2017

Optum360 Learning:

Comprehensive Anatomy and Physiology for ICD-10-CM and ICD-10-PCS Coding

Contents

Introduction

Welcome to Comprehensive Anatomy and Physiology for ICD-10-CM and ICD-10-PCS Coding

The transition from ICD-9-CM to ICD-10-CM and ICD-10-PCS marks a transformation in coding in the United States. Not only have code choices increased five-fold, but the code descriptions themselves are much more specific. The greater level of detail in ICD-10 demands that coders have an in-depth knowledge of anatomy, physiology, and pathophysiology if they are to select the most appropriate code in the new system. Optum360's ***Comprehensive Anatomy and Physiology for ICD-10-CM and ICD-10-PCS Coding*** is a great initial step in that education.

Before delving into the details of anatomy and physiology, however, it is important to understand the transition from ICD-9 to ICD-10 and the differences between the code sets.

ICD-9-CM to ICD-10 Transition

The codes within ICD-9-CM fall woefully short of today's medical reporting needs. ICD-9-CM was created more than 25 years ago as a modern and expandable system that was then only partially filled. Thousands of codes have been added to ICD-9-CM over the years to classify new procedures and diseases, and today the remaining space in ICD-9-CM procedure and diagnosis coding systems cannot accommodate new technologies or new understanding of diseases.

In response to ICD-9-CM's shortcomings, new coding systems were developed and soon will be implemented in the United States. The World Health Organization (***WHO***) created and adopted ICD-10 in 1994 and it has been used in much of the world since then. This system is the basis for the new U.S. diagnosis coding system, International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM).

Concurrent to the clinical modification of ICD-10 by the National Center for Health Statistics (***NCHS***), the Centers for Medicare and Medicaid Services (***CMS***) commissioned 3M Health Information Management to develop a new procedure coding system to replace volume 3 of ICD-9-CM, used for inpatient procedure coding. Now that the coding systems have been designed and written, they need only be implemented, but progress is slow. The government is moving cautiously toward implementation, partly because the scope of change is massive and will profoundly affect all care providers, payers, and government agencies, but also because the change is massive and costly enough to carry considerable political impact.

On January 16, 2009, the Department of Health and Human Services (HHS) published a final rule in the *Federal Register,* 45 CFR part 162, "HIPAA Administrative Simplification: Modifications to Medical Data Code Set Standards to Adopt ICD-10-CM and ICD-10-PCS" (downloadable at http://edocket.access.gpo.gov/2009/pdf/E9-743.pdf). This final rule adopts modifications to standard medical data code sets for coding diagnoses and inpatient hospital procedures by adopting ICD-10-CM for diagnosis coding, including the *Official ICD-10-CM Guidelines for Coding and Reporting*, and ICD-10-PCS for inpatient hospital procedure coding, effective October 1, 2013. The most current 2016 update release is available for public viewing, and additional updates are expected before implementation. On September 5, 2012, HHS announced a final rule that would delay the implementation of the ICD-10-CM code sets from October 2013 to October 2014. This delay gives the health care community additional time to prepare and test systems appropriately.

DEFINITIONS

CMS. Centers for Medicare and Medicaid Services. Federal agency that provides health insurance for more than 74 million Americans through Medicare, Medicaid, and Children's Health Insurance Program. CMS contracted with 3M HIS to develop a new procedure coding system (ICD-10-PCS). Find CMS at http://www.cms.gov/.

NCHS. National Center for Health Statistics. U.S. government agency that, jointly with CMS, refines the diagnostic portion of ICD-9-CM and is responsible for the clinical modification of ICD-10. NCHS holds several hearings a year to consider changes or additions to diagnosis coding. Find NCHS at http://www.cdc.gov/nchs.

WHO. World Health Organization. International agency that maintains an international nomenclature of diseases, causes of death, and public health practices. WHO, with advice from participating countries, developed ICD-9 to track morbidity and mortality statistics worldwide. It recently updated diagnosis coding with ICD-10. Find WHO at http://www.who.int/en.

Treatment for this condition is typically a combination of topical corticosteroids and oral tetracycline to control the infection and thus the hair loss.

Coding for Other Types of Alopecia

ICD-9-CM	ICD-10-CM	
704.09 Other alopecia	L63.0	Alopecia (capitis) totalis
	L63.1	Alopecia universalis
	L64.0	Drug-induced androgenic alopecia
	L64.8	Other androgenic alopecia
	L65.1	Anagen effluvium
	L65.2	Alopecia mucinosa
	L65.8	Other specified nonscarring hair loss
	L66.0	Pseudopelade
	L66.2	Folliculitis decalvans
	L66.8	Other cicatricial alopecia
	L66.9	Cicatricial alopecia, unspecified

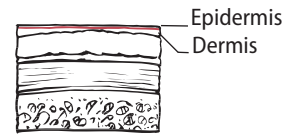
Skin Ulcers

In ICD-9-CM, pressure and other types of ulcers are reported with multiple codes, although they are not specific to anatomical location. In ICD-10-CM, coders can pinpoint with a single code the ulcer site, type of ulcer, and whether it is related to a disease process. The coding of ulcers will not be reviewed in this publication; however, some anatomy and physiology concepts will be discussed to aid with coding accuracy.

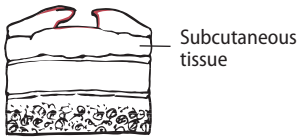
Pressure Ulcer Stages

Pressure ulcer stages play an important role in ICD-9-CM and ICD-10-CM coding. Unfortunately, providers do not always document the specific stage of the ulcer, so wound descriptors may need to be scrutinized. Carefully review the many guidelines pertaining to the coding of pressure ulcers. These guidelines can be found in the front section of Optum360's *ICD-10-CM Complete Official Code Set* book or online at the Centers for Medicare and Medicaid Services (CMS) website.

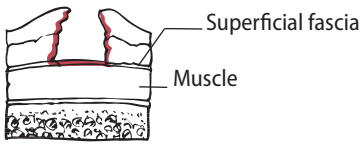
Figure 2.7: Four Stages of Pressure Ulcers



First Stage
Persistent focal erythema



Second Stage
Abrasion, blister, partial thickness skin loss involving epidermis and/or dermis



Third Stage
Full thickness skin loss involving damage or necrosis of subcutaneous tissue

Fourth Stage
Necrosis of soft tissues through to underlying muscle, tendon, or bone

Coding Axiom

ICD-10-CM Official Coding Guideline I.C.12.a.3. states, "Assignment of the pressure ulcer stage code should be guided by clinical documentation of the stage or documentation of the terms found in the Alphabetic Index. For clinical terms describing the stage that are not found in the Alphabetic Index, and there is no documentation of the stage, the provider should be queried."

The stage descriptions in figure 2.7 use the terms found in the alphabetic index.

Anatomy and Pathophysiology and the ICD-10-CM Code Set

In ICD-10-CM, diagnosis coding of conditions affecting the cardiovascular system is much more detailed than it is in ICD-9-CM. In many cases, there is one ICD-9-CM code describing a diagnosis, whereas there are several ICD-10-CM codes. Details such as specific anatomical site or the severity of a condition have been incorporated into ICD-10-CM that didn't exist in ICD-9-CM.

For example, ICD-9-CM has one specific code to classify cardiac arrest:

427.5 Cardiac arrest

In ICD-10-CM, however, more specific codes are available to classify the cardiac arrest, including:

I46.2 Cardiac arrest due to underlying cardiac condition

I46.8 Cardiac arrest due to other underlying condition

I46.9 Cardiac arrest, cause unspecified

The increased specificity of ICD-10-CM makes it imperative that physicians document more detailed information and that coders are able to determine from documentation the code or codes appropriate for the patient's condition.

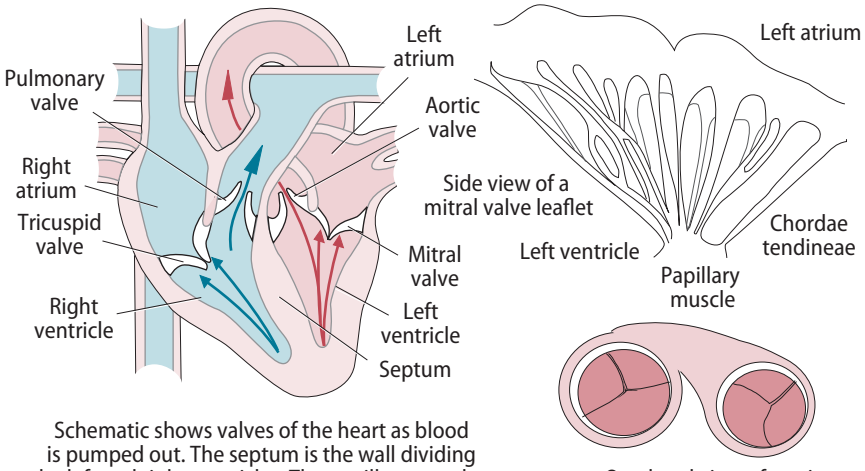
Valvular Disorders

Acute rheumatic fever, a complication of strep pharyngitis in children, results in various cardiac conditions in more than a third of patients affected. Depending on the extent of heart inflammation involved, patients with the acute form of the disease may develop heart failure, ***pericarditis***, myocarditis, and endocarditis, which is manifested as insufficiency of the mitral (65 to 70 percent of cases) and aortic valves (25 percent of cases).

DEFINITIONS

pericarditis. Inflammation affecting the pericardium.

Figure 7.11: Valvular Function



Schematic shows valves of the heart as blood is pumped out. The septum is the wall dividing the left and right ventricles. The papillary muscles and chordae tendineae (above right) function to open and close the atrioventricular valves

Overhead view of aortic (left) and pulmonary valves while closed

Chronic disease may result in arrhythmias, ventricular dysfunction, and dilation of the atria. In adults, acute rheumatic fever is the most common cause of mitral valve stenosis and the leading cause for valvular replacement surgery. Although the mitral valve is most commonly affected, the aortic and tricuspid valves may also be involved.

Chronic manifestations due to protracted disease and continued valve deformity occur in an estimated 9 to 39 percent of adults with previous rheumatic heart disease. Two to 10 years after an acute episode of rheumatic fever, the valve apparatus may fuse, with resulting stenosis or stenosis with insufficiency. Each recurrent episode can extend the valvular damage.

For acute rheumatic heart conditions, there is a one-to-one mapping of the appropriate ICD-9-CM code to the appropriate ICD-10-CM code. For instance, ICD-9-CM code 391.Ø for acute rheumatic pericarditis directly correlates to code IØ1.Ø in ICD-10-CM. This is also true for some valvular diseases resulting from rheumatic fever. Although ICD-9-CM does classify some conditions as rheumatic in nature, ICD-10-CM has distinguished, in large part, specific valvular diseases caused by rheumatic fever versus those not related to the disease, as well as the specific valve involved as shown in the following table. This differentiation does not always result in additional ICD-10-CM codes, as demonstrated by ICD-9-CM codes 396.Ø through 396.8, which map to ICD-10-CM code IØ8.Ø.

Coding for Diseases of the Heart Valves

ICD-9-CM		ICD-10-CM	
Rheumatic			
394.Ø	Mitral stenosis	IØ5.Ø	Rheumatic mitral stenosis
394.2	Mitral stenosis with insufficiency	IØ5.2	Rheumatic mitral stenosis with insufficiency
394.9	Other and unspecified mitral valve diseases	IØ5.8 IØ5.9	Other rheumatic mitral valve diseases Rheumatic mitral valve disease, unspecified
396.Ø	Mitral valve stenosis and aortic valve stenosis	IØ8.Ø	Rheumatic disorders of both mitral and aortic valves
396.1 396.2 396.3	Mitral valve stenosis and aortic valve insufficiency Mitral valve insufficiency and aortic valve stenosis Mitral valve insufficiency and aortic valve insufficiency	IØ8.Ø	Rheumatic disorders of both mitral and aortic valves
397.Ø	Diseases of tricuspid valve	IØ7.Ø IØ7.1 IØ7.2 IØ7.8 IØ7.9	Rheumatic tricuspid stenosis Rheumatic tricuspid insufficiency Rheumatic tricuspid stenosis and insufficiency Other rheumatic tricuspid valve diseases Rheumatic tricuspid valve disease, unspecified
397.1	Rheumatic diseases of pulmonary valve	IØ9.89	Other specified rheumatic heart diseases
397.9	Rheumatic diseases endocardium, valve unspecified	IØ8.1 IØ8.2 IØ8.3 IØ8.8 IØ8.9 IØ9.1	Rheumatic disorders of both mitral and tricuspid valves Rheumatic disorders of both aortic and tricuspid valves Combined rheumatic disorders of mitral, aortic and tricuspid valves Other rheumatic multiple valve diseases Rheumatic multiple valve disease, unspecified Rheumatic diseases of endocardium, valve unspecified

There are many differences between the ICD-9-CM and ICD-10-CM terminology used for valvular disorders. Key differences can be as simple as a "disorder" code in ICD-9-CM becoming more specific in ICD-10-CM; however, there are some important terms to be aware of.

Insufficiency is, in general, the inability to perform a function adequately or to the level necessary for the human body. When using the term with regard to valve

DEFINITIONS

insufficiency. Inadequate closure of the valve, allowing abnormal backward blood flow.

Ascariasis is an intestinal infection caused by roundworms and is most prevalent in unsanitary or overcrowded populations of the world. The symptoms, though rare in many cases, depend on the volume of worms and the site of infestation. Ascariasis pneumonia is caused by the roundworm larvae that travel through the bloodstream or lymph system into the lungs, causing coughing, shortness of breath, and wheezing lasting about six days before the larvae are expelled through a cough or reingested.

Coding for Pneumonia in Whooping Cough and Other Infectious Diseases

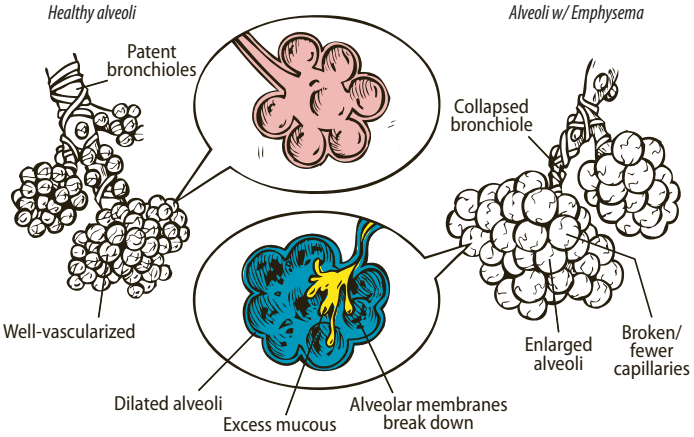
ICD-9-CM		ICD-10-CM	
484.3	Pneumonia in whooping cough	A37.Ø1	Whooping cough due to Bordetella pertussis with pneumonia
		A37.11	Whooping cough due to Bordetella parapertussis with pneumonia
		A37.81	Whooping cough due to other Bordetella species with pneumonia
		A37.91	Whooping cough, unspecified species with pneumonia
484.8	Pneumonia in other infectious diseases classified elsewhere	B77.81	Ascariasis pneumonia
		J17	Pneumonia in diseases classified elsewhere

What was previously reported as pneumonia in whooping cough within the ICD-9-CM code set is broken down even further within ICD-10-CM to allow for specific causal agents to be reported that contribute to the condition. As has been the case with other conditions, it is important to understand how these causal agents relate. Coders need this information at the time of code selection, as it is not yet certain how payers will react to unlisted codes in the ICD-10-CM code set. Using the highest level of specificity at all times will be key to accurate payment for providers.

Emphysematous Bleb and Other Emphysema

Emphysema is a condition of the respiratory system that restricts the air flow during exhalation because the bronchioles and alveoli deteriorate gradually. This causes a loss of lung elasticity, which can result in significant breathing difficulty. As this condition progresses, the spherical air sacs within the lungs become irregular and contain holes, reducing not only the number of air sacs but also the amount of oxygen that can circulate into the blood from the lungs (a decrease in the gas exchange). As the air sacs deteriorate, the openings collapse, trapping air within the lungs. Treatment for this condition can slow down the deterioration; however, once the damage is done, it cannot be reversed or cured. Smoking and air pollution are main contributors to emphysema.

Figure 10.7: Emphysema



INTERESTING A & P FACT

In addition to smoking and air pollution, some patients with emphysema, especially those that are diagnosed early in life, acquire the disease due to a rare genetic deficiency of serum alpha-1 antitrypsin (AAT). AAT protects the elasticity of the lungs and due to deficiency enzymes in the body cause damage resulting in emphysema.

Character 6: Device

Devices are reported by the sixth character of the PCS code in the medical surgical section and should only be assigned for devices that remain in the patient at the conclusion of the procedure. No device value should be assigned for small devices that are considered integral to the performance of the procedure, such as sutures, clips, ligatures, radiological markers, and postop wound drains. There are four major types of devices:

- Biological or synthetic material that takes the place of all or a portion of a body part (e.g., skin graft, joint prosthesis)
- Biological or synthetic material that assists or prevents a physiological function (e.g., IUD)
- Therapeutic material not absorbed by, eliminated by, or incorporated into a body part (e.g., radioactive implant)
- Mechanical or electronic appliances used to assist, monitor, take the place of, or prevent a physiological function (e.g., cardiac pacemaker, orthopedic pin)

Device characters may be assigned with many various root operation characters. When no device is used or left in the body after the procedure, the appropriate value for the sixth character position is Z— No device. The specific root operations listed below can *only* be assigned when performed in conjunction with a procedure involving a device.

- Insertion
- Replacement
- Supplement
- Change
- Removal
- Revision

The character meaning tables that introduce each body system in this book display the device values that are valid with each particular body system. Be aware that the sixth character may have different meanings in sections other than the medical/surgical section. For example, in the chiropractic section, the sixth character defines the method.

Device Key and Device Aggregation Table

The Device Key is a resource for the PCS code set that maps a specific device, by brand or common name, to a valid PCS character (see the following table). As new devices are developed, the key will be updated. Often these device names can also be found in the Alphabetical Index.

Device	PCS Description
3f (Aortic) Bioprosthesis valve	Zooplastic Tissue in Heart and Great Vessels
AbioCor® Total Replacement Heart	Synthetic Substitute
Absolute Pro Vascular (OTW) Self-Expanding Stent System	Intraluminal Device
Acculink (RX) Carotid Stent System	Intraluminal Device
Acellular Hydrated Dermis	Nonautologous Tissue Substitute
Acetabular cup	Liner in Lower Joints
Activa PC neurostimulator	Stimulator Generator, Multiple Array for Insertion in Subcutaneous Tissue and Fascia

Knowledge Assessment Questions

1. Which approach is defined as "entry of instrumentation through a natural or artificial external opening to reach the site of the procedure"?
   a. Open
   b. Percutaneous
   c. Via natural or artificial opening
   d. External

2. Which root operation is defined as "taking or letting out fluid and/or gases from a body part"?
   a. Extirpation
   b. Release
   c. Change
   d. Drainage

3. What body part character would be assigned for a procedure performed in the lymphatic and hemic systems on the bone marrow of the sternum?
   a. T Bone marrow
   b. Q Bone marrow, sternum
   c. 7 Lymphatic, thorax
   d. S Bone marrow, vertebral

4. Which procedure is defined as "putting back in or on all or a portion of a separated body part to its normal location or other suitable location"?
   a. Reattachment
   b. Alteration
   c. Revision
   d. Transfer

5. A procedure is performed on the antrum of Highmore and is assigned to body part character Q or R in the ear, nose, and sinus body system.
   a. True
   b. False

6. A patient has a procedure performed on the left side of the diaphragm. Which of the following body part characters would be the most appropriate choice from the respiratory body system?
   a. T Diaphragm
   b. 2 Carina
   c. S Diaphragm, left
   d. L Lung, left

7. The lung pleura is the ridge at the junction of the trachea and the bronchi formed by a projection of the lowest tracheal cartilage separating the openings of the two bronchi.
   a. True
   b. False