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# Development of the ICD-10 Procedure Coding System (ICD-10-PCS)

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*The International Classification of Diseases 10th Revision Procedure Classification System (ICD-10-PCS) has been developed as a replacement for Volume 3 of the International Classification of Diseases 9th Revision. The development of ICD-10-PCS was funded by the U.S. Health Care Financing Administration. ICD-10-PCS has a multi-axial seven character alphanumeric code structure which provides a unique code for all substantially different procedures and which allows new procedures to be easily incorporated as new codes. ICD-10-PCS was under development for over five years and the initial draft was formally tested and evaluated by an independent contractor. The final version of the ICD-10-PCS was released in the Spring of 1998. The design, development and testing of ICD-10-PCS are discussed.*

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## Introduction

Volume 3 of the International Classification of Diseases 9th Revision Clinical Modification (ICD-9-CM) has been used in the U.S. for the reporting of inpatient procedures since 1979. The structure of Volume 3 of ICD-9-CM has not allowed new procedures associated with rapidly changing technology to be effectively incorporated as new codes. As a result, in 1992 the U.S. Health Care Financing Administration (HCFA) funded a project to produce a preliminary design for a replacement for Volume 3 of ICD-9-CM. After a review of the preliminary design, HCFA in 1995 awarded 3M Health Information Systems a three year contract to complete the development of a replacement system. The new system is named ICD-10 Procedure Coding System (ICD-10-PCS).

The development of ICD-10-PCS has four major objectives:

### Completeness

There should be a unique code for all substantially different procedures. In Volume 3 of ICD-9-CM, procedures on different body parts, with different approaches, or of different types are sometimes assigned to the same code.

### Expandability

As new procedures are developed the structure of ICD-10-PCS should allow them to be easily incorporated as unique codes.

### *Multi-axial*

ICD-10-PCS should have a multi-axial structure with each code character having the same meaning within a specific procedure section and across procedure sections to the extent possible.

### *Standardized Terminology*

ICD-10-PCS should include definitions of the terminology used. While the meaning of specific words can vary in common usage, ICD-10-PCS should not include multiple meanings for the same term and each term must be assigned a specific meaning.

If these four objectives are accomplished, then ICD-10-PCS should enhance the ability of health information coders to determine accurate codes with minimal effort.

In the development of ICD-10-PCS, there were several general guidelines that were followed:

### *Diagnostic Information is Not Included in Procedure Description*

When procedures are performed for specific diseases or disorders, the disease or disorder is not specified. Thus, there are no separate codes for procedures for aneurysms, cleft lip, strictures, neoplasms, hernias, etc. The diagnosis codes and not the procedure codes contain the specific information regarding the nature of the disease or disorder.

### *Explicit Not Otherwise Specified (NOS) Options are Not Provided*

ICD-9-CM will often provide a “not otherwise specified” option. Explicit NOS options are not provided in ICD-10-PCS. A minimal level of specificity is always required for each component of the procedure. For each component of the procedure there are ICD-10-PCS coding rules that specify how the procedure should be coded when there is insufficient

information available in the medical record to support the specificity required by ICD-10-PCS.

### *Limited Use of Not Elsewhere Classified (NEC) Option*

ICD-9-CM will often provide a “not elsewhere classified” option. All possible components of a procedure are specified in ICD-10-PCS, thus, in general, there is no need for a “not elsewhere classified” option. However, new devices are frequently being developed and therefore, for devices, it is necessary to have a “not elsewhere classified” option that can be used until the new device can be explicitly added to the coding system. Likewise, an NEC option is included in the nuclear medicine section that can be used for newly approved radiopharmaceuticals until they can be explicitly added to the coding system.

### *Level of Specificity*

Based on the combinations of the seven alphanumeric characters, all possible procedures were defined. Frequency of occurrence was not a consideration in the development of the system. A code was created for any procedure that could be performed.

ICD-10-PCS has a seven character alphanumeric code structure. Each character has up to 34 different values. The ten digits 0-9 and the 24 letters A-H, J-N and P-Z comprise each character. The letters O and I are not used in order to avoid confusion with the digits 0 and 1.

Procedures are divided into sections that relate to the general type of procedure (e.g., medical and surgical, imaging, etc.). The first character of the procedure code always specifies the section. The sections are shown in Table 1.

The second through seventh characters have a standard meaning within each sec-

Sections	
0	Medical and Surgical
1	Obstetrics
2	Placement
3	Administration
4	Measurement and Monitoring
5	Imaging
6	Nuclear Medicine
7	Radiation Oncology
8	Osteopathic
9	Rehabilitation and Diagnostic Audiology
B	Extracorporeal Assistance and Performance
C	Extracorporeal Therapies
D	Laboratory
F	Mental Health
G	Chiropractic
H	Miscellaneous

**Table 1:** Sections

tion but may have different meanings across sections.

In most sections, one of the characters specifies the precise type of procedure being performed (e.g., excision, resection, etc.), while the other characters specify additional information such as the body part on which the procedure is being performed. In the ICD-10-PCS the term “procedure” is used to refer to the complete specification of the seven characters.

## ICD-10-PCS Manual

In the ICD-10-PCS system, the ICD-10-PCS codes are described in three separate divisions.

Tabular Listing  
Index  
List of Codes

The Index allows codes to be located by an alphabetic look up. The Index entry will refer to a specific location in the Tabular List. Reference to the Tabular List is always necessary in order to obtain the complete code. The list of codes allows a

direct look up of each code and provides a short description of each code.

### *Tabular List in ICD-10-PCS Manual*

The Tabular List in ICD-10-PCS has a very different organization than ICD-9-CM. Each page in the Tabular List is composed of grids which specify the valid combinations of character values that comprise a particular procedure code. Table 2 shows a portion of a page from the Tabular List. The upper portion of each grid contains a description of the first two or three characters of the procedure code. For example, for procedures in the medical and surgical section the first three characters are the name of the section, the body system and the root operation being performed.

In ICD-10-PCS characters 027 would indicate that the grid refers to the medical and surgical section (0) of the body system heart & great vessels (2) and a root operation of dilation (7). As shown in Table 2 the root operation (i.e., dilation) is followed by its definition.

The lower portion of the grid specifies all the valid combinations of characters four through seven. The four columns in the grid represent the last four characters and for the medical and surgical section are labeled Body Part, Approach, Device and Qualifier, respectively. Each row in the grid defines the valid combinations of characters four through seven. The Tabular List contains only combinations of characters that represent a valid procedure. Combinations of characters that do not constitute a valid procedure are not contained in the Tabular List.

The grid in Table 3 generates 48 unique procedure codes. For example, code 02705DZ represents the procedure for dilation of one coronary artery using an intraluminal device by a percutaneous intraluminal approach (i.e., percutaneous

<b>0:</b> Medical and Surgical <b>2:</b> Heart and Great Vessels <b>7: Dilation:</b> Expanding the orifice or the lumen of a tubular body part			
Body Part Character 4	Approach Character 5	Device Character 6	Qualifier Character 7
<b>0</b> Coronary Artery, One <b>1</b> Coronary Arteries, Two <b>2</b> Coronary Arteries, Three <b>3</b> Coronary Arteries, Four or More	<b>1</b> Open Intraluminal <b>2</b> Open Intraluminal Endoscopic <b>5</b> Percutaneous Intraluminal <b>6</b> Percutaneous Intraluminal Endoscopic	<b>D</b> Intraluminal Device <b>Y</b> Device NEC <b>Z</b> None	<b>Z</b> None

**Table 2:** Grid from the Tabular list specifies the valid combinations of characters 4 through 7 for the medical and surgical procedure dilation of the heart and great vessels (027)

transluminal coronary angioplasty with stent).

*List of Codes*

The actual codes that result from the first body part (i.e., one coronary artery) in the grid for dilation of heart and great vessels are listed in Table 3. The 12 codes listed in Table 3 are examples of entries in the List of Codes. Each code has a description that is complete and easy to read.

*Index*

The Index allows codes to be located based on an alphabetic look up. Codes can be found in the index based on the type of procedure being performed. Thus, the code for a percutaneous intraluminal dilation of the coronary arteries with an

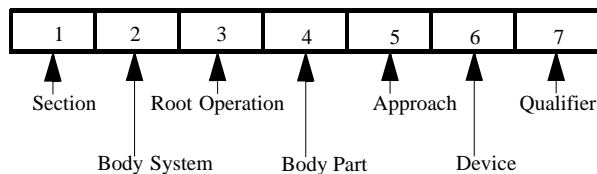
intraluminal device can be found in the Index under dilation, or any synonym of dilation (e.g., angioplasty). Once the desired term is located in the Index, the Index specifies the first three or four characters of the code followed by three periods (e.g., 0270...). Each entry in the Tabular List refers to the first three characters of the code (e.g., 027). Based on the first three characters of the code obtained from the Index, the corresponding entry in the Tabular List can be located. The Tabular List is then used to obtain the complete code by specifying the possible combinations of the last four characters.

**Medical and Surgical Procedures**

The seven characters for medical and surgical procedures have the following meaning:

02701DZ	Dilation, Coronary Artery, One, Open Intraluminal with Intraluminal Device
02701YZ	Dilation, Coronary Artery, One, Open Intraluminal with Device NEC
02701ZZ	Dilation, Coronary Artery, One, Open Intraluminal
02702DZ	Dilation, Coronary Artery, One, Open Intraluminal Endoscopic with Intraluminal Device
02702YZ	Dilation, Coronary Artery, One, Open Intraluminal Endoscopic with Device NEC
02702ZZ	Dilation, Coronary Artery, One, Open Intraluminal Endoscopic
02705DZ	Dilation, Coronary Artery, One, Percutaneous Intraluminal with Intraluminal Device
02705YZ	Dilation, Coronary Artery, One, Percutaneous Intraluminal with Device NEC
02705ZZ	Dilation, Coronary Artery, One, Percutaneous Intraluminal
02706DZ	Dilation, Coronary Artery, One, Percutaneous Intraluminal Endoscopic with Intraluminal Device
02706YZ	Dilation, Coronary Artery, One, Percutaneous Intraluminal Endoscopic with Device NEC
02706ZZ	Dilation, Coronary Artery, One, Percutaneous Intraluminal Endoscopic

**Table 3:** Code descriptions for dilation of one coronary artery (0270)



## SECTION

The medical and surgical section constitutes the vast majority of procedures that would normally be reported in an inpatient setting. Medical and surgical procedures have the first character specifying the section designated with the number "0".

## BODY SYSTEM

The second character indicates the general body system (e.g., gastrointestinal). The third character indicates the root operation which specifies the objective of the procedure (e.g., repair). The fourth character indicates the specific part of the body system on which the procedure was performed (e.g., duodenum). The fifth character indicates the approach used to reach the site of the procedure (e.g., open). The sixth character indicates whether any device was used in the procedure (e.g., synthetic substitute). The seventh character is a qualifier that has a unique meaning for individual procedures. For example, the qualifier can be used to identify the second site involved in a bypass. Characters 1-4 must always be assigned a precise value. The approach (character 5), the device (character 6) and the qualifier (character 7) are not applicable to all procedures. The letter Z is used for characters 5, 6 and 7 to indicate that an approach, device or qualifier was not applicable for a specific procedure.

The body systems for medical and surgical procedures are specified in the second character and are shown in Table 4. In order to provide necessary body parts detail some traditional body systems are

assigned multiple body system categories. For example, body system categories K (Muscles), L (Tendons), M (Bursa, Ligaments, Fascia), N (Head and Facial Bones), P (Upper Bones), Q (Lower Bones), R (Upper Joints) and S (Lower Joints) are subsystems of the Musculoskeletal system.

Body Systems	
0	Central Nervous System
1	Peripheral Nervous System
2	Heart and Great Vessels
3	Upper Arteries
4	Lower Arteries
5	Upper Veins
6	Lower Veins
7	Lymphatic and Hemic System
8	Eye
9	Ear, Nose, Sinus
B	Respiratory System
C	Mouth and Throat
D	Gastrointestinal System
F	Hepatobiliary System and Pancreas
G	Endocrine System
H	Skin and Breast
J	Subcutaneous Tissue
K	Muscles
L	Tendons
M	Bursa, Ligaments, Fascia
N	Head and Facial Bones
P	Upper Bones
Q	Lower Bones
R	Upper Joints
S	Lower Joints
T	Urinary System
V	Female Reproductive System
W	Male Reproductive System
X	Anatomical Regions
Y	Upper Extremities
Z	Lower Extremities

**Table 4:** Medical and Surgical Body Systems

## ROOT OPERATIONS

The root operation is specified in the third character. In the medical and surgical section there are 30 different root operation terms as shown in Table 5. The root

<b>Root Operation</b>	<b>Definition</b>
Alteration	Modifying the natural anatomical structure of a body part without affecting the function of the body part
Bypass	Altering the route of passage of the contents of a tubular body part
Change	Taking out or off a device from a body part and putting back an identical or similar device in or on the same body part without cutting or puncturing the skin or a mucous membrane
Control	Stopping, or attempting to stop, postprocedural bleeding
Creation	Making a new structure that does not physically take the place of a body part
Destruction	Eradicating all or a portion of a body part
Detachment	Cutting off all or a portion of an extremity
Dilation	Expanding the orifice or the lumen of a tubular body part
Division	Separating, without taking out, a body part
Drainage	Taking or letting out fluids and/or gases from a body part
Excision	Cutting out or off, without replacement, a portion of a body part
Extirpation	Taking or cutting out solid matter from a body part
Extraction	Taking out or off all or a portion of a body part
Fragmentation	Breaking down solid matter in a body part
Fusion	Joining together portions of an articular body part rendering the articular body part immobile
Insertion	Putting in a non biological appliance that monitors, assists, performs or prevents a physiological function but does not physically take the place of a body part
Inspection	Visually and/or manually exploring a body part
Map	Locating the route of passage of electrical impulses and/or locating functional areas in a body part
Occlusion	Completely closing the orifice or lumen of a tubular body part
Reattachment	Putting back in or on all or a portion of a body part
Release	Freeing a body part
Removal	Taking out or off a device from a body part
Repair	Restoring to the extent possible, a body part to its natural anatomic structure
Replacement	Putting in or on biological or synthetic material that physically takes the place of all or a portion of a body part
Reposition	Moving to its normal location or other suitable location all or a portion of a body part
Resection	Cutting out or off, without replacement, all of a body part
Restriction	Partially closing the orifice or lumen of a tubular body part
Revision	Correcting a portion of a previously performed procedure
Transfer	Moving, without taking out, all or a portion of a body part to another location to take over the function of all or a portion of a body part
Transplantation	Putting in or on all or a portion of a living body part taken from another individual or animal to physically take the place and/or function of all or a portion of a similar body part

**Table 5: Medical and Surgical Root Operation Definitions**

operation specifies the underlying objective of the procedure. Each root operation is given a very precise definition. For example, the term *insertion* is used for putting in or on devices. If a device is taken out but no equivalent device is put in then the root operation term *removal* is used. The term removal is only used for taking out or off devices. The root operation term *extirpation* is used when solid matter such as a foreign body, embolus, clot, thrombus or stone is taken out of a body part without taking out any of the body part. The root operation term *excision* is used to indicate that a portion of a body part was cut out, while the root operation term *resection* is used to indicate that all of a body part was cut out. If the body part that is cut out has biological or synthetic material substituted for it then the root operation term *replacement* is used. If the body part that is cut out has a living body part from a donor put in its place then the root operation term *transplantation* is used. The above examples of root operation terminology illustrates the precision used to define these terms. There is always a clear distinction made regarding the differences between each root operation term.

A root operation must also constitute a complete procedure. The term anastomosis is not a root operation since it is a means of joining and is an integral part of another procedure such as a bypass or a resection. An anastomosis can never be performed as a stand alone procedure. Similarly, incision is not a root term since it is a means of opening and is always an integral part of another procedure.

Appendix A provides additional detail on the root operations and Appendix B compares all root operations for the medical and surgical section and provides an example of each root operation.

## *BODY PART*

The body part is specified in the fourth character. The body part indicates the specific part of the body system on which the procedure was performed (e.g., duodenum).

## *APPROACH*

The technique used to reach the site of the procedure (i.e., approach) is specified in the fifth character. There are 13 different approaches as shown in Table 7.

The approach is comprised of four components: the access location, method, type of instrumentation and route.

### *Access Location*

For operations performed on an internal body site, the access location specifies the *external* body site through which the *internal* site of the operation is reached. There are two possible access locations: skin or mucous membrane and an external orifice. The skin or mucous membrane can be cut through or punctured by instruments in order to reach the internal site of the operation. The internal site of an operation can also be reached through an external orifice. External orifices can be natural (e.g., mouth) or artificial (e.g., colostomy stoma).

### *Method*

The method specifies how the external body site is entered. An open method involves cutting through the external body layer or lining of an orifice and any other intervening body layers necessary to expose the internal site of the operation. An instrumental method involves the entry of instrumentation through the access location in order to reach the internal site of the procedure. Instrumentation can be introduced by puncture or minor incision or through an external orifice. The puncture or minor incision used to introduce the instrumentation does not constitute an

<b>Approach</b>	<b>Definition</b>
Open	Cutting through the skin or mucous membrane and any other body layers necessary to expose the site of the operation
Open Intraluminal	Cutting through the skin or mucous membrane and any other body layers necessary to expose a tubular body part and introduction of instrumentation into the lumen to reach the site of the operation
Open Intraluminal Endoscopic	Cutting through the skin or mucous membrane and any other body layers necessary to expose a tubular body part and introduction of instrumentation into the lumen to reach and visualize the site of the operation
Percutaneous	Entry, by puncture or minor incision, of instrumentation through the skin or mucous membrane and any other body layers necessary to reach the site of the operation
Percutaneous Endoscopic	Entry, by puncture or minor incision, of instrumentation through the skin or mucous membrane and any other body layers necessary to reach and visualize the site of the operation
Percutaneous Intraluminal	Entry, by puncture or minor incision, of instrumentation through the skin or mucous membrane and any other body layers necessary to reach a tubular body part and introduction of instrumentation into the lumen to reach the site of the operation
Percutaneous Intraluminal Endoscopic	Entry, by puncture or minor incision, of instrumentation through the skin or mucous membrane and any other body layers necessary to reach a tubular body part and introduction of instrumentation into the lumen to reach and visualize the site of the operation
Transorifice Intraluminal	Entry of instrumentation through a natural or artificial external orifice into the lumen of the connected tubular body part to reach the site of the operation
Transorifice Intraluminal Endoscopic	Entry of instrumentation through a natural or artificial external orifice into the lumen of the connected tubular body part to reach and visualize the site of the operation
Open With Cardiopulmonary Bypass	Cutting through the skin or mucous membrane and any other body layers necessary to expose the site of the operation with the use of cardiopulmonary bypass during a portion of the procedure
Open With Inflow Occlusion	Cutting through the skin or mucous membrane and any other body layers necessary to expose the site of the operation with the use of inflow occlusion during a portion of the procedure
Open With Temporary Shunt	Cutting through the skin or mucous membrane and any other body layers necessary to expose the site of the operation with the use of a temporary shunt during a portion of the procedure
None	Procedures performed directly on the skin or mucous membrane and procedures performed indirectly by the application of external force through the skin or mucous membrane

**Table 6: Medical and Surgical Approach Definitions**



open approach since it does not expose the site of the procedure or expose any tubular body part. An approach can involve both methods. For example, a procedure can include an open method to expose a tubular body part followed by the introduction of instrumentation into the tubular body part.

#### *Type of Instrumentation*

Instrumentation may include the capability to visualize the site of the operation. For example, the instrumentation used to perform a sigmoidoscopy permits the internal site of the operation to be visualized while the instrumentation used to perform a needle biopsy of the liver does not. The term endoscopic is used to refer to instrumentation that permits a site to be visualized.

#### *Route*

Instrumental methods may involve the passage of instrumentation into the lumen of a tubular body part in order to reach the internal site of the operation. An intraluminal route indicates that instrumentation was passed into the lumen of a tubular body part.

Operations performed directly on the skin or mucous membrane constitute an external surface and therefore, the approach is *none* (e.g., skin excision). Procedures performed indirectly by the application of external force also constitute an external site and the approach is *none* (e.g., closed repair of fracture). Table 6 contains a definition of each approach. Appendix C compares the components of each different approach along with an example of each approach. For cardiovascular procedures there are three additional open approaches which specify whether cardiopulmonary bypass, inflow occlusion or a temporary shunt was used during the procedure.

#### *DEVICE*

The device is specified in the sixth character and is only used to specify devices that remain after the procedure is completed. There are four general types of devices:

1. Biological or synthetic material that takes the place of all or a portion of a body part (e.g., skin grafts and joint prosthesis).
2. Biological or synthetic material that assists or prevents a physiological function (e.g., IUD).
3. Therapeutic material that is not absorbed by, eliminated by, or incorporated into a body part (e.g., radioactive implant). Therapeutic materials that are considered devices can always be removed.
4. Mechanical or electronic appliances used to assist, monitor, take the place of or prevent a physiological function (e.g., diaphragmatic pacemaker, orthopedic pins).

Devices can be used with the root operations alteration, bypass, change, creation, dilation, drainage, fusion, insertion, occlusion, reattachment, removal, repair, replacement, restriction and revision. Instruments that describe how a procedure is performed are not specified in the device character. The approach character specifies whether instrumentation is used to reach or to reach and visualize the site of the procedure. If the objective of the procedure is to put in the device, then the root operation is *insertion*. If the device is put in as a part of a procedure that has an underlying objective other than the insertion of the device, then the root operation corresponding to the underlying objective of the procedure is used with the device specified in the device character. Thus, even if the repair of a bone includes put-

ting in a fixation device, the root operation is repair and not insertion. Materials which are incidental to a procedure such as clips, ligatures and sutures are not specified in the device character. Since new devices can be developed a “device NEC” option is provided.

#### **QUALIFIER**

The qualifier is specified in the seventh character. The qualifier has a unique meaning for individual procedures. For example, the qualifier can be used to identify the second site included in a bypass.

#### **Guidelines for Medical and Surgical Section**

In developing the medical and surgical procedure codes, there were several specific guidelines that were followed:

##### *Composite Terms are not Root Operations*

Root operations describe only the underlying objective of the procedure itself. Thus, composite terms such as colonoscopy and sigmoidectomy are not root terms since they specify multiple aspects of a procedure. A diagnostic colonoscopy is a composite of the root operation inspection (visual exploration), the body part (colon) and the instrument used to visualize the site of the procedure (colonoscope). The precise part of the gastrointestinal tract which was inspected would be specified by the body part (character 4). A partial sigmoidectomy is a composite of the root operation excision and the body part sigmoid. A partial sigmoidectomy would be coded as an excision (cut out, without replacement, a portion of a body part) at the body part, sigmoid. While the terms colonoscopy and sigmoidectomy would be in the Index they would not constitute root entries in the Tabular List.

##### *Code Based on Objective of Procedure*

The root term used to describe a procedure is based on the objective of the procedure. Thus, if a procedure is performed in order to take out a foreign body, then the procedure is coded as an *extirpation*. Dilating the urethra would be coded as *dilation* since the objective of the procedure is to dilate the urethra. If the dilation of a urethra includes putting in an intraluminal device, the root operation remains a *dilation* and not an *insertion* of the intraluminal device since the underlying objective of the procedure is the *dilation* of the urethra.

##### *Combination Procedures are Coded Separately*

If a procedure involves distinct parts, then multiple codes are used. For example, the obtaining of the vein graft used for coronary bypass surgery is coded as a separate procedure.

##### *Revisions of Procedures*

A revision of a procedure is doing over again a portion of a previously performed procedure that has failed to function as intended. Revisions do not include the complete doing over again of the procedure which is considered the same as the original procedure. Revisions also do not include the correction of complications that do not require the doing over again of a portion of the original procedure such as the control of bleeding. *Revision* is a root operation term. Revisions can be done on a previously performed alteration, bypass, creation, detachment, excision, fusion, insertion, occlusion, reattachment, repair, replacement, reposition, resection, restriction, transfer and transplantation. The specification of the original operation on which the revision is being performed is identified in the qualifier character. Revisions can be performed on any

procedure which includes a device except the root operation *change*. Revisions are frequently performed on implanted mechanical appliances (e.g., diaphragmatic pacemakers), or materials used in replacements or repairs (e.g., synthetic substitute). Thus, revision encompasses the repositioning and fixing of malfunctions in devices. Revisions can also be performed on any procedure which does not include a device but does include an anastomosis (e.g., resection).

### Specification of Approach

Many procedures can be accomplished by different approaches. Except for procedures on the skin or mucous membrane, a specification of the approach is always required.

### Examples of procedures coded in ICD-10-PCS

The following are several examples of procedures from the medical and surgical section coded in ICD-10-PCS.

*Open reduction with internal fixation of left tibia with plate and screws: 0QQH04Z*

Medical and surgical section (0), body system lower bones (Q), root operation repair (Q), body part left tibia (H), open approach (0) with internal fixation device (4) and without qualifier(Z).

*Laparoscopic appendectomy:0DTJ4ZZ*

Medical and surgical section (0), body system gastrointestinal (D), root operation resection (T), body part appendix (J), percutaneous endoscopic approach (4), without device (Z) and without qualifier(Z).

*Sigmoidoscopy with biopsy:0DBNZX*

Medical and surgical section (0), body system gastrointestinal (D), root operation excision (B), body part sigmoid colon (N), transorifice intraluminal endoscopic

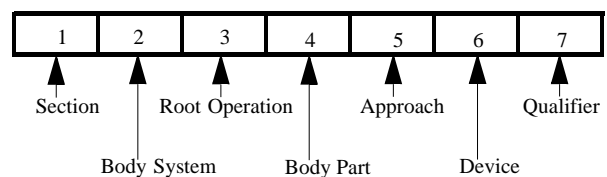
approach (8), without device (Z) and with qualifier diagnostic (X).

*Tracheostomy: 0B110F5*

Medical and surgical section (0), body system respiratory (B), root operation bypass (1), body part trachea (1), open approach (0), with tracheostomy device (F) and qualifier opening to the skin (5).

### Obstetrics

The seven characters for the obstetrics section have the same meaning as in the medical and surgical section.



Obstetrical procedures have the first character specifying the section designated with the number "1". For the obstetrical section the body system has only one value, "0" for pregnancy. The root operations *change, drainage, insertion, inspection, removal, repair, reposition, resection* and *transplantation* are used in the obstetrical section and have the same meaning as in the medical and surgical section. The Obstetrics section includes operations performed on the products of conception only; operations on the pregnant female are coded in the medical and surgical section (e.g., episiotomy). The obstetrics section also includes two additional root operations, *abortion* and *delivery* which are defined as:

- Abortion: Artificially terminating a pregnancy
- Delivery: Assisting the passage of the products of conception from the genital canal

A Cesarean Section does not constitute an additional root operation since it is a

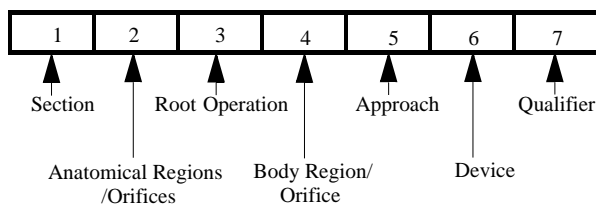
resection (i.e., cutting out all of a body part). The body parts for the obstetrical sections are:

- Products of conception
- Products of conception, retained
- Products of conception, ectopic

The term “products of conception” is used to refer to all components of a pregnancy including the fetus, amnion, umbilical cord and placenta. There is no differentiation of the products of conception based on gestational age. Thus, the specification of the products of conception as a zygote, embryo or fetus or the trimester of the pregnancy is not part of the procedure code and would be obtained from the diagnosis code. The approaches for the obstetrical section are the same as the medical and surgical section. The device character has the same definition as the medical and surgical section and is used for devices such as fetal monitoring electrodes. The qualifier character is specific to the root operation; it is used to specify the type of delivery (e.g., low forceps, high forceps, etc.), the type of C-section (e.g., classical, low cervical, etc.) or the type of fluid taken out during a drainage (e.g., amniotic fluid, fetal blood, etc.).

### Placement Procedures

The seven characters for the placement section have the following meaning:



Placement procedures, generally, refer to putting a device in or on a body region for the purpose of protection, immobilization, stretching, compression or packing. A placement procedure always has a device

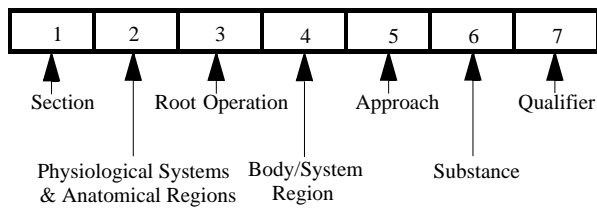
specified. Placement procedures have the first character specifying the section designated with the number “2”. For the placement section the body region/orifice has only two values indicating either body region or body orifice. The root operations *change* and *removal* are used in the placement section and have the same meaning as in the medical and surgical section. The placement section also includes five additional root operations which are defined as follows.

- Compression: Putting pressure on an external body part
- Dressing: Putting material on an external body part for protection
- Immobilization: Limiting or preventing motion of an external body part
- Packing: Putting material in a body part
- Traction: Exerting a pulling force on an external body part in a distal direction

The body regions for the placement section are either external body regions (e.g., upper leg) or natural orifices. Since all placement procedures are performed on an external body region or within an orifice the approach is always none. The device character is always specified and indicates the material or device used in the placement procedure (e.g., cast, splint, bandage, etc.). Except for casts for fractures and dislocations, devices in the placement section are off the shelf and do not require any extensive design, fabrication or fitting. The placement of devices that require extensive design, fabrication or fitting are coded in the rehabilitation section. The qualifier character is not used in the placement section.

### Administration

The seven characters for the administration section have the following meaning:



Administration procedures refer to the putting in or on a therapeutic, prophylactic, protective, diagnostic, nutritional or physiological substance. Administration procedures have the first character specifying the section designated with the number "3". For the administration section the body system has only two values indicating physiological system and anatomical region or circulatory system. The circulatory body system is used for transfusion procedures. There are three root operations for the administration section.

**Introduction:** Putting in or on a therapeutic, diagnostic, nutritional, physiological or prophylactic substance except blood or blood products

**Irrigation:** Putting in or on and retrieving a liquid substance

**Transfusion:** Putting in blood or blood products

The fourth character specifies the body system/region which is the site where the administration occurs and not the site where the substance administered has an effect. The sites include skin and mucous membrane, subcutaneous tissue and muscle which are used to differentiate intradermal, subcutaneous and intramuscular injections. Character 5 specifies the approach and has the same meaning as in the medical and surgical section. The approach for intradermal, subcutaneous and intramuscular introductions (i.e., injections) would be percutaneous. If a catheter is used to introduce a substance into an internal site within the circulatory system, then the approach would be percutaneous intraluminal. Thus, if a catheter is used to

introduce contrast directly into the heart for angiography, then the procedure would be coded as a percutaneous intraluminal introduction of contrast into the heart.

The body systems/regions for arteries and veins are peripheral artery, central artery, peripheral vein and central vein. The peripheral artery or vein is used when a substance is introduced locally into an artery or vein. For example, chemotherapy would be the introduction of an antineoplastic substance into a *peripheral artery* or vein by a percutaneous intraluminal approach. In general, the substance introduced into a peripheral artery or vein has a systemic effect and not a local effect.

The central artery or vein is used when the site within the artery or vein where the substance is introduced is distant from the point of entry of the instrumentation into the artery or vein. The introduction of a substance using a catheter directly at the site of a clot within an artery or vein would be coded as an introduction of a thrombolytic substance into a *central artery or vein* by a percutaneous intraluminal approach. In general, the substance introduced into a central artery or vein has a local effect.

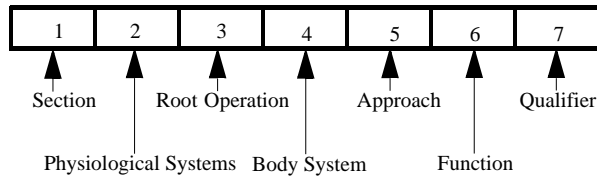
The sixth character specifies the substance being introduced. There are broad categories of substances, such as anesthetics, contrast, or dialysate, plus blood products specified in Character 6.

Character 7 is a qualifier and is used to indicate whether the introduction is single or continuous. Continuous introductions are used to specify that the introduction of the substance required more than 15 minutes. A standard IV would be a continuous introduction of an electrolytic and water balance substance into a peripheral vein by a percutaneous intraluminal approach. For the circulatory body system, the quali-

fiers autologous and nonautologous are used to describe the substance administered.

### Measurement and Monitoring

The characters for the measuring and monitoring section have the following meaning:



Measurement and monitoring procedures refer to the determination of the level of a physiological or physical function. If the equipment used to perform the measurement or monitoring is a device that is inserted and left in, then the insertion of the device is coded as a separate procedure. Measurement and monitoring procedures have the first character specifying the section designated with the number 4. For the measurement and monitoring section, the physiological system has only one value. There are two root operations in the measurement and monitoring section which are defined as:

**Measurement:** Determining the level of a physiological or physical function at a point in time

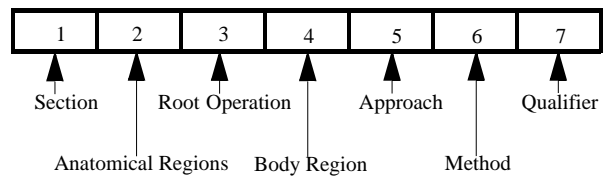
**Monitoring:** Determining the level of a physiological or physical function repetitively over a period of time

The fourth character specifies the specific body system which is being measured or monitored. The fifth character specifies the approach which has the same meaning as the medical and surgical section. The sixth character specifies the precise physiological or physical function being measured or monitored. Examples of physiological or physical functions would be conductivity, metabolism, pulse, temperature or volume. The seventh character

is the qualifier which is unique for each procedure. An EKG would be the measurement of cardiac electrical activity while an EEG would be the measurement of electrical activity of the central nervous system. A cardiac catheterization performed to measure the pressure in the heart would be coded as the measurement of cardiac pressure by a percutaneous intraluminal approach.

### Osteopathic

The seven characters for the osteopathic section have the following meaning:



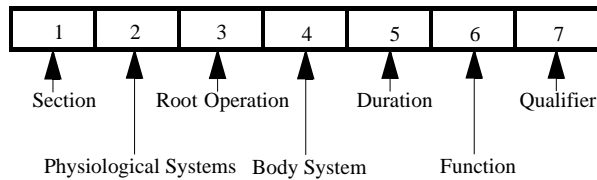
Osteopathic procedures have the first character specifying the section designated with the number "8". For the osteopathic section, the body system character has only one value, anatomical regions. There is only one root operation in the osteopathic section.

**Treatment:** Manual treatment to eliminate or alleviate somatic dysfunction and related disorders

The fourth character specifies the body region on which the osteopathic manipulation is performed. The approach for osteopathic manipulations is always *none*. The sixth character is the method which specifies the means by which the manipulation is accomplished. The seventh character is not used in the osteopathic section and always has the value *none*.

### Extracorporeal Assistance and Performance

The seven characters for the extracorporeal assistance and performance section have the following meaning:



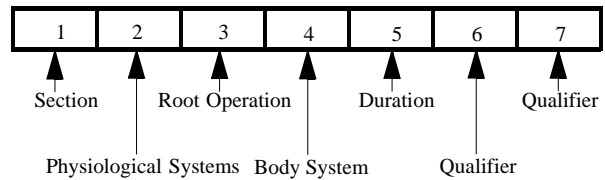
In an extracorporeal assistance and performance procedure, equipment external to the body is used to assist or perform a physiological function. Extracorporeal assistance and performance procedures have the first character specifying the section designated with the letter “B”. For the extracorporeal assistance and performance section, the physiological system has only one value. There are three root operations in the extracorporeal assistance and performance section.

- Assistance: Taking over a portion of a physiological function by extracorporeal means
- Performance: Completely taking over a physiological function by extracorporeal means
- Restoration: Returning, or attempting to return, a physiological function to its natural state by extracorporeal means

The fourth character specifies the body system (e.g., cardiac, respiratory, etc.) for which extracorporeal assistance or performance is being used. The fifth character specifies the duration of the extracorporeal assistance or performance (i.e., single, intermittent or continuous). For respiratory ventilation assistance or performance, the range of hours is specified (<24 hours, 24-96 hours or >96 hours). The sixth character specifies the physiological function being assisted or performed (e.g., oxygenation, ventilation, etc.). The seventh character is a qualifier which specifies the type of equipment used in the extracorporeal assistance or performance.

### Extracorporeal Therapies

The seven characters for the extracorporeal therapies section have the following meaning:



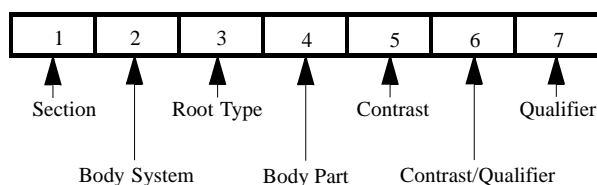
In an extracorporeal therapy, equipment external to the body is used for a therapeutic purpose that does not involve the assistance or performance of physiological function. Extracorporeal therapies have the first character specifying the section designated with the letter “C”. For the extracorporeal therapy section, the physiological system has only one value. There are six root operations in the extracorporeal therapy section.

- Decompression: Extracorporeal elimination of undissolved gas from body fluids
- Hyperthermia: Extracorporeal raising of body temperature
- Hypothermia: Extracorporeal lowering of body temperature
- Pheresis: Extracorporeal separation of blood products
- Phototherapy: Extracorporeal treatment by light rays
- Ultraviolet Light Therapy: Extracorporeal treatment by ultraviolet light

The fourth character specifies the body system on which the extracorporeal therapy is performed (e.g., skin, circulatory, etc.). The fifth character specifies the duration of the extracorporeal therapy (e.g., single or intermittent). The sixth character is not used for extracorporeal therapies and always has the value none. The seventh character is a qualifier which is only used to specify the components of the circulatory system on which pheresis is performed.

### Imaging Procedures

The seven characters for imaging procedures have the following meaning:



The section for imaging procedures is indicated by the number “5” in the first character. Imaging procedures include plain film, Fluoroscopy, CT, MRI, and Ultrasound. Nuclear medicine procedures including PET, uptakes and scans are in the nuclear medicine section and therapeutic radiology is in the radiation oncology section.

The second character is the body system and the fourth character is the body part. The third character is the root type of imaging procedure (e.g, MRI, Ultrasound, etc.). Table 7 contains the list of all root types for the imaging section with a definition of each root type. The fifth character specifies the type of contrast material used in the imaging procedure (e.g., high or low osmolar). When the concentration of the contrast is not relevant (e.g., air) or for MRIs (e.g., Gadoteridol) the specific contrast is specified. An “Identification Not Requested” option is allowed for character 5 in the imaging section to be used in hospitals and other institutions where detailed information about contrast material is not requested by the payor.

The sixth character provides either fur-

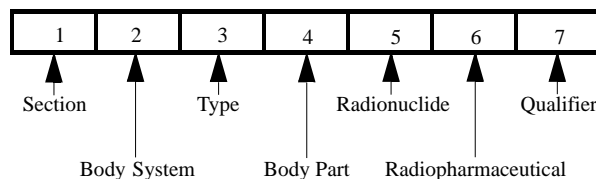
ther detail about the contrast material such as specifying the route of administration (e.g., IV, direct, via colostomy) or contains a qualifier specific to the root type of imaging procedure. For example, for plain radiography procedures without contrast, character 6 indicates if the procedure was done at the bedside (portable).

The seventh character is a qualifier that has a unique meaning for individual imaging procedures. (e.g., Cine evaluation, plain film subtraction, etc.)

Contrast (character 5), contrast/qualifier (character 6) and qualifier (character 7) are not applicable to all imaging procedures.

### Nuclear Medicine

The seven characters for the nuclear medicine section have the following meaning:



Nuclear medicine is the introduction of radioactive material into the body in order to create an image, to diagnose and treat pathologic conditions and to assess metabolic functions. The nuclear medicine sec-

Plain Radiography	Planar display of an image developed from the capture of external ionizing radiation on photographic or photoconductive plate.
Fluoroscopy	Single plane or bi-plane real time display of an image developed from the capture of external ionizing radiation on fluorescent screen. The image may also be stored by either digital or analog means.
Computerized Tomography (CT Scan)	Computer-reformatted digital display of multiplanar images developed from the capture of multiple exposures of external ionizing radiation.
Magnetic Resonance Imaging (MRI)	Computer reformatted digital display of multiplanar images developed from the capture of radio frequency signals emitted by nuclei in a body site excited within a magnetic field.
Ultrasonography	Real time display of images of anatomy or flow information developed from the capture of reflected and attenuated high frequency sound waves.

**Table 7:** Imaging Procedure Definitions



tion does not include the introduction of encapsulated radioactive material for the treatment of oncologic disease which is included in the radiation oncology section.

Nuclear medicine procedures have the first character specifying the section designated by the number “6”. The second character represents the body system on which the nuclear medicine procedure is performed. The third character indicates the type of nuclear medicine procedure (e.g., planar imaging or non-imaging uptake). Table 8 contains the list of the types of nuclear medicine procedures with a definition of each type.

The fourth character indicates the body part or body region being studied.

Regional (e.g., lower extremity veins) and combination (e.g., liver and spleen) body parts are commonly used in this section.

The fifth and sixth characters together specify the radiopharmaceutical used in the nuclear medicine procedure. Charac-

ter 5 specifies the radionuclide which is the source of the radiation and character 6 specifies the radiopharmaceutical agent.

As with devices in the medical and surgical section, a “not elsewhere classified” (NEC) option is included in the nuclear medicine section to be used for newly approved radiopharmaceuticals until they can be explicitly added to the coding system. An “Identification Not Requested” option is allowed for characters 5 and 6 in the nuclear medicine section to be used in hospitals and other institutions where reporting of the radiopharmaceutical is not requested by the payor.

The seventh character is a qualifier and provides further details on the specific nuclear medicine procedure performed. For example, the qualifiers used with tomographic imaging of the heart include rest, stress and wall motion.

If more than one introduction of radiopharmaceutical is carried out then more than one code is used to describe a single

Planar Imaging	Introduction of radioactive materials into the body for single plane display of images developed from the capture of radioactive emissions.
Tomographic (Tomo) Imaging	Introduction of radioactive materials into the body for three dimensional display of images developed from the capture of radioactive emissions.
Positron Emission Tomographic (PET) Imaging	Introduction of radioactive materials into the body for three dimensional display of images developed from the simultaneous capture, 180 degrees apart, of radioactive emissions.
Nonimaging Uptake	Introduction of radioactive materials into the body for measurements of organ function, from the detection of radioactive emissions.
Nonimaging Probe	Introduction of radioactive materials into the body for the study of distribution and fate of certain substances by the detection of radioactive emissions; or, alternatively, measurement of absorption of radioactive emissions from an external source.
Nonimaging Assay	Introduction of radioactive materials into the body for the study of body fluids and blood elements, by the detection of radioactive emissions.
Systemic Therapy	Introduction of unsealed radioactive materials into the body for treatment.

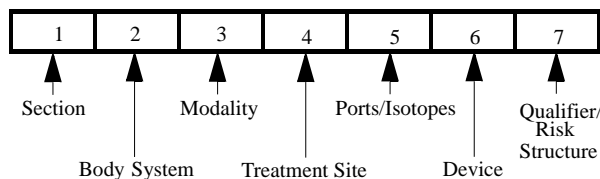
**Table 8: Nuclear Medicine Procedure Definitions**

nuclear medicine procedure. For example, a thallium scan of the heart during stress and at rest will have both a code for the stress study and a second code for a rest study. When the procedure has two imaging sessions performed at different times, but not an additional administration of a radiopharmaceutical, the two imaging procedures are noted in the qualifier column. For example, a stress with redistribution thallium study has a qualifier to indicate the two separate imaging sessions.

Occasionally two radiopharmaceuticals are used for a nuclear medicine procedure, and imaging is done simultaneously. Two distinct codes are used, because two radiopharmaceutical introductions have been done.

### Radiation Oncology

The seven characters for radiation oncology procedures have the following meaning:



The section for radiation oncology is indicated by the number “7” in the first character. The radiation oncology section includes all radiation oncology procedures, including all treatment simulations and medical physics treatment support procedures performed as part of radiation oncology. The second character is the body system (e.g., Central Nervous System, Musculoskeletal) which is being irradiated. The third character specifies the modality or type of radiation which is being used (e.g., photons, electrons). The fourth character specifies the body part that is the target of the radiation therapy. Character 5 provides a count of the ports used or

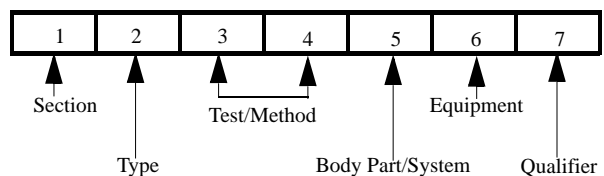
the isotopes introduced into the body. Ports are the number of beams directed at the body part which is receiving the radiation. Character 6 specifies the equipment used during a radiation oncology procedure. The equipment includes external protective devices which may be prefabricated or custom designed and constructed specifically for individual patients, implant devices and other devices which are an integral part of the radiation oncology procedure (e.g., Gamma Knife). Character 7 represents a qualifier to the radiation oncology procedure. For radiation oncology treatments and simulations, character 7 specifies the risk structures that are taken into account as part of the intervention (e.g., eye, brain stem, spinal cord). The risk structures are body parts that may be exposed to radiation and must be taken into account during the radiation oncology procedure.

For medical physics procedures, the qualifier identifies the specific medical physics activity performed (e.g., dosimetry, irregular field calculation).

An “Identification Not Requested” option is allowed for characters 5,6 and 7 in the radiation oncology section and is used in hospitals and other institutions where reporting this level of detail is not requested by the payor.

### Rehabilitation and Diagnostic Audiology

The seven characters for the rehabilitation and diagnostic audiology section have the following meaning:



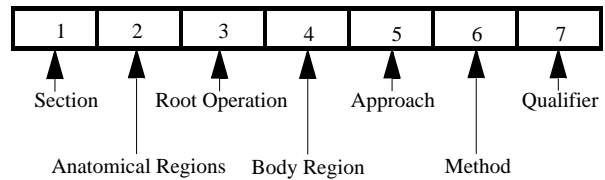
Rehabilitation procedures include physical therapy, occupational therapy and speech-language pathology. Osteopathic procedures and chiropractic procedures are in separate sections. Rehabilitation and diagnostic audiology procedures have the first character specified with the number “9”. The type of procedure is specified in the second character. There are 4 different types of rehabilitation and diagnostic audiology procedures which are defined as follows:

Treatment:	Use of specific activities or methods to develop, improve and/or restore the performance of necessary functions, compensate for dysfunction and/or minimize debilitation.
Assessment:	Includes a determination of the patient’s diagnosis when appropriate, need for treatment, planning for treatment, periodic assessment and documentation related to these activities.
Fitting(s):	Design, fabrication, modification, selection and/or application of splint, orthosis, prosthesis, hearing aids and/or other rehabilitation device.
Caregiver Training:	Educating caregiver with the skills and knowledge used to interact with and assist the patient.

The root operation *treatment* includes training as well as activities which restore function. The third and fourth characters specify the exact test or method employed. For example, therapy to improve the range of motion as well as training for bathing techniques are two different types of treatment. The fifth character is the body part or system for which the procedure is being performed. Character 6 specifies the type of equipment used. Specific types of equipment are not specified. Rather, broad categories of equipment are specified (e.g., aerobic endurance and conditioning equipment, assistive/adaptive/supportive devices, etc.) The seventh character is a qualifier and is only used for certain test/methods to specify whether the test/method is group or individual.

## Chiropractic

The seven characters for the chiropractic section have the following meaning:



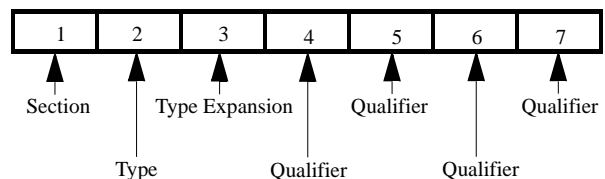
Chiropractic procedures have the first character specifying the section designated with the letter “G”. For the chiropractic section, the body system has only one value. There is only one root operation in the chiropractic section.

Treatment: Manual treatment of the musculoskeletal system to restore normal neurophysiological function

The fourth character specifies the body site on which the chiropractic manipulation is performed. The approach for chiropractic manipulation is always none. The sixth character is the method which specifies the means by which the manipulation is accomplished. The seventh character is not used in the chiropractic section and always has the value none.

## Mental Health

The seven characters for the mental health section have the following meaning:

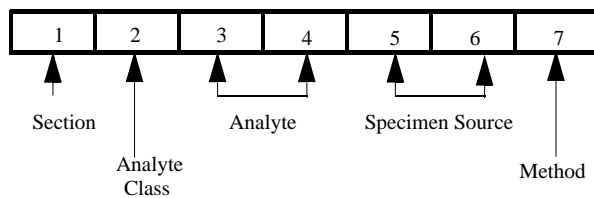


The mental health section provides codes to describe the full range of services provided by psychiatrists and other mental health professionals. The first character for Mental Health procedures is “F”. The second character specifies the type of procedure, such as crisis intervention, or counseling. The third character is for pro-

cedure type expansion (e.g., to indicate that counseling was educational or vocational). The fourth character is a qualifier. Characters 5,6 and 7 are never used and always have the value of none.

## Laboratory Procedures

The seven characters for the laboratory section have the following meaning:



Laboratory procedure codes are identified by the letter “D” in the first character.

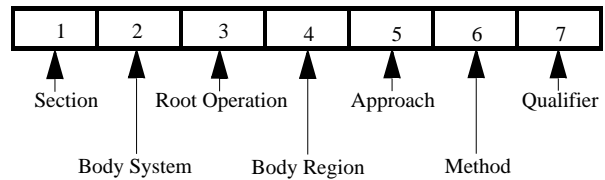
The second character, the analyte class, is a categorization of the major classes of tests that are performed. There are six major classes and two extensions, in the laboratory section: Blood Bank, Hematology, Chemistry and Other Chemistry, Microbiology and Other Microbiology, Toxicology and Pathology.

The third and fourth characters specify the analyte, (i.e., the material being identified or measured for each analyte class) (e.g., calcium, hematocrit). The fifth and sixth characters identify the specimen if applicable (e.g., cerebral spinal fluid).

Character seven is the method used in the analysis (e.g., stain, culture). It is not always necessary to specify the method to be used in a laboratory test. When a specific method is not requested, standard method is used in character seven.

## Miscellaneous

The seven characters for the miscellaneous section have the following meaning:



The miscellaneous section includes acupuncture, therapeutic massage and yoga therapy. The first character for miscellaneous section procedures is “H”. The one value for body system is “anatomical region”. The miscellaneous section has only one root operation which is defined as follows:

Other Therapies: Methodologies which attempt to remediate or cure a disorder or disease.

There is only one body region indicating the whole body. There is no approach, so the approach is always none. Character 6 designates the method (i.e., Acupuncture, Therapeutic Massage or Yoga Therapy). There are no qualifiers, so none is always assigned to the seventh character.

## Modifications to ICD-10-PCS

Throughout the development of ICD-10-PCS, extensive input from a wide range of organizations was obtained. A Technical Advisory Panel which included representatives from the American Health Information Management Association, American Hospital Association and the American Medical Association provided review and comment throughout the development of ICD-10-PCS.

The initial draft of ICD-10-PCS was widely disseminated. Both a paper and computerized version of the system were made available. Copies of ICD-10-PCS were distributed to all major physician specialty societies. HCFA made ICD-10-PCS available on its web site.

As a result of feedback from the extensive review of ICD-10-PCS, the system was modified from its initial version to

reflect the suggestions from the reviewers. The most frequent issue identified by reviews was missing tabular entries, (i.e., procedures were identified for which there was no corresponding tabular entry). Missing tabular entries most often related to the need to allow additional approaches for a specific procedure (e.g., a wide range of procedures that previously could only be performed by an open approach can now be performed by a percutaneous or percutaneous endoscopic approach). Several additional root operations were defined in the medical and surgical section (e.g., fusion). The approaches were simplified. Originally, there were 17 different approaches. The approaches that specified that the access location was the lining of an orifice or was within the orifice itself were eliminated. These approaches did not constitute a critical distinction in describing the procedure performed. These approaches were incorporated into the other approaches by modifying the definition of some of the other approaches. These changes reduced the number of approaches to 13. Biopsy is not a root operation since it is usually a form of an excision. Many reviewers suggested that it was important to distinguish biopsies from therapeutic excisions. Therefore, a qualifier specifying that the excision was diagnostic was added.

One of the most frequent issues raised concerning ICD-10-PCS was the issue of NOS codes. The concern was that sufficient specificity of documentation may not be present in the medical record to support the detail required by ICD-10-PCS. Originally, ICD-10-PCS did not provide for NOS codes. As a result of these concerns, modifications were made to ICD-10-PCS to address this issue. Since ICD-10-PCS is a multi-axial system, the NOS issue was addressed separately for each character.

In the Medical and Surgical section, the NOS issue primarily relates to the root operation, body part and approach characters. The operation *repair* is an operation of exclusion. Most of the other 29 root operations constitute some type of repair. However, if the objective of the procedure meets the definition of one of the other root operations then *repair* is not coded. *Repair* is only coded when none of the other operations apply. In essence, *repair* is the NOS option for the root operation character. The ICD-10-PCS coding instructions were modified to indicate that if the root operation can not be determined from the documentation and the necessary information could not be obtained from the physician, then the root operations *repair* should be coded.

In order to address the issue of insufficient anatomic specificity in the medical record, the use of generic body parts was expanded. If the precise body part was not specified, then the option of coding a generic body part was added. For example, originally, for excision of the liver the precise part of the liver excised was required (i.e., right lobe, left lobe or caudate lobe). The generic body part “liver” was added as an option. Thus, if the documentation in the medical record does not indicate the precise part of the liver and the specification of the precise body part of the liver could not be obtained from the physician, then the coder has the option of simply coding the body part as liver. This in essence, provides the user with a “liver NOS” option. The coder will still need to identify the broad anatomic regions but will have a coding option when the full anatomic detail is not available in the medical record and the necessary information could not be obtained from the physician.

There are four broad approach types: open, percutaneous, transorifice and

none. The ICD-10-PCS coding instructions were modified to indicate that if the full detail on the type of approach can not be determined, then the most basic open, percutaneous or transorifice approach should be coded. Minimally, the coder will still need to be able to specify whether the approach was open, percutaneous, transorifice or none. This distinction is so fundamental to the description of the procedure that any less specificity relative to the approach would not be appropriate.

While the NOS issue primarily related to the medical and surgical section, there were also NOS related issues in some of the other sections of ICD-10-PCS. The imaging, nuclear medicine and radiation oncology sections of ICD-10-PCS allow the reporting of detail relating to the procedure that may not be readily available in the hospital medical record. Further, in these sections the level of detail allowed by ICD-10-PCS, while important for internal management, may not be required by payors. For the characters in these sections where the full detail of ICD-10-PCS may not be required an “Identification Not Requested” option is provided. The sections and characters for which an Identification Not Requested Option is provided are summarized in Table 9.

Section	Character
Imaging	Character 5 - Contrast
Nuclear Medicine	Character 5 - Radionuclide
	Character 6 - Radiopharmaceutical
Radiation Oncology	Character 5 - Ports/Isotopes
	Character 6 - Device
	Character 7 - Risk structure

**Table 9:** Sections and characters for which an Identification Not Requested option is provided

The Identification Not Requested option allows the procedure to be coded excluding the detail specified in the characters in

Table 9.

The modifications made to ICD-10-PCS to address the NOS issue strike a balance between a precise description of the procedure and the realities of the current state of medical records documentation.

### Number of Codes in ICD-10-PCS

Table 10 summarizes the number of codes by section in the final draft of ICD-10-PCS. The number in parenthesis for the imaging, nuclear medicine and radiation oncology sections specify the number of additional codes that would be present if the full detail associated with the Identification Not Requested characters in Table 9 were included.

Section	Number of Codes
Medical and Surgical	176,367
Obstetrics	322
Placement	831
Administration	1,228
Measurement and Monitoring	224
Imaging	9,433 (13,141)
Nuclear Medicine	365 (1,011)
Radiation Oncology	1,225 (308,015)
Osteopathic	100
Rehabilitation and Diagnostic Audiology	1,705
Extracorporeal Assistance and Performance	28
Extracorporeal Therapies	20
Laboratory	2,681
Mental Health	283
Chiropractic	100
Miscellaneous	3
Total	194,915

**Table 10:** Number of ICD-10-PCS codes by section

There are a total of 197,769 codes in ICD-10-PCS which represents a substantial increase in the number of codes relative to ICD-9-CM procedure codes. The

grid structure of ICD-10-PCS permits the specification of a large number of codes on a single page in the Tabular division. The combined Tabular and Index divisions of ICD-10-PCS are 1,087 pages which is approximately half the size of the Tabular and Index in the ICD-10 diagnosis coding manual from the World Health Organization.

### **Testing of ICD-10-PCS**

As an informal test in October 1996, seventy health information professionals were trained in ICD-10-PCS. After the training, they coded a sample of records from their institutions using ICD-10-PCS and reported suggestions and problems to the ICD-10-PCS project staff.

HCFA conducted a formal test of ICD-10-PCS in order to determine if it would be a practical replacement for the current ICD-9-CM procedures. HCFA used two contractors to evaluate ICD-10-PCS. The contractors were the two Clinical Data Abstraction Centers (CDACs): DynKePRO in York, PA, and FMAS in Columbia, MD.

As part of a contract awarded in 1994, the primary task of the CDACs has been to collect clinical data from about 1.5 million medical records over five years. The primary end product of the CDAC contracts was the development of accurate and reliable clinical data in quantities sufficient to support the analytical efforts of the PROs as they carry out the Health Care Quality Improvement Program. Since the CDACs had a ready supply of current medical records and extensive experience in reviewing, abstracting and coding medical records, they were selected to test ICD-10-PCS.

Using the ICD-10-PCS training manual, the CDACs were trained for two days on the medical/surgical part of the system,

and a separate one-day session was held for the remaining sections (nuclear medicine, radiation oncology osteopathic, etc.) The CDACs then spent several weeks coding with ICD-10-PCS to gain experience. Conference calls were held to answer questions prior to the start of the formal testing.

In the first phase of the test, a sample of 5000 medical records (2500 per CDAC) was selected, identifying cases with a wide distribution of ICD-9-CM procedure codes. The CDACs coded the cases using ICD-10-PCS and noted any questions or concerns. These questions and other issues were forwarded to project staff, which then responded on an ongoing basis. As a result of this interaction, a list of revisions to the final draft was made. This included terms that needed clarification and omissions in the tabular list or index sections. In addition, areas where the training manual could be improved were identified.

In the second phase of the test, a subset of 100 medical records was recoded blindly using both ICD-9-CM and ICD-10-PCS. The reviewers coded the initial 50 records first with ICD-9-CM, then with ICD-10-PCS. For the last 50 records, they reversed the process and began with ICD-10-PCS. The systems were compared on issues such as ease of use, time needed to identify codes, number of codes required, problems identifying codes, strengths and weaknesses of each system, and any other issues identified by the coding personnel.

After an initial learning curve, the CDAC coders were able to use ICD-10-PCS easily, with a few challenges. Because of the added detail in ICD-10-PCS, it was occasionally necessary for the coders to utilize a medical dictionary or an anatomy textbook. The coders required a greater

understanding of anatomy and surgical terms to use ICD-10-PCS than is required for ICD-9-CM. As a result a greater amount of training time will be necessary for ICD-10-PCS than is currently required for ICD-9-CM. Although the initial ICD-10-PCS training manual was very useful, the CDACS felt that it needed to be strengthened with additional examples before any national training takes place. It was also suggested by the CDACs that the addition of diagrams of the body systems would be useful in the training manual.

Once the CDAC coders became proficient in ICD-10-PCS, they were able to suggest a number of improvements, such as additional index entries and revisions to the body site and approach characters. These suggestions were included in the final draft of ICD-10-PCS. The testing pointed out the ease with which ICD-10-PCS can be updated and expanded when issues are identified. Another area of concern was correct code assignment for records that did not provide enough documentation of a specific site or the type of procedure or when the coders did not have enough knowledge of anatomy to select a precise code. The concerns resulted in the modification of the ICD-10-PCS coding rules to address this issue.

A side-by-side comparison of ICD-10-PCS and ICD-9-CM was performed when the coders became proficient with the use of the new system. One CDAC reported that the staff did not detect a significant time difference in using ICD-10-PCS as compared to ICD-9-CM. The other CDAC found that ICD-10-PCS coding took somewhat longer. ICD-10-PCS sometimes required a greater number of codes than ICD-9-CM. This was due in part to the use in ICD-9-CM of more combination codes than in ICD-10-PCS. However, it was felt that the precision of ICD-10-PCS resulted

in greater detail about the nature of the procedure and was therefore worthwhile. It was suggested that once coders became familiar with the greater detail and precision of ICD-10-PCS, the result would be improved accuracy and efficiency of coding.

Both CDACs pointed out that once the coders were familiar with ICD-10-PCS, they rarely used the index. The ICD-10-PCS system was found to be so well organized and so well structured that coders could quickly find the correct section of the tabular list. The index was used more often when the coder was just learning the definitions of the root procedures and the other basic terms used in ICD-10-PCS. However, once coders understood ICD-10-PCS, they found it easy to code from the tabular section.

Both CDACs found ICD-10-PCS to be an improvement over ICD-9-CM as it provided greater specificity in coding for use in research, statistical analysis, and administrative areas. A major strength of the system was its detailed structure, which allowed users to recognize and report more precisely the procedures that were performed.

### **Comparison of ICD-10-PCS and ICD-9-CM**

In 1993, the National Committee on Vital & Health Statistics (NCVHS) issued a report concerning recommendations for a single procedure classification system. As part of this report, NCVHS identified the essential characteristics that a procedure classification system should possess. The characteristics listed in Table 11 are taken directly from the NCVHS report and summarizes the essential characteristics of a procedure coding system. Included in Table 11 is a comparison of ICD-9-CM and



NCVHS Characteristics	ICD-9-CM	ICD-10-PCS
<b>Hierarchical structure</b>		
Ability to aggregate data from individual codes into larger categories	The ability to aggregate by body system is provided but there is no ability to aggregate by other components of a procedure	The ability to aggregate across all essential components of a procedure is provided
Each code has a unique definition forever - not reused	Some codes do not have a unique definition because the codes have been reused	All codes have a unique definition
<b>Expandibility</b>		
Flexibility to new procedures and technologies ("empty" code numbers)	Minimal flexibility New procedures and technologies are difficult to incorporate. Virtually no empty code numbers	Extensive flexibility New procedures and technologies are easily incorporated. Unlimited empty code numbers available
Mechanism for periodic updating	Updated annually through Coordination and Maintenance Committee	Update process needs to be established. If ICD-10-PCS replaces ICD-9-CM, Coordination and Maintenance Committee would be responsible for update process
Code expansion must not disrupt systematic code structure	Code expansions are difficult to incorporate without disrupting systematic code structure	Code expansions do not disrupt systematic structure
<b>Comprehensive</b>		
Provides NOS and NEC categories so that all possible procedures can be classified somewhere	Extensive use of NOS and NEC categories. All procedures can be categorized somewhere. Broad NOS and NEC categories result in procedure codes which are ambiguously defined	Limited use of NOS and NEC categories. NEC and NOS categories are specific to each axis of code. All procedures can be categorized somewhere. Procedure codes are precisely defined even when NOS and NEC options are used
Includes all types of procedures	All types of procedures are included although there is minimal detail for many types of procedure	All types of procedures are included except evaluation and management procedures. Complete detail is provided for all types of procedures
Applicability to all setting and types of providers	All settings and types of providers are covered although there is minimal detail for many settings and types of providers	All settings and types of providers are covered except physician office services for evaluation and management. Complete detail is provided for all settings and types of providers
<b>Non-Overlapping</b>		
Each procedure (or component of a procedure) is assigned to only one code	The same procedure when performed for different diagnoses is sometimes assigned to multiple codes	Each procedure is assigned to only one code

Table 11: Comparison of ICD-9-CM and ICD-10-PCS Using the NCVHS Characteristics

NCVHS Characteristics	ICD-9-CM	ICD-10-PCS
<b>Ease of Use</b>		
Standardization of definitions and terminology	No standard definitions provided. Terminology is inconsistent across codes	All terminology is precisely defined. All terminology is used constantly across all codes
Adequate indexing and annotation for all users	Full index but specificity of index varies across codes	Full index. Index is computer generated so specificity of index is consistent across codes
<b>Setting and Provider Neutrality</b>		
Same code regardless of who or where procedure is performed	Codes are independent of who or where procedure is performed	Codes are independent of who or where procedure is performed
<b>Multi-axial</b>		
Body system(s) affected	Body system affected can be determined from code number	A specific character in the code specifies the body system effected
Technology used	Limited and inconsistent specification of technology used	Technology used is specified in the approach character of the code
Techniques/approaches used	Limited and inconsistent specification of techniques/approaches used	The techniques/approaches used are specified in the approach character of the code
Physiological effect or pharmacological properties	Limited and inconsistent specification of physiological effect and pharmacological properties	Physiological effect and pharmacological properties are specified when relevant to the procedure
Characteristics/composition of implant	Limited an inconsistent specification of characteristics/composition of implant	The characteristics/composition of implants are specified in the device character of the code
<b>Limited to Classification of Procedures</b>		
Should not include diagnostic information	Diagnostic information is included for some codes	No diagnostic information is included in the code
Other data elements (such as age) should be elsewhere in the record	No other data elements included in code	No other data elements included in code

**Table 11:** Comparison of ICD-9-CM and ICD-10-PCS Using the NCVHS Characteristics (Continued)

ICD-10-PCS across each of the NCVHS characteristics. As the comparisons in Table 11 indicate, ICD-10-PCS meets virtually all the NCVHS characteristics while ICD-9-CM fails to meet many of the NCVHS characteristics.

In addition to the NCVHS characteristics, there are several other attributes of a procedure coding system that should be taken into consideration when comparing systems.

#### *Training Effort*

As the independent evaluation of ICD-10-PCS demonstrated there is a learning curve associated with ICD-10-PCS. Since the CDAC staff were trained ICD-9-CM coders, the independent evaluation did not include a formal comparison of the training time for ICD-10-PCS and ICD-9-CM. However, because of the additional specificity of ICD-10-PCS it is likely that the training time needed to achieve a minimum level of coding proficiency is greater with ICD-10-PCS than with ICD-9-CM. While it may take longer to reach a minimum level of proficiency with ICD-10-PCS, it should take less time to become highly proficient with ICD-10-PCS than with ICD-9-CM. Because ICD-9-CM lacks clear definitions and many substantially different procedures are coded with the same code, the identification of the correct code requires extensive knowledge of the contents of *Coding Clinic* and other coding guidelines. Becoming completely familiar with all the conventions associated with ICD-9-CM requires extensive effort and as a result, the process of becoming highly proficient in ICD-9-CM can require a long learning curve.

#### *Completeness and Accuracy of Codes*

The CDACs concluded that procedures coded in ICD-10-PCS provided a much more complete and accurate description of

the procedure performed. The specification of the procedures performed not only affects payment but is integral to internal management systems, external performance comparisons and the assessment of quality of care. The detail and completeness of ICD-10-PCS is essential in today's health care environment.

#### *Communications with Physicians*

ICD-9-CM procedure codes often provide a relatively poor description of the precise procedure performed. Thus, physicians reviewing or analyzing data coded in ICD-9-CM can have difficulty developing clinical pathways, evaluating the coding from a fraud and abuse perspective or performing research. The ICD-10-PCS codes provide a more clinically relevant description of procedures that can be more readily understood and used by physicians.

#### **Conclusion**

ICD-10-PCS has been developed as a replacement for Volume 3 of ICD-9-CM. The system has evolved during its five year development based on extensive input from many segments of the health care industry. The multi-axial structure of the system combined with its detailed definition of all terminology will permit a precise specification of procedures for use in health services research, epidemiology, statistical analysis and administrative areas. It will also enhance the ability of health information coders to determine accurate procedure codes with minimal effort.

## APPENDIX A

### Medical and Surgical Root Operation Definitions

Alteration	<p><b>Definition:</b> Modifying the natural anatomical structure of a body part without affecting the function of the body part</p> <p><b>Explanation:</b> Principal purpose is to improve appearance</p> <p><b>Examples:</b> Face lift Breast augmentation</p>
Bypass	<p><b>Definition:</b> Altering the route of passage of the contents of a tubular body part</p> <p><b>Explanation:</b> Rerouting contents around an area of a body part to another distal (down stream) area in the normal route; rerouting the contents to another different but similar route and body part; or to an abnormal route and another dissimilar body part.</p> <p><b>Examples:</b> Gastrojejunal bypass Coronary artery bypass</p>
Change	<p><b>Definition:</b> Taking out or off a device from a body part and putting back an identical or similar device in or on the same body part without cutting or puncturing the skin or a mucous membrane</p> <p><b>Explanation:</b> Requires no invasive intervention</p> <p><b>Example:</b> Change a drainage tube</p>
Control	<p><b>Definition:</b> Stopping or attempting to stop, postprocedural bleeding</p> <p><b>Explanation:</b> Confined to postprocedural bleeding and limited to the Anatomical Regions, Upper Extremities and Lower Extremities body systems</p> <p><b>Examples:</b> Control of postprostatectomy bleeding Control of postpneumonectomy bleeding</p>
Creation	<p><b>Definition:</b> Making a new structure that does not physically take the place of a body part</p> <p><b>Explanation:</b> Confined to sex change operations where genitalia are made</p> <p><b>Examples:</b> Create an artificial vagina in a male Create an artificial penis in a female</p>
Destruction	<p><b>Definition:</b> Eradicating all or a portion of a body part</p> <p><b>Explanation:</b> The actual physical destruction of all or a portion of a body part by the direct use of energy, force or a destructive agent. There is no tissue taken out.</p> <p><b>Examples:</b> Fulgurate a rectal polyp Crush a fallopian tube</p>
Detachment	<p><b>Definition:</b> Cutting off all or a portion of an extremity</p> <p><b>Explanation:</b> Pertains only to extremities. The body part determines the level of the detachment. All of the body parts distal to the detachment level are detached</p> <p><b>Examples:</b> Shoulder disarticulation Below knee amputation</p>
Dilation	<p><b>Definition:</b> Expanding the orifice or the lumen of a tubular body part</p> <p><b>Explanation:</b> Stretching by pressure using intraluminal instrumentation</p> <p><b>Examples:</b> Dilate the trachea Dilate the anal sphincter</p>

## Medical and Surgical Root Operation Definitions

Division	<p><b>Definition:</b> Separating, without taking out, a body part</p> <p><b>Explanation:</b> Separating into two or more portions by sharp or blunt dissection</p> <p><b>Examples:</b> Bisect an ovary Spinal cordotomy Divide a patent ductus</p>
Drainage	<p><b>Definition:</b> Taking or letting out fluids and/or gases from a body part</p> <p><b>Explanation:</b> The fluids or gases may be normal or abnormal</p> <p><b>Examples:</b> I &amp; D of an abscess Thoracentesis</p>
Excision	<p><b>Definition:</b> Cutting out or off, without replacement, a portion of a body part</p> <p><b>Explanation:</b> Involves the act of cutting with either a sharp instrument or other method such as a hot knife or laser. The qualifier “diagnostic” is used to identify excisions that are biopsies</p> <p><b>Examples:</b> Partial nephrectomy Liver biopsy Pulmonary segmentectomy</p>
Extirpation	<p><b>Definition:</b> Taking or cutting out solid matter from a body part</p> <p><b>Explanation:</b> Taking out solid matter (which may or may not have been broken up) by cutting with either a sharp instrument or other method such as a hot knife or laser, by blunt dissection, by pulling, by stripping or by suctioning, with the intent not to take out any appreciable amount of the body part. The solid matter may be imbedded in the tissue of the body part or in the lumen of a tubular body part.</p> <p><b>Examples:</b> Sequestrectomy Cholelithotomy</p>
Extraction	<p><b>Definition:</b> Taking out or off all or a portion of a body part</p> <p><b>Explanation:</b> The body part is not completely dissected free but is pulled or stripped by the use of force (e.g., manual, suction, etc.) from its location. The qualifier “diagnostic” is used to identify extractions that are biopsies.</p> <p><b>Examples:</b> Tooth extraction Vein stripping Dermabrasion</p>
Fragmentation	<p><b>Definition:</b> Breaking down solid matter in a body part</p> <p><b>Explanation:</b> Physically breaking up solid matter which is not normally present in a body part such as stones and foreign bodies. The break up may be accomplished by direct physical force or shock waves applied directly or indirectly through intervening layers. The resulting debris is not taken out but is passed from the body or absorbed by the body. The solid matter may be in the lumen of a tubular body part or in a body cavity.</p> <p><b>Examples:</b> Lithotripsy, urinary stones Lithotripsy, gallstones</p>
Fusion	<p><b>Definition:</b> Joining together portions of an articular body part rendering the articular body part immobile</p> <p><b>Explanation:</b> Confined to joints</p> <p><b>Examples:</b> Spinal fusion Ankle arthrodesis</p>

## Medical and Surgical Root Operation Definitions

Insertion	<p><b>Definition:</b> Putting in a nonbiological appliance that monitors, assists, performs or prevents a physiological function, but does not physically take the place of a body part</p> <p><b>Examples:</b> Implant a radioactive element Insert a diaphragmatic pacemaker</p>
Inspection	<p><b>Definition:</b> Visually and/or manually exploring a body part</p> <p><b>Explanation:</b> Looking at a body part directly or with an optical instrument or feeling the body part directly or through intervening body layers</p> <p><b>Examples:</b> Diagnostic arthroscopy Exploratory laparotomy</p>
Map	<p><b>Definition:</b> Locating the route of passage of electrical impulses and/or locating functional areas in a body part</p> <p><b>Explanation:</b> Confined to the cardiac conduction mechanism and the central nervous system</p> <p><b>Examples:</b> Map cardiac conduction pathways Locate cortical areas</p>
Occlusion	<p><b>Definition:</b> Completely closing the orifice or lumen of a tubular body part</p> <p><b>Explanation:</b> Can be accomplished intraluminally or extraluminally</p> <p><b>Examples:</b> Ligate the vas deferens Fallopian tube ligation</p>
Reattachment	<p><b>Definition:</b> Putting back in or on all or a portion of a body part</p> <p><b>Explanation:</b> Pertains only to body parts or appendages that have been severed. May or may not involve the re-establishment of vascular and nervous supplies.</p> <p><b>Examples:</b> Reattach penis Reattach a hand Replant parathyroids</p>
Release	<p><b>Definition:</b> Freeing a body part</p> <p><b>Explanation:</b> Eliminating abnormal compression or restraint by force or sharp or blunt dissection. Some of the restraining tissue may be taken out but none of the body part itself is taken out.</p> <p><b>Examples:</b> Lyse peritoneal adhesions Free median nerve</p>
Removal	<p><b>Definition:</b> Taking out or off a device from a body part</p> <p><b>Explanation:</b> May or may not involve invasive intervention</p> <p><b>Examples:</b> Remove a drainage tube Remove a cardiac pacemaker</p>
Repair	<p><b>Definition:</b> Restoring to the extent possible, a body part to its natural anatomical structure</p> <p><b>Explanation:</b> An operation of exclusion. Most of the other operations are some type of repair but if the objective of the procedure is one of the other operations then that operation is coded. If none of the other operations are performed to accomplish the repair then the operation "repair" is coded.</p> <p><b>Examples:</b> Tracheoplasty Suture laceration Herniorrhaphy</p>

## Medical and Surgical Root Operation Definitions

Replacement	<p><b>Definition:</b> Putting in or on a biological or synthetic material that physically takes the place of all or a portion of a body part</p> <p><b>Explanation:</b> The biological material may be living similar or dissimilar tissue from the same individual or non-living similar or dissimilar tissue from the same individual, another individual or animal. The body part replaced may have been previously taken out, previously replaced, or may be taken out concomitantly with the replacement.</p> <p><b>Examples:</b> Replace external ear with synthetic prosthesis Total hip replacement Replacement of part of the aorta Free skin graft Pedicle skin graft</p>
Reposition	<p><b>Definition:</b> Moving to its normal location or other suitable location all or a portion of a body part</p> <p><b>Explanation:</b> The body part repositioned is aberrant, compromised or may have been detached. If attached, it may or may not be detached to accomplish the repositioning</p> <p><b>Examples:</b> Reposition undescended testicle Reposition an aberrant kidney</p>
Resection	<p><b>Definition:</b> Cutting out or off, without replacement, all of a body part</p> <p><b>Explanation:</b> Involves the act of cutting with either a sharp instrument or other method such as a hot knife or laser</p> <p><b>Examples:</b> Total gastrectomy Pneumonectomy Total nephrectomy</p>
Restriction	<p><b>Definition:</b> Partially closing the orifice or lumen of a tubular body part</p> <p><b>Explanation:</b> Can be accomplished intraluminally or extraluminally</p> <p><b>Examples:</b> Fundoplication Cervical cerclage</p>
Revision	<p><b>Definition:</b> Correcting a portion of a previously performed procedure</p> <p><b>Explanation:</b> Redoing a portion of a previously performed procedure that has failed to function as intended. Revisions exclude the complete redo of the procedure and procedures to correct complications that do not require the redoing of a portion of the original procedure, such as the control of bleeding.</p> <p><b>Examples:</b> Revise hip replacement Revise gastroenterostomy</p>
Transfer	<p><b>Definition:</b> Moving, without taking out, all or a portion of a body part to another location to take over the function of all or a portion of a body part</p> <p><b>Explanation:</b> The body part transferred is not detached from the body. Its vascular and nerve supply remain intact. The body part whose function is taken over may or may not be similar.</p> <p><b>Examples:</b> Nerve transfer Tendon transfer</p>
Transplantation	<p><b>Definition:</b> Putting in or on all or a portion of a living body part taken from another individual or animal to physically take the place and/or function of all or a portion of a similar body part</p> <p><b>Explanation:</b> The native body part may or may not be taken out. The transplanted body part may either physically take the place of the native body part or simply take over all or a portion of its function.</p> <p><b>Examples:</b> Lung transplant Kidney transplant</p>

## Appendix B

### Comparison of Medical and Surgical Root Operations

Operation	Action	Object	Modification	Example
<b>Operations that take out or eliminate all or a portion of a body part:</b>				
Excision	Cutting out or off	Portion of a body part	Without replacement of the body part	Sigmoid polypectomy
Resection	Cutting out or off	All of a body part	Without replacement of the body part	Total nephrectomy
Extraction	Taking out or off	All or a portion of a body part	Without replacement of the body part	Toenail extraction
Destruction	Eradicating	All or a portion of a body part	Without replacement of the body part	Fulgurate rectal polyp
Detachment	Cutting off	All or a portion of an extremity	Without replacement of the extremity	Below the knee amputation
<b>Operations that involve putting in or on, putting back, or moving living body parts:</b>				
Transplantation	Putting in or on	All or a portion of a living body part	Taken from other individual or animal; physically takes the place and/or function of all or a portion of a body part	Heart transplant
Reattachment	Putting back in or on	All or a portion of a body part	Body part was detached	Reattach finger
Reposition	Move	All or a portion of a body part	Put in its normal or other suitable location. Body part may or may not be detached	Undescended testicle
Transfer	Move	All or a portion of a body part	Without taking out the body part; takes over function of similar body part	Tendon transfer
<b>Operations that take out or eliminate solid matter, fluids, or gases from a body part:</b>				
Drainage	Taking or letting out	Fluid and/or gases from a body part	Without taking out any of the body part	I & D of an abscess
Extirpation	Taking or cutting out	Solid matter in a body part	Without taking out any of the body part	Sequestrectomy
Fragmentation	Breaking down	Solid matter in a body part	Without taking out any of the body part or any of the solid matter	Lithotripsy, gallstones



## Comparison of Medical and Surgical Root Operations

Operation	Action	Object	Modification	Example
<b>Operations that only involve examination of body parts and regions:</b>				
Inspection	Visual and/or manual exploration	A body part	None	Diagnostic arthroscopy
Map	Locating	Route of passage of electrical impulses. Functional areas in a body part.	None	Cardiac conduction pathways. Locate cortical areas
<b>Operations that can be performed only on tubular body parts:</b>				
Bypass	Altering the route of passage	Contents of tubular body part	May include use of living tissue, non living biological material or synthetic material which does not take the place of the body part	Gastrojejunal bypass
Dilation	Expanding	Orifice or lumen of a tubular body part	By application of pressure	Dilate anal sphincter
Occlusion	Completely closing	Orifice or lumen of a tubular body part	None	Fallopian tube ligation
Restriction	Partially closing	Orifice or lumen of a tubular body part	None	Cervical cerclage
<b>Operations that always involve devices:</b>				
Insertion	Putting in	Non biological appliance	Does not physically take the place of body part	Pacemaker insertion
Replacement	Putting in or on	Biological or synthetic material; living tissue taken from same individual	Physically takes the place of all or a portion of a body part	Total hip replacement
Removal	Taking out or off	Device	None	Remove cardiac pacemaker
Change	Taking out or off and putting back	Identical or similar device	Without cutting or puncturing the skin or mucous membrane	Change a drainage tube

## Comparison of Medical and Surgical Root Operations

Operation	Action	Object	Modification	Example
<b>Miscellaneous operations:</b>				
Alteration	Modifying	Natural anatomical structures of a body part	Without affecting function of a body part	Face lift
Creation	Making	New structure	Does not physically take the place of a body part	Artificial vagina
Control	Stopping or attempting to stop	Postprocedural bleeding	Limited to anatomic regions and extremities	Control of postprostatectomy bleeding
Division	Separating	A body part	Without taking out any of the body part	Bisect ovary
Fusion	Joining together	An articular body part	Rendering body part immobile	Spinal fusion
Release	Freeing	A body part	By eliminating compression or restriction; without taking out any of the body part	Lyse peritoneal adhesions
Repair	Restoring	To the extent possible, a body part to its natural anatomic structure	May include use of living tissue, nonliving biological material or synthetic material which does not take the place or take over the function of the body part	Hernia repair
Revision	Correcting	Portion of a previously performed procedure	Procedure failed to function as intended	Revise hip replacement

## APPENDIX C

### Components of the Medical and Surgical Approach Definitions

Access Location	Method	Type of Instrumentation	Route	Approach	Example
Skin or Mucous Membrane	Open	N/A	N/A	Open	Abdominal Hysterectomy
Skin or Mucous Membrane	Open Instrumental	Without Visualization	Intraluminal	Open Intraluminal	Common Duct Exploration
Skin or Mucous Membrane	Open Instrumental	With Visualization	Intraluminal	Open Intraluminal Endoscopic	Open Colonoscopy with Polypectomy
Skin or Mucous Membrane	Instrumental	Without Visualization	N/A	Percutaneous	Needle Biopsy of Liver
Skin or Mucous Membrane	Instrumental	With Visualization	N/A	Percutaneous Endoscopic	Arthroscopy
Skin or Mucous Membrane	Instrumental	Without Visualization	Intraluminal	Percutaneous Intraluminal	Femoral Artery Embolectomy
Skin or Mucous Membrane	Instrumental	With Visualization	Intraluminal	Percutaneous Intraluminal Endoscopic	Percutaneous Gastroscopy
Orifice	Instrumental	Without Visualization	Intraluminal	Transorifice Intraluminal	Insert Endotracheal Tube
Orifice	Instrumental	With Visualization	Intraluminal	Transorifice Intraluminal Endoscopic	Sigmoidoscopy
Skin or Mucous Membrane	N/A	N/A	N/A	None	Closed Fracture Reduction