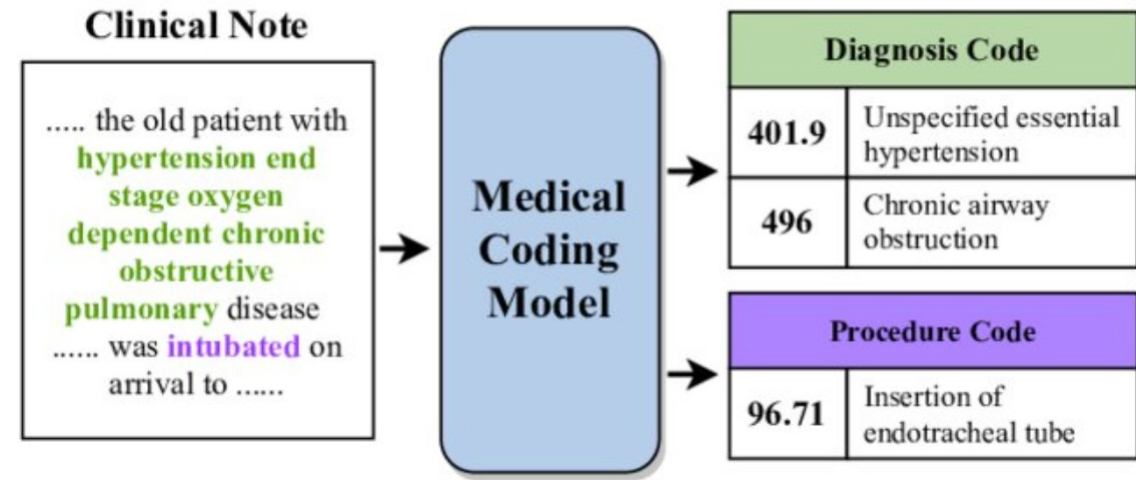
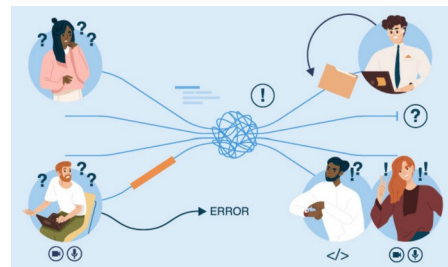
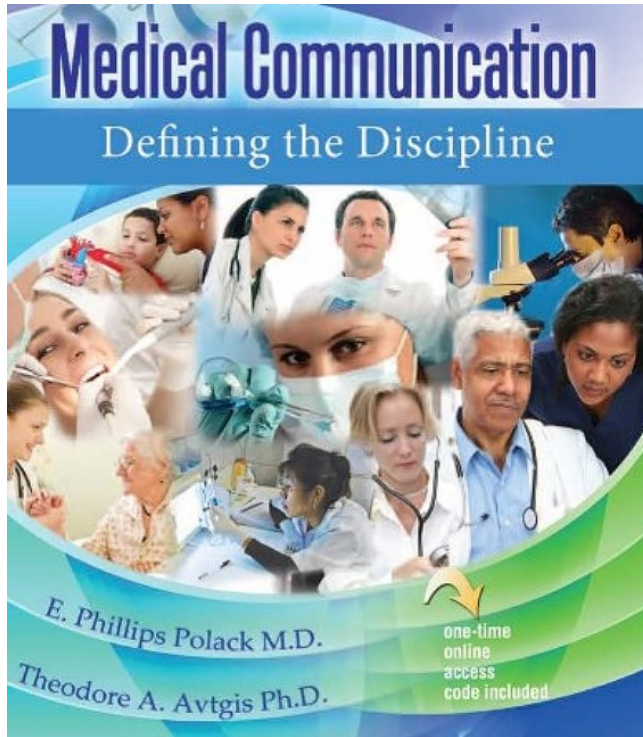


ICD

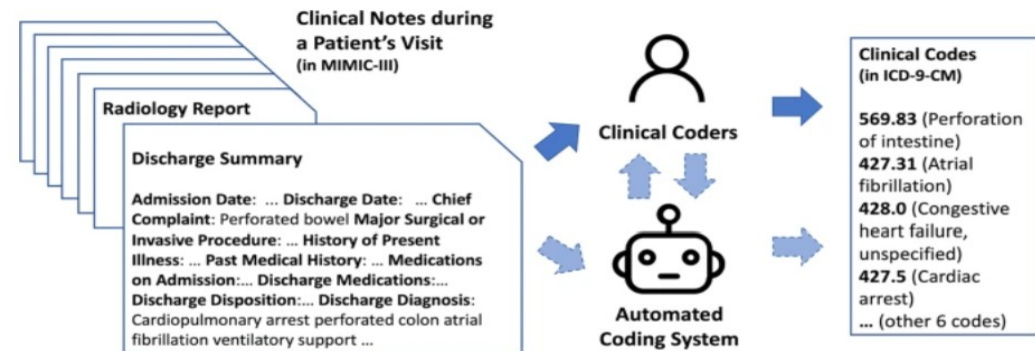
Courtesy: <https://www.aapc.com/>, <https://www.cms.gov/>

Medical Communication



https://www.researchgate.net/publication/357734346_A_Unified_Review_of_Deep_Learning_for_Automated_Medical_Coding/figures?lo=1

Fig. 1: An example of clinical coding, manual and automated (linked with solid and dashed arrows, respectively), with ICD-9-CM codes from a clinical note in the MIMIC-III data set²⁰ of ICU patients in 2001–2012 in a hospital in the US.



Dashed arrows between clinical coders and the automated coding system suggest potential interactions between them, while this is yet to be considered in many clinical coding systems. Note that the format of data and clinical codes does not reflect the situation of other regions in the world—for example, in the UK, where data may be less structured and there is no universal discharge summary format available.

<https://www.nature.com/articles/s41746-022-00705-7>

ICD9 or ICD10

- ICD: International Statistical Classification of Diseases and Related Health Problem
- It is a medical classification by the World Health Organization (WHO)
- It contains codes for diseases, signs and symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or diseases
- ICD 10 is the 10th version of ICD, and first used by member states in 1994.
- In the base classification, ICD allows more than 14,000 different codes and member states have expanded the code set by, for example, specifying the cause of injury, or adding procedure codes.

ICD 10

- ICD is a classification of diseases which defines as a system of categories to which morbid entities are assigned according to established criteria.
- The purpose of the ICD is to permit systematic recording, analysis, interpretation and comparison of mortality and morbidity data collected in different countries or areas, and at different times.
- It translates diagnoses of diseases and other health problems from words into an alphanumeric code, which permits easy storage, retrieval, and analysis of data.

ICD-10 Version:2019

Search

▼ ICD-10 Version:2019



▼ I Certain infectious and parasitic diseases

▶ A00-A09 Intestinal infectious diseases

▼ A15-A19 Tuberculosis

▼ A15 Respiratory tuberculosis, bacteriologically and histologically confirmed

A15.0 Tuberculosis of lung, confirmed by sputum microscopy with or without culture

A15.1 Tuberculosis of lung, confirmed by culture only

A15.2 Tuberculosis of lung, confirmed histologically

A15.3 Tuberculosis of lung, confirmed by unspecified means

A15.4 Tuberculosis of intrathoracic lymph nodes, confirmed bacteriologically and histologically

A15.5 Tuberculosis of larynx, trachea and bronchus, confirmed bacteriologically and histologically

ICD10

- ICD's original use was to classify causes of mortality as recorded at the registration of death.
- Later, its scope was extended to include diagnoses in morbidity.

ICD10

- It does not provide sufficient details on different attributes of health conditions
- It does not describe functioning and disability as aspects of health (it is in the International Classification of Functioning, Disability and Health (ICF)).
- It does not include a full array of health interventions or reasons for encounter

ICD10

- The core concept of ICD10 is “family” – a suite of integrated classification products that share similar features and can be singularly or jointly to provide information on different aspects of health and healthcare system.
- ICD is part of WHO-FIC
- WHO Family of International Classifications (WHO-FIC) aims to provide a conceptual framework of information dimensions that are related to health and health management.
- WHO FIC strives to build the family of classifications based on sound scientific and taxonomic principles, in culturally appropriate and internationally applicable, and focuses on the multidimensional aspects of health.

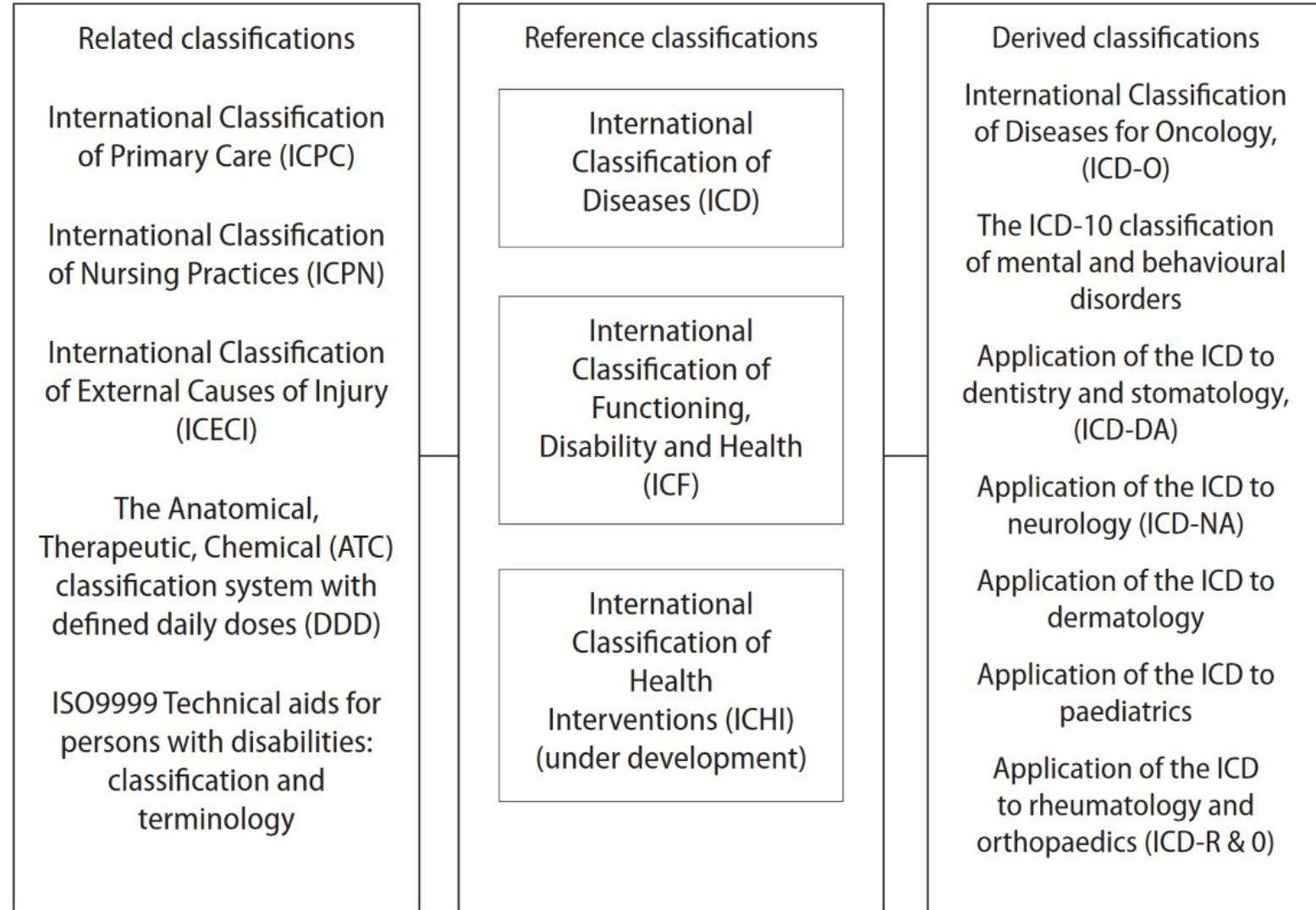
▼ ICD-10 Version:2019

- ▶ I Certain infectious and parasitic diseases
- ▶ II Neoplasms
- ▶ III Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
- ▶ IV Endocrine, nutritional and metabolic diseases
- ▶ V Mental and behavioural disorders
- ▶ VI Diseases of the nervous system
- ▶ VII Diseases of the eye and adnexa
- ▶ VIII Diseases of the ear and mastoid process
- ▶ IX Diseases of the circulatory system
- ▶ X Diseases of the respiratory system
- ▶ XI Diseases of the digestive system
- ▶ XII Diseases of the skin and subcutaneous tissue
- ▶ XIII Diseases of the musculoskeletal system and connective tissue
- ▶ XIV Diseases of the genitourinary system
- ▶ XV Pregnancy, childbirth and the puerperium
- ▶ XVI Certain conditions originating in the perinatal period
- ▶ XVII Congenital malformations, deformations and chromosomal abnormalities
- ▶ XVIII Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified
- ▶ XIX Injury, poisoning and certain other consequences of external causes
- ▶ XX External causes of morbidity and mortality
- ▶ XXI Factors influencing health status and contact with health services
- ▶ XXII Codes for special purposes



WHO-FIC

Fig. 1. Schematic representation of the WHO-FIC



Adaptation

- Oncology: ICD-O coding system for malignant neoplasms, also allow greater specificity for non-malignant neoplasms.
- Dermatology
- Dentistry and Stomatology
- Neurology
- Rheumatology and orthopedics

Non-diagnostic classifications

- International Classification of functioning, disability and health (ICF)
 - Part 1: classifications for functioning and disability
 - Body functions and structures
 - Activities and participation
 - Part 2: environmental and personal contextual factors
 - ICF uses an alphanumeric system in which the letters b, s, d and e are used to denote body functions, body structures, activities, and participation and environmental factors, respectively.
 - These letters are followed by a numeric code that starts with the chapter number (one digit), followed by the second level (two digits), and the third and fourth levels (one digit each)

ICD10 CM (Clinical Modification) overview

▼ ICD-10 Version:2019



- ▶ I Certain infectious and parasitic diseases
- ▶ II Neoplasms
- ▶ III Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism
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ICD 10 CM (Clinical Modification) overview

▼ ICD-10 Version:2019

▼ I Certain infectious and parasitic diseases

▶ A00-A09 Intestinal infectious diseases

▼ A15-A19 Tuberculosis

- ▶ A15 Respiratory tuberculosis, bacteriologically and histologically confirmed
- ▶ A16 Respiratory tuberculosis, not confirmed bacteriologically or histologically
- ▶ A17 Tuberculosis of nervous system
- ▶ A18 Tuberculosis of other organs
- ▶ A19 Miliary tuberculosis

▼ A20-A28 Certain zoonotic bacterial diseases

- ▶ A20 Plague
- ▶ A21 Tularemia

▼ ICD-10 Version:2019

▼ I Certain infectious and parasitic diseases

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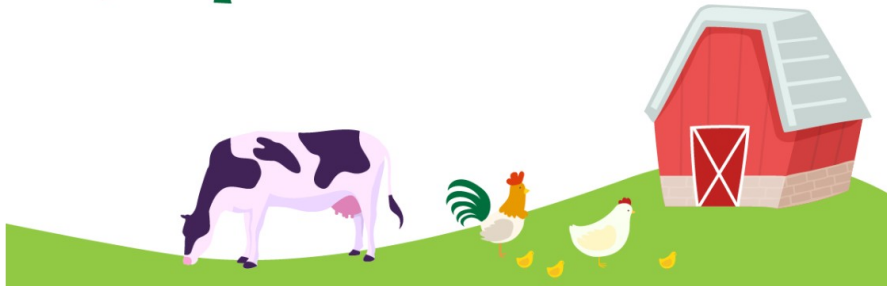
A15.4 Tuberculosis of intrathoracic lymph nodes, confirmed bacteriologically and histologically

A15.5 Tuberculosis of larynx, trachea and bronchus, confirmed bacteriologically and histologically

A15.6 Tuberculous pleurisy, confirmed bacteriologically and histologically

Funny ICD 10 Cod

ANiMALS



W53 - Contact with rodent
W55.21 - Bitten by cow
W55.41 - Bitten by pig
W56.12 - Struck by sea lion
W56.22XS - Struck by orca, sequela
W56.52XA - Struck by other fish, initial encounter
W59.22 - Struck by a turtle
W61.12XD - Struck by macaw, subsequent encounter
W61.39 - Other contact with chicken
W61.43 - Pecked by turkey
T63.443 - Toxic effect of venom of bees, assault
T63.621 - Toxic effect of contact with other jellyfish, accidental (unintentional)

TRANSPortation



V00.01 - Pedestrian on foot injured in collision with roller-skater
V00.151 - Fall from heeled shoes
V80.1 - Animal-rider or occupant of animal-drawn vehicle injured in collision with pedestrian or animal
Y93.01 - Activity, walking, marching and hiking
V94.810 - Civilian watercraft involved in water transport accident with military watercraft
V96.00XA - Unspecified balloon accident injuring occupant, initial encounter
V97.33 - Sucked into jet engine
W22.02 - Walked into lamp post
W37.0XXA - Explosion of bicycle tire, initial encounter

Funny ICD 10 Code

Hobbies



V91.07 – Burn due to water-skis on fire
Y92.017 – Garden or yard in single-family (private) house as the place of occurrence of the external cause
Y92.241 – Library as the place of occurrence of the external cause
Y92.253 – Opera house as the place of occurrence of the external cause
Y93.02 – Activity, running
Y93.G3 – Activity involving cooking and baking
Y93.D1 – Activity, knitting and crocheting
V98.3 – Accident to, on or involving ski lift

Seasonal



L55.0 – Sunburn of first degree
W16.722 – Jumping or diving from boat striking bottom causing other injury
W17.3 – Fall into empty swimming pool
W39 – Discharge of firework
X03 – Exposure to controlled fire, not in building or structure
V00.211A – Fall from ice-skates, initial encounter

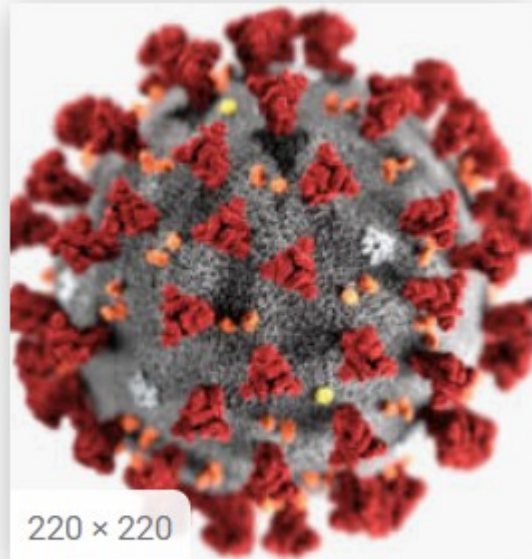
Resource: www.icd10data.com/ICD10CM/Codes



ICD10 CM - Coronavirus

- Browser

- <https://icd.who.int/browse10/2019/en> (WHO)
- <https://icd10cmtool.cdc.gov/> (CDC)



Coronavirus - Wikipedia
en.wikipedia.org

- ▼ B95-B98 Bacterial, viral and other infectious agents
 - ▶ B95 Streptococcus and staphylococcus as the cause of diseases classified to other chapters
 - ▶ B96 Other specified bacterial agents as the cause of diseases classified to other chapters
 - ▼ B97 Viral agents as the cause of diseases classified to other chapters
 - B97.0 Adenovirus as the cause of diseases classified to other chapters
 - B97.1 Enterovirus as the cause of diseases classified to other chapters
 - B97.2 Coronavirus as the cause of diseases classified to other chapters
 - B97.3 Retrovirus as the cause of diseases classified to other chapters

CHAPTER 22: Codes for special purposes (U00-U85)

U07 Emergency use of U07

U07.0 Vaping-related disorder

U07.1 COVID-19

ICD10 CM - Coronavirus

CHAPTER 1: Certain infectious and parasitic diseases (A00-B99)

B34 Viral infection of unspecified site

B34.0 Adenovirus infection, unspecified

B34.1 Enterovirus infection, unspecified

B34.2 Coronavirus infection, unspecified

B34.3 Parvovirus infection, unspecified

B34.4 Papovavirus infection, unspecified

B34.8 Other viral infections of unspecified site

B34.9 Viral infection, unspecified

B97.2 Coronavirus as the cause of diseases classified elsewhere

B97.21 SARS-associated coronavirus as the cause of diseases classified elsewhere

B97.29 Other coronavirus as the cause of diseases classified elsewhere

B97.3 Retrovirus as the cause of diseases classified elsewhere

CHAPTER 10: Diseases of the respiratory system (J00-J99)

J12 Viral pneumonia, not elsewhere classified

J12.0 Adenoviral pneumonia

J12.1 Respiratory syncytial virus pneumonia

J12.2 Parainfluenza virus pneumonia

J12.3 Human metapneumovirus pneumonia

J12.8 Other viral pneumonia

J12.81 Pneumonia due to SARS-associated coronavirus

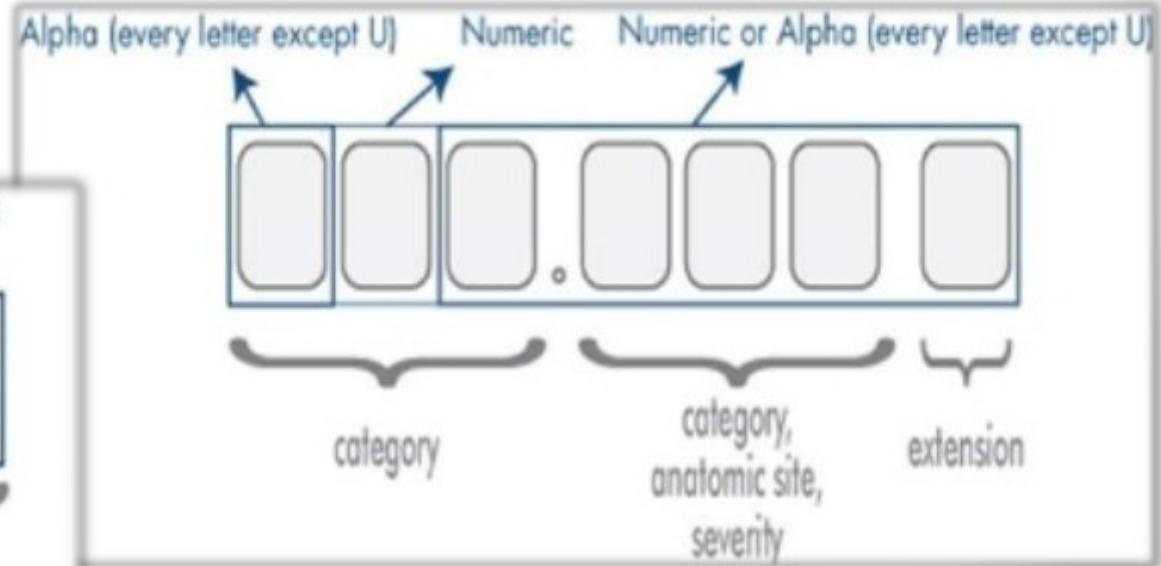
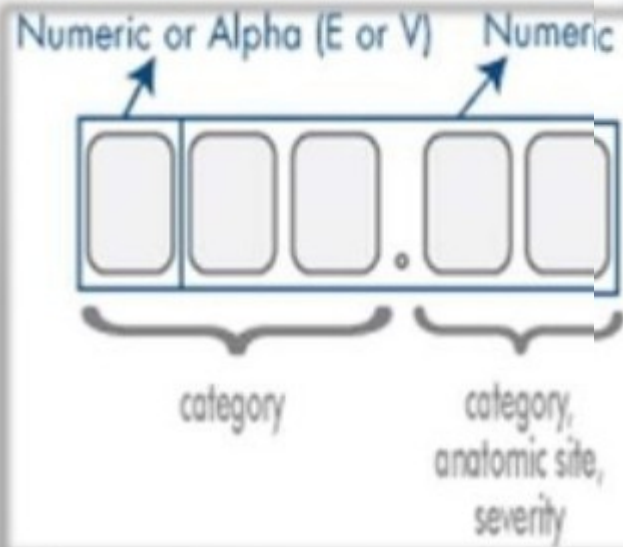
J12.89 Other viral pneumonia

J12.9 Viral pneumonia, unspecified

ICD9 ⇨ ICD10

ICD-10

ICD-9



ICD-9-CM vs. ICD-10-CM

ICD-9-CM (Volume I & 2)	ICD-10-CM
3-5 characters in length	3-7 characters in length
Approximately 14,000 codes	Approximately 68,000 codes
First digit may be alpha (E or V) or numeric; digits 2-5 are numeric	Digit 1 is alpha (to indicate the category); Digit 2 is numeric (in the future, alpha characters may be used if code expansion is needed); Digits 3-7 can be alpha or numeric
Limited space for adding new codes	Flexible for adding new codes
Lacks detail	Very specific
Lacks laterality	Includes laterality (i.e., codes identifying right vs. left)

GEMS

(General Equivalency Mapping System)

B97.89 Other viral agents as the cause of diseases classified elsewhere

A75.0 Epidemic louse-borne typhus fever due to *Rickettsia prowazekii*

<u>ICD-9-CM</u>	<u>ICD-10-CM</u>	<u>Flag</u>	<u>Meaning</u>
07999	B9789	10000	Approximate Match
080	A750	00000	Exact Match

► 2015 ICD-9-CM Diagnosis Code 079.99

Unspecified viral infection

► 080 Louse-borne (epidemic) typhus

Excerpt: AMA Fact Sheet 7 – Crosswalking Between ICD-9 and ICD-10

Table 1: Percentages of Types of Matches

Mapping Categories	ICD-10 to ICD-9	ICD-9 to ICD-10
No Match	1.2%	3.0%
1-to1 Exact Match	5.0%	24.2%
1-to-1 Approximate Match with 1 Choice	82.6%	49.1%
1-to-1 Approximate Match with Multiple Choices	4.3%	18.7%
1-to-Many Match with 1 Scenario	6.6%	2.1%
1-to-Many Match with Multiple Scenarios	0.2%	2.9%



CAUTION!

You cannot rely simply on the GEMS system to cross-match everything. If the flag is other than “00000” there are other potential possibilities. It’s best to start in the alphabetic index and then complete the look up process in the tabular.

ICD-9-CM vs. ICD-10-CM

ICD-9-CM vs. ICD-10-CM comparison

<i>ICD-9-CM</i>	<i>ICD-10-CM</i>
13,000 codes	68,000 codes
17 chapters	21 chapters (order of chapters different than ICD-9-CM)
Separate V and E codes. (Supplemental Classification for Health Encounters and Injuries/Poisonings)	Supplemental Classification incorporated into main classification
Reassignment to appropriate body system	Diseases reassigned to most appropriate chapter
Example: Gout/Endocrine	Example: Gout/Musculoskeletal
Classifies injuries by type	Classifies injuries by site, then by type
Separate section for postop complications	Post-op complications moved to procedure-specific body system chapter
3–5 character length	Alphanumeric with up to 7 characters
Some codes require 4th and 5th digits	Full code titles, no 4th and 5th digits
	Addition of 6th character in some chapters
	Addition of code extensions via 7th character for injuries, and external causes of injury
	Addition of a placeholder (x)
	Greater specificity and laterality (right and left)
Etiology/manifestations coded separately	Etiology/manifestation codes combined



General postoperative complication

Early

- Acute confusion: exclude dehydration and sepsis
- Nausea and vomiting: analgesia or anesthetic-related, paralytic ileus
- Fever
- Secondary haemorrhage: often as a result of infection
- Pneumonia
- Wound or anastomosis dehiscence
- Deep vein thrombosis (DVT)
- Acute urinary retention
- Urinary tract infection (UTI)
- Post-operative wound infection
- Bowel obstruction due to fibrinous adhesions
- Paralytic Ileus

Multiple Diagnosis Coding (I/O)

- Etiology (cause)
- Manifestation (symptom)
 - Slanted brackets [/]
 - Example: Retinopathy, diabetic 250.5 [362.01]
- Code as shown
 - 250.5X
 - 362.01

ICD-9-CM vs. ICD-10-CM

▶ 274 Gout

- ▶ 274.0 Gouty arthropathy
 - ▶ 274.00 Gouty arthropathy, unspecified [convert 274.00 to ICD-10-CM](#)
 - ▶ 274.01 Acute gouty arthropathy [convert 274.01 to ICD-10-CM](#)
 - ▶ 274.02 Chronic gouty arthropathy without mention of tophus (tophi)
 - ▶ 274.03 Chronic gouty arthropathy with tophus (tophi) [convert 274.03 to I](#)
- ▶ 274.1 Gouty nephropathy
 - ▶ 274.10 Gouty nephropathy, unspecified [convert 274.10 to ICD-10-CM](#)
 - ▶ 274.11 Uric acid nephrolithiasis [convert 274.11 to ICD-10-CM](#)
 - ▶ 274.19 Other gouty nephropathy [convert 274.19 to ICD-10-CM](#)
- ▶ 274.8 Gout with other specified manifestations
 - ▶ 274.81 Gouty tophi of ear [convert 274.81 to ICD-10-CM](#)
 - ▶ 274.82 Gouty tophi of other sites, except ear [convert 274.82 to ICD-10-CM](#)
 - ▶ 274.89 Gout with other specified manifestations [convert 274.89 to ICD-10-](#)
- ▶ 274.9 Gout, unspecified [convert 274.9 to ICD-10-CM](#)

▼ M10 Gout

- M10.0 Idiopathic gout
- M10.1 Lead-induced gout
- M10.2 Drug-induced gout
- M10.3 Gout due to impairment of renal function
- M10.4 Other secondary gout
- M10.9 Gout, unspecified

<https://icd.who.int/browse10/2019/en#/M10>

ICD-9-CM 274.9 converts approximately to:

- 2023 [ICD-10-CM M10.9](#) Gout, unspecified

<http://www.icd9data.com/2014/Volume1/240-279/270-279/274/default.htm>

Examples of the Numbers by Specialty

Specialty	# ICD-9 Codes	# ICD-10 Codes
Gastroenterologists	596	706
Pulmonologists	255	336
Urologists	389	591
Endocrinologists	335	675
Neurologists	459	591
Pediatricians	702	591
Infectious Disease	1,270	1,056

Translating ICD-9 to ICD-10

- GEMS (

<https://www.asco.org/practice-policy/billing-coding-reporting/icd-10/general-equivalence-mappings-gems>

General Equivalence Mappings (GEMS)



Translating ICD-9 Codes Into ICD-10



The transition to ICD-10 obviously has a significant impact on billing practices. You and your staff may want to identify frequently used ICD-9 codes and develop a “cheat sheet” for ICD-10. If your practice currently uses a superbill, be aware this will likely need significant revisions. There are 69,000 ICD-10 codes as opposed to 14,000 ICD-9 codes. As such, the superbill may become too cumbersome, which may call for the need to explore other billing methods.



<https://www.icd10data.com/Convert>

ICD-10 Implementation

- Single implementation date of October 1, 2015 for all users
- Ambulatory and physician services provided on or after October 1, 2015 will use ICD-10-CM diagnosis codes
- Inpatient discharges occurring on or after October 1, 2015 will use ICD-10-CM and ICD-10-PCS codes

Why ICD-10, not ICD-9

Current ICD-9 is:

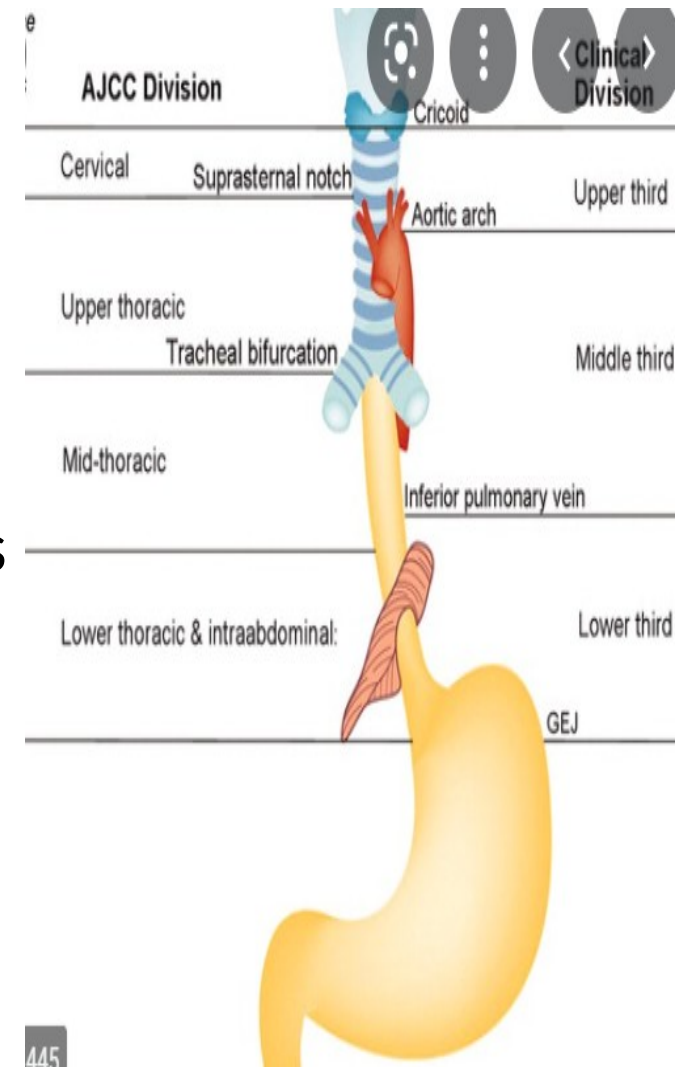
- 30 years old
- Current code structure limits amount of new codes that can be created
- Has obsolete groupings of disease families
- Lacks specificity and detail to support:
 - Accurate anatomical positions
 - Differentiation of risk & severity
 - Key parameters to differentiate disease manifestations

Example

- C15 Malignant neoplasm of the esophagus
 - C15.3 Malignant neoplasm of upper third of esophagus
 - C15.4 Malignant neoplasm of middle third of esophagus
 - C15.5 Malignant neoplasm of lower third of esophagus
 - C15.8 Malignant neoplasm of overlapping lesion of esophagus
 - C15.9 Malignant neoplasm of esophagus, unspecified

Find above ICD 10 codes:

- Please find these on your ICD10 browser:
 - <https://icd.who.int/browse10/2019/en> (WHO)
 - <https://icd10cmtool.cdc.gov/> (CDC)



ICD-10-CM Code Structure



International
Classification of
Diseases, 10th
Revision, Clinical
Modification (ICD-
10-CM)



Category
first three
characters

M84 Disorder of continuity
of bone



Etiology, anatomic site,
severity, fourth, fifth, sixth
characters (if applicable)

M84.311- Stress fracture,
right shoulder

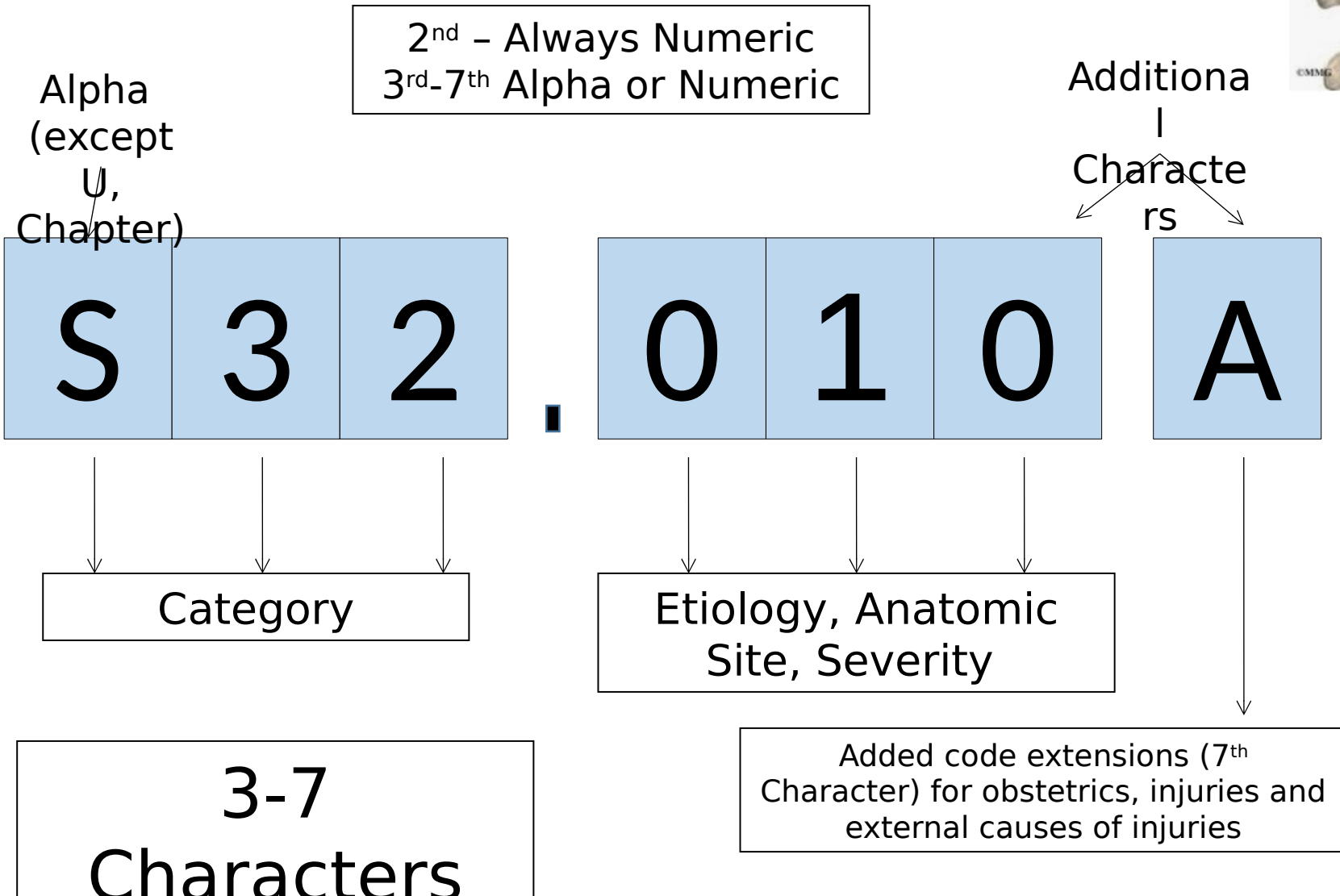


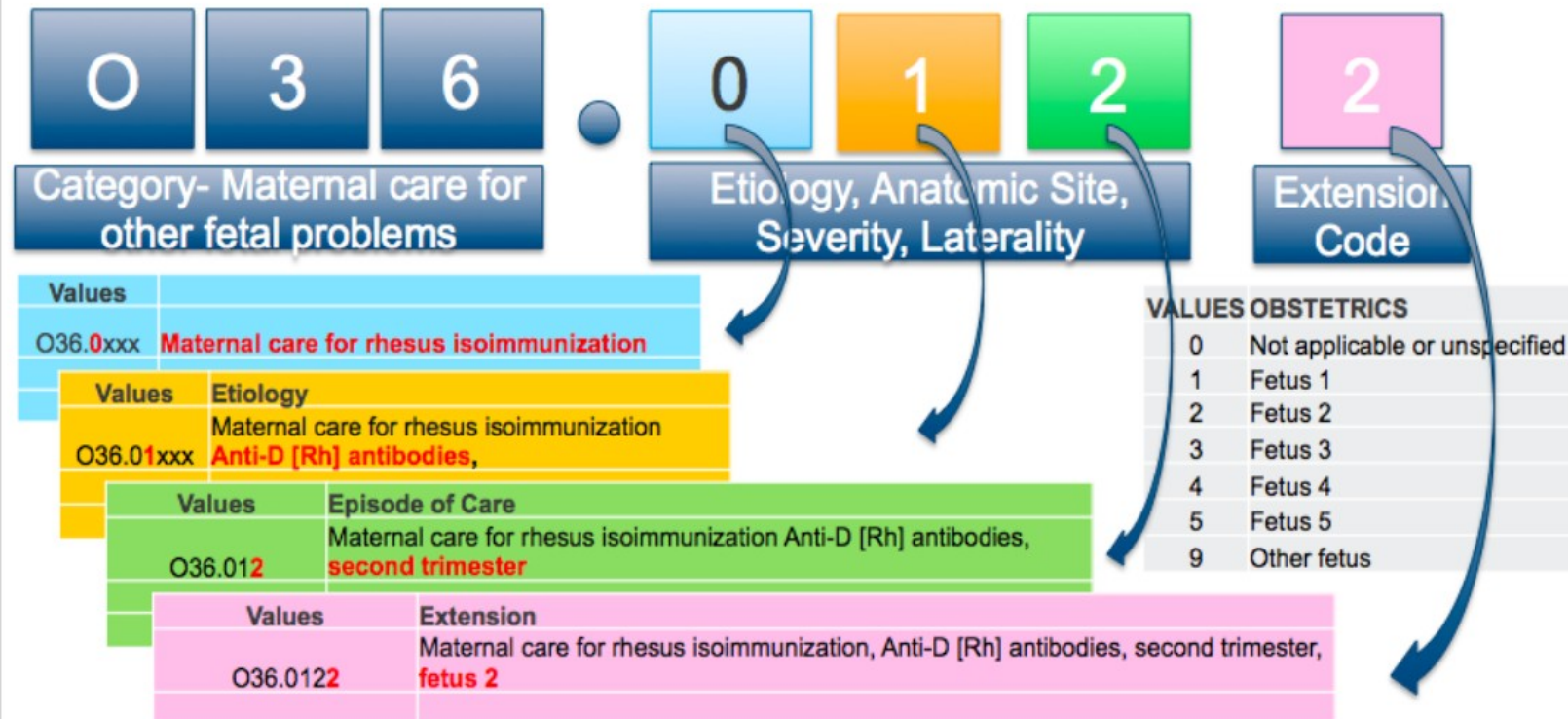
Extension
seventh
character
(if applicable)

M84.311A Stress fracture, right
shoulder; initial encounter

ICD-10-CM (diagnosis) Code Format

S32.010 Wedge compression fracture of first lumbar vertebra





DEPENDENT UPON CATEGORY
May not be required.

<https://nursekey.com/anti-d-preventing-rhesus-isoimmunisation/>

Rh incompatibility is when a mother has Rh-negative blood and her baby has Rh-positive blood. Rh isoimmunization is when the blood from the baby makes the mother's body create antibodies that can harm the baby's blood cells.

https://res.cloudinary.com/dpmykpsih/image/upload/gold-coast-site-258/media/28543/icd-10_provider_training_ppt_update_100615.pdf

Format and Structure

- Chapter
- Three character blocks
- Four character categories further define
 - Site
 - Etiology
 - Manifestation
 - State of the disease or condition
- Seventh Character Extenders

Examples:

 - A – Initial Encounter
 - D – Subsequent Encounter
 - S – Sequela- complications or conditions arising from the injury

ICD-10 CM Code Layout: Injury, Poisoning and Certain Other Consequences of External Causes (S00-T98)



VALUES	INJURIES & EXTERNAL CAUSES
A	Initial Encounter (Closed fracture)
B	Initial Encounter for open fracture type I or II, NOS
C	Initial Encounter for open fracture type IIIA, IIIB, or IIIC
D	Subsequent Encounter (Closed fracture) (Routine Healing)
E	Subsequent Encounter for open fracture type I or II, routine healing
F	Subsequent Encounter for open fracture type IIIA, IIIB or IIIC, routine healing
G	Subsequent Encounter (Closed) fracture with delayed healing
H	Subsequent Encounter for open fracture type I or II, delayed healing
J	Subsequent Encounter for open fracture type IIIA, IIIB or IIIC, delayed healing
K	Subsequent Encounter (Closed) fracture with nonunion
M	Subsequent Encounter for open fracture type I or II, nonunion
N	Subsequent Encounter for open fracture type IIIA, IIIB or IIIC, nonunion
P	Subsequent Encounter (Closed) fracture with malunion
Q	Subsequent Encounter for open fracture type I or II, malunion
R	Subsequent Encounter for open fracture type IIIA, IIIB or IIIC, malunion
S	Sequela



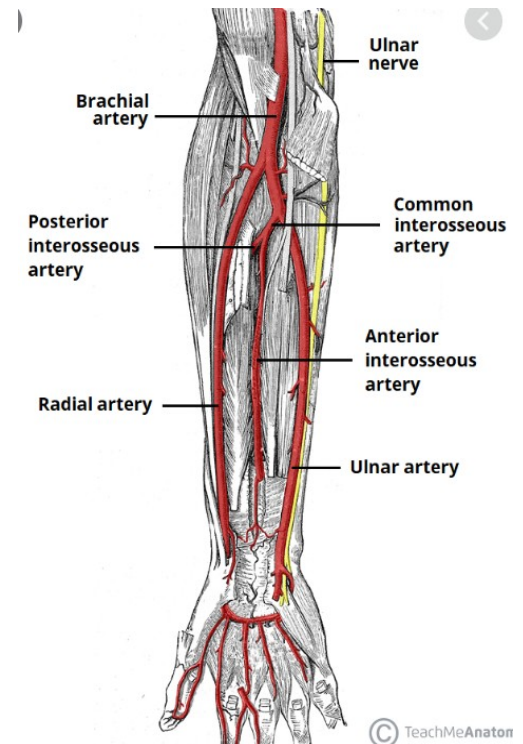
Greenstick Fracture | Torus Fractures

Fifth/Sixth Characters

- Identifies the most precise level of specificity
- Example:
 - S55.011- Laceration of ulnar artery at forearm level, right arm
- 3 - S55 is a category for injury of blood vessels at forearm level
- 4 - S55.0 specifies the injury is at the ulnar artery at the forearm level
- 5 - S55.01 specifies it is a laceration
- 6 - S55.011 specifies it is of the right arm
- A 7th character extender is also required



laceration

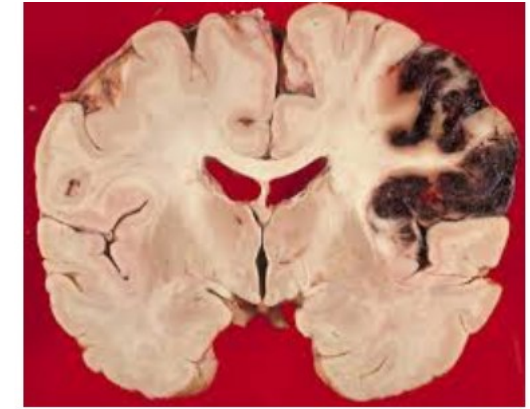


Comparison: ICD-9 to ICD-10

434.11	Cerebral embolism with infarction
Code represents embolism of cerebral arteries with infarction	

With specificity and laterality, one ICD-9 code translates into 14 possible ICD-10 codes

I63.40	Cerebral infarction due to embolism of unspecified cerebral artery
I63.49	Of other cerebral artery
I63.411	Of right middle cerebral artery
I63.412	Of left middle cerebral artery
I63.419	Of unspecified middle cerebral artery
I63.421	Of right anterior cerebral artery
I63.422	Of left anterior cerebral artery
I63.429	Of unspecified anterior cerebral artery
I63.431	Of left posterior cerebral artery
I63.432	Of right posterior cerebral artery
I63.439	Of unspecified posterior cerebral artery
I63.441	Of right cerebellar artery
I63.442	Of left cerebellar artery
I63.449	Of unspecified cerebellar artery



Cerebral infarcts

New Features in ICD-10-CM

- Laterality (Left, Right, Bilateral)
- Combination codes for certain conditions and common associated symptoms and manifestations
- Combination codes for poisonings and their associated external cause
- Obstetric codes identify trimester instead of episode of care

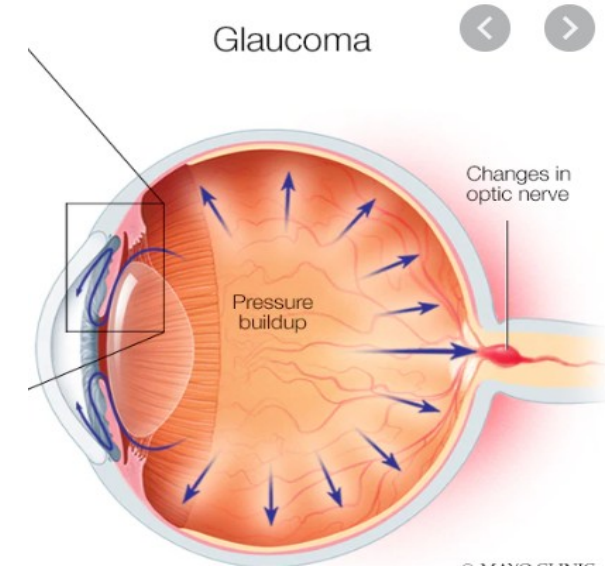
Laterality Example:

- H61.12 Hematoma of pinna
 - H61.121 Hematoma of pinna, right ear
 - H61.122 Hematoma of pinna, left ear
 - H61.123 Hematoma of pinna, bilateral ears
 - H61.129 Hematoma of pinna, unspecified ear



Hematoma of Pinna: A deformity of the outer ear that may occur after injury to the ear.

New Features in ICD-10-CM Placeholder “X” Character



4. Placeholder character

The ICD-10-CM utilizes a placeholder character “X”. The “X” is used as a placeholder at certain codes to allow for future expansion. An example of this is at the poisoning, adverse effect and underdosing codes, categories T36-T50. Where a placeholder exists, the X must be used in order for the code to be considered a valid code.

H40.11 Primary open-angle glaucoma
Chronic simple glaucoma

Example:

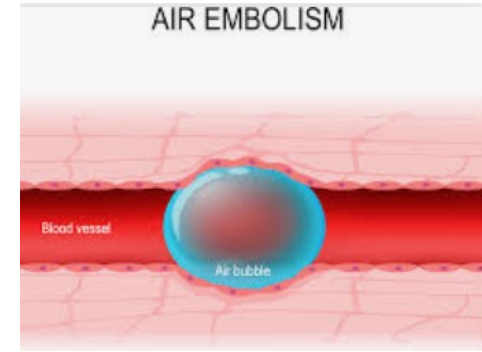
One of the following 7th characters is to be assigned to code H40.11 to designate the stage of glaucoma

- 0 - stage unspecified
- 1 - mild stage
- 2 - moderate stage
- 3 - severe stage
- 4 - indeterminate stage

—————> H40.11X1 Mild stage primary open-angle glaucoma

5. 7th Characters

Certain ICD-10-CM categories have applicable 7th characters. The applicable 7th character is required for all codes within the category. The 7th character must always be the 7th character in the data field. If a code that requires a 7th character is not 6 characters, a placeholder **X** must be used to fill in the empty characters.



Example 1: The appropriate 7th character is to be added to each code from category T79
A - initial encounter
D - subsequent encounter
S - sequela

T79.0 Air embolism (traumatic)

—————> **T79.0XXA Initial encounter for a traumatic air embolism**

Some codes have even more!

Example 2: **W06 Fall from bed**

The appropriate 7th character is to be added to code W06
A - initial encounter
D - subsequent encounter
S - sequela

—————> **W06.XXXD Subsequent encounter for a fall from a bed**

ICD-10-CM says the seventh character S is “for use for complications or conditions that arise as a direct result of an injury, such as scar formation after a burn. The scars are sequelae of the burn.” In other words, **sequela** are the late effects of an injury

Chapter Changes: Diabetes Mellitus

- Diabetes mellitus is located in Chapter 3, Endocrine, Nutritional and Metabolic Diseases, and Immunity Disorders in ICD-9-CM (250)
- Diabetes mellitus is located in Chapter 4, Endocrine, Nutritional and Metabolic Disorders in ICD-10-CM (E00-E89)

<https://www.icd10data.com/ICD10CM/Codes>

Diabetes Mellitus

There are five (5) Diabetes Mellitus categories in the ICD-10-CM to reflect the current clinical classifications of diabetes. They are:

- E08 Diabetes Mellitus due to an underlying condition
- E09 Drug or chemical induced diabetes mellitus
- E10 Type I diabetes mellitus
- E11 Type 2 diabetes mellitus
- E13 Other specified diabetes mellitus

<https://www.icd10data.com/ICD10CM/Codes>

Diabetes Mellitus

- ICD-9-CM has fifth-digit subclassifications that state the type of diabetes (including unspecified) and whether the diabetes is uncontrolled or not stated as uncontrolled
 - 250.00 Diabetes without mention of complication, NOS, not stated as uncontrolled
- ICD-10-CM has no stated unspecified code, so the default is type II and no longer classified as uncontrolled/ controlled
 - E10.11 Type 1 diabetes mellitus with ketoacidosis with coma

Diabetes Mellitus

- Combination codes are used in ICD-10-CM for diabetes
- The three character category shows the type of diabetes
- The fourth character shows the underlying conditions with specified complications
- The fifth character defines the specific manifestation

```

E08.3 Diabetes mellitus due to underlying condition with ophthalmic complications
  E08.31 Diabetes mellitus due to underlying condition with unspecified diabetic retinopathy
    E08.311 ..... with macular edema
    E08.319 ..... without macular edema
  E08.32 Diabetes mellitus due to underlying condition with mild nonproliferative diabetic
  retinopathy
    E08.321 Diabetes mellitus due to underlying condition with mild nonproliferative diabetic
    retinopathy with macular edema
      E08.3211 ..... right eye
      E08.3212 ..... left eye
      E08.3213 ..... bilateral
      E08.3219 ..... unspecified eye

```

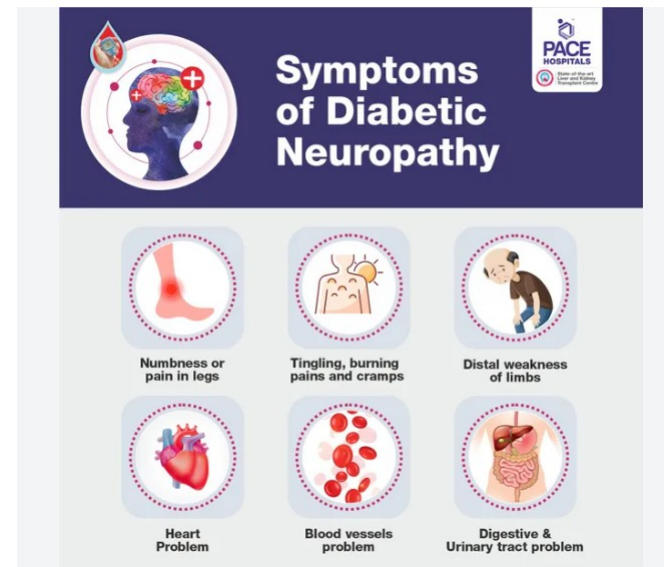
Diabetes Mellitus

- E08.22 Diabetes mellitus due to an underlying condition with diabetic chronic kidney disease

<https://www.icd10data.com/ICD10CM/Codes/E00-E89/E08-E13/E08-/E08.22>

- E09.52 Drug or chemical induced diabetes mellitus with diabetic peripheral angiopathy with gangrene

- E11.41 Type 2 diabetes mellitus with diabetic mononeuropathy



Diabetes Mellitus

- In ICD-10-CM there is a code, Z79.4 long-term current use of insulin, that is used the same way we currently use V58.67 in ICD-9-CM
- ICD-10 Code **Z79. 4**, Long-term (current) use of insulin should be assigned to indicate that the patient uses insulin for Type 2 **diabetes** mellitus (Category E11* codes). **Z79. 4** should NOT be used for Type 1 **diabetes** mellitus (Category E10* codes).

Examples about coding Diabetes Mellitus

- Coding a type 2 diabetic patient evaluated for a chronic diabetic left foot ulcer with necrosis of muscle. The patient takes insulin on a daily basis. The coding would follow:
 - **E11.621**, Type 2 diabetes mellitus with foot ulcer
 - **L97.523**, Non-pressure chronic ulcer of other part of left foot with necrosis of muscle
 - **Z79.4**, Long term (current) use of insulin

Examples about coding Diabetes Mellitus

- Coding a type 1 diabetic patient is seen in the ED for an initial encounter to evaluate the leakage of her insulin pump, then the code assignment would be:
 - **T85.633A**, Leakage of insulin pump, initial encounter
 - **E10.69**, Type 1 diabetes mellitus with other specified complication



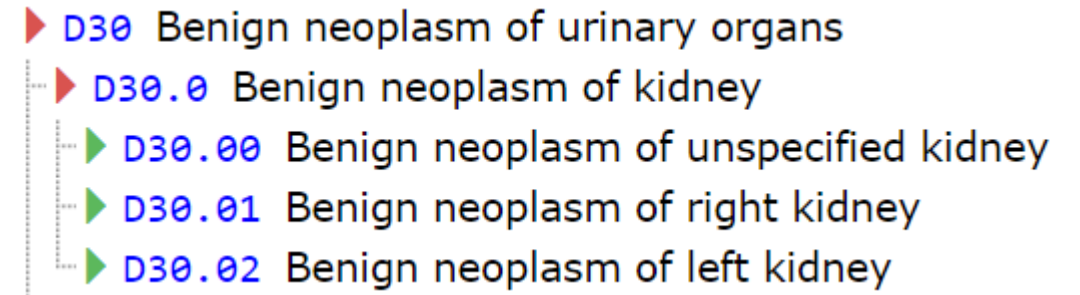
Neoplasms

- A patient may have a malignancy in two or more sites in the same organ, which may represent different primaries or metastatic disease
- The ICD-10-CM guidelines state to query the provider for the status of each tumor so that the correct codes can be assigned
- Reference: ICD-10-CM Official Draft Guideline C.2.i

<https://www.cms.gov/Medicare/Coding/ICD10/Downloads/2019-ICD10-Coding-Guidelines-.pdf>

- Accurate sequencing for primary and secondary cancer depends on which site is being treated or focused upon at the current encounter. For instance, a patient who has primary breast cancer (C50.xx) who is now seen for metastatic bone cancer will have a code for the secondary bone cancer (C79.51) sequenced before a code for the primary breast cancer (C50.xx).

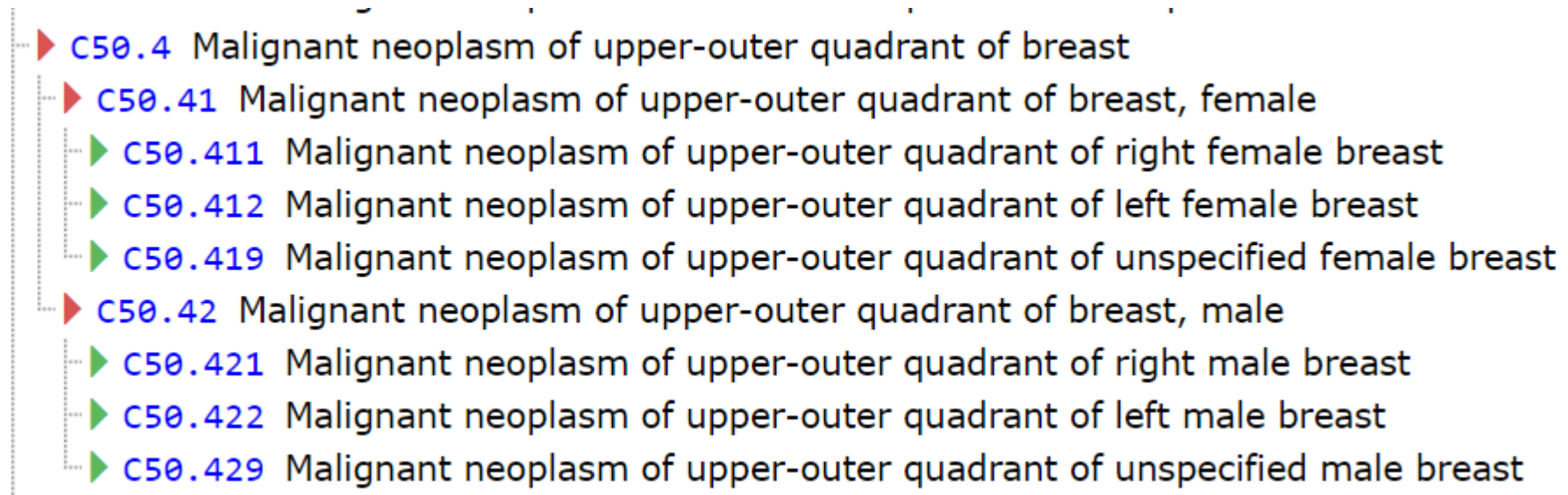
Neoplasms



- Laterality is also addressed in ICD-10-CM, unlike ICD-9-CM
- Examples:
 - D30.02 Benign neoplasm of left kidney
 - D04.11 Carcinoma in situ of skin of right eyelid, including canthus
 - C40.31 Malignant neoplasm of short bones of right lower limb

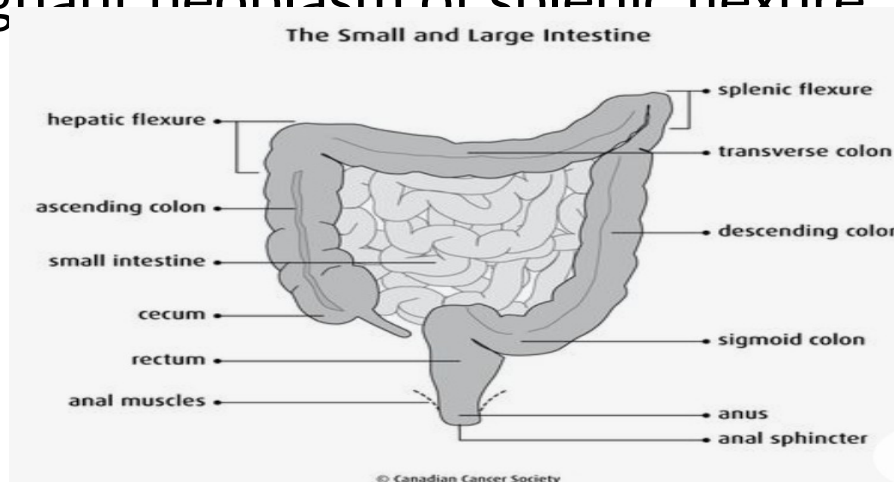
Neoplasm Changes

- Malignant neoplasm breast
 - 54 choices for male/female breast
 - Documentation must include:
 - Laterality
 - Location
 - Use of an additional code to identify estrogen receptor status (if known)
- Example: C50.422 malignant neoplasm of upper-outer quadrant of the left male breast



Neoplasm Changes

- Malignant neoplasm of large and small intestine
 - 26 choices available
 - Specific site (appendix, caput coli, cecum, colon and rectum, ascending, caput, descending colon, distal, left, overlapping. Pelvic, right, sigmoid, hepatic flexure, sigmoid flexure, duodenum, ileum, jejunum.....)
- C18.5 Malignant neoplasm of colonic flexure



- ▶ C17 Malignant neoplasm of small intestine
- ▼ C18 Malignant neoplasm of colon
 - C18.0 Malignant neoplasm: Caecum
 - C18.1 Malignant neoplasm: Appendix
 - C18.2 Malignant neoplasm: Ascending colon
 - C18.3 Malignant neoplasm: Hepatic flexure
 - C18.4 Malignant neoplasm: Transverse colon
 - C18.5 Malignant neoplasm: Splenic flexure
 - C18.6 Malignant neoplasm: Descending colon
 - C18.7 Malignant neoplasm: Sigmoid colon
 - C18.8 Malignant neoplasm: Overlapping lesion of colon
 - C18.9 Malignant neoplasm: Colon, unspecified

Case

A 40 year-old pregnant patient comes in for a consultation for **possible chromosomal abnormalities** to the fetus. She is **carrying** a single pregnancy.

ICD-9-CM Codes:

655.83 Other known or suspected fetal abnormality, NEC,
antepartum

<https://www.icd10data.com/ICD10CM/Codes>

ICD-10-CM codes:

O35.1xx0 Maternal care for (suspected) chromosomal abnormality
in fetus, not applicable or unspecified

Case

A patient is found to have two distinct malignant tumors in his right lung– one in his **right lower lobe** and one in his **right upper lobe**.

ICD-9-CM codes:

162.5 Malignant neoplasm, lower lobe, bronchus or lung

162.3 Malignant neoplasm, upper lobe, bronchus or lung

ICD-10-CM codes:

C34.31 Malignant neoplasm of lower lobe, right bronchus or lung

C34.11 Malignant neoplasm of upper lobe, right bronchus or lung

Note: ICD-10-CM guidelines address multiple malignancies in one organ (Section I.C.2.i). ICD-9-CM guidelines do not.

Case

Type II diabetic patient presents to the physician's office for a follow up visit. She has **diabetic dermatitis** on her left calf that will not resolve. She had recently been started on **Humulin N** for better diabetes control. At today's visit the doctor decides to continue the patient on insulin for another month and gives her a prescription for steroids for the skin condition.

ICD-9-CM codes:

250.80 – Type 2 diabetes with other specified manifestations

692.9 – Dermatitis NOS

V58.67 – Long-term (current) use of insulin

ICD-10-CM codes:

E11.620 Type 2 diabetes mellitus with diabetic dermatitis

Z79.4 Long term current use of insulin

Case

A pregnant patient presents to the office for a visit. She is **19 weeks, 3 days**, and is diagnosed with a **bladder infection** caused by **E. coli**. The doctor told the patient to drink more water and prescribes cephalexin. She is to return in 10 days for a recheck.

ICD-9-CM codes:

- 646.60 Infections of genitourinary tract in pregnancy
- 041.49 Other and unspecified Escherichia coli [E.coli]

ICD-10-CM codes:

- O23.12 Infections of bladder in pregnancy, second trimester
- B96.2 Escherichia coli (E. coli) as the cause of diseases classified elsewhere
- Z3A.19 19 weeks gestation of pregnancy

Case

ED visit: A 14 year-old boy is at a movie theater and running in a parking lot when he was hit by a car. He was diagnosed with a **nondisplaced fracture** of the **medial condyle** of the lower end of the **left femur**. The leg was placed in a long leg splint and no further intervention was required.

ICD-9-CM code:

821.21 Fracture of condyle, femoral

Note: Additional E codes are reported to indicate the circumstances surrounding the injury.

ICD-10-CM code:

S72.435A Nondisplaced fracture of medial condyle of left femur, initial encounter for closed fracture

Note: Additional V, W, X, Y codes are reported to indicate the circumstances surrounding the injury.

Case

A patient presents to the **emergency department** after receiving a **second degree** burn to his **left upper arm**. **TBSA 3%**. He receives treatment and is told to follow up with his family physician.

ICD-9-CM code:

943.23 Burn of upper arm, blisters, epidermal loss [second degree]

948.00 Burn [any degree] involving less than 10% of body surface

Note: Additional E codes are reported to indicate the circumstances surrounding the injury.

ICD-10-CM code:

T22.232A Burn of second degree of left upper arm, initial encounter

T31.0 Burns involving less than 10% of body surface

Note: Additional X/Y codes are reported to indicate the circumstances surrounding the injury.

Case

A patient presents for a **follow up visit**. She had tried to stop her two cats from fighting. **One of the cats bit her left hand and right thumb without nail damage**. The open wound was washed and she was started on antibiotics. She presents today for a dressing change and wound check.

ICD-9-CM codes:

883.0 Open wound of finger(s), without mention of complication

882.0 Open wound of hand except finger(s) alone, without mention of complication

Note: E codes are not reported for subsequent encounters (Section I.C.19.a.2.)

ICD-10-CM codes:

S61.051D Open bite of right thumb without damage to nail, subsequent encounter

S61.452D Open bite of left hand, subsequent encounter

W55.01XD Bitten by cat

Note: External cause codes are reported for each encounter for which the injury or condition is being treated.

ICD10 in EHR

- ICD 10
- COVID-19 patient diagnosis from 4CE (i2b2):
 - [https://figshare.com/articles/Diagnosis Data for International Electronic Health Record-Derived COVID-19 Clinical Course Profile The 4CE Consortium/12152967](https://figshare.com/articles/Diagnosis_Data_for_International_Electronic_Health_Record-Derived_COVID-19_Clinical_Course_Profile_The_4CE_Consortium/12152967)

siteid	icd_code	icd_version	num_patients
Combined	Z29.0	10	1352
Combined	J12.8	10	1229
Combined	J96.0	10	1119
Combined	R05	10	937
Combined	I10	10	830

Combined	U07.1	10	796
Combined	J06.9	10	753
Combined	R68.89	10	640
Combined	J12.81	10	609
Combined	J96.00	10	545

ICD9 in EHR

- Finding ICD 9 code for MIMIC III Demo Data
 - https://physionet.org/content/mimiciii-demo/1.4/DIAGNOSES_ICD.csv

MIMIC-III Clinical Databases

File: <base> / DIAGNOSES_ICD.csv (48,997 bytes)

row_id	subject_id	hadm_id	seq_num	icd9_code
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112346	10006	142345	3	5672
112347	10006	142345	4	40391
112348	10006	142345	5	42731
112349	10006	142345	6	4280
112350	10006	142345	7	4241
112351	10006	142345	8	4240
112352	10006	142345	9	2874

ICD9:

<http://www.icd9data.com/2015/Volume1/default.htm>

ICD-10 Provider Impacts

- Clinical documentation is the foundation of successful ICD-10 Implementation
- Golden Rule of Documentation
 - If it isn't documented by the physician, it didn't happen
 - If it didn't happen, it can't be billed
- The purpose in documentation is to tell the story of what was performed and what is diagnosed accurately and thoroughly reflecting the condition of the patient
 - what services were rendered and
 - what is the severity of the illness
- The key word is **SPECIFICITY**
 - Granularity
 - Laterality
- Complete and concise documentation allows for accurate coding which leads to maximized reimbursement

ICD10 Specificity

W54.0-, Bitten by dog

X30-, Exposure to excessive natural heat

X31-, Exposure to excessive natural cold

X38-, Flood

Z59.0, Homelessness

Z59.1, Inadequate housing

Z59.5, Extreme poverty

Z75.1, Person awaiting admission to adequate facility elsewhere

Z75.3, Unavailability and inaccessibility of health-care facilities

Z75.4, Unavailability and inaccessibility of other helping agencies

Z76.2, Encounter for health supervision and care of other healthy infant and child

Z99.12, Encounter for respirator [ventilator] dependence during power failure

ICD-10 Changes Everything

- ICD-10 changes the clinical practice.
- ICD-10 Implementation will impact everyone:
 - Registration, Nurses, Managers, Lab, Clinical Area, Billing, Physicians, and Coding.

Resources

- AHIMA: <https://www.ahima.org/education-events/education-by-topic/coding/>
- AMA: <https://www.ama-assn.org/practice-management/claims-processing/icd-10-overview>
- CMS: <https://www.cms.gov/icd10/>
- CDC: <https://www.cdc.gov/nchs/icd/icd-10-cm.htm>
- WHO: <https://icd.who.int/browse10/2019/en>
- ICD9: <http://www.icd9data.com/2015/Volume1/default.htm>
- <https://www.slideshare.net/CureMDHealthcare/icd10-fundamentals-and-navigation>