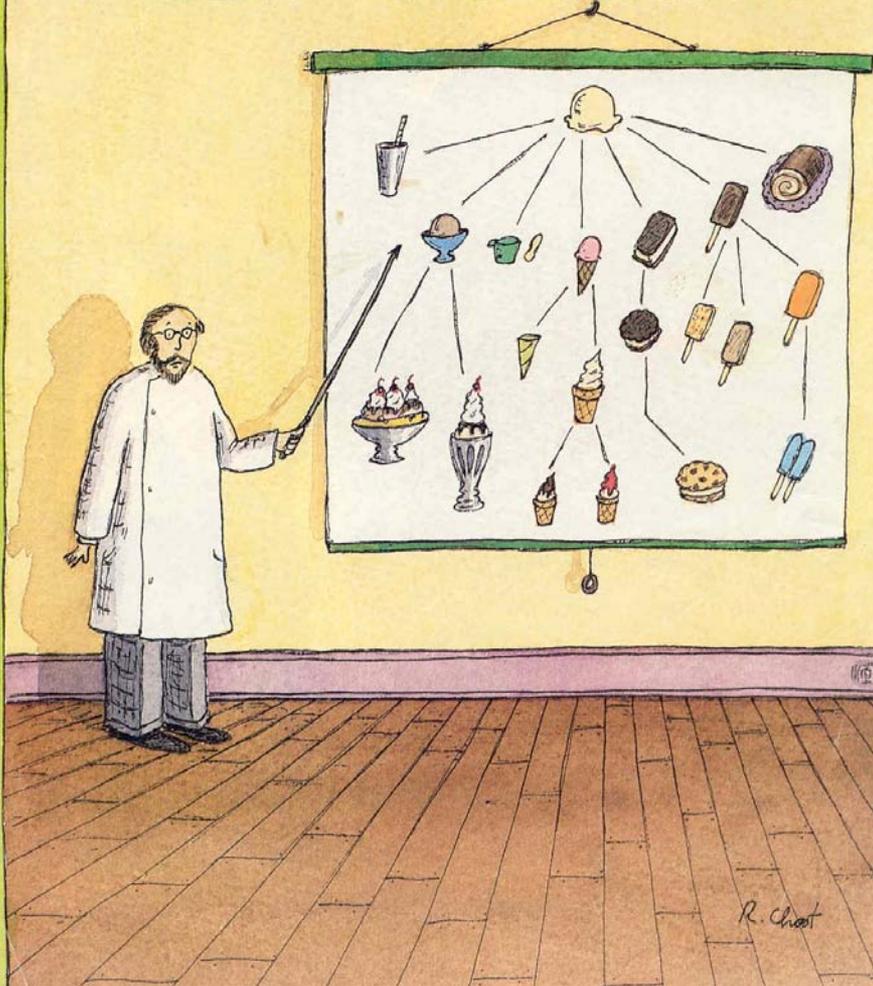
4. Primer in ICD 11-speak

- Terminology
- Ontology
- Semantic wiki
- Linearization
- Content model
- Use-case ...

Aug. 4, 1986

THE NEW YORKER

Price \$1.50



What is Ontology?

- **Ontology (philosophy)**
 - the Organization of Reality ☺ !!!
- **Ontology (computer science)**
 - the explicit – operational description of the conceptualization of a domain:
 - Concepts: **entity** and **quality**
(*properties and attributes*)
- An ontology defines:
 - a **common vocabulary**
 - a shared understanding/exchange:
 - among **people**
 - among **software agents**
 - between **people and software**
 - to reuse data - information
 - to introduce standards to allow interoperability

Use cases

- Several versions of ICD-11, each specific to a major type of use
 - Certainly: Mortality and Morbidity
 - Others foreshadowed:
 - Primary health care
 - Research
 - Lower resource settings
 - etc.
- Each will be specified in terms of the same ‘foundation layer’
 - Relationship between use-case versions is less clear

5. The products

- First priority
 - Version for coding causes of death
 - Version for coding hospital in-patient cases (and supporting case-mix funding)
- Also...
 - Primary health care, lower resource settings, research...
- All based on an underlying database

6. Process

- Complex and has become more so.

7. Content model

- What should be specified for categories in ICD-11?
- What must be specified if it is to function properly as a database?

Each category in ICD-11 has a set of attributes, which are the Content Model

TITLE of ENTITY: Name of disease, disorder, or syndrome...

- 1. Textual definition**
- 2. Synonyms - Inclusion – Exclusion - Index terms**

Descriptive characteristics

- 1. Type**
Disease, disorder, syndrome, injury, sign/symptom, external cause, reason for encounter;
- 2. Body System(s)** (*physiology*)
- 3. Body Part(s)** (*anatomical site*)
- 4. Manifestation Attributes**
 - a. Signs & Symptoms**
 - b. Diagnostic Findings**
- 5. Causal Properties** (*etiology*)
 - a. Causal Mechanisms /Agents**
(+ special set for External Causes)
 - b. Risk Factors**
 - c. Genomic characteristics**
- 6. Temporal Properties**
- 7. Severity and/or Extent**
- 8. Functional Properties**
- 9. Treatment**

Maintenance attributes

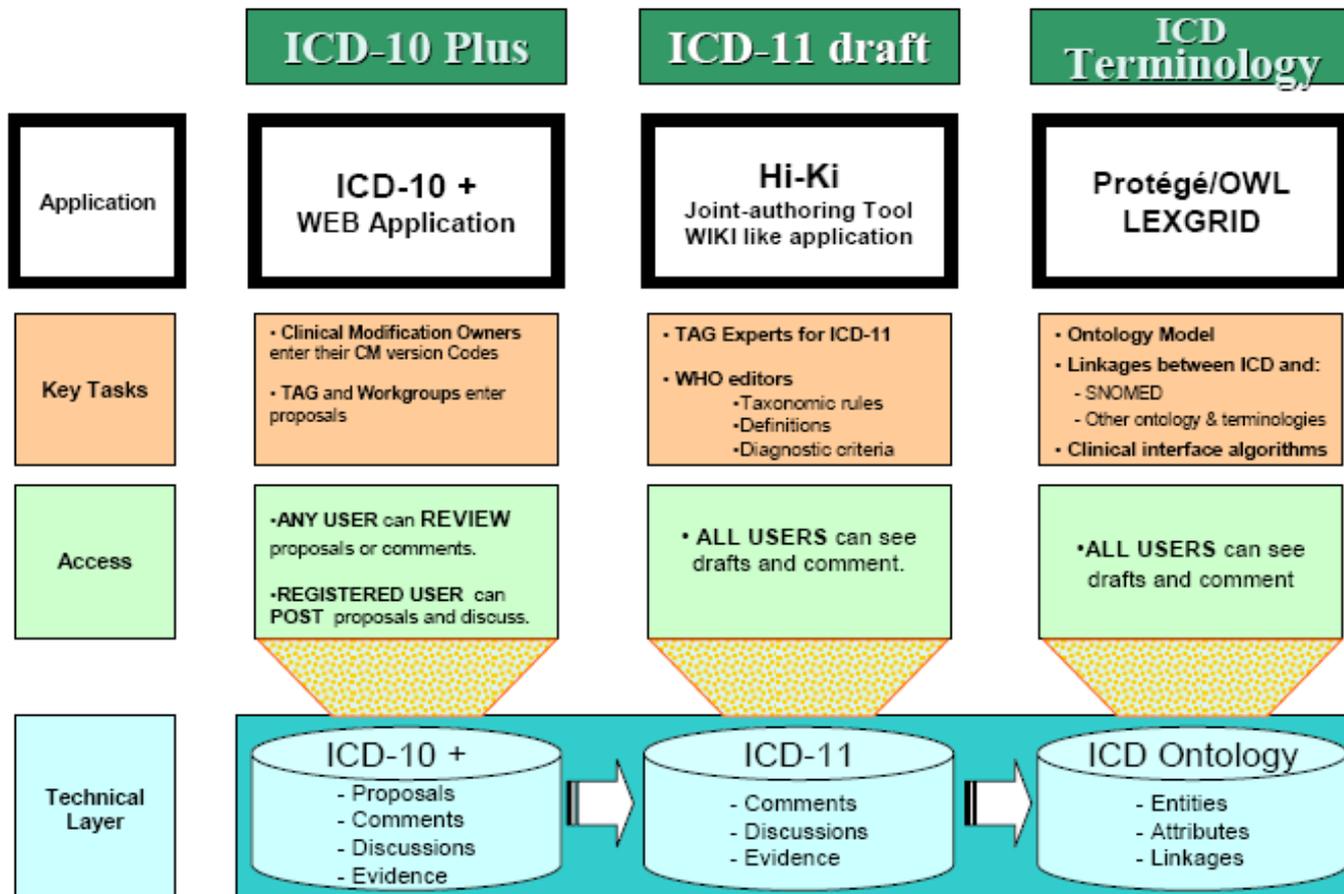
- A. Unique identifier**
- B. Subset, adaptation, and special view flag**
 1. Primary Care
 2. Clinical Care
 3. Research
 4. Special indices (e.g. Public Health Indices or Resource Groupings)
- C. Hierarchical relationships**
parents and children in ICD structure
- D. Mapping relationships**
Linkages to other systems like SNOMED etc.
- E. Other rules**

Extension for External Causes

Descriptive characteristics

- 1. Intent**
- 2. Mechanism**
- 3. Object/substance**
- 4. Place**
- 5. Activity**

8. Development platform



iCat Overview

- iCAT – the Initial/ICD Collaborative Authoring Tool
- Web-based application – access it from a browser
- Browsing and editing the ICD Content Model
- Collaborate – discuss issues, peer review, etc.
- Developed by Tania Tudorache et al in Mark Musen's group at Stanford
- In consultation with Injury/Ext Causes TAG, modified to accommodate proposals for external causes chapter

iCAT Functions

Manage
Hierarchy

Enter and Edit
Content



Collaboration:
Add notes and
discussions on
concepts and
content

My ICD x ICD Content x Category Notes and Discussions x Reviews x

ICD Categories

Create class Watch class

- ICD Categories 196
- 01' I 'Certain infectious and parasitic diseases' 1 44
- 02' II 'Neoplasms' 1 10
- 03' III 'Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism'
- 04' IV 'Endocrine, nutritional and metabolic diseases'
- 05' V 'Mental and behavioural disorders' 68
- 06' VI 'Diseases of the nervous system' 17
- 07' VII 'Diseases of the eye and adnexa' 5
- 08' VIII 'Diseases of the ear and mastoid process'
- 09' IX 'Diseases of the circulatory system' 7
 - I00-I02 'Acute rheumatic fever'
 - I05-I09 'Chronic rheumatic heart diseases'
 - I10-I15 'Hypertensive diseases' 1
 - I20-I25 'Ischaemic heart diseases'**
 - I20 'Angina pectoris'
 - I21 'Acute myocardial infarction'
 - I22 'Subsequent myocardial infarction'
 - I23 'Certain current complications following acute myocardial infarction'
 - I24 'Other acute ischaemic heart diseases'
 - I25 'Chronic ischaemic heart disease'
 - I26-I28 'Pulmonary heart disease and diseases of pulmonary circulation'
 - I30-I52 'Other forms of heart disease'
 - I60-I69 'Cerebrovascular diseases' 4
 - I70-I79 'Diseases of arteries, arterioles and capillaries'

Details for I20-I25 'Ischaemic heart diseases'

← Definition Terms Clinical Description Diagnostic Criteria Causal Mechanism and Risk

ICD Code: I20-I25

ICD Title: Ischaemic heart diseases

External Definitions:

Definition	CUI	Ontology ID
blood deficiency in the myocardium caused by a constriction or obstruction of its blood vessels; frequently occurs in conjunction with hypoxia, which is reduction in oxygen supply.	C0151744	UMLS/CSP2006
A disorder of cardiac function caused by insufficient blood flow to the muscle tissue of the heart. The decreased blood flow may be due to narrowing of the coronary arteries, to obstruction by a thrombus, or less commonly to diffuse	C0151744	UMLS/NCI2007_05E

Definition:

Text

Notes for F00-F09 'Organic, including

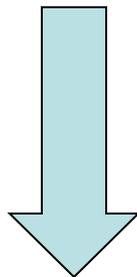
New Topic Reply Expand

Subject	Author
Alzheimer's disease, dementia, and the other entries F00 to F09 should move to chapter 6 diseases of the nervous system.	SNOMED Mapper

ICD11 Components

Foundation: ICD categories with

- Definitions, synonyms
- Clinical descriptions
- Diagnostic criteria
- Causal mechanism
- Functional impact



Find Term

Linearizations



```

A000 Cholera due to Vibrio cholerae 01, biovar cholerae
A001 Cholera due to Vibrio cholerae 01, biovar eltor
A009 Cholera, unspecified
A0100 Typhoid fever, unspecified
A0101 Typhoid meningitis
A0102 Typhoid fever with heart involvement
A0103 Typhoid pneumonia
A0104 Typhoid arthritis
A0105 Typhoid osteomyelitis
A0109 Typhoid fever with other complications
A011 Paratyphoid fever A
A012 Paratyphoid fever B
A013 Paratyphoid fever C
A014 Paratyphoid fever, unspecified
A020 Salmonella enteritidis
A021 Salmonella sepsis
A0220 Localized salmonella infection, unspecified
A0221 Salmonella meningitis
A0222 Salmonella pneumonia
A0223 Salmonella arthritis
A0224 Salmonella osteomyelitis
A0225 Salmonella pyelonephritis
A0229 Salmonella with other localized infection
    
```

Primary Care

```

A000 Cholera due to Vibrio cholerae 01, biovar cholerae
A001 Cholera due to Vibrio cholerae 01, biovar eltor
A009 Cholera, unspecified
A0100 Typhoid fever, unspecified
A0101 Typhoid meningitis
A0102 Typhoid fever with heart involvement
A0103 Typhoid pneumonia
A0104 Typhoid arthritis
A0105 Typhoid osteomyelitis
A0109 Typhoid fever with other complications
A011 Paratyphoid fever A
A012 Paratyphoid fever B
A013 Paratyphoid fever C
A014 Paratyphoid fever, unspecified
A020 Salmonella enteritidis
A021 Salmonella sepsis
A0220 Localized salmonella infection, unspecified
A0221 Salmonella meningitis
A0222 Salmonella pneumonia
A0223 Salmonella arthritis
A0224 Salmonella osteomyelitis
A0225 Salmonella pyelonephritis
A0229 Salmonella with other localized infection
A028 Other specified salmonella infections
A029 Salmonella infection, unspecified
    
```

Morbidity

```

A000 Cholera due to Vibrio cholerae 01, biovar cholerae
A001 Cholera due to Vibrio cholerae 01, biovar eltor
A009 Cholera, unspecified
A0100 Typhoid fever, unspecified
A0101 Typhoid meningitis
A0102 Typhoid fever with heart involvement
A0103 Typhoid pneumonia
A0104 Typhoid arthritis
A0105 Typhoid osteomyelitis
A0109 Typhoid fever with other complications
A011 Paratyphoid fever A
A012 Paratyphoid fever B
A013 Paratyphoid fever C
A014 Paratyphoid fever, unspecified
A020 Salmonella enteritidis
A021 Salmonella sepsis
A0220 Localized salmonella infection, unspecified
A0221 Salmonella meningitis
A0222 Salmonella pneumonia
A0223 Salmonella arthritis
A0224 Salmonella osteomyelitis
A0225 Salmonella pyelonephritis
A0229 Salmonella with other localized infection
A028 Other specified salmonella infections
A029 Salmonella infection, unspecified
A030 Shigellosis due to Shigella dysenteriae
A031 Shigellosis due to Shigella flexneri
A032 Shigellosis due to Shigella boydii
A033 Shigellosis due to Shigella sonnei
A038 Other shigellosis
A039 Shigellosis, unspecified
A040 Enteropathogenic Escherichia coli infection
A041 Enterotoxigenic Escherichia coli infection
    
```

Mortality

SNOMED-CT, International Classification of Functioning, Disability and Health (ICF), ICECI ...

9. TAGs

- Topic Advisory Groups
 - Mental health, Internal medicine, Injury & External Causes, Malignancies, Rare diseases, etc.
 - Supplemented by work groups, etc.
 - Supported by Managing Editors
 - All self-funded/volunteer
- Special variants
 - TAG-like groups: mortality and morbidity
 - TAG-information modelling and informatics

TAG Injury & External Causes

- Managing editor: Adam Harrison (no relation!)
- Core members & Honorary consultants
- Focus groups
 - External Causes: structure
 - Kirsten McKenzie, Lois Fingerhut
 - Spinal injury
 - Dr Bonne Lee and the ISCoS
 - Relationship with AIS
 - Maria Segue-Gomez
 - ‘Out of injury chapter’ issues
 - Prof Colin Cryer
 - Work-related injury
 - Tim Driscoll
 - And others – but there are topics in need of leaders

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Adam is waiting to hear from you...

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10. iCAMPs

Nine-day workshop in September 2009

TAG technical editors and leaders

Classification experts

IT experts

WHO Terminology and Classifications group

<https://sites.google.com/site/icd11revision/home>

Find by searching with Google: ICD-11 iCamp

iCAMP 2: September 27-30, 2010



[WHO ICD Revision: iCAMP Day 6](#)

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Sixth day of the World Health Organization's International Classification of Diseases (ICD) Revision **iCamp** Meeting. This meeting will discuss the Collaborative Authoring Tool ...

[youtube.com](#)



[WHO ICD Revision: iCAMP Day 3](#)

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Third day of the World Health Organization's International Classification of Diseases (ICD) Revision **iCamp** Meeting. This meeting will discuss the Collaborative Authoring Tool ...

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[WHO ICD Revision: iCAMP Day 7](#)

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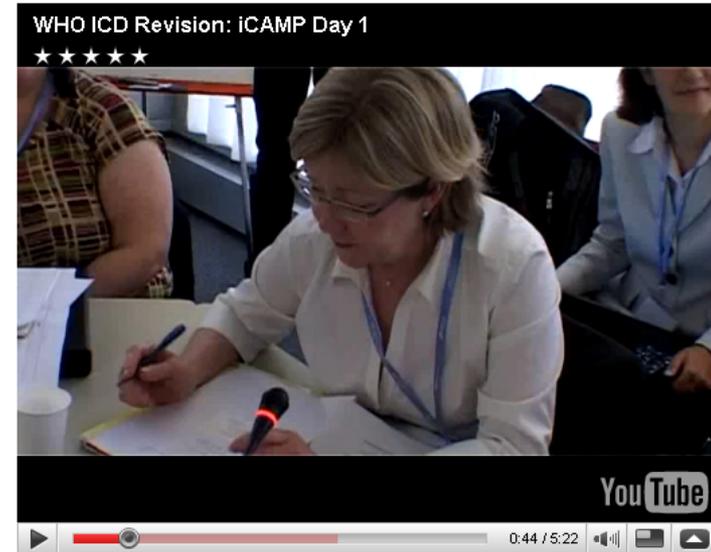
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11. When & how to get involved

- Reflect: what should change in ICD-11?
 - Will you have another chance...?
- Connect with the revision process
 - Now (ASAP)
 - a TAG e.g. Injury/External Causes via adam.harrison@flinders.edu.au
 - External causes structure: Kirsten McKenzie, Lois Fingerhut.
 - the mortality or morbidity 'TAG-like group' (recently formed)
 - Members of the ICD Revision Steering Group
 - Later
 - Respond to drafts during public consultation phase (2011-ish)
 - Repent at leisure (*why* didn't I put forward my brilliant idea...?)

Questions?