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# Comparative Analysis of ICD-11

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# Two areas of focus

- ICD-11 to ICD-10
  - Describe and quantify the changes
- ICD-11 to ICD-10-CM
  - Post-coordination significantly increases granularity and scope of coding
  - ICD-11 as possible replacement for ICD-10-CM?

Part 1

# ICD-11 / ICD-10

# Materials - data files

<https://icd.who.int/en/>

- ICD-11 data files for Mortality and Morbidity Statistics (2018 MMS linearization)
  - Tabular file
  - Index file
- Maps between ICD-11 and ICD-10 – three mapping files
  - 10To11MapToOneCategory
    - One ICD-10 code mapped to one ICD-11 code
  - 10To11MapToMultipleCategories
    - One ICD-10 code can map to multiple ICD-11 codes
  - 11To10MapToOneCategory
    - One ICD-11 code mapped to one ICD-10 code

## Other resources

- ICD-11 Reference Guide
- ICD-11 Implementation or Transition Guide
- ICD-11 MMS Browser
- ICD-11 MMS Coding Tool
- ICD-11 Foundation Component Browser
- ICD Application Programming Interface (API) –
  - Access to linearizations and foundation component
  - Post-coordination support
    - Allowable axes and values
- ICD-10-CM 2019 version
- UMLS – Metathesaurus and lexical tools

# How big is ICD-11?

Code type	Chapters 1 - 25	Chapters 26, V, X
For navigation purposes	2432	1444
For coding purposes	14622	13662
Total	17054	15106

- Total number of ICD-11 codes = 32,160\*, but
  - 15,106 codes (47%) in 3 chapters that fall outside scope of ICD-10:
    - Chapter 26 - Supplementary Chapter Traditional Medicine Conditions
    - Chapter V - Supplementary section for functioning assessment
    - Chapter X - Extension Codes (for support of post-coordination)
  - Only leaf codes are used in coding
- Total usable ICD-11 codes = 14,622
  - 20% increase over ICD-10 with 12,187 codes used for coding purposes\*\*

Subsequent analysis focused on these 14,622 codes

\* A number of 55,000 is often quoted in ICD-11 documentation, this refers to the number of entities in the Foundation Component, not all of them have unique codes

\*\* Number derived from the ICD-10 to ICD-11 mapping files, assuming that all ICD-10 codes are included

# What has changed?

- Traditionally, it is very difficult to know what has/has not changed between ICD versions because
  - Totally different codes and code syntax  
(e.g. *Huntington disease*: **G10** in ICD-10, **8A01.10** in ICD-11)
  - Names may change without change of meaning, and vice versa
  - Change in organizing principles, chapter delineation
- WHO published official maps to/from ICD-10
- But mapping is different from equivalence
  - Narrow to broad maps common
  - Maps can be one-to-many

# Acute bronchitis in ICD-10 and ICD-11

ICD-10



ICD-11

- ▼ X Diseases of the respiratory system
  - ▶ J00-J06 Acute upper respiratory infections
  - ▶ J09-J18 Influenza and pneumonia
  - ▼ J20-J22 Other acute lower respiratory infections

▼ J20 Acute bronchitis

- J20.0 Acute bronchitis due to *Mycoplasma pneumoniae*
- J20.1 Acute bronchitis due to *Haemophilus influenzae*
- J20.2 Acute bronchitis due to streptococcus
- J20.3 Acute bronchitis due to coxsackievirus
- J20.4 Acute bronchitis due to parainfluenza virus
- J20.5 Acute bronchitis due to respiratory syncytial virus
- J20.6 Acute bronchitis due to rhinovirus
- J20.7 Acute bronchitis due to echovirus
- J20.8 Acute bronchitis due to other specified organisms
- J20.9 Acute bronchitis, unspecified

- ▼ 12 Diseases of the respiratory system
  - ▶ Upper respiratory tract disorders
  - ▶ Certain lower respiratory tract diseases
  - ▼ Lung infections
    - ▶ CA40 Pneumonia
    - ▶ CA41 Acute bronchiolitis

▼ CA42 Acute bronchitis

- CA42.0 Acute bronchitis due to *Streptococcus*
- CA42.1 Acute bronchitis due to Rhinovirus
- CA42.2 Acute bronchitis due to Respiratory syncytial virus
- CA42.3 Acute bronchitis due to Parainfluenza virus
- CA42.4 Acute bronchitis due to *Haemophilus influenzae*
- CA42.5 Acute bronchitis due to Coxsackievirus
- CA42.Y Other specified acute bronchitis
- CA42.Z Acute bronchitis, unspecified

# Example – 10To11MapToOneCategory

icd10Code icd10Title		icd11Code icd11Title	
J20-J22	Other acute lower respiratory infections	CA4Z	Lung infections, unspecified
J20	Acute bronchitis	CA42.Z	Acute bronchitis, unspecified
J20.0	Acute bronchitis due to Mycoplasma pneumoniae	CA42.Z	Acute bronchitis, unspecified
J20.1	Acute bronchitis due to Haemophilus influenzae	CA42.4	Acute bronchitis due to Haemophilus influenzae
J20.2	Acute bronchitis due to streptococcus	CA42.0	Acute bronchitis due to Streptococcus
J20.3	Acute bronchitis due to coxsackievirus	CA42.5	Acute bronchitis due to Coxsackievirus
J20.4	Acute bronchitis due to parainfluenza virus	CA42.3	Acute bronchitis due to Parainfluenza virus
J20.5	Acute bronchitis due to respiratory syncytial virus	CA42.2	Acute bronchitis due to Respiratory syncytial virus
J20.6	Acute bronchitis due to rhinovirus	CA42.1	Acute bronchitis due to Rhinovirus
J20.7	Acute bronchitis due to echovirus	CA42.Z	Acute bronchitis, unspecified
J20.8	Acute bronchitis due to other specified organisms	CA42.Z	Acute bronchitis, unspecified
J20.9	Acute bronchitis, unspecified	CA42.Z	Acute bronchitis, unspecified

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# Example – 11To10MapToOneCategory

<b>icd11Code</b>	<b>icd11Title</b>	<b>icd10Code</b>	<b>icd10Title</b>
CA42	Acute bronchitis	J20	Acute bronchitis
CA42.0	Acute bronchitis due to Streptococcus	J20.2	Acute bronchitis due to streptococcus
CA42.1	Acute bronchitis due to Rhinovirus	J20.6	Acute bronchitis due to rhinovirus
CA42.2	Acute bronchitis due to Respiratory syncytial virus	J20.5	Acute bronchitis due to respiratory syncytial virus
CA42.3	Acute bronchitis due to Parainfluenza virus	J20.4	Acute bronchitis due to parainfluenza virus
CA42.4	Acute bronchitis due to Haemophilus influenzae	J20.1	Acute bronchitis due to Haemophilus influenzae
CA42.5	Acute bronchitis due to Coxsackievirus	J20.3	Acute bronchitis due to coxsackievirus
CA42.Y	Other specified acute bronchitis	J20.8	Acute bronchitis due to other specified organisms
CA42.Z	Acute bronchitis, unspecified	J20	Acute bronchitis

# Equivalence – Roundtrip ICD-10/ICD-11

ICD-10



ICD-11

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# Use of maps to determine equivalence

- Hypothesis: Equivalence  $\approx$  Roundtrip mapping
  - If
    - ICD-10 code X maps to one ICD-11 code Y  
(11To10MapToOneCategory)
    - and
    - ICD-11 code Y maps back to ICD-10 code X  
(11To10MapToOneCategory)
    - Then X and Y are equivalent
  - 4,820 equivalent code pairs identified  
(33% of ICD-11 codes used for coding purposes)

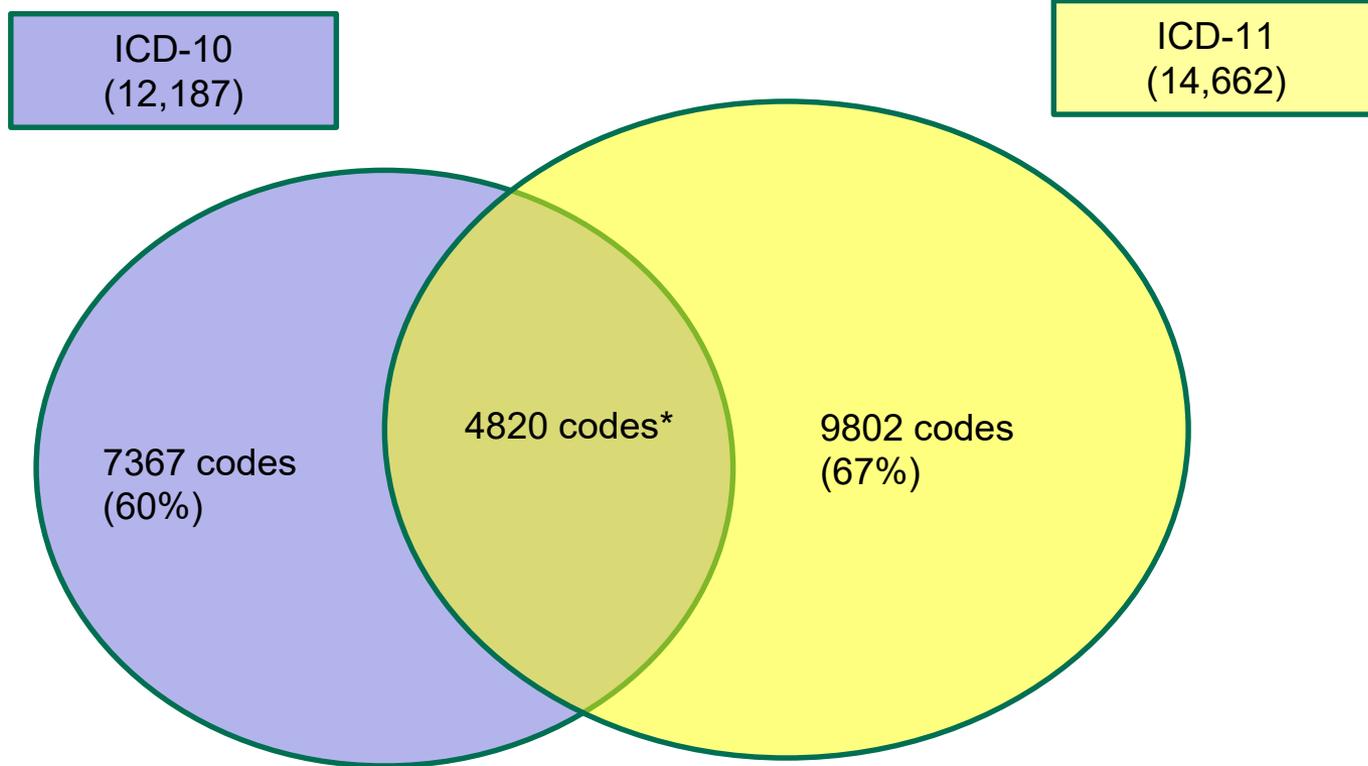
	ICD10CODE	ICD10TITLE	ICD11CODE	ICD11TITLE
1	J20	Acute bronchitis	CA42.Z	Acute bronchitis, unspecified
2	M21	Other acquired deformities of limbs	FA31.Z	Acquired deformities of limbs, unspecified
3	S50	Superficial injury of forearm	NC30.Z	Superficial injury of forearm, unspecified
4	A18.5	Tuberculosis of eye	1B12.1	Tuberculosis of eye
5	S06.3	Focal brain injury	NA07.4Z	Unspecified focal traumatic brain injury
6	B80	Enterobiasis	1F65	Enterobiasis
7	D06	Carcinoma in situ of cervix uteri	2E66.Z	Carcinoma in situ of cervix uteri, unspecified
8	S27.3	Other injuries of lung	NB32.3Z	Injury of lung, unspecified
9	K64.1	Second degree haemorrhoids	DB60.1	Second degree haemorrhoids
10	B47.0	Eumycetoma	1F29	Eumycetoma
11	K58.0	Iritable bowel syndrome with diarrhoea	DD91.01	Iritable bowel syndrome, diarrhoea predominant
12	O43	Placental disorders	JA8A.Z	Maternal care related to placental disorders, unspecified
13	K91.1	Postgastric surgery syndromes	DE11	Dumping syndrome
14	Q21.4	Aortopulmonary septal defect	LA8B.0	Congenital aortopulmonary window
15	M20.1	Hallux valgus (acquired)	FA30.0	Acquired hallux valgus
16	Q44.4	Choledochal cyst	LB20.20	Choledochal cyst
17	G45.3	Amaurosis fugax	8B10.0	Amaurosis fugax
18	D10.4	Benign neoplasm: Tonsil	2E90.4	Benign neoplasm of tonsil
19	T67	Effects of heat and light	NF01.Z	Effects of heat, unspecified
20	S93.4	Sprain and strain of ankle	ND14.7Z	Strain or sprain of ankle, unspecified

Random sample of equivalent codes  
 (“roundtrip mapping”)

# Equivalent codes

	Number of codes (%)	Examples	
		ICD-10	ICD-11
Same description	1840 (38%)	A00 Cholera	1A00 Cholera
ICD-11 description contains ICD-10 description	605 (13%)	C46 Kaposi sarcoma	2B57.Z Kaposi sarcoma of unspecified primary site
ICD-10 description contains ICD-11 description	150 (3%)	F63.1 Pathological fire-setting [pyromania]	6C70 Pyromania
Others	2225 (46%)	A09 Other gastroenteritis and colitis of infectious and unspecified origin	1A40.Z Infectious gastroenteritis or colitis without specification of infectious agent
Total	4820 (100%)		

# Proportion of change



\*actual equivalence of the codes not manually validated

# Proportion of equivalent codes by chapter

ICD-10 chapter		codes	equivalent codes (%)	
XV	Pregnancy, childbirth and the puerperium	501	339	67.7%
XVIII	Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	398	269	67.6%
XXI	Factors influencing health status and contact with health services	712	410	57.6%
XVI	Certain conditions originating in the perinatal period	388	210	54.1%
X	Diseases of the respiratory system	279	147	52.7%
XVII	Congenital malformations, deformations and chromosomal abnormalities	705	339	48.1%
VIII	Diseases of the ear and mastoid process	135	63	46.7%
IV	Endocrine, nutritional and metabolic diseases	412	185	44.9%
XI	Diseases of the digestive system	503	212	42.1%
VI	Diseases of the nervous system	390	163	41.8%
XIX	Injury, poisoning and certain other consequences of external causes	1457	608	41.7%
I	Certain infectious and parasitic diseases	919	383	41.7%
VII	Diseases of the eye and adnexa	307	127	41.4%
IX	Diseases of the circulatory system	453	178	39.3%
XIV	Diseases of the genitourinary system	505	195	38.6%
III	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	192	74	38.5%
V	Mental and behavioural disorders	467	175	37.5%
XIII	Diseases of the musculoskeletal system and connective tissue	623	223	35.8%
XII	Diseases of the skin and subcutaneous tissue	400	133	33.3%
II	Neoplasms	874	254	29.1%
XXII	Codes for special purposes	46	5	10.9%
XX	External causes of morbidity and mortality	1521	128	8.4%
		12187	4820	39.6%

# Chapter shift

- Codes from one ICD-10 chapter moved to a different chapter in ICD-11
- Significance:
  - Reflects different organizing principles or new understanding of diseases
  - May result in wrong coding if coders are not aware
  - Can lead to missed codes – e.g. value set curators may overlook some codes if they are placed in a different chapter
- To analyze chapter shift – use the ICD-10 to ICD-11 maps (both one-category and multi-category) to see distribution of source and target chapters

# New chapters in ICD-11

- Chapter 3 Diseases of the blood or blood-forming organs
- Chapter 4 Diseases of the immune system
- Chapter 7 Sleep-wake disorders
- Chapter 17 Conditions related to sexual health
- Chapter 26 - Supplementary Chapter Traditional Medicine Conditions
- Chapter V - Supplementary section for functioning assessment
- Chapter X - Extension Codes

Split from Chapter III  
Diseases of the blood and  
blood-forming organs and  
certain disorders involving  
the immune mechanism

Not analyzed further

# ICD-11 chapters

icd10	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch9	Ch10	Ch11	Ch12	Ch13	Ch14	Ch15	Ch16	Ch17	Ch18	Ch19	Ch20	Ch21	Ch22	Ch23	Ch24	Ch25	
I	849							3						1												
II		863	1																							
III			122	60																	1					
IV	2			5	384		1	1				5		1		1					1					
V						425	9	7									24				1				1	
VI	18			2	2	3	8	333											1			19				
VII	1				1					292											1	4	3			
VIII											126												2			
IX	10			2	1			62			356		8								1	6				
X	10			1								263														
XI	8					1							472								4	10				
XII	21	3		2	3	1					7			288	2	2						8				
XIII	12		1	42		1		5		1				2	526			1			1	25				
XIV	10	9												2		423	2	1			2	31				
XV																		501								
XVI								1				1		1						382						
XVII		1			1			2	1		1			15	1	7					673					
XVIII	5					1		5			1		1	5								354				
XIX				7				6			1			1								1	1383	26	1	
XX						6																11	3	1452		
XXI	1														1										697	
XXII	13																					22				



Part 2

# ICD-11 / ICD-10-CM

# Comparison with ICD-10-CM

- Big difference in the number of existing (pre-coordinated) codes
  - ICD-11 14,622 codes
  - ICD-10-CM 71,932 codes
- However, with post-coordination, possible number of codes can be much higher
- ICD-11 allows two kinds of post-coordination:
  - Two or more stem codes (connected by “/”)  
*Urinary tract infection due to Extended spectrum beta-lactamase producing Escherichia coli = GC08.0 / MG50.27*
    - GC08.0 *Urinary tract infection, site not specified, due to Escherichia coli*
    - MG50.27 *Extended-spectrum beta-lactamase producing Escherichia coli*
  - Stem codes with one or more extension codes (connected by “&”)  
*Tuberculosis of prostate = 1B12.5 & XA63E5*
    - 1B12.5 *Tuberculosis of the genitourinary system*
    - XA63E5 *Prostate gland*

# Normalized lexical matching to ICD-10-CM

- Method

- Use ICD-11 MMS linearization index tabulation file
- Normalize terms using UMLS lexical tools (luinorm)
- Match normalized terms to normalized terms in the UMLS
- Map to ICD-10-CM codes in the UMLS (both codes for coding purposes and codes NOT for coding purposes)

- Results

- 3,211 ICD-11 codes for coding purposes (from chapters 1 – 25) mapped to:
  - 2,315 ICD-10-CM codes for coding purposes
  - 1,577 ICD-10-CM codes NOT for coding purposes

	i11code	I11name	i10cmcode	i10cmname
1	MG44.12	Short stature of child	R62.52	Short stature (child)
2	9A76	Corneal ulcer	H16.00	Unspecified corneal ulcer
3	JA67.Z	Complications of anaesthesia during pregnancy, unspecified	O29.9	Unspecified complication of anesthesia during pregnancy
4	NB91.6Z	Injury of duodenum, unspecified	S36.400	Unspecified injury of duodenum
5	1F62	Ascariasis	B77.9	Ascariasis, unspecified
6	6B01	Panic disorder	F41.0	Panic disorder [episodic paroxysmal anxiety]
7	GA07.Z	Salpingitis and oophoritis, unspecified	N70	Salpingitis and oophoritis
8	LB30.00	Renal agenesis	Q60.2	Renal agenesis, unspecified
9	8D21	Dyskinetic cerebral palsy	G80.3	Athetoid cerebral palsy
10	EB40.Z	Pemphigus, unspecified	L10	Pemphigus
11	7B00.2	Sleep terrors	F51.4	Sleep terrors [night terrors]
12	2C81.Z	Malignant neoplasms of penis, unspecified	C60.9	Malignant neoplasm of penis, unspecified
13	LA85.1	Transposition of the great arteries	Q20.3	Discordant ventriculoarterial connection
14	9A91	Cyst of iris, ciliary body or anterior chamber	H21.3	Cyst of iris, ciliary body and anterior chamber
15	8B24	Hypoxic-ischaemic encephalopathy	P91.6	Hypoxic ischemic encephalopathy [HIE]
16	9C40.7	Traumatic optic neuropathy	S04.01	Injury of optic nerve
17	NB32.3Z	Injury of lung, unspecified	S27.309	Unspecified injury of lung, unspecified
18	NE86	Malignant hyperthermia due to anaesthesia	T88.3	Malignant hyperthermia due to anesthesia
19	NB30.Z	Injury of blood vessels of thorax, unspecified	S25	Injury of blood vessels of thorax
20	LA85.2Z	Double outlet right ventricle, unspecified	Q20.1	Double outlet right ventricle

Random sample of normalized lexical matches to ICD-10-CM (excluding exact matches)

# Manual matching

- Select a convenience sample of ICD-10-CM codes from 6 disease areas
- Lookup the ICD-10-CM description using the ICD-11 browser and coding tool
- Determine if the meaning of the ICD-10-CM code can be
  - Fully represented by a pre-coordinated ICD-11 code
  - Fully represented by post-coordination
  - Only partially represented even with post-coordination

# Tuberculosis

- A15 – A19 *Tuberculosis*: 51 codes
- Fully represented by pre-coordinated ICD-11 codes: 23
  - A18.50 *Tuberculosis of eye, unspecified* =  
1B12.1 *Tuberculosis of eye*\*
- Fully represented by post-coordination: 28
  - A18.32 *Tuberculous enteritis* =  
1B12.7 *Tuberculosis of the digestive system* & XA6452 *Small intestine*
  - A18.52 *Tuberculous keratitis* =  
1B12.1 *Tuberculosis of eye* & XA4C02 *Cornea*

\*Equivalent meaning, if not equivalent coding

# Skin cancer

- C44 *Other and unspecified malignant neoplasm of skin:* 101 codes
- Fully represented by pre-coordinated codes: 5
  - C44.92 *Squamous cell carcinoma of skin, unspecified* = 2C31.Z *Cutaneous squamous cell carcinoma*
- Fully represented by post-coordination: 92
  - C44.212 *Basal cell carcinoma of skin of right ear and external auricular canal* = 2C32.Z *Basal cell carcinoma of skin, unspecified* & XK9K *Right* & XA6ZY6 *External Ear*
- Only partial representation: 4
  - C44.81 *Basal cell carcinoma of overlapping sites of skin*
    - No ICD-11 code for 'overlapping sites of skin'

# Diabetes mellitus type 2

- E11 *Type 2 diabetes mellitus*: 86 codes
- Fully represented by pre-coordinated codes: 1
  - E11.9 *Type 2 diabetes mellitus without complications* = 5A11 *Type 2 diabetes mellitus*
- Fully represented by post-coordination: 60
  - E11.42 *Type 2 diabetes mellitus with diabetic polyneuropathy* = 5A11 *Type 2 diabetes mellitus* / 8C03.0 *Diabetic polyneuropathy*
- Only partial representation: 25
  - E11.638 *Type 2 diabetes mellitus with other oral complications*
    - No ICD-11 code for 'oral complications of diabetes'

# Hypertension

- I10 – I16 *Hypertensive diseases*: 17 codes
- Fully represented by pre-coordinated codes: 5 codes
  - I10 *Essential (primary) hypertension* =  
BA00.Z *Essential hypertension, unspecified*
- Fully represented by post-coordination: 9 codes
  - I11.0 *Hypertensive heart disease with heart failure* =  
BA01 *Hypertensive heart disease* / BD1Z *Heart failure, unspecified*
- Only partial representation: 3 codes
  - I15.0 *Renovascular hypertension*
    - Closest match: BA04 *Secondary hypertension*
    - No code for 'renovascular disease'

# Polyhydramnios

- O40 *Polyhydramnios*: 28 codes
- Based on 2 axes
  - Trimester (4 values)
  - Fetus affected (7 values)
- Only partial representation possible because ICD-11 does not have extension codes for trimester and multiple fetuses

- ▶ 040 Polyhydramnios
  - ▶ 040.1 Polyhydramnios, first trimester
    - ▶ 040.1XX0 ..... not applicable or unspecified
    - ▶ 040.1XX1 ..... fetus 1
    - ▶ 040.1XX2 ..... fetus 2
    - ▶ 040.1XX3 ..... fetus 3
    - ▶ 040.1XX4 ..... fetus 4
    - ▶ 040.1XX5 ..... fetus 5
    - ▶ 040.1XX9 ..... other fetus
  - ▶ 040.2 Polyhydramnios, second trimester
    - ▶ 040.2XX0 ..... not applicable or unspecified
    - ▶ 040.2XX1 ..... fetus 1
    - ▶ 040.2XX2 ..... fetus 2
    - ▶ 040.2XX3 ..... fetus 3
    - ▶ 040.2XX4 ..... fetus 4
    - ▶ 040.2XX5 ..... fetus 5
    - ▶ 040.2XX9 ..... other fetus
  - ▶ 040.3 Polyhydramnios, third trimester
    - ▶ 040.3XX0 ..... not applicable or unspecified
    - ▶ 040.3XX1 ..... fetus 1
    - ▶ 040.3XX2 ..... fetus 2
    - ▶ 040.3XX3 ..... fetus 3
    - ▶ 040.3XX4 ..... fetus 4
    - ▶ 040.3XX5 ..... fetus 5
    - ▶ 040.3XX9 ..... other fetus
  - ▶ 040.9 Polyhydramnios, unspecified trimester
    - ▶ 040.9XX0 ..... not applicable or unspecified
    - ▶ 040.9XX1 ..... fetus 1
    - ▶ 040.9XX2 ..... fetus 2
    - ▶ 040.9XX3 ..... fetus 3
    - ▶ 040.9XX4 ..... fetus 4
    - ▶ 040.9XX5 ..... fetus 5
    - ▶ 040.9XX9 ..... other fetus

# Fracture of thumb

- *S62.5 Fracture of thumb: 105 codes – partial representation only*

Axis	Values	Post-coordinate in ICD-11
Laterality	Left, right, unspecified	✓
Location	Proximal phalanx, distal phalanx, unspecified phalanx	✓
Type	Open fracture, closed fracture	✓
Displacement	Displaced, nondisplaced	✓
Healing	Routine healing, delayed healing, nonunion, malunion	✓
Episode of care	Initial encounter, subsequent encounter, sequela	✗

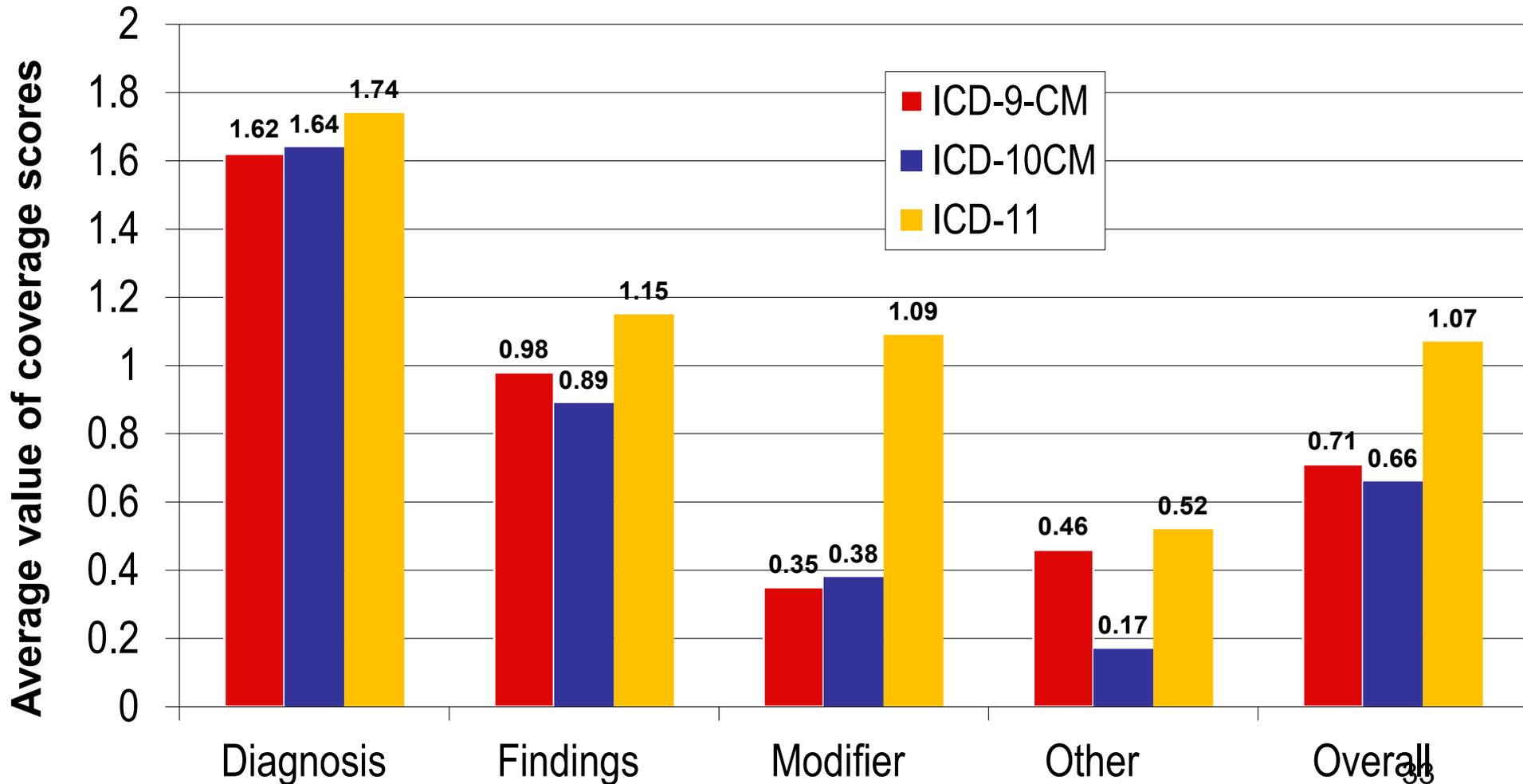
- ▶ S62.51 Fracture of proximal phalanx of thumb
  - ▶ S62.511 Displaced fracture of proximal phalanx of right thumb
    - ▶ S62.511A ..... initial encounter for closed fracture
    - ▶ S62.511B ..... initial encounter for open fracture
    - ▶ S62.511D ..... subsequent encounter for fracture with routine healing
    - ▶ S62.511G ..... subsequent encounter for fracture with delayed healing
    - ▶ S62.511K ..... subsequent encounter for fracture with nonunion
    - ▶ S62.511P ..... subsequent encounter for fracture with malunion
    - ▶ S62.511S ..... sequela
  - ▶ S62.512 Displaced fracture of proximal phalanx of left thumb
    - ▶ S62.512A ..... initial encounter for closed fracture
    - ▶ S62.512B ..... initial encounter for open fracture
    - ▶ S62.512D ..... subsequent encounter for fracture with routine healing
    - ▶ S62.512G ..... subsequent encounter for fracture with delayed healing
    - ▶ S62.512K ..... subsequent encounter for fracture with nonunion
    - ▶ S62.512P ..... subsequent encounter for fracture with malunion
    - ▶ S62.512S ..... sequela
  - ▶ S62.513 Displaced fracture of proximal phalanx of unspecified thumb
    - ▶ S62.513A ..... initial encounter for closed fracture
    - ▶ S62.513B ..... initial encounter for open fracture
    - ▶ S62.513D ..... subsequent encounter for fracture with routine healing
    - ▶ S62.513G ..... subsequent encounter for fracture with delayed healing
    - ▶ S62.513K ..... subsequent encounter for fracture with nonunion
    - ▶ S62.513P ..... subsequent encounter for fracture with malunion
    - ▶ S62.513S ..... sequela

# Summary of results

Disease	Total codes	Full pre-coord (%)	Full post-coord (%)	Partial (%)
Tuberculosis	51	24 (47%)	27 (53%)	0 (0%)
Skin cancer	101	5 (5%)	92 (91%)	4 (4%)
DM type 2	86	1 (1%)	60 (70%)	25 (29%)
Hypertension	17	5 (29%)	9 (53%)	3 (18%)
Polyhydramnios	28	0 (0%)	0 (0%)	28 (100%)
Fracture thumb	105	0 (0%)	0 (0%)	105 (100%)
Total	388	35 (9%)	188 (49%)*	165 (43%)

\* post-coordination coverage will increase to 193 (76%) codes if ICD-11 adds 3 extension codes for episode of care, thus covering all 105 fracture thumb codes

# Clinical content coverage of ICD-9-CM vs. ICD-10-CM vs. ICD 11





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*Thank you!*

Supplementary slides: Chapter shift between ICD-10 and ICD-11

# ICD-11 chapters

icd10	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch9	Ch10	Ch11	Ch12	Ch13	Ch14	Ch15	Ch16	Ch17	Ch18	Ch19	Ch20	Ch21	Ch22	Ch23	Ch24	Ch25
I	849							3						1											
II		863	1																						
III			122	60																					
IV	2			5	384		1	1																	
V						425	9	7																1	
VI	18			2	2	3	8	333																	
VII	1				1				292																
VIII										126													2		
IX	10			2	1			62			356		8							1		6			
X	10			1								263													
XI	8					1							472								4		10		
XII	21	3		2	3	1					7			288	2	2									8
XIII	12		1	42		1		5		1				2	526				1		1		25		
XIV	10	9												2		423		2	1		2		31		
XV																									
XVI								1				1		1											
XVII		1			1			2	1		1			15	1	7									
XVIII	5					1		5			1		1	5									354		
XIX				7				6			1			1								1	1383	26	1
XX						6																11	3	1452	
XXI	1														1										697
XXII	13																						22		

- No chapter shift
- One ICD-10 chapter mapping predominantly to the corresponding chapter in ICD-11



# ICD-11 chapters

icd10	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch9	Ch10	Ch11	Ch12	Ch13	Ch14	Ch15	Ch16	Ch17	Ch18	Ch19	Ch20	Ch21	Ch22	Ch23	Ch24	Ch25
I	849							3						1											
II		863	1																						
III			122	60																1					
IV	2			5	384			1	1			5		1		1				1					
V						425		9	7								24			1					1
VI	18			2	2	3													1		19				
VII	1				1															1	4	3			
VIII																						2			
IX	10			2	1															1	6				
X	10			1																					
XI	8						1														4	10			
XII	21	3		2	3	1																8			
XIII	12		1	42		1															1	25			
XIV	10	9																			2	31			
XV																									
XVI												1		1							502				
XVII		1			1			2	1		1			15	1	7					673				
XVIII	5					1		5			1		1	5								354			
XIX				7				6			1			1								1	1383	26	1
XX						6																11	3	1452	
XXI	1														1										697
XXII	13																					22			

- Some spreading for Chapter 1 *Certain infectious or parasitic diseases*
- Some diseases in other ICD-10 chapters now classified as infectious diseases e.g.
  - Bacterial meningitis (VI Diseases of nervous system)
  - Acute rheumatic myocarditis (IX Diseases of circulatory system)
  - Impetigo (XII Diseases of skin and subcutaneous tissue)



# ICD-11 chapters

icd10	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch9	Ch10	Ch11	Ch12	Ch13	Ch14	Ch15	Ch16	Ch17	Ch18	Ch19	Ch20	Ch21	Ch22	Ch23	Ch24	Ch25	
I	849							3						1												
II		863	1																							
III			122	60																	1					
IV	2			5	384		1	1				5		1		1					1					
V						425	9	7									24				1				1	
VI	18			2	2														1			19				
VII	1				1																1	4	3			
VIII																						2				
IX	10			2	1																1	6				
X	10			1																						
XI	8																					4	10			
XII	21	3		2	3																		8			
XIII	12		1	42		1		5		1				2	526				1		1	25				
XIV	10	9												2		423	2	1			2	31				
XV																					501					
XVI								1				1		1							382					
XVII		1			1			2	1		1			15	1	7						673				
XVIII	5					1		5			1		1	5									354			
XIX				7				6			1			1								1	1383	26	1	
XX						6																11	3	1452		
XXI	1														1										697	
XXII	13																					22				

- ICD-10 chapter III *Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism* divided into two chapters:
  - Chapter 3 *Diseases of the blood or blood-forming organs*
  - Chapter 4 *Diseases of the immune system*



# ICD-11 chapters

icd10	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch9	Ch10	Ch11	Ch12	Ch13	Ch14	Ch15	Ch16	Ch17	Ch18	Ch19	Ch20	Ch21	Ch22	Ch23	Ch24	Ch25
I	849							3						1											
II		863	1																						
III			122	60																	1				
IV	2			5	384		1	1				5		1		1					1				
V						425	9	7									24				1				1
VI	18			2	2	3	8	333											1			19			
VII	1				1					292											1	4	3		
VIII											126												2		
IX	10			2	1																1	6			
X	10			1																					
XI	8																				4	10			
XII	21	3		2	3																	8			
XIII	12		1	42																	1	25			
XIV	10	9																			2	31			
XV																									
XVI																					382				
XVII		1			1			2	1		1			15	1	7						673			
XVIII	5					1		5			1		1	5									354		
XIX				7				6			1			1								1	1383	26	1
XX						6																11	3	1452	
XXI	1														1										697
XXII	13																					22			

- Some diseases moved to Chapter 4 *Diseases of the immune system*, especially from ICD-10 chapter XIII *Diseases of the musculoskeletal system and connective tissue* (autoimmune diseases) e.g.
  - Systemic sclerosis
  - Systemic lupus erythematosus
  - Juvenile dermatomyositis

# ICD-11 chapters

icd10	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch9	Ch10	Ch11	Ch12	Ch13	Ch14	Ch15	Ch16	Ch17	Ch18	Ch19	Ch20	Ch21	Ch22	Ch23	Ch24	Ch25
I	849							3						1											
II		863	1																						
III			122	60																	1				
IV	2			5	384		1	1				5		1		1					1				
V						425	9	7									24				1				1
VI	18			2	2	3	8	333											1		10				
VII	1				1				292																
VIII																									
IX	10			2	1			62																	
X	10			1																					
XI	8					1																			
XII	21	3		2	3	1																			
XIII	12		1	42		1		5																	
XIV	10	9												2		423	2	1			2	31			
XV																		501							
XVI								1				1		1					382						
XVII		1			1			2	1		1		15	1	7					673					
XVIII	5					1		5			1		1	5								354			
XIX				7				6			1			1							1	1383	26	1	
XX						6															11	3	1452		
XXI	1														1										697
XXII	13																					22			

- Chapter 7 *Sleep-wake disorders*, is brand-new. Most codes come from two ICD-10 chapters
  - V *Mental and behavioural disorders* e.g. Nightmares
  - VI *Diseases of the nervous system* e.g. Sleep apnoea

# ICD-11 chapters

icd10	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch9	Ch10	Ch11	Ch12	Ch13	Ch14	Ch15	Ch16	Ch17	Ch18	Ch19	Ch20	Ch21	Ch22	Ch23	Ch24	Ch25
I	849							3						1											
II		863	1																						
III			122	60																1					
IV	2			5	384		1	1				5		1		1				1					
V						425	9	7									24			1				1	
VI	18			2	2	3	8	333											1		19				
VII	1				1				292											1	4	3			
VIII										126												2			
IX	10			2	1			62			356		8							1	6				
X	10			1								263													
XI	8					1							472							4	10				
XII	21	3		2	3	1																			
XIII	12		1	42		1		5																	
XIV	10	9																							
XV																									
XVI								1																	
XVII		1			1			2																	
XVIII	5					1		5			1	1	5								354				
XIX				7				6			1		1								1	1383	26	1	
XX						6															11	3	1452		
XXI	1														1									697	
XXII	13																				22				

• Stroke, cerebral hemorrhage, cerebrovascular diseases etc. previously under Chapter IX *Diseases of the circulatory system* now moved to Chapter 8 *Diseases of the nervous system*



# ICD-11 chapters

icd10	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch9	Ch10	Ch11	Ch12	Ch13	Ch14	Ch15	Ch16	Ch17	Ch18	Ch19	Ch20	Ch21	Ch22	Ch23	Ch24	Ch25	
I	849							3						1												
II		863	1																							
III			122	60																	1					
IV	2			5	384		1	1				5		1		1					1					
V						425	9	7									24				1				1	
VI	18			2	2	3	8	333											1			19				
VII	1				1					292											1	4	3			
VIII																						2				
IX	10																			1		6				
X	10																									
XI	8																				4	10				
XII	21	3																								
XIII	12																									
XIV	10	9												2		423	2	1			2	31				
XV																										
XVI								1				1		1							382					
XVII		1			1			2	1		1			15	1	7						673				
XVIII	5					1		5			1		1	5									354			
XIX				7				6			1			1									1	1383	26	1
XX						6																	11	3	1452	
XXI	1														1											697
XXII	13																									22

• Chapter 17 *Conditions related to sexual health*, is brand-new. Most codes come from ICD-10 chapter V *Mental and behavioural disorders* e.g. Gender identity disorders

# ICD-11 chapters

icd10	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch9	Ch10	Ch11	Ch12	Ch13	Ch14	Ch15	Ch16	Ch17	Ch18	Ch19	Ch20	Ch21	Ch22	Ch23	Ch24	Ch25	
I	849							3						1												
II		863	1																							
III			122	60																	1					
IV	2			5	384		1	1				5		1		1					1					
V						425	9	7									24				1				1	
VI	18																			1		19				
VII	1																				1	4	3			
VIII																						2				
IX	10																				1	6				
X	10																									
XI	8																									
XII	21	3														2										
XIII	12																	1			1	25				
XIV	10	9														423	2	1			2	31				
XV																		501								
XVI																				382						
XVII		1														7					673					
XVIII	5																					354				
XIX																						1	1383	26	1	
XX						6																11	3	1452		
XXI	1														1										697	
XXII	13																					22				

- Some spreading for Chapter 21  
*Symptoms, signs or clinical findings, not elsewhere classified*
- Diseases in other ICD-10 chapters now moved here e.g.
  - Hemiplegia (VI Diseases of nervous system)
  - Cardiac arrest (IX Diseases of circulatory system)
  - Haematemesis (XI Diseases of the digestive system)
  - Pain in joint (XIII Diseases of the musculoskeletal system and connective tissue)
  - Stress incontinence (XIV Diseases of the genitourinary system)

