ICD-10
A COMPREHENSIVE OVERVIEW

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ABSTRACT

The Centers for Medicare and Medicaid Services (CMS) and the National Center for Health Statistics (NCHS) have worked diligently to revise and update the International Classification of Diseases (ICD) in order to provide United States based medical professionals with a comprehensive and consistent classification system for diagnoses. All health care providers covered under the Health Insurance Portability Accountability Act (HIPAA), including Medicare and Medicaid, in order to standardize diagnoses for medical and billing purposes, will use these classifications. The goals of these changes include improving effectiveness of patient care, safety, and health outcomes, and an improved medical coding and billing system for all health practices and organizations using ICD-10.
Continuing Nursing Education Course Planners
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Policy Statement
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Continuing Education Credit Designation:
This educational activity is credited for 4.5 hours. Nurses may only claim credit commensurate with the credit awarded for completion of this course activity.

Statement of Learning Need
The ICD-10 will require interdisciplinary training and support in all areas of the healthcare industry in the United States. While overlap in training within health teams will occur, nurses in various roles and settings, especially in areas of case management, administration, and health informatics will need to be prepared for successful implementation. ICD-10 education will include new criteria, such as new diagnostic specifiers and a growing number of expanded coding and descriptors for many medical and surgical conditions.
**Course Purpose**
To provide nursing professionals in hospital and clinic practice with knowledge of the new ICD-10 diagnostic codes and descriptors for a wide range of health conditions beginning in October 2015.

**Target Audience**
Advanced Practice Registered Nurses and Registered Nurses (Interdisciplinary Health Team Members, including Vocational Nurses and Medical Assistants may obtain a Certificate of Completion)

**Course Author & Planning Team Conflict of Interest Disclosures**
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There is no commercial support for this course.

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**Termination Date:** 11/11/2015

Please take time to complete a self-assessment of knowledge, on page 4, sample questions *before* reading the article.

Opportunity to complete a self-assessment of knowledge learned will be provided at the end of the course.
1. All member countries of the World Health Organization ("WHO") require ONLY the ICD diagnostic coding for the wide-range of healthcare services except _____________________.
   a) Canada
   b) the Congo
   c) the United States
   d) Iceland

2. Medical coding and billing personnel
   a) are not part of the healthcare workforce.
   b) make up one-fifth of the healthcare workforce.
   c) make up one percent of the healthcare workforce.
   d) have decreased under ICD.

3. The second character of the medical and surgical procedures section codes reflects the general body system, for example, _________________.
   a) gastrointestinal
   b) the duodenum
   c) a device such as a synthetic substitute
   d) small intestine

4. True/False: The International Statistical Classification of Diseases (ICD) provides an international, standardized medical diagnosis and billing system.
   a) True
   b) False

5. The root operation presents the ________________ of the procedure.
   a) technique
   b) location
   c) access location
   d) goal
Introduction

The ICD-10 is the revised version of the International Statistical Classification of Diseases (ICD) and related health problems, a medical classification list issued by the World Health Organization (WHO). It contains the codes for diseases, their signs and symptoms (physical complaints and unusual findings), social and legal circumstances, and external reasons behind diseases of injury.¹ The code set has over 14,400 different codes and enables the tracking and diagnosis of a number of new diseases. These codes can be expanded to more than 16,000 codes by utilizing the optional sub-classifications given. The comprehensive details provided by the ICD can be further increased with a simplified multi-axial approach.

Why is ICD-10 relevant to nurses? Nurses provide direct patient care in multiple settings and are required to document precise patient symptom descriptions and well-defined care outcomes. As the need to standardize medical diagnosis and billing systems develops in the United States, and internationally, all members of the health team will need to be educated and updated on documentation and medical record systems, as well as medical coding and billing criteria. Diagnoses in multiple subspecialties have revised numerical codes and narrative descriptors, including diagnostic specifiers that care providers will need to stay informed about.

The entire health industry has shown agreement to adopt the ICD-10 since it provides more information in order to have better health results and to eventually reduce healthcare cost. Certain issues remain and are evolving; such as claims submitted with unspecified codes instead of a more specific ICD-10 code.
ICD-10: Standard Diagnostic Tool For Health Management

The International Statistical Classification of Diseases is the standard diagnostic tool for health management, epidemiology, and clinical purposes. This includes the evaluation of the general health scenario of population groups. It is used for assessing the incidence and prevalence of diseases and other kinds of health problems, providing a picture of the general health situation of various regions and populations. The World Health Organization (WHO) has provided detailed information about the new ICD-10 along with relevant digital material involving training and online support, such as ICD-10 downloadable study guides.

The ICD is used by nurses, physicians, researchers, health providers, health managers and coders, policy makers, health information technology workers, patent organizations and insurers to categorize the diseases and other health related problems recorded on various kinds of health records, including death certificates. Along with enabling the storage and retrieval of diagnostic information for epidemiological, clinical and quality purposes, these records are the basis for the compilation of national morbidity and mortality statistics by WHO member nations.

Lastly, the ICD is used for the resource allocation and reimbursement decision making by many countries. It is interesting to note that although U.S. healthcare providers have been required to adhere to ICD-10 coding since October 1, 2015, the U.S. is the only nation in the world that requires a two-tiered reporting system, which includes the Centers For Medicaid and Medicare Services (CMS). All other countries, including Canada, only require the ICD diagnostic coding for a wide-range of healthcare services as reviewed by the WHO.
All WHO member nations use the ICD, which has also been translated into 43 languages. Most countries use ICD to report mortality data, which is a major indicator of health status in a country. ICD-10 was endorsed by the 43rd World Health Assembly in 1990, and came into use in 1994. ICD is still under revision, through a current revision process, and the release year for ICD-11 has been declared as 2018.

The ICD-10 is important to medical coding and billing associates, because the ICD is the common system of codes classifying every health problem or disease that needs to be coded. The diagnosis codes reflect a generalized explanation of the injury, disease or health problem that was the catalyst for the patient-physician encounter. A biller-coder uses the ICD-10 on a daily basis.

The 9th edition of the ICD (ICD-9) was used in the U.S. since 1979. The ICD-10, however, is not only an update of the old version, it is a new edition that includes all codes rearranged and positioned in different areas. Additionally, the ICD-10 involves significant differences as compared to ICD-9; such as, ICD-9 has more than 14,000 diagnosis codes and around 4,000 procedural codes whereas ICD-10 has more than 68,000 diagnosis codes and over 72,000 procedural codes. Other differences are based on how the codes are presented (for instance, the number of characters), and how these are interpreted (decoding the characters to determine what specific groupings mean).

Changing over to ICD-10 is considered an improvement. Presently, medical coding and billing requirements make up one-fifth of the healthcare workforce, which is a number that is growing. Shifting to ICD-10 has resulted in an increased demand for medical coders, since it would make the billing and coding process more time consuming and
complicated. Additionally, the ICD-10 implementation in the U.S. will influence practice roles for licensed medical providers and nurses working in both private and public health practices. This new system of coding and billing will influence all aspects of the health industry with the ultimate goal to improve patient care and outcomes. It will be critical for health providers, including medical and nursing clinicians, to understand the new documentation requirements for ICD-10, and, specifically how it could impact the historical role of nurse informaticists.

The initial sections discussed here highlight the basic code structure, definitions and terms important for health members to understand new diagnostic codes and descriptors pertaining to health specialties and conditions treated. Although coding to underlying disease has changed dramatically with ICD-10, the purpose of this article is not to delve into the minutiae of coding symbols and alternate classifications for the purpose of compiling statistics. Such details will be omitted here to allow for a sharper focus on new ICD classifications related to medical diagnostic descriptors and relevant discussion surrounding morbidity and mortality pertaining to particular diseases and conditions.

**Compliance Date**

The compliance date for the execution of ICD-10 was October 1, 2015, for all Health Insurance Portability and Accountability Act (HIPAA) covered entities. The U.S. initiated the ICD-10-CM (“CM” means *clinical modification*) for medical diagnoses based on the ICD-10 as developed by the WHO; and, furthermore, the U.S Centers for Medicare and Medicaid Services (CMS) developed a new Procedure Coding System (PCS) for inpatient procedures. The ICD-10-CM replaces all prior diagnostic coding systems in every healthcare setting beginning October 1, 2015 and forward. The ICD-10-PCS, including the ICD-10-PCS official Guidelines for
Coding and Reporting, would also replace the ICD-9-CM procedure codes.\(^2\) This will be further elaborated on later on.

**Changes to the ICD Coding System**

Changes to the ICD coding system involve the following criteria, as briefly outlined below. This section will help to prepare the learner develop a general understanding of how terms will be used in the ICD-10 to define health conditions and treatments. Although, coding system criteria can be construed as inherently dry to health professionals required to know it, learners may approach the recommended learning as general knowledge needed in order to understand what is expected from health professionals to adhere to ethical coding and billing practices that influence patient care outcomes, and for future regional and national panel discussions related to improving U.S. healthcare system coding and descriptors for medical treatment. Moreover, as increased numbers of nurses and physicians become involved in ICD practices within a national and global arena, the discussion within U.S. healthcare teams promises to be more robust and rewarding as patient care outcomes are continuously reviewed.

**Laterality**

Laterality (side of the body affected) has been added to the relevant code.\(^3\) Examples of laterality include: right, left, and bilateral. ICD-10 codes include:

- L89.012 - Pressure Ulcer of *right* elbow, stage II
- D27.0 - Benign neoplasm of *right* ovary
- I63.412 - Cerebral infarction due to embolism of *left* middle cerebral artery
- C50.511 - Malignant neoplasm of lower-outer quadrant of *right* female breast
- H16.013 – Central corneal ulcer, bilateral
- L89.012 – Pressure ulcer of right elbow, stage II

Diseases specified under laterality, right and left, include:

- Cancers
- Cerebral Infarction
- Pressure Ulcers
- Extremity Atherosclerosis
- Arthritis
- Fractures
- Sprains
- Injury
- Joint Pain
- Joint Effusion
- Tears, Meniscus, Cruciate Ligament
- Dislocations

**Code Structure**

The ICD-10 code set has been expanded to seven positions from five positions (first one alphanumeric, and others numeric). The codes use alphanumeric characters in all positions, not only the first position like in the ICD-9. While the following may not hold interest for many clinical persons, it is important to briefly summarize the ICD code structure that has relevance to health informaticists and administrative staff with a role in diagnostic coding and billing. The code structure in ICD-10 can be summarized as follows:³
• 3-7 characters (instead of 3-5 characters as in ICD-9)

• Character 1 is alpha, where all letters except U are used (unlike ICD-9 where first character is numeric or alpha [E or V])

• Character 2 is numeric whereas character 3-7 are alpha or numeric (unlike ICD-9 where characters 2-5 are numeric)

• Use of decimal after 3 characters (like in ICD-9)

• Alpha characters are not case sensitive

*Placeholder*

There is use of a dummy placeholder “x” in ICD-10. This dummy placeholder is used with some codes to allow for potential future expansion and/or to fill out empty characters when a code contains less than 6 characters and a 7th character applies. When a placeholder character appears, it must be placed in order for the code to be recognized as valid.

*Number of Codes*

As indicated earlier, existing codes have significantly increased to a current number of 69,000, as compared to the ICD-9 that had 14,000. The new code set gives a significant increase in the specificity of the reporting, enabling more information to be delivered in a code. The terminology has also been modernized and has been made more consistent throughout the code set.

*Severity Parameters*

The ICD-10 has expanded the severity parameters, unlike ICD-9 that has limited severity parameters.
Combination Codes

The ICD-10 has expanded the combination codes for capturing the complexity of patients in a better way. The combination codes used, increase specificity and the “x” placeholder illustrations can be seen in Table 1 below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>125.110</td>
<td>Atherosclerotic heart disease of native coronary artery with unstable angina pectoris.</td>
</tr>
<tr>
<td>S72.044G</td>
<td>Non-displaced fracture of base of neck of right femur, subsequent encounter for closed fracture with delayed healing.</td>
</tr>
<tr>
<td>C50.511</td>
<td>Malignant neoplasm of lower-outer quadrant of right female breast.</td>
</tr>
<tr>
<td>C50.512</td>
<td>Malignant neoplasm of lower-outer quadrant of left female breast</td>
</tr>
<tr>
<td>H40.11X2</td>
<td>Primary open-angle glaucoma, moderate stage.</td>
</tr>
</tbody>
</table>

Exclude Notes

The ICD-10 has two kinds of exclude notes, while ICD-9 has just one type. The types of exclude notes are type 1 and type 2, which are described as follows:
Excludes Note Type 1:

The type 1 excludes note is a pure exclude note, implying “not coded here”. It indicates that the code excluded should never be used at the same time as the code above the excludes note type 1. This is used when two conditions cannot take place together, like a congenital condition versus an acquired kind of the same condition.

Excludes Note Type 2:

The type 2 excludes note reflects the criteria of “not included here.” It shows that the condition excluded is not the part of the condition reflected by the code; however, a patient might be having both conditions at the same time. If an excludes note type 2 appears under a code, it is acceptable to use both the code and excluded code together, where appropriate.

Definitions

In certain cases, new code definitions are given in ICD-10 reflecting modern medical practices. For example, the definition of acute myocardial infarction is now four weeks instead of eight weeks.

Anatomy and Restructuring

In ICD-10, injuries are categorized by anatomical site instead of by the type of injury.

Category restructuring and code reorganization have taken place in a number of ICD-10 chapters, leading to the classification of some disorders and diseases that are different from ICD-9.5
Reclassification

Some diseases have been categorized into different sections and chapters in order to show present medical knowledge.5

Summary of the Changes

The summary of the changes between ICD-9 and ICD-10 are listed in Table 2 below. The table identifies diagnosis descriptors important to clinicians, coders and billers.

<table>
<thead>
<tr>
<th>CD-9-CM Diagnosis Codes</th>
<th>ICD-10-CM Diagnosis Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Laterality</td>
<td>Laterality –</td>
</tr>
<tr>
<td></td>
<td>Right or Left account for &gt;40% of codes</td>
</tr>
<tr>
<td>3-5 digits</td>
<td>7 digits</td>
</tr>
<tr>
<td></td>
<td>• Digit 1 is alpha; Digit 2 is numeric</td>
</tr>
<tr>
<td></td>
<td>• Digits 3–7 are alpha or numeric</td>
</tr>
<tr>
<td></td>
<td>• Decimal is placed after the third character</td>
</tr>
<tr>
<td>No placeholder characters</td>
<td>“X” placeholders</td>
</tr>
<tr>
<td>14,000 codes</td>
<td>69,000 codes to better capture specificity</td>
</tr>
<tr>
<td>Limited Severity Parameters</td>
<td>Extensive Severity Parameters</td>
</tr>
<tr>
<td>Limited Combination Codes</td>
<td>Extensive Combination Codes to better capture complexity types of Exclude Notes</td>
</tr>
<tr>
<td>1 type of Excludes Notes</td>
<td>2 types of Exclude Notes</td>
</tr>
</tbody>
</table>
The ICD-10

The National Center for Health Statistics (NCHS), the federal agency having the authority and responsibility for use of ICD-10 in the United States, has also created a clinical modification of the classification for morbidity purposes. The ICD-10, as mentioned earlier, is used for coding and classifying mortality data for death certificates. As mentioned earlier, it replaced the ICD-9 for this purpose on January 1, 1999. The ICD-10-CM is the replacement for the ICD-9, Volumes 1 and 2, which would be effective and implemented from October 2015.6

The ICD-10 is copyrighted by the WHO, which owns and issues the classification system. The WHO has authorized the development of an adaptation of ICD-10 for use in the United States for governmental purposes.6 All the changes and modifications to the ICD-10 must comply with WHO conventions for the ICD. A Technical Advisory Panel and vast additional consultation with clinical coders, physician groups and others to ensure clinical utility and accuracy developed the ICD-10 after a comprehensive analysis.

The whole draft of the Tabular list of ICD-10, and the initial crosswalk between ICD-9 and ICD-10 were made accessible on the NCHS website for public opinion. This opinion period was between December 1997 and February 1998. The American Health Information Management Association and the American Hospital Association executed a field test for ICD-10 in 2003. All suggestions, comments and results of field test were reviewed, and more changes to ICD-10 were made on the basis of those suggestions. In addition, new concepts have been integrated to the ICD-10 on the basis of the established updated procedure for ICD-9 and the WHO’s ICD-10. This represents ICD-9 changes from 2003-2011 and ICD-10 changes from 2002-2010.6
The clinical codes and descriptors in ICD-10 represent significant improvement over ICD-9. Particular improvements include the addition of information related to ambulatory and managed care encounters, creation of combination diagnosis codes and symptoms for decreasing the number of codes required to completely explain the condition, expanded injury codes, the addition of sixth and seventh characters, integration of common fourth and fifth digit sub classification, laterality, and higher specificity in code allocation. The new structure would enable more expansion than was possible or expected within the ICD-9.

All Health Information Portability and Accountability Act (HIPAA) covered entities must start using ICD-10 codes by October 1st 2015, as made compulsory by the U.S. Department of Health and Human Services. The implementation deadline of ICD-10 has been delayed many times. The ICD-10 guidelines were primarily established to replace ICD-9 on October 1, 2013. Two separate yearlong delays to the implementation of ICD-10 pushed its implementation to 2015.6

As previously noted in the table above reflecting summary of changes since ICD-9, the structure of the ICD-10 code includes the following:

- The first character must be an alpha character, excluding “u”.
- The second and third one are numeric.
- The characters from four till seven can be a combination of numeric and alpha character.
- The first three characters classify the injury.
- The fourth through sixth characters explain in detail the cause, anatomical site, and severity of the illness or injury.
• The seventh character is an extension digit, and used to categorize an initial, after or sequel (late affect) treatment encounter.

**ICD-10-PCS**

The International Classification of Diseases 10th revised Procedure Coding System (ICD-10-PCS) has been made as a replacement of the Volume 3 of the International Classification of Diseases 9th Revision, *i.e.*, ICD-9. The U.S. Centers for Medicare and Medicaid Services (CMS) sponsored the development of ICD-10-PCS.

The ICD-10-PCS applies a multiaxial seven-character alphanumeric code structure that gives a unique code for all substantially diverse procedures, and enables new procedures to be easily integrated as new codes. ICD-10-PCS remained under development for more than 5 years.7 The primary draft was tested formally and assessed by an independent contractor; however, the final version was released in 1998, with yearly updates since the 1998 release.

*Attributes Considered During Development*

The goal of the development of the ICD-10-PCS’s was to integrate four major attributes. These are outlined below.7

• Completeness:

There should be a different code for all substantially different processes. In Volume 3 of the ICD-10, the processes of various body parts, with different methods or of different kinds, are often allocated to the same code.
- **Expandability:**
  As new processes are developed, the structure of the ICD-10 should enable them to be integrated easily as unique codes.

- **Multiaxial:**
  The ICD-10 codes must be consistent with independent characters, where each individual axis has its meaning across as wide a range of codes as possible.

- **Standardized Terminology**
  The ICD-10 should also include definitions of the terminology used. While the meaning of certain words differs in common usage, ICD-10 must not include various meanings of the same term, and each term must be allocated a specific meaning. If these four goals are met, then the ICD-10 should improve the ability of health information coders to build accurate codes with minimal effort.

**Principles of ICD-10 Development**

In the development process of ICD-10, several principles were followed, including those listed below.

*Procedure Description Does Not Include Diagnostic Information*

The processes carried out for particular disorders or diseases are not contained in the procedure code. There are no codes for the procedures exclusive to strictures, cleft lip, aneurysms, hernias, neoplasms, etc. The diagnosis codes specify the disorder or disease, not the procedure codes.
**Not Otherwise Specified (NOS) Options are Restricted**

The ICD-9 often gives a “not otherwise specified” (NOS) code option. Many NOS options made accessible in ICD-10 are restricted to usages established in the ICD-10 official guidelines. A minimal specificity level is needed for every part of the procedure.

**Not Elsewhere Classified (NEC) Options have Limited Use**

The ICD-9 often gives a “not elsewhere classified” code option. Since all important parts of the procedure are specified in ICD-10, there is usually no need for an NEC code option. However, only limited NEC options are integrated into ICD-10 where required. For instance, new devices are developed on a frequent basis; hence it is required to provide the “other device” option for usage until the addition of the new device in the coding system.

**Specificity Level**

All processes presently performed can be specified in ICD-10. The frequency with which any procedure is carried out was not a consideration in the system development. Instead, a unique code is available for the changes of any procedure that can be executed.

The ICD-10 utilizes a seven-character alphanumeric code structure. Every character has up to 34 possible values, each of which reflects a particular option for the general character definition. For example, stomach is one of the values for the body part character. The ten digits, 0-9, and the 24 letters, A-H, J-N, and P-Z may be used in every character. The letters O and I are not used to prevent confusion with the digits 0 and 1.
Procedures have been divided into different sections that depict the general kind of procedure, for example: obstetrics, medical, surgical, imaging. The first character of the procedure code always specifies a section. The sections have been listed in Table 3 below.

<table>
<thead>
<tr>
<th></th>
<th>Medical and Surgical</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Obstetric</td>
</tr>
<tr>
<td>2</td>
<td>Placement</td>
</tr>
<tr>
<td>3</td>
<td>Administration</td>
</tr>
<tr>
<td>4</td>
<td>Measurement and Monitoring</td>
</tr>
<tr>
<td>5</td>
<td>Extracorporeal Assistance and Performance</td>
</tr>
<tr>
<td>6</td>
<td>Extracorporeal Therapies</td>
</tr>
<tr>
<td>7</td>
<td>Osteopathic</td>
</tr>
<tr>
<td>8</td>
<td>Other procedures</td>
</tr>
<tr>
<td>9</td>
<td>Chiropractic</td>
</tr>
<tr>
<td>B</td>
<td>Imaging</td>
</tr>
<tr>
<td>C</td>
<td>Nuclear Medicine</td>
</tr>
<tr>
<td>D</td>
<td>Radiation Oncology</td>
</tr>
<tr>
<td>F</td>
<td>Physical Rehabilitation and Diagnostic Audiology</td>
</tr>
<tr>
<td>G</td>
<td>Mental health</td>
</tr>
<tr>
<td>H</td>
<td>Substance abuse treatment</td>
</tr>
</tbody>
</table>

The second through seventh characters mean the same thing in every section, but might mean different things in different sections. In all sections the third character means the general kind of procedure performed, for example, resection, fluoroscopy, or transfusion, while the other characters provide additional information, such as the body part and method. In ICD-10, the term “procedure” means the complete specification of the seven characters.
ICD-10-PCS Format

The ICD-10-PCS has been made up of three parts:

- Tables
- Index
- List of Codes

The Index enables the codes to be located through an alphabetic lookup. The index entry identifies a specific location in the Tables, which must be used for constructing a full and valid code. The List of Codes gives a detailed listing of all valid codes, with full text explanation accompanying each code.

Tables in ICD-10-PCS

The Tables in ICD-10 are arranged differently from ICD-9. Every page in the Tables is made up of rows specifying the valid combinations of code values. In ICD-10, the upper part of every table specifies the values for the first three characters of the codes in that table. In the medical and surgical section the first three characters are section, body system, and the root operation. In ICD-10, the value 026 means the section medical and surgical (0), the body system heart and great vessels (2) and the root operation dilation (7) is the code 027. Below is an excerpt from ICD-10, in Table 4 below.

As shown in Table 4 below, the root operation, i.e. dilation, is along with its definition. The lower part of the table specifies all valid combinations of the remaining characters, four through seven. The columns in the table specify the last four characters. In the medical and surgical section, these are labeled as body part, approach, the device, and qualifier, respectively. Each row in the table specifies the valid blend of values from characters
four through seven. The table has only those combinations of values that result in a proper and valid procedure code: 0 - Medical and Surgical; 2 - Heart and Great Vessels; 7 - Dilation: Expanding an Orifice or the Lumen of a Tubular Body Part.

Table 4

<table>
<thead>
<tr>
<th>Body Part</th>
<th>Approach</th>
<th>Device</th>
<th>Qualifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 Coronary Artery, One Site</td>
<td>0 Open</td>
<td>4 Drug-eluting Intraluminal Device</td>
<td>6 Bifurcation</td>
</tr>
<tr>
<td>1 Coronary Arteries, Two Sites</td>
<td>3 Percutaneous</td>
<td>D Intraluminal Device</td>
<td>Z No Qualifier</td>
</tr>
<tr>
<td>2 Coronary Arteries, Three Sites</td>
<td>4 Percutaneous</td>
<td>T Radioactive Intraluminal Device</td>
<td></td>
</tr>
<tr>
<td>3 Coronary Arteries, Four or More Sites</td>
<td></td>
<td>Z No Device</td>
<td></td>
</tr>
</tbody>
</table>

The row given in the table can be used to develop 96 unique procedure codes. For instance, code 02703DZ marks the procedure for dilation of one coronary artery through an intraluminal device via percutaneous approach, or percutaneous transluminal coronary angioplasty with stent.

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

- 027004Z - Dilation of Coronary Artery, One Site with Drug-eluting Intraluminal Device, Open Approach
- 02700DZ - Dilation of Coronary Artery, One Site with Intraluminal Device, Open Approach
• 02700TZ - Dilation of Coronary Artery, One Site with Radioactive Intraluminal Device, Open Approach
• 02700ZZ - Dilation, Coronary Artery, One Site, Open Approach
• 027034Z - Dilation, Coronary Artery, One Site with Drug-eluting Intraluminal Device, Percutaneous Approach
• 02703DZ - Dilation, Coronary Artery, One Site with Intraluminal Device, Percutaneous Approach
• 02703TZ - Dilation, Coronary Artery, One Site with Radioactive Intraluminal Device, Percutaneous Approach
• 02703ZZ - Dilation, Coronary Artery, One Site, Percutaneous Approach
• 027044Z - Dilation, Coronary Artery, One Site with Drug-eluting Intraluminal Device, Percutaneous Endoscopic Approach
• 02704DZ - Dilation, Coronary Artery, One Site with Intraluminal Device, Percutaneous Endoscopic Approach
• 02704TZ - Dilation, Coronary Artery, One Site with Radioactive Intraluminal Device, Percutaneous Endoscopic Approach
• 02704ZZ - Dilation, Coronary Artery, One Site, Percutaneous Endoscopic Approach

List of Codes

The valid codes explained above are developed using the first body part value in Table 4 (i.e., one coronary artery), combined with all the valid devices and approaches listed in the Table, and the value “No Qualifier”. The codes listed above are examples of the entries in the List of Codes. Every code has a text explanation that is complete and easy to read.
The Index

The index enables the codes to be located based on an alphabetic lookup. Codes might be found in the index on the basis of the general type of the procedure (for example, transfusion, resection, fluoroscopy), or in more generally used terms like appendectomy. The code for percutaneous intraluminal dilation of the coronary arteries with an intraluminal device can also be found in the index under dilation, or dilation's synonym, angioplasty. Once the required term is located in the index, it specifies the first three or four values of the code; for example, 027, or directs another term to be viewed.

Each table allows the healthcare provider to select the first three values of the code. Based on the first three values of the code found in the index the corresponding table can also be located. The table is then used to get the complete code by specifying the last four values.

Medical and Surgical Section

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

- Character 1 = Section
- Character 2 = Body System
- Character 3 = Root Operation
- Character 4 = Body Part
- Character 5 = Approach
- Character 6 = Device
- Character 7 = Qualifier
Character Meanings:

The medical and surgical section codes reflect the huge majority of the procedures reported in an inpatient scenario. The medical and surgical procedures codes hold a first character value of 0. The second character reflects the general body system, for example, gastrointestinal.

The third character refers to the root operation (procedure), and the fourth character shows the specific body part onto which procedure is to be performed, for example, the duodenum.

The fifth character shows the approach used at the procedure site, for example, open. The sixth character shows whether the device was used and remained at the end of the procedure, for example, a synthetic substitute.

The seventh character is a qualifier that might hold the specific meaning for a limited range of values. For instance, the qualifier can be used to determine the destination site of the root operation.

The first through fifth characters are always allocated a specific value, however the device (i.e., the sixth character) and the qualifier (seventh character) are not applicable to all the procedures. The value Z is utilized for the sixth and seventh characters to show that a specific qualifier or device does not apply to this procedure. The body systems for the medical and surgical section codes are also specified in the second character.
The body systems for the medical and surgical section codes are specified in the second character, as shown in Table 5 below. To provide the required detail, some body systems are subdivided. For instance, body system values K (muscles), L (tendons), M (burse and ligaments), N (head and facial bones), P (upper bones), Q (lower bones), R (upper joints) and S (lower joints) are divisions of the musculoskeletal system.

Table 5

<table>
<thead>
<tr>
<th></th>
<th>Root Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>1</td>
<td>Peripheral Nervous System</td>
</tr>
<tr>
<td>2</td>
<td>Heart and Great Vessels</td>
</tr>
<tr>
<td>3</td>
<td>Upper Arteries</td>
</tr>
<tr>
<td>4</td>
<td>Lower Arteries</td>
</tr>
<tr>
<td>5</td>
<td>Upper Veins</td>
</tr>
<tr>
<td>6</td>
<td>Lower Veins</td>
</tr>
<tr>
<td>7</td>
<td>Lymphatic and Hematic System</td>
</tr>
<tr>
<td>8</td>
<td>Eye</td>
</tr>
<tr>
<td>9</td>
<td>Ear, Nose, Sinus</td>
</tr>
<tr>
<td>B</td>
<td>Respiratory System</td>
</tr>
<tr>
<td>C</td>
<td>Mouth and Throat</td>
</tr>
<tr>
<td>D</td>
<td>Gastrointestinal System</td>
</tr>
<tr>
<td>F</td>
<td>Hepatobiliary System and Pancreas</td>
</tr>
<tr>
<td>G</td>
<td>Endocrine System</td>
</tr>
<tr>
<td>H</td>
<td>Skin and Breast</td>
</tr>
<tr>
<td>J</td>
<td>Subcutaneous Tissue and Fascia</td>
</tr>
<tr>
<td>K</td>
<td>Muscles</td>
</tr>
<tr>
<td>L</td>
<td>Tendons</td>
</tr>
<tr>
<td>M</td>
<td>Bursae and Ligaments</td>
</tr>
<tr>
<td>N</td>
<td>Head and Facial Bones</td>
</tr>
<tr>
<td>P</td>
<td>Upper Bones</td>
</tr>
<tr>
<td>Q</td>
<td>Lower Bones</td>
</tr>
<tr>
<td>R</td>
<td>Upper Joints</td>
</tr>
<tr>
<td>S</td>
<td>Lower Joints</td>
</tr>
<tr>
<td>T</td>
<td>Urinary System</td>
</tr>
<tr>
<td>U</td>
<td>Female Reproductive System</td>
</tr>
<tr>
<td>V</td>
<td>Male Reproductive System</td>
</tr>
<tr>
<td>W</td>
<td>Anatomical Regions, General</td>
</tr>
<tr>
<td>X</td>
<td>Anatomical Regions, Upper Extremities</td>
</tr>
<tr>
<td>Y</td>
<td>Anatomical Regions, Lower Extremities</td>
</tr>
</tbody>
</table>

**Root Operation**

The root operation is specified in the third character. In the medical and surgical section, there are 31 different values, as shown in Table 6 below.
<table>
<thead>
<tr>
<th>Root Operation</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alteration</td>
<td>Modifying the anatomic structure of a body part without affecting the function of the body part</td>
</tr>
<tr>
<td>Bypass</td>
<td>Altering the route of passage of the contents of a tubular body part</td>
</tr>
<tr>
<td>Change</td>
<td>Taking out or turning 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</td>
</tr>
<tr>
<td>Control</td>
<td>Stopping, or attempting to stop, post procedural bleeding</td>
</tr>
<tr>
<td>Creation</td>
<td>Making a new genital structure that does not take over the function of a body part</td>
</tr>
<tr>
<td>Destruction</td>
<td>Physical eradication of all or a portion of a body part by the direct use of energy, force or a destructive agent</td>
</tr>
<tr>
<td>Detachment</td>
<td>Cutting off all or part of the upper or lower extremities</td>
</tr>
<tr>
<td>Dilation</td>
<td>Expanding an orifice or the lumen of a tubular body part</td>
</tr>
<tr>
<td>Division</td>
<td>Cutting into a body part without draining fluids and/or gases from the body part in order to separate or transect a body part</td>
</tr>
<tr>
<td>Drainage</td>
<td>Taking or letting out fluids and/or gases from a body part</td>
</tr>
<tr>
<td>Excision</td>
<td>Cutting out, or off, without replacement, a portion of a body part</td>
</tr>
<tr>
<td>Extermination</td>
<td>Taking or cutting out solid matter from a body part</td>
</tr>
<tr>
<td>Extraction</td>
<td>Pulling or stripping out, or off, all, or a portion of a body part by the use of force</td>
</tr>
<tr>
<td>Fragmentation</td>
<td>Breaking solid matter in a body part into pieces</td>
</tr>
<tr>
<td>Fusion</td>
<td>Joining together portions of an articular body part rendering the articular body part immobile</td>
</tr>
<tr>
<td>Insertion</td>
<td>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</td>
</tr>
<tr>
<td>Inspection</td>
<td>Visually and/or manually exploring a body part</td>
</tr>
<tr>
<td>Map</td>
<td>Locating the route of passage of electrical impulses and/or locating functional areas in a body part</td>
</tr>
<tr>
<td>Occlusion</td>
<td>Completely closing an orifice or the lumen of a tubular body part</td>
</tr>
<tr>
<td>Reattachment</td>
<td>Putting back in, on, all, or a portion of a separated body part to its normal location, or other suitable location</td>
</tr>
<tr>
<td>Release</td>
<td>Freeing a body part from an abnormal physical constraint by cutting or by use of force</td>
</tr>
</tbody>
</table>
## Root Operations

<table>
<thead>
<tr>
<th>Operations</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Removal</strong></td>
<td>Taking out or off a device from a body part</td>
</tr>
<tr>
<td><strong>Repair</strong></td>
<td>Restoring, to the extent possible, a body part to its normal anatomic structure and function</td>
</tr>
<tr>
<td><strong>Replacement</strong></td>
<td>Putting in, or on, biological or synthetic material that physically takes the place and/or function of all or a portion of a body part</td>
</tr>
<tr>
<td><strong>Reposition</strong></td>
<td>Moving to its normal location or other suitable location all, or a portion of a body part</td>
</tr>
<tr>
<td><strong>Resection</strong></td>
<td>Cutting out or off, without replacement, all of a body part</td>
</tr>
<tr>
<td><strong>Restriction</strong></td>
<td>Partially closing an orifice or the lumen of a tubular body part</td>
</tr>
<tr>
<td><strong>Revision</strong></td>
<td>Correcting, to the extent possible, a portion of a malfunctioning device or the position of a displaced device</td>
</tr>
<tr>
<td><strong>Supplement</strong></td>
<td>Putting in or on biological or synthetic material that physically reinforces and/or augments the function of a body part</td>
</tr>
<tr>
<td><strong>Transfer</strong></td>
<td>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</td>
</tr>
<tr>
<td><strong>Transplantation</strong></td>
<td>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</td>
</tr>
</tbody>
</table>

The root operation presents the goal of the procedure. Every root operation has a precise definition. For instance, the root operation insertion is applied for procedures where devices are inserted in or on the body part. If a device is taken out and an equivalent device is inserted, then the root operation removal is applied. The root operation extirpation is applied when solid matter, like emboli, calculus, or a foreign body is taken out without taking out any of the body part.

The root operation excision is applied when a part of the body part is cut out, while the resection is applied, when the whole body part, as explained by the body part value is cut out. If synthetic or biological material is inserted to take the place of all, or a part of the body part, then the root operation replacement is applied. If the body part contains a
living body part from a donor put in its site, then the root operation transplantation is carried out.⁷

These examples of root operation terminology show the precision of the value explained in the system. There is a clear difference between each root operation. A root operation specifies the goal of the procedure. The term anastomosis is not a root operation, since it is the meaning of joining and is always a vital component of another procedure, like resection or bypass, which has a particular goal.⁷ In a similar way, incision is not a root operation, since it is always the part of the goal of another procedure like drainage or division. The root operation repair in this section functions as “not elsewhere” classified (NEC code) option. It is applied when the procedure performed is not one of the other specific root operations.

**Body Part**

The fourth character of the code specifies the body part. The body part shows the specific part of the body system on which the procedure was carried out, for example the duodenum. Tubular body parts are explained in ICD-10 as those hollow parts of the body that give a route of passage for solids, liquids and gases. These usually include the cardiovascular system and body parts like those contained in the gastrointestinal tract, biliary tract, genitourinary tract, and respiratory tract.⁷

**Approach**

The fifth character specifies the technique that is applied for reaching the location of the procedure. There are seven approaches, as shown in Table 7 below. The approach is based on three parts, the access location, technique, and type of instrumentation.⁸
Table 7

<table>
<thead>
<tr>
<th>Approach</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Open</strong></td>
<td>Cutting through the skin or mucous membrane and any other body layers necessary to expose the site of the procedure.</td>
</tr>
<tr>
<td><strong>Percutaneous</strong></td>
<td>Entry, by puncture or minor incision, of instrumentation through the skin or mucous membrane and/or any other body layers necessary to reach the site of the procedure.</td>
</tr>
<tr>
<td><strong>Percutaneous Endoscopic</strong></td>
<td>Entry, by puncture or minor incision, of instrumentation through the skin or mucous membrane and/or any other body layers necessary to reach and visualize the site of the procedure.</td>
</tr>
<tr>
<td><strong>Via Natural or Artificial Opening</strong></td>
<td>Entry of instrumentation through a natural or artificial external opening to reach the site of the procedure.</td>
</tr>
<tr>
<td><strong>Via Natural or Artificial Opening Endoscopic</strong></td>
<td>Entry of instrumentation through a natural or artificial external opening to reach and visualize the site of the procedure.</td>
</tr>
<tr>
<td><strong>Via Natural or Artificial Opening Endoscopic with Percutaneous Endoscopic Assistance</strong></td>
<td>Entry of instrumentation through a natural or artificial external opening to reach and visualize the site of the procedure, and entry, by puncture or minor incision, of instrumentation through the skin or mucous membrane and any other body layers necessary to aid in the performance of the procedure.</td>
</tr>
<tr>
<td><strong>External</strong></td>
<td>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.</td>
</tr>
</tbody>
</table>

Access Location

For the procedures carried out on an internal body part the access location represents the external site through which the location of the procedure is attained. There are two kinds of access locations, mucous or skin membranes and external orifices. Each approach value, except the
external, contains one of these two access locations. The mucous or skin membrane can be punctured or cut to reach the procedure site. All percutaneous and open approach values utilize this access location. The location of the procedure can also be reached via an external opening. External openings might be natural, like the mouth, or artificial like a colostomy stoma. 

**Method**

For procedures carried out on an internal part of the body the method reflects how the external access location is reached. An open method indicates cutting through the mucous membrane or skin and any other intervening body layers essential to expose the location of the procedure. An instrumental method indicates the entry of the instrumentation via accessing the location of the internal procedure site. Instrumentation can also be made by minor incision or puncture, or through an external opening.

The minor incision or puncture doesn’t make an open approach since it does not expose the location of the procedure. An approach can have various methods. For instance, the percutaneous endoscopic approach entails both percutaneous methods to access the procedure site and the entry of instrumentation into the part of the body necessary to carry out the procedure.

**Kind of Instrumentation**

For procedures carried out on an internal part of the body the instrumentation implies that specialized equipment is used to carry out the procedure. Instrumentation is utilized in all internal methods except the basic open approach. Instrumentation may or may not entail the
ability to visualize the procedure location. For instance, the instrumentation utilized to carry out a sigmoidoscopy allows the internal location of the procedure to be visualized, but the instrumentation utilized to execute a needle biopsy of the liver does not enable visualization. For instance, the term “endoscopic,” as applied in approach values, means instrumentation that enables a site to be visualized.8

External Approaches

Procedures carried out directly on the mucous membrane or skins are determined by the external approach, for example, skin excision. Procedures carried out indirectly by the use of external force are also determined by the external approach for example, closed reduction of a fracture. Table 7 shown above has the definition of every approach.8

Device

The device is reflected by the sixth character of the code and is used to specify the devices that are there even after the end of the procedure. There are four common kinds of devices.8

- Synthetic or biological material taking the position of all, or a part of a body part, for example, joint prosthesis or skin graft
- Synthetic or biological material helping or avoiding a physiological function, for example, intrauterine device (IUD)
- Therapeutic material not absorbed, eliminated, or stored into a body part, for example, radioactive implant
- Electronic or mechanical appliances that are used to help, assess, take the position of, or avoid, a physiological function, for example orthopedic pin or cardiac pacemaker.
While all the devices can be eliminated, certain devices cannot be eliminated without including another non-biological body part substitute or appliance. Particular device values might be coded with the root operations, bypass, alteration, creation, drainage, dilation, occlusion, fusion, reposition, or restriction. Particular device values should be coded with root operations insertion, change, replacement, removal, or revision.

Instruments applied to visualize the procedure location are not reflected in the device value. That information is given in the approach value. If the goal of the procedure is to insert a device, then the root operation is called insertion. If the device is inserted to meet a goal other than insertion, then root 12 operation explaining the underlying goal of the procedure is to be applied, with the device determined in the device character. For instance, if the procedure to substitute the hip joint is carried out, the root operation replacement would be coded and the prosthetic device is specified in a device character.

Materials that are incidental to the procedure, like ligatures, clips, and sutures are not reflected in the device character. Since new devices may be developed, the value “other device” is given as a temporary alternative for use until that specific device value is integrated to the system.

**Qualifier**

The qualifier is specified in the seventh character. It entails unique values for the individual procedures as required. For instance, the qualifier may be used to determine the destination location in a bypass. In creating the medical and surgical procedures codes, various principles were considered. 

8
Composite Terms

The only part of the procedure specified in a root operation is the goal of the procedure. Composite terms like sigmoidectomy and colonoscopy are not the root operations because they specify various components in the procedure. The term colonoscopy is a composite of information contained in the root operation value, i.e., the inspection, the body part value, meaning large intestine, and the endoscopic approach value, i.e., through artificial or natural opening endoscopic.

In ICD-10, the parts of the procedures are explained separately. The underlying goal of the procedure is defined by the root operation (third character), the precise component of the gastrointestinal tract inspected is defined by body part (fourth character), and the method applied to reach and visualize the procedure location is defined by the approach (the fifth character). A partial sigmoidectomy is similarly the composite of information entailed in the root operation value, i.e., the excision and the body part value, which is the sigmoid colon. In ICD-10, a partial sigmoidectomy is coded as excision (meaning cutting out or off, with no replacement, a part of a body part), of the sigmoid body part. While the colonoscopy term and sigmoidectomy term are listed in ICD-10 index, they are not separate root operations in the Tables; however, they specify the correct root operation and body system in the Tables.8

Root Operation

The root operation is based on the goal of the procedure, such as resection of transverse colon or artery dilation. The allocation of the root operation is purely based on the procedure carried out, which may or may not have been the planned procedure. If the planned procedure is changed or stopped, (for example, an excision rather than a resection is carried out) the root operation is identified by the procedure actually
If the required outcomes fail to persist after the end of the procedure, \textit{i.e.}, the artery doesn’t stay expanded after the end of dilation procedure, the root operation would still be specified by the procedure actually carried out.

If the procedure carried out takes out any foreign body, then the procedure is coded as an extirpation. Dilating the urethra, for example, would be coded as \textit{dilation}, because the goal of the procedure is to dilate the urethra. If dilation of the urethra entails inserting an intraluminal stent, the root operation would remain dilation, and not labeled as insertion of the intraluminal device, since the underlying goal of the procedure was dilation of the urethra.

The stent is determined by the intraluminal device value in the sixth character of the dilation procedure code. If the goal is to put radioactive elements in the urethra, then the procedure would be coded to the root operation \textit{insertion}, with the radioactive element determined in the sixth character of the code. If the goal of the procedure is to rectify the displaced or malfunctioning device, the procedure would be coded to the root operation \textit{revision}.\footnote{In root operation revision, the original device that is being revised is determined by the device's character. Revision is usually carried out on mechanical appliances, for example pacemakers, or materials utilized in replacement procedures, like synthetic substitutes. General revision procedures entail adjustment of pacemaker placement and correction of malfunctioning knee prosthesis.}
Combination Procedures and Separate Coding

If multiple procedures, as reflected by the distinct goals, are carried out in between an operative episode, then multiple codes must be used. For instance, getting the vein graft applied for coronary bypass surgery is coded as a separate procedure from a bypass itself.

Redo of Procedures Coded to the Procedure

The partial or complete redo of the original procedure is to be coded to the root operation that determines the procedure carried out, instead of a revision. For instance, a full redo of a hip replacement procedure that required inserting in a new prosthesis is coded to the root operation replacement, not the revision. The correction of the various complications that result from the original procedure, apart from device complications, as defined in the root operation revision, are also to be coded to the procedure carried out. For instance, the procedure applied to control the hemorrhage that may arise from the original procedure must be coded to control, instead of revision.

ICD-10 Procedure Codes

This section covers some examples of procedure codes from the medical and surgical section in the ICD-10 to familiarize the reader with coding formatting and narratives. A more comprehensive discussion of ICD-10 coding according to system classification and diagnoses will follow.

Placement Section

The seven characters in the placement section hold the following meaning.

Character 1 = Section
Character 2 = Anatomical Region
Character 3 = Root Operation
Character 4 = Body Region/Orifice
Character 5 = Approach
Character 6 = Device
Character 7 = Qualifier

Placement section codes reflect procedures for placing an externally positioned device in or on a body region for the goal of immobilization, protection, stretching, packing or compression. Placement procedure codes do have a first character value of “2”. The second character value for the body system is either anatomical orifices or anatomical regions. The root operations removal and change are put in the placement section, and hold the same meaning as in the medical and surgical section. The placement section also holds five additional root operations, explained as follows:

- Compression: Exerting pressure on a body region
- Dressing: Placing the material on the body region for the protection
- Immobilization: Limiting or avoiding motion of a body region
- Packing: Putting material in an orifice or body region
- Traction: Exerting a pulling force on a body region in a distal direction

The fourth character values are either natural orifices (the ear) or body regions (like the upper leg). Since placement procedures are carried out directly on the mucous membrane or skin, or executed indirectly by the use of external force through the mucous membrane or skin, the approach value is always external. The device character is always specified, except in the case of manual traction, and indicates which
device was used during the procedure (for example, splint, cast, bandage, etc.).

Apart from the casts for dislocations and fractures, the devices in the placement section are off the shelf and do not need any sort of extensive design, fitting or fabrication. The device placements that need fabrication, extensive design, or fitting are coded in the rehabilitation section. The qualifier character is not reflected in the placement section; therefore, the qualifier value is always no qualifier.9

Administration Section

The seven characters in the administration section hold the following meaning:

Character 1 = Section
Character 2 = Physiological System and Anatomical Region
Character 3 = Root Operation
Character 4 = Body System/Region
Character 5 = Approach
Character 6 = Substance
Character 7 = Qualifier

The administration section codes show the procedures for placing in, or on, a therapeutic, protective, prophylactic, diagnostic, nutritional, or psychological substance. Administration procedure codes hold the first character value of 3. The body system character holds three values, i.e., the circulatory system, the indwelling device and physiological systems, and anatomical regions. The circulatory body system is utilized for the transfusion procedures. There are three root operations contained in the administration section.
• Introduction: Placing in, or on, a diagnostic, therapeutic, physiological, nutritional, or prophylactic substance other than blood and blood products

• Irrigation: Placing in, or on, a cleaning substance

• Transfusion: Placing in blood or blood products

The fourth character reflects the body region/system. It determines the location where the substance is monitored, not the location where the substance administered or is effective. Sites include mucous membrane and skin or subcutaneous muscle and tissue. These differentiate the subcutaneous, intradermal, and intramuscular injections, respectively. Other locations include respiratory tract, eye, peritoneal cavity, and epidural space. The fifth character reflects the approaches as explained in the medical and surgical section.

The approach for subcutaneous, intradermal, and intramuscular introduction (i.e., injections) is percutaneous. If a catheter is used to introduce a substance into an internal location in the circulatory system, the approach is percutaneous. For instance, if the catheter is being threaded directly into the heart to introduce contrast for angiography, then the procedure is coded as percutaneous exposure of contrast into the heart.

The body regions or systems for veins and arteries are peripheral artery, central artery, central vein and peripheral vein. The peripheral vein or artery is usually used when a substance is introduced locally into a vein or artery. For instance, chemotherapy is the introduction of an antineoplastic element into a peripheral vein or an artery by a percutaneous approach.
In general terms, the substance introduced into a peripheral vein or an artery has a systemic effect.

The central vein or an artery is usually used when the location where the substance is introduced is far from the entry site of the vein or artery. For instance, a substance introduced directly at the site of a clot in a vein or artery by using a catheter is coded as a thrombolytic substance introduction into a central vein or an artery by a percutaneous approach. In general, the substance introduced into a central vein or artery has a local effect.

The sixth character denotes the substance that is being introduced. Wide classifications of substances are explained, like contrast, anesthetic, dialysate (this ordering removes confusion as to whether or not dialysate is a blood product), and blood products such as platelets. The seventh character is a qualifier that is used to specify if the substance transferred is non-autologous or autologous, or to specify other substances that were introduced.

*Measurement and Monitoring Section*

The characters in the measuring and monitoring section hold the following meanings:

Character 1 = Section
Character 2 = Physiological System
Character 3 = Root Operation
Character 4 = Body System
Character 5 = Approach
Character 6 = Function/Device
Character 7 = Qualifier
Measurement and monitoring section codes show the procedures for identifying the levels of physical or physiological function. Measurement and monitoring procedure codes hold the first character value as “4”. The second character value for the body system is either physiological devices or physiological systems. There are two root operations in this section, briefly explained below:

- Measurement: Determining the physical or physiological function level at a point in time.

- Monitoring: Determining the physiological or physical function level repeatedly within a certain timeframe.

The fourth character shows the body system that is to be monitored and measured. The fifth character shows approaches explained in the medical and surgical section. Rather than specifying the device, the sixth character shows the physical or physiological function being monitored or measured.

Examples of the physical or physiological function values include metabolism, volume, pulse, conductivity and temperature. If a device used to carry out the monitoring or measurement is put in and left in, then the insertion of the device is coded as a distinct medical and surgical section procedure. The seventh character qualifier holds specific values as required to better specify the body part (for example, pulmonary, portal, central, etc.) or the variation of the procedure carried out (for example, stress, ambulatory, etc.).

Examples of usual procedures coded under this section are EGG, EKG and cardiac catheterization. An EKG is the gauge of the cardiac electrical
activity, and an EGG is the measurement of the electrical activity in the central nervous system. A cardiac catheterization used to measure the heart's pressure is coded as the measurement of the cardiac pressure via percutaneous approach.

**Extracorporeal Assistance and Performance Section**

The seven characters in the extracorporeal assistance and performance section hold the following meanings:

Character 1 = Section  
Character 2 = Physiological System  
Character 3 = Root Operation  
Character 4 = Body System  
Character 5 = Duration  
Character 6 = Function  
Character 7 = Qualifier

In the extracorporeal assistance and performance procedures, external equipment that lies outside the body is applied to assist or carry out a physiological function. Extracorporeal help and performance procedure codes hold the first character value of 5. The second character value for the body system is physiological systems. Three root operations are present in this section, as explained below:\(^9\)

- **Assistance:** Taking over a part of the physiological function by extracorporeal ways
- **Performance:** Fully taking over a physiological function via extracorporeal ways
- **Restoration:** Returning or trying to return, a physiological function to the original condition through extracorporeal ways
The root operation restoration entails a single procedure code that specifies the extracorporeal cardioversion. The fourth character shows the body system (for example, respiratory and cardiac) to which the extracorporeal assistance or procedure is carried out. The fifth character shows the duration of the procedure (i.e., single, intermittent, and continuous). In cases of respiratory ventilation performance or assistance, the duration is denoted in hours, i.e., 96 hours. The sixth character shows the physiological function helped or executed (for example, ventilation, oxygenation, etc.) during the procedure. The seventh character qualifier indicates the type of equipment used, if used at all.

**Extracorporeal Therapies Section**

The seven characters in the extracorporeal therapies section hold the following meanings:

Character 1 = Section  
Character 2 = Physiological System  
Character 3 = Root Operation  
Character 4 = Body System  
Character 5 = Duration  
Character 6 = Qualifier  
Character 7 = Qualifier

In extracorporeal therapy the equipment lies outside the body and is applied for a therapeutic purpose that is not concerned with the performance or assistance of a physiological function. Extracorporeal therapy codes hold the first character value of 6. The second character value for the body system is the physiological systems. Ten root operations are present in the extracorporeal therapy section, as explained below:
- Phototherapy: The extracorporeal treatment through light rays.
- Atmospheric control: The extracorporeal control of environment composition and pressure.
- Decompression: The extracorporeal eradication of undissolved gas from the body liquid.
- Electromagnetic therapy: The extracorporeal treatment through electromagnetic rays.
- Hyperthermia: The extracorporeal elevation of body temperature.
- Hypothermia: The extracorporeal decrease in body temperature.
- Pheresis: The extracorporeal separation of the blood products.
- Ultrasound therapy: Extracorporeal treatment via ultrasound.
- Ultraviolet light therapy: The extracorporeal treatment through ultraviolet light.
- Shock wave therapy: Extracorporeal treatment through shock waves.

The fourth character shows the body system on which the extracorporeal therapy is carried out (for example, circulatory, skin, etc.). The fifth character shows the duration of the process (for example, single or intermittent). The sixth character is not denoted for extracorporeal therapies and always contains the value “no qualifier”. The seventh character qualifier is applied in the root operation Pheresis for specifying the blood element on which pheresis is carried out.
Suture of Skin Laceration, Left Lower Arm: 0HQEXZZ

Medical and Surgical section (0), body system Skin and Breast (H), root operation Repair (Q), body part Skin, Left Lower Arm (E), External approach (X), No Device (Z), and No 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), No Device (Z) and No 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), No Device (Z) and No Qualifier (Z).  

Sigmoidoscopy with Biopsy: 0DBN8ZX

Medical and Surgical section (0), body system Gastrointestinal (D), root operation Excision (B), body part Sigmoid Colon (N), Via Natural or Artificial Opening Endoscopic approach (8), No Device (Z) and with qualifier Diagnostic (X).  

Tracheostomy using Tracheostomy Tube: 0B110F4

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 Cutaneous (4).
Obstetrics Section

The seven characters contained in the obstetrics section hold the same meaning as in the medical and surgical section:

Character 1 = Section
Character 2 = Body System
Character 3 = Root Operation
Character 4 = Body Part
Character 5 = Approach
Character 6 = Device
Character 7 = Qualifier

Obstetrics procedure codes hold a first character value of “1”. The second character value for the body system is pregnancy. The root operations Drainage, Change, Insertion, Extraction, Inspection, Repair, Removal, Reposition, Resection and Transplantation are considered for the obstetrics section, and hold the same meaning as in the medical and surgical section.\(^9\) The obstetrics section also entails two additional forms of root operations, Abortion and Delivery, explained below.

- Abortion: Artificial termination of a pregnancy
- Delivery: Assisting the route of the products of conception from the genital canal

The cesarean section does not have its own unique root operation, since the underlying goal is extraction, \(i.e.,\) pulling out all or a part of the body part. The body part values in obstetrics section include:\(^9\)

- Products of conception
- Products of conception, retained
- Products of conception, ectopic
The obstetrics section also entails the procedures carried out on the products of conception only, *i.e.*, the procedure on the pregnant individual are coded in medical and surgical section for example, episiotomy. The term “products of conception” means all physical parts of a pregnancy including the amnion, fetus, umbilical cord and placenta. There is no difference among the products of conception on the basis of gestational age. Therefore, the specification of the products of conception as an embryo, fetus, or zygote, or the trimester of the pregnancy, is not included in the procedure code, however, can be determined in the diagnosis code.  

The fifth character reflects the approaches as explained in the medical and surgical section. The sixth character is applied for devices like fetal monitoring electrodes. Qualifier values are particular to the root operation and are applied to specify the kind of extraction (for example, high forceps, low forceps, low cervical cesarean, high forceps, *etc.*), the kind of fluid coming out during the drainage procedure (for example fetal blood, amniotic fluid, *etc.*), or the body system of the products of conception on which a repair was carried out.

*Osteopathic Section*

The seven characters in the osteopathic section hold the following meaning:

Character 1 = Section  
Character 2 = Anatomical Region  
Character 3 = Root Operation  
Character 4 = Body Region  
Character 5 = Approach  
Character 6 = Method  
Character 7 = Qualifier
Osteopathic procedure codes hold the first character value of 7. The body system character has the value anatomical regions. There is only one root operation in the osteopathic section.

Manual treatment for alleviating or removing somatic dysfunction and other related disorders are outlined in the osteopathic section of ICD-10.\textsuperscript{10} The fourth character shows the body region on which an osteopathic manipulation has been performed. The approach for the osteopathic manipulations is always external. The sixth character shows the means by which the manipulation is achieved. The seventh character is not denoted in the osteopathic section and always holds the “no qualifier” value.

\textit{Other Procedures Section}

The seven characters in the other procedures section hold the following meaning:

Character 1 = Section
Character 2 = Body System
Character 3 = Root Operation
Character 4 = Body Region
Character 5 = Approach
Character 6 = Method
Character 7 = Qualifier

The other procedures section also contains suture removal, acupuncture, and in vitro fertilization. Codes under this section hold the first character value of 8. The second character value for the body system is anatomical regions and physiological systems.\textsuperscript{10} The other procedures section has just one root operation, which is explained below.
Other procedures involve methods that try to cure or remediate a disease or disorder. The fourth character defines the specified body region values, and also the body region values “none” for the extracorporeal procedures. The approaches include external and percutaneous. The sixth character shows the method (for example, robotic assisted procedure and acupuncture etc.). The seventh character is a qualifier and entails specific values as required.

**Chiropractic Section**

The seven characters under the chiropractic section hold the following meanings:

- Character 1 = Section
- Character 2 = Anatomical Region
- Character 3 = Root Operation
- Character 4 = Body Region
- Character 5 = Approach
- Character 6 = Method
- Character 7 = Qualifier

The chiropractic section procedure codes hold the first character value of 9. The second character value for the body system is anatomical regions. Just one root operation falls under the chiropractic section. The manual procedure involves a direct thrust to move a joint past the physiological range of motion with no exceeding anatomical limit. The fourth character shows the body region on which the chiropractic manipulation is carried out.

The approach for the chiropractic manipulation is always external. The sixth character is the technique by which the manipulation is done. The
seventh character is not shown in the chiropractic section and always holds the value “no qualifier”.

*Imaging Section*

The seven characters under the imaging section hold the following meaning:

Character 1 = Section  
Character 2 = Body System Character  
Character 3 = Root Type  
Character 4 = Body Part  
Character 5 = Contrast  
Character 6 = Qualifier  
Character 7 = Qualifier

Imaging procedure codes hold the first character value of “B”. Imaging section codes show the procedures including fluoroscopy, radiography, MRI, CT and ultrasound. Nuclear medicine procedure codes, including the uptakes, scans and PET are under the nuclear medicine section. Therapeutic radiation procedure codes are in the separate radiation oncology section.

Under the imaging section, the second character shows the body system and the fourth character shows the body part. The third character denotes the root type of imaging procedure (for example ultrasound, MRI, etc.).

Table 8, below, contains the list of all type in the imaging section, with a definition of every type.
### Table 8

<table>
<thead>
<tr>
<th>Root Type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plain Radiography</strong></td>
<td>Planar display of an image developed from the capture of external ionizing radiation on photographic or photoconductive plate.</td>
</tr>
<tr>
<td><strong>Fluoroscopy</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Computerized Tomography (CT Scan)</strong></td>
<td>Computer-reformatted digital display of multiplanar images developed from the capture of multiple exposures of external ionizing radiation.</td>
</tr>
<tr>
<td><strong>Magnetic Resonance Imaging (MRI)</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Ultrasonography</strong></td>
<td>Real time display of images of anatomy or flow information developed from the capture of reflected and attenuated high frequency sound waves.</td>
</tr>
</tbody>
</table>

The fifth character shows if the contrast material utilized in the imaging procedures is high or low osmolar, when applicable. The sixth character qualifier gives further detail as required, such as unenhanced followed by enhanced. The seventh character qualifier shows specific values as required in order to specify further the goal of the imaging procedure, like densitometry, or the approach applied, for example, intravascular.10

**Nuclear Medicine Section**

The seven characters in the nuclear medicine section hold the following meaning:

Character 1 = Section
Nuclear medicine section codes define procedures that introduce radioactive material into the body in order to make an image, diagnose and treat pathologic situations, or to evaluate metabolic functions. The nuclear medicine section doesn’t include the introduction of encapsulated radioactive material for treating cancer. These procedures are included in the radiation oncology section.

Nuclear medicine procedure codes hold the first character value of C. The second character shows the body system on which the nuclear medicine procedure is carried out. The third character root type shows the type of nuclear medicine procedure (for example planar imaging or non-imaging uptake). Table 9 shows the root types for nuclear procedures, with a definition of each type.\(^\text{10}\)

<table>
<thead>
<tr>
<th>Root Type</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planar Imaging</strong></td>
<td>Introduction of radioactive materials into the body for single plane display of images developed from the capture of radioactive emissions.</td>
</tr>
<tr>
<td><strong>Tomographic (Tomo) Imaging</strong></td>
<td>Introduction of radioactive materials into the body for three dimensional display of images developed from the capture of radioactive emissions.</td>
</tr>
<tr>
<td><strong>Positron Emission Tomographic (PET) Imaging</strong></td>
<td>Introduction of radioactive materials into the body for three dimensional display of images developed from the simultaneous capture, 180 degrees apart, of radioactive emissions.</td>
</tr>
<tr>
<td><strong>Nonimaging Uptake</strong></td>
<td>Introduction of radioactive materials into the body for measurements of organ function, from the detection of radioactive emissions.</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Nonimaging Probe</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Nonimaging Assay</strong></td>
<td>Introduction of radioactive materials into the body for the study of body fluids and blood elements, by the detection of radioactive emissions.</td>
</tr>
<tr>
<td><strong>Systemic Therapy</strong></td>
<td>Introduction of unsealed radioactive materials into the body for treatment.</td>
</tr>
</tbody>
</table>

The fourth character shows the body region or the body part studied. Regional (for example, lower extremity veins) and combination (for example, spleen and liver) body part values are applied in this section.

The fifth character shows the radionuclide, which is the radiation source. The fifth character value, other radionuclide, is given in the nuclear medicine section for recently approved radionuclides until they can be integrated into the system.

The sixth and seventh characters are not specified in the nuclear medicine section, and always have the value “none”. If more than one radiopharmaceutical is use to carry out the procedure, then more than one code is used.  

*Radiation Oncology Section*

The seven characters under the radiation oncology section hold the following meaning:

Character 1 = Section
Character 2 = Body System
Character 3 = Root Type
Character 4 = Body Part
Character 5 = Modality Qualifier
Character 6 = Isotope
Character 7 = Qualifier

Radiation oncology procedure codes hold a first character value of D. The second character shows the body system (for example, musculoskeletal, central nervous) irradiated. The third character, root type, shows the general modality applied (for example, beam radiation). The fourth character shows the body part that is irradiated. The fifth character specifies further the radiation modality applied (such as electrons or photons). The sixth character shows the isotopes exposed within a body, if any, or whether the beam used is a gamma beam or other photon. The seventh character is not shown in the radiation oncology section and always carries the value “none”.

Physical Rehabilitation and Diagnostic Audiology Section

The seven characters under the physical rehabilitation and diagnostic audiology section hold the following meaning:

Character 1 = Section
Character 2 = Section Qualifier
Character 3 = Root Type
Character 4 = Body System & Region
Character 5 = Type Qualifier
Character 6 = Equipment
Character 7 = Qualifier
Physical rehabilitation section codes show procedures including occupational therapy, speech therapy, and speech-language pathology. Osteopathic procedures and the chiropractic procedures are under sections 7 and 9 respectively. Physical rehabilitation and diagnostic audiology procedure codes hold the first character value of F. The second character shows the section qualifier Rehabilitation or Diagnostic audiology.

The third character shows the root type. There are 14 root type values; those values are further categorized into four basic classifications of rehabilitation and diagnostic procedures, explained as follows:

- **Treatment:** Application of particular methods or activities to make, improve and restore the performance of important functions, alleviate dysfunction and reduce the debilitation
- **Assessment:** Includes the identification of the patient’s diagnosis when required, treatment need, treatment planning, periodic evaluation and documentation related to these functions
- **Fitting(s):** Design, modification, fabrication, selection and/or application of orthosis, splint, hearing aids, prosthesis and other rehabilitation device.
- **Caregiver training:** Educating caregiver with knowledge and the abilities that are used for interacting with and help the patient

The root type treatment entails training and activities that restore function. The fourth character shows the body system or region on which the procedure is carried out. The fifth character implies a type qualifier that further specifies the procedure performed. Examples include treatment to enhance the range of motion and training for bathing techniques. The sixth character shows the equipment utilized. Particular
equipment is not explained in the equipment value. Rather, wide categories of equipment are mentioned (for example, the assistive/adaptive/supportive, aerobic endurance and conditioning, etc.). The seventh character is not identified in the rehabilitation and diagnostic audiology section, and always holds the value “none”.11

Mental Health Section

The seven characters under the mental health section mean the following:

Character 1 = Section
Character 2 = Body System
Character 3 = Root Type
Character 4 = Type Qualifier
Character 5 = Qualifier
Character 6 = Qualifier
Character 7 = Qualifier

Mental health procedure codes hold the first character value of G. The second character is applied to show the body system elsewhere in the ICD-10. Since the body system is not used under this section, the second character always holds the value “none”. The third character shows the root type like counseling and crisis intervention. The fourth character is a type qualifier that shows whether the counseling was vocational or educational. The fifth, sixth and seventh characters are not mentioned and always hold the value “none”.11

Substance Abuse Treatment Section

The seven characters under the substance abuse treatment section hold the following meaning:
Substance abuse treatment codes hold the first character value of H. The second character determines the body system elsewhere in the ICD-10. Since body system is not used under this section the second character always holds the value “none”. The third character indicates the root type. Examples include individual counseling and detoxification services. The fourth character is a type qualifier that includes the values cognitive behavioral, interpersonal, and 12 step. The fifth, sixth, and seventh characters are not shown and always hold the value “none”.11

**Changes In The ICD-10**

During the development stage of ICD-10, extensive input was taken from a broad range of organizations. A technical advisory panel that included representatives from the American Health Information Management Association, the American Medical Association, and the American Hospital Association, gave reviews and opinions throughout the process. The primary draft of ICD-10 was broadly disseminated. Both the electronic and paper version of the system was made available. The copies of ICD-10 were also disseminated to all main physician specialty societies. Also, the Centers for Medicare and Medicaid Services made the ICD-10 accessible for download on its website.9
As a result of the feedback obtained, the system was changed from its primary version to reflect the suggestions from reviewers. The most frequent request was to put in entries to the Tables to show procedures for which there were no corresponding PCS codes. A common request was to add percutaneous and endoscopic approach values for a specific procedure, in order to show the high use of less invasive approaches. More root operations were made in the medical and surgical section, for example fusion.

The approaches were simplified. Originally, there were 17 different approaches. The approaches, which showed the access location as the lining of an orifice itself, were eliminated. These approaches did not make a critical distinction when explaining the procedure carried out, and were integrated into the rest of the approaches by changing the definitions.

Biopsy is not a different root operation, and a number of reviewers recommended that it was significant to differentiate biopsies from the therapeutic procedures. Therefore, the qualifier approach was integrated for application with the root operations excision, drainage, and extraction.

The issue of NOS codes was one of the most highlighted issues. The concern was that enough documentation might not be present in the medical record for supporting the detail needed by the ICD-10. Initially, the ICD-10 did not give NOS code options. As a result of these concerns, changes were made to tackle this issue. Because the ICD-10 is a multiaxial system the NOS issue was tackled separately from each character.\(^5\)
Under the Medical and Surgical section, the issue related to NOS is mainly based on the body part, root operation, and approach characters. The root operation value Repair is an operation of exclusion. If the goal of the procedure qualifies for the definition of one of the other root operations, then repair would not be coded. Repair is only coded when none of the other operations can be used. The ICD-10 coding guidelines were changed to show that if the root operation is unable to be identified from the documentation, and the essential information cannot be gathered from the physician, then the root operation repair may be coded. Repair is the NOS alternative for the root operation character.

In order to tackle the issue of not enough anatomic specificity in the medical record, the use of the general body part values was used. General body part values were then added to as many body systems as required, for use if the specific body part is not specified. For instance, for procedures carried out on the liver, originally the precise component of the liver excised was needed (i.e., the left or the right lobe). The general body part value liver was applied. If the medical documentation doesn’t show the precise part of the liver, and the detail is unable to be gathered from the physician, the coder might allocate the general body part value liver. This gives the user a “liver NOS” option.

Three different body systems were also included, containing fourth character body region values for the general anatomical regions, the regions in the lower and upper extremities. The coder might determine the wide anatomic region where the procedure was carried out, if the complete anatomic detail is not accessible in the medical record, and the essential information cannot be gathered from the physician. There are four general approach classifications: open, percutaneous, through artificial or natural opening, and external.
The ICD-10 coding guidelines were changed to show that if the complete definition of the approach cannot be identified, then general open, transorificie, or percutaneous approach might be coded. The coder would still need to be able to show if the approach was percutaneous, open, external, or transorificie. The distinction is so fundamental to the explanation of the procedure that any less specificity is unacceptable. While the NOS issue mainly concerns the medical and surgical section, there were also NOS related issues present in other sections of the ICD-10. The nuclear medicine, imaging, and radiation oncology sections in ICD-10 contain detail that might not be easily available in the medical record.

In addition, the detail level given by the ICD-10 under these sections, while significant for research and internal management, might not be needed by the payers. For characters under these sections where the complete detail of ICD-10 might not be needed, an “other” value is given. The characters and sections for which an “other” value is given are summarized in Table 10 below:

<table>
<thead>
<tr>
<th>Section Character</th>
<th>Character</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical and Surgical</td>
<td>Character 6 – Device</td>
</tr>
<tr>
<td>Imaging</td>
<td>Character 5 – Contrast</td>
</tr>
<tr>
<td>Nuclear Medicine</td>
<td>Character 5 – Radionuclide</td>
</tr>
<tr>
<td>Radiation Oncology</td>
<td>Character 5 – Isotope</td>
</tr>
</tbody>
</table>

The modifications applied to the ICD-10 to address the NOS issue create a balance between a precise explanation of the procedure and the realities
of the present state of medical record documentation. The following Table 11 shows the number codes by section, in ICD-10.\textsuperscript{7}

<table>
<thead>
<tr>
<th>Section</th>
<th>Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical and Surgical</td>
<td>61,898</td>
</tr>
<tr>
<td>Obstetrics</td>
<td>300</td>
</tr>
<tr>
<td>Placement</td>
<td>861</td>
</tr>
<tr>
<td>Administration</td>
<td>1388</td>
</tr>
<tr>
<td>Measurement and Monitoring</td>
<td>339</td>
</tr>
<tr>
<td>Extracorporeal Assistance and Performance</td>
<td>41</td>
</tr>
<tr>
<td>Extracorporeal Therapies</td>
<td>42</td>
</tr>
<tr>
<td>Osteopathic</td>
<td>100</td>
</tr>
<tr>
<td>Other Procedures</td>
<td>60</td>
</tr>
<tr>
<td>Chiropractic</td>
<td>90</td>
</tr>
<tr>
<td>Imaging</td>
<td>2934</td>
</tr>
<tr>
<td>Nuclear Medicine</td>
<td>463</td>
</tr>
<tr>
<td>Radiation Oncology</td>
<td>1939</td>
</tr>
<tr>
<td>Rehabilitation and Diagnostic Audiology</td>
<td>1380</td>
</tr>
<tr>
<td>Mental Health</td>
<td>30</td>
</tr>
<tr>
<td>Substance Abuse Treatment</td>
<td>59</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>71,924</strong></td>
</tr>
</tbody>
</table>

In total there are 71,924 codes in ICD-10. This shows a substantial increase over the number of ICD-9 procedure codes. The table structure of ICD-10 allows the specification of a vast number of codes on a single page in the Tables. The combined Index and Tables of the ICD-10 are almost half of the physical size of the ICD-10 diagnosis coding manual from the WHO.\textsuperscript{7}
ICD-10 Testing

During an informal test, conducted in 1996, 70 health information experts and professionals were given training in the use of ICD-10. After training, they coded samples from their institutions using ICD-10 and made suggestions and raised issues to the ICD-10 project staff. CMS carried out a formal test of ICD-10 to know if it could be a practical replacement for the ICD-9-CM procedures. The CMS applied two contractors to assess the ICD-10, which were the two clinical data abstraction centers (CDACs) of DynkePRO in York, Pennsylvania and FMAS Columbia, MD.

The major task of the CDACs was to gather clinical data from around 1.5 million medical records within a five-year period. The initial end product of the CDAC contracts was the creation of reliable and accurate clinical data in quantities large enough to support the analytical efforts of the PROs (mobile powered instruments to support workflow) as they conduct the health care quality improvement program. Because the CDACs have a supply of current medical records and high experience already in assessing, abstracting, and coding the medical records, they were chosen to test the ICD-10.

Using the ICD-10 manual for training, the CDACs were trained for two days on the medical and surgical part of the system, and a separate one-day session was also conducted for the rest of the sections (including radiation oncology, nuclear medicine, osteopathic, etc.). The CDACs then took several weeks coding with the ICD-10 to gain experience. Conference calls were conducted to answer any questions before the beginning of the formal testing. In the first stage of the test, a sample of 5,000 medical records was chosen, including cases with a broad distribution of ICD-9 procedure codes.
The CDACs coded the cases via ICD-10, and took into consideration any concerns or questions they had. Concerns and questions were then moved ahead to the project staff, which then reviewed those concerns on an ongoing basis. Through this interaction, a list of recommended revisions to the final draft was developed. This contained terms that required clarification, and deletions identified in the Index or Tables. Furthermore, areas where the training manual could be improved were also identified.

In the second stage of the test, a subset of 100 medical records was coded blindly using both ICD-10 and ICD-9. For the last 50 records, the procedure was reversed, and ICD-10 was coded first and then ICD-9. The systems were also compared on issues like time required determining codes, ease of use, number of codes needed, issues identifying codes, strengths and drawbacks of each system, and any other issues determined by the coding personnel. After the primary learning curve, the CDAC coders were able to apply ICD-10 with ease, with only a few challenges.

Due to the added detail and information in ICD-10, it was sometimes necessary for the coders to refer to an anatomy textbook or medical dictionary. The coders needed a greater understanding of surgical terms and anatomy to use the ICD-10 than was needed to use the ICD-9-CM. Though the initial ICD-10 training manual was quite helpful, the CDACs thought that it required more examples prior to any national training. The CDACs also recommended the incorporation of body system diagrams in the training manual.

Once the CDAC coders became proficient in the ICD-10 they were also able to recommend many improvements, like changes of approach values,
body parts, more index entries, etc. These recommendations have been integrated in subsequent drafts of ICD-10. Testing demonstrated an ease with which ICD-10 can be upgraded and expanded when problems are identified. One more area of concern was the problem of code allocation in various situations; when the records didn’t give satisfactory level of documentation to code the precise procedure or body part, or when the coders do not have sufficient knowledge of anatomy to choose a precise code. These concerns led to NOS modifications of ICD-10 and the coding guidelines previously mentioned.

A comparison of the ICD-9 and the ICD-10 was carried out once the test coders became proficient in the new system. One CDAC stated that the staff did not identify any noticeable time difference while using the ICD-10, as compared to the ICD-9-CM. The other CDAC found that ICD-10-coding took somewhat longer. The ICD-10 needed more codes than the ICD-9. This was because of the fact that ICD-10 uses combination procedure codes and their equivalents, which are coded separately.

It was realized that the precision of ICD-10 led to greater detail regarding the nature of the procedure and thus worth the possible addition in coding time. It was recommended that once coders became familiar with the enhanced precision and detail of ICD-10 the outcome would be enhanced efficiency and accuracy of coding. Both CDACs showed that once the coders become familiar with ICD-10 they hardly used the index. The ICD-10 tables seemed to be better structured and organized, so that coders could readily find the right section of the tables. The index was referred to more often for the root operations identification and other terms that appear in ICD-10.
Once coders knew ICD-10 they found it easier to code right from the tables. Both CDACs termed ICD-10 was an *enhancement* over ICD-9, because it gave higher specificity for usage in statistical analysis, research and administrative areas. A major plus point of the system was its comprehensive structure, which enabled the users to report the procedures carried out more precisely. The National Committee on vital and health statistics (NCVHS) published a report stating suggestions for the new procedure classification system. NCVHS determined the important characteristics, which a procedure system should have. These characteristics have been listed in Table 12 below. Table 12 shows how the ICD-10 meets virtually all NCVHS characteristics, while the ICD-9 does not. Along with the NCVHS characteristics, there are various other traits of the procedure coding system that must be considered when comparing the systems.10

<table>
<thead>
<tr>
<th>NCVHS Characteristics</th>
<th>ICD-9-CM</th>
<th>ICD-10-PCS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hierarchical structure:</strong> Ability to aggregate data from individual codes into larger categories</td>
<td>Hierarchical structure: The ability to aggregate by body system is provided but there is no ability to aggregate by other components of a procedure</td>
<td>Hierarchical structure: The ability to aggregate across all essential components of a procedure is provided</td>
</tr>
<tr>
<td>Each code has a unique definition forever - not reused</td>
<td>Some codes do not have a unique definition because the codes have been reused</td>
<td>All codes have a unique definition</td>
</tr>
<tr>
<td><strong>Expandability:</strong> Flexibility to new procedures and technologies (“empty” code numbers)</td>
<td>Expandability: Minimal flexibility. New procedures and technologies are difficult to incorporate. Virtually no empty code numbers</td>
<td>Expandability: Extensive flexibility. New procedures and technologies are easily incorporated. Virtually unlimited empty code values available.</td>
</tr>
<tr>
<td>Mechanism for periodic updating</td>
<td>Updated annually through Coordination and Maintenance Committee</td>
<td>Update process needs to be established. If ICD-10-PCS replaces ICD-9-CM, Coordination and Maintenance Committee would be responsible for update process</td>
</tr>
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<td>--------------------------------</td>
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</tr>
<tr>
<td>Code expansion must not disrupt systematic code structure</td>
<td>Code expansions are difficult to incorporate without disrupting systematic code structure</td>
<td>Code expansions do not disrupt systematic structure</td>
</tr>
</tbody>
</table>

**Comprehensive:**
Provides NOS and NEC categories so that all possible procedures can be classified somewhere

- Includes all types of procedures
- Applicability to all setting and types of providers

**Comprehensive:**
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

- All types of procedures are included although there is minimal detail for many types of procedures

**Comprehensive:**
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

- All types of procedures are included except evaluation/management procedures. Complete detail is provided for all types of procedures.
- All settings and types of providers are covered except physician office services for evaluation and management. Complete detail is provided for all settings/types of providers.
<table>
<thead>
<tr>
<th>Non-Overlapping:</th>
<th>Non-Overlapping:</th>
<th>Non-Overlapping:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each procedure (or component of a procedure) is assigned to only one code</td>
<td>The same procedure when performed for different diagnoses is sometimes assigned to multiple codes</td>
<td>Each procedure is assigned to only one code</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ease of Use:</th>
<th>Ease of Use:</th>
<th>Ease of Use:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standardization of definitions and terminology</td>
<td>No standard definitions provided. Terminology is inconsistent across codes</td>
<td>All terminology is precisely defined. All terminology is used constantly across all codes</td>
</tr>
<tr>
<td>Adequate indexing and annotation for all users</td>
<td>Full index but specificity of index varies across codes</td>
<td>Full index. Index is computer generated. so specificity of index is consistent across codes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Setting and Provider Neutrality:</th>
<th>Setting and Provider Neutrality:</th>
<th>Setting and Provider Neutrality:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same code regardless of who or where procedure is performed</td>
<td>Codes are independent of who or where procedure is performed</td>
<td>Codes are independent of who or where procedure is performed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multiaxial:</th>
<th>Multiaxial:</th>
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<tbody>
<tr>
<td>Body system(s) affected</td>
<td>Body system affected can be determined from code number.</td>
<td>A specific character in the code specifies the body system affected.</td>
</tr>
<tr>
<td>Technology used</td>
<td>Limited and inconsistent specification of technology used.</td>
<td>Technology used is specified in the approach character of the code.</td>
</tr>
<tr>
<td>Techniques/approaches used</td>
<td>Limited and inconsistent specification of techniques/approaches used</td>
<td>Techniques/approaches used are specified in the approach character of the code.</td>
</tr>
</tbody>
</table>
The independent assessment of ICD-10 illustrated a learning curve linked with the introduction of ICD-10. Because the CDAC staff was composed of trained ICD-9 coders, this evaluation could not include a formal comparison of the primary training time for the ICD-9 and ICD-10. Due to the enhanced specificity provided by ICD-10, there is a possibility that the training time required to attain the least level of coding proficiency is higher for ICD-10 than that of ICD-9. However, while it might take longer to attain the lowest level of proficiency with the ICD-10, it should consume less time to become a highly proficient ICD-10 coder than a highly proficient ICD-9 coder.\(^\text{12}\)

Since ICD-9 doesn’t contain clear definitions and since a number of substantial different procedures are coded with the same code, the
determination of the correct code needs extensive knowledge of other coding guidelines. Becoming familiar with all the conventions of ICD-9 takes a lot of effort, and thus, the process of being highly proficient in ICD-9-CM necessitates a long learning curve. The CDACs stated that procedures coded in the ICD-10 gave much more accurate and comprehensive explanations of the procedures carried out. The specification of the procedure carried out influences not just payment, but is vital to internal management, external performance comparisons, and the evaluation of the quality of care.

The completeness of ICD-10 is important in health care settings today. ICD-9-CM procedure codes usually give a poor explanation of the precise procedure carried out. Physicians evaluating data codes in the ICD-9-CM might have problem in developing clinical routes, assessing the coding for possible abuse or fraud, or carrying out research. The ICD-10 codes give more clinically pertinent procedure explanations that can be better understood by the users.

**The ICD-10 Chapters**

The ICD-10 includes chapters that list and explain various coding sections. The various ICD-10 chapters with their pertinent coding sections will be discussed below, including highlights of the new classification improvements and expanded specifiers using revised terminology (as mentioned in the previous discussion). Apart from a brief description of some of the diseases covered in the ICD-10, mention is made of the codes corresponding to disease states so as to support readers to better understand how the coding has been done and how to read it for effective reporting.
Certain Infections And Parasitic Diseases

The section on infections and parasitic disease in this section contains information regarding the classification of certain infectious and parasitic diseases, as described by ICD-10. According to the ICD-10, parasitic and infectious diseases include those that are usually taken as transmissible or communicable. The following are the exceptions:

- Suspected carrier or carrier of infectious disease
- Some localized infections
- Parasitic and infectious diseases complicating childbirth, pregnancy and puerperium (except the obstetrical tetanus)
- Parasitic and infectious diseases particular to perinatal period (except tetanus, congenital syphilis, neonatorum, perinatal human immunodeficiency virus, (i.e., HIV) and perinatal gonococcal infection.
- Influenza and other kinds of acute respiratory infections

Carrier of Infectious Disease\(^\text{14}\)

Included: suspected carrier

- Z22.0 Carrier of typhoid
- Z22.1 Carrier of other intestinal infectious diseases
- Z22.2 Carrier of diphtheria
- Z22.3 Carrier of other specified bacterial diseases
  - Carrier of bacterial disease due to:
    - meningococci
    - staphylococci
    - streptococci
• Z22.4 Carrier of infections with a predominantly sexual mode of transmission
  
  Carrier of:
  o gonorrhoea
  o syphilis

• Z22.6 Carrier of human T-lymphotropic virus type-1 [HTLV-1] infection

• Z22.8 Carrier of other infectious diseases

• Z22.9 Carrier of infectious disease, unspecified

**Infectious and Parasitic Diseases Classifiable Elsewhere but Complicating Childbirth Pregnancy, and the Puerperium**

The mentioned conditions, which complicate pregnancy, aggravate it, or a reason for obstetric care, include the following:

• 098.0 Tuberculosis complicating pregnancy, childbirth and the puerperium

• 098.1 Syphilis complicating pregnancy, childbirth and the puerperium

• 098.2 Gonorrhea complicating pregnancy, childbirth and the puerperium

• 098.3 Other infections with a predominantly sexual mode of transmission complicating pregnancy, childbirth and the puerperium

• 098.4 Viral hepatitis complicating pregnancy, childbirth and the puerperium

• 098.5 Other viral diseases complicating pregnancy, childbirth and the puerperium
• O98.6 Protozoal diseases complicating pregnancy, childbirth and the puerperium

• O98.7 Human immunodeficiency virus [HIV] disease complicating pregnancy, childbirth and the puerperium

• O98.8 Other maternal infectious and parasitic diseases complicating pregnancy, childbirth and the puerperium

• O98.9 Unspecified maternal infectious or parasitic disease complicating pregnancy, childbirth and the puerperium

Excluded:

• Asymptomatic human immunodeficiency virus [HIV] infection status (Z21)

• Laboratory evidence of human immunodeficiency virus [HIV] (R75)

• Obstetrical tetanus (A34)

• Puerperal:
  o infection (O86)
  o sepsis (O85)

• When the reason behind the maternal care is that the disease is diagnosed or suspected to have affected the fetus (O35-O36)

**Congenital Virus Diseases**

• P35.0 Congenital rubella syndrome
  o Congenital rubella pneumonitis

• P35.1 Congenital cytomegalovirus infection

• P35.2 Congenital herpes viral [herpes simplex] infection

• P35.3 Congenital viral hepatitis
• P35.8 Other congenital viral diseases
  o Congenital varicella [chickenpox]
• P35.9 Congenital viral disease, unspecified

**Acute Nasopharyngitis**

Included:
- Coryza (acute)
  - Nasal catarrh, acute
- Nasopharyngitis
  - NOS
- Infective NOS
  Rhinitis:
  - acute
  - infective
Excluded:
- Asopharyngitis, chronic
- Pharyngitis:
  - NOS
  - acute
  - chronic
- Rhinitis:
  - NOS
  - allergic
  - chronic
  - vasomotor
- Sore throat:
  - NOS
  - acute
This section contains the following disease blocks, a few of which will be discussed.15

- A00-A09 Intestinal infectious diseases
- A15-A19 Tuberculosis
- A20-A28 Certain zoonotic bacterial diseases
- A30-A49 Other bacterial diseases
- A50-A64 Infections with a predominantly sexual mode of transmission
- A65-A69 Other spirochetal diseases
- A70-A74 Other diseases caused by Chlamydia
- A75-A79 Rickettsioses
- A80-A89 Viral infections of the central nervous system
- A92-A99 Arthropod-borne viral fevers and viral hemorrhagic fevers
- B00-B09 Viral infections characterized by skin and mucous membrane lesions
- B15-B19 Viral hepatitis
- B20-B24 Human immunodeficiency virus [HIV] disease
- B25-B34 Other viral diseases
- B35-B49 Mycoses
- B50-B64 Protozoal diseases
- B65-B83 Helminthiases
- B85-B89 Pediculosis, ascariases and other infestations
- B90-B94 Sequele of infectious and parasitic diseases
- B95-B98 Bacterial, viral and other infectious agents
• B99-B99 Other infectious diseases

**Intestinal Infectious Diseases**

*Cholera*

- A00.0 Cholera due to *Vibrio cholera* 01, biovar cholera (Classical cholera)
- A00.1 Cholera due to *Vibrio cholera* 01, biovareltor (Cholera eltor)
- A00.9 Cholera, unspecified

Cholera is the infection that affects small intestine by certain strains of the bacterium called *Vibrio Cholera*. The symptoms of this disease range from none to mild, and mild to severe. The major symptom is a huge quantity of watery diarrhea that remains for few days. In addition, vomiting and muscle cramps may occur.

Severe diarrhea may lead to dehydration and electrolyte imbalance. This causes cold skin, sunken eyes, wrinkling of hands and feet and reduced skin elasticity. Symptoms are usually seen two to five days after its occurrence.

*Tuberculosis*

- A15.1 Tuberculosis of lung, confirmed by culture only
- A15.2 Tuberculosis of lung, confirmed histological
- A15.3 Tuberculosis of lung, confirmed by unspecified means
- A15.4 Tuberculosis of intrathoracic lymph nodes, confirmed bacteriological and histological
• A15.5 Tuberculosis of larynx, trachea and bronchus, confirmed bacteriological and histological

• A15.6 Tuberculosis pleurisy, confirmed bacteriological and histological

• A15.7 Primary respiratory tuberculosis, confirmed bacteriological and histological

• A15.8 Other respiratory tuberculosis, confirmed bacteriological and histological

• A15.9 Respiratory tuberculosis unspecified, confirmed bacteriological and histological

Tuberculosis, or TB or MTB, short form of tubercle bacillus or Mycobacterium tuberculosis, respectively, is a common widespread disease that is caused due to strains of Mycobacterium, generally Mycobacterium tuberculosis. The disease usually attacks lungs; however, it can also influence other body parts. It is transmitted from an infected person to uninfected persons through air, cough, sneezing, or other fluids that stay in the air. The major symptoms include chronic cough, blood tinged spit, night sweats, fever and rapid weight loss.

**Certain Zoonotic Bacterial Diseases**

• A20.0 Bubonic plague
• A20.1 Cellulocutaneous plague
• A20.2 Pneumonic plague
• A20.3 Plague meningitis
• A20.7 Septiceemic plague
• A20.8 Other forms of plague
• A20.9 Plague, unspecified
• A21.0 Ulceroglandulartularemia
• A21.1 Oculoglandulartularemia
• A21.2 Pulmonary tularemia
• A21.3 Gastrointestinal tularemia
• A21.7 Generalized tularemia
• A21.8 Other forms of tularemia
• A21.9 Tularemia, unspecified
• A22.0 Cutaneous anthrax
• A22.1 Pulmonary anthrax
• A22.2 Gastrointestinal anthrax
• A22.7 Anthrax sepsis
• A22.8 Other forms of anthrax
• A22.9 Anthrax, unspecified
• A23.0 Brucellosis due to Brucellamelitensis
• A23.1 Brucellosis due to Brucellaabortus
• A23.2 Brucellosis due to Brucellasuis
• A23.3 Brucellosis due to Brucellacanis
• A23.8 Other brucellosis
• A23.9 Brucellosis, unspecified
• A24.0 Glanders
• A24.1 Acute and fulminating melioidosis
• A24.2 Subacute and chronic melioidosis
• A24.3 Othermelioidosis
• A24.4 Melioidosis, unspecified
• A25.0 Spirillosis
• A25.1 Streptobacillosis
• A25.9 Rat-bite fever, unspecified
• A26 Erysipeloid
• A26.0 Cutaneous erysipeloid
• A26.7 Erysipelothrix sepsis
• A26.8 Other forms of erysipeloid
• A26.9 Erysipeloid, unspecified
• A27 Leptospirosis
• A27.0 Leptospirosis icterohemorrhagica
• A27.8 Other forms of leptospirosis
• A27.9 Leptospirosis, unspecified
• A28 Other zoonotic bacterial diseases, not elsewhere classified
• A28.0 Pasteurellosis
• A28.1 Cat-scratch disease
• A28.2 Extraintestinal yersiniosis
• A28.8 Other specified zoonotic bacterial diseases, not elsewhere classified
• A28.9 Zoonotic bacterial disease, unspecified

**Bubonic Plague**

Bubonic plague is one of the three kinds of bacterial infection that is caused by Yersinia pestis.\(^ {15} \) Flu like symptoms appear after 1 week of exposure to bacteria. This includes headache, fever, and vomiting. Painful and swollen lymph nodes appear in the areas closest to where the bacteria entered the skin. Often the lymph nodes break open. It is primarily spread by infected fleas from small animals, and also from the exposure to body fluids from a dead infected animal. The infection enters the skin through a fleabite and makes its way through the lymph nodes, making them swell. Diagnosis is made though blood, sputum, and lymph node fluid test.\(^ {15} \)
Glanders

Glanders is an infectious disease that occurs mainly in horses, donkeys, and mules. It can be exposed to other animals like goats, cats, and dogs. The bacterium Burkholderia malleus is responsible for this infection, which can also enter the body through contaminated food and water. Symptoms include development of nodular lesions in the lungs and ulceration of the mucous membranes in the upper respiratory tract. Other signs include fever, coughing, and release of infected nasal discharge.

Neoplasms

This section contains information regarding the classification of neoplasms, as described by the ICD-10.

Primary, Ill-defined, Secondary and Unspecified Locations of Malignant Neoplasm

Classification C76-C80 include the malignant neoplasms which are not clearly indicated in the original location of the cancer or the cancer that is asserted to be “disseminated”, “spread” or “scattered” without mentioning the primary location. In both of the cases, the primary location is taken as unknown.

Functional Activity

All neoplasms are categorized under this section, whether these are active in functional terms or not. An additional code from the ICD-10 Chapter on neoplasms might be used, if needed, to determine the functional activity linked with any kind of neoplasm. For instance, the catecholamine-releasing malignant pheochromocytoma of the adrenal gland is to be coded to C74 with an additional code E27.5, and basophile adenoma of
the pituitary gland having Cushing syndrome is to be coded to D35.2 with an additional code of E24.0.16

*Morphology*

There are various major morphological (historical) classes of malignant neoplasms like carcinomas including squamous (cell) and the adenocarcinomas, sarcomas, other soft tissue tumors such as mesotheliomas, lymphomas (Hodgkin and non Hodgkin), leukemia, other specified and location-specific kinds and some uncertain cancers. Cancer is a common term and might be used for any of these mentioned groups, though it is hardly applied to the malignant neoplasms of hematopoietic, lymphatic and related tissue. Carcinoma is often used wrongly as an alternate term for “cancer”.

Neoplasms are categorized predominantly by location in the wide groupings for behavior. In certain exceptional cases morphology is shown under the category and subcategory titles. For those wanting to determine the histological kind of neoplasm, complete separate morphology codes are given in the morphology section of the neoplasms chapter. These codes have been extracted from the second edition of ICD-O (ICD for Oncology), which is a dual-axis categorization, giving independent coding systems for morphology and topography.

Morphology codes hold six digits; the first four show the histological type, the fifth digit represents the behavior code (malignant primary, malignant secondary (metastatic), in situ, benign, uncertain whether benign or malignant); the sixth digit is the grading code (*i.e.*, differentiation) for firm tumors, and is also taken as a unique code for the leukemia and lymphomas.16
Malignant Neoplasms Overlap Site Boundaries and the Use of Subcategory

The categories C00-C75 categorize the primary malignant neoplasms as per the point of origin. Many three-character classifications are further classified into subcategories or named parts of the organ in question. A neoplasm overlapping two or more affected sites in the three-character category, and whose point of origin cannot be identified should be categorized into subcategory of overlapping lesion, unless the combination is particularly indexed elsewhere. For instance, the carcinoma of the stomach and esophagus is specifically indexed to the C16.0 (cardia), while the carcinoma of the ventral space and tip of the tongue should be allocated to C02.8. On the contrary, carcinoma of the tip of the tongue extending to the ventral surface is coded as C02.1 as the origin point (the tip) is known.

“Overlapping” means that the locations involved are contiguous. In numerical terms, the consecutive subcategories are frequently anatomically contiguous, however, this is not always so (for example, the bladder, C67), and the coder might want to consult anatomical texts to identify the topographical associations. Often the neoplasm overlaps the three character category boundaries in certain systems. To cater to this, the following subcategories have been established:

- C02.8 Overlapping lesion of tongue
- C08.8 Overlapping lesion of major salivary glands
- C14.8 Overlapping lesion of lip, oral cavity and pharynx
- C21.8 Overlapping lesion of rectum, anus and anal canal
- C24.8 Overlapping lesion of biliary tract
- C26.8 Overlapping lesion of digestive system
- C39.8 Overlapping lesion of respiratory and intrathoracic organs
• C41.8 Overlapping lesion of bone and articular cartilage
• C49.8 Overlapping lesion of connective and soft tissue
• C57.8 Overlapping lesion of female genital organs
• C63.8 Overlapping lesion of male genital organs
• C68.8 Overlapping lesion of urinary organs
• C72.8 Overlapping lesion of central nervous system

An example in this regard can be the carcinoma of small intestine and stomach, which would be coded to C26.8 (overlapping lesion of the digestive system).

**Malignant Neoplasms of Ectopic Tissue**

Malignant neoplasms of ectopic tissue are to be coded to the location where they are found, for example the ectopic pancreatic malignant neoplasms of the ovaries are to be coded to the ovaries (C56).

*Usage of Alphabetical Index for Coding Neoplasms*

Along with the site, behavior and morphology must also be considered while coding neoplasms, and reference is to be made first to the alphabetical index entry for the morphological explanation. The initial page of ICD-10, volume 3, includes general guidelines regarding the correct use of the alphabetical index. The particular examples and guidelines related to neoplasms must be consulted to make sure of the correct use of categories and subcategories in ICD-10.
**Use of the Second Edition of ICD-10 (ICD for Oncology)**

For various morphological kinds, the ICD-10 gives a restricted topographical categorization or none at all. The topography codes of ICD-10 are applied to all neoplasms, basically the same three and four character categories that the correlating chapter of the code applied for malignant neoplasms (C00-C77, C80), therefore giving enhanced specificity for the location for other neoplasms (malignant secondary metastatic, benign, in situ, and unknown or uncertain).

It is suggested that agencies concerned with determining both morphology and location of tumors, for example, cancer hospitals, cancer registers, pathology departments and other agencies related to cancer, will highly benefit from the use of ICD-10. This section contains the following disease blocks.

- C00-C97 Malignant neoplasms
- C00-C75 Malignant neoplasms stated or presumed to be primary, of specified sites, except of lymphoid, hematopoietic and related tissue
- C00-C14 Malignant neoplasms of lip, oral cavity and pharynx
- C15-C26 Malignant neoplasms of digestive organs
- C30-C39 Malignant neoplasms of respiratory and intrathoracic organs
- C40-C41 Malignant neoplasms of bone and articular cartilage
- C43-C44 Melanoma and other malignant neoplasms of skin
- C45-C49 Malignant neoplasms of mesothelial and soft tissue
- C50-C50 Malignant neoplasm of breast
- C51-C58 Malignant neoplasms of female genital organs
- C60-C63 Malignant neoplasms of male genital organs
• C64-C68 Malignant neoplasms of urinary tract
• C69-C72 Malignant neoplasms of eye, brain and other parts of central nervous system
• C73-C75 Malignant neoplasms of thyroid and other endocrine glands
• C76-C80 Malignant neoplasms of ill-defined, secondary and unspecified sites
• C81-C96 Malignant neoplasms stated or presumed to be primary, of lymphoid, hematopoietic and related tissue
• C97-C97 Malignant neoplasms of independent (primary) multiple sites
• D00-D09 In situ neoplasms
• D10-D36 Benign neoplasms
• D37-D48 Neoplasms of uncertain or unknown behavior

**Malignant Neoplasms**

If needed, the use of the additional code (U85) is recommended to determine the resistance, refractive properties of neoplasm, and non-responsiveness to antineoplastic drugs; malignant neoplasms, stated or supposed to be primary, of specified locations, except of hematopoietic lymphoid and related tissue refer to C00-C75 in the code.

**Malignant Neoplasms of Lip, Oral Cavity and Pharynx**

• C00 Malignant neoplasm of lip
  Excluded:
  • skin of lip (C43.0, C44.0)
• C00.0 External upper lip
- NOS
  - lipstick area
  - vermilion border
- C00.1 External lower lip
  - NOS
  - lipstick area
  - vermilion border
- C00.2 External lip, unspecified
  - Vermilion border NOS
- C00.3 Upper lip, inner aspect
  - buccal aspect
  - frenulum
  - mucosa
  - oral aspect
- C00.4 Lower lip, inner aspect
  - buccal aspect
  - frenulum
  - mucosa
  - oral aspect
- C00.5 Lip, unspecified, inner aspect
  (Lip, not specified whether upper or lower):
  - buccal aspect
  - frenulum
  - mucosa
  - oral aspect
- C00.6 Commissure of lip
- C00.8 overlapping lesion of lip
- C00.9 Lip, unspecified
The malignant neoplasm on the lip or mouth usually occurs at an average age of 60 years, with its frequency 8 times higher in men than in women. Predisposing factors include heavy use of alcohol, tobacco, poor oral hygiene, syphilis, ill-fitting dentures, Plummer-Vinson syndrome, pipe smoking, betel nut chewing, and over exposure to wind and sun. Premalignant leukoplakia or painless non-healing ulcer or erythroplasia might be the initial sign of oral cancer, localized pain is felt later, however, lymph nodes might appear in the initial stages.\textsuperscript{17}

Diagnostic techniques include biopsy, digital examination, exfoliative cytology, and X-ray film of the mandible to identify the metastatic lung lesions:

- C01 Malignant neoplasm of base of tongue
  
  Included:
  
  - Dorsal surface of base of tongue
  - Fixed part of tongue NOS
  - Posterior third of tongue

The site of the base of tongue neoplasm is critical for diagnosis, management and prognosis. The base of the tongue is the location for the posterior opening of the oral cavity, the entrance of esophagus and pharynx, and the inferior site of the nasopharynx. The surgical handling of the malignant neoplasms of the tongue base remains difficult in spite of the latest advances in diagnostic methods.\textsuperscript{18}

A lot of older patients present an advanced stage of disease, since the symptoms are not diagnosed on time. The treatment process sometimes
influences adjacent structures, like the posterior floor of the esophagus, larynx, and mouth.

- C03 Malignant neoplasm of gum
  
  Included:
  - alveolar (ridge) mucosa, gingival

  Excluded:
  - malignant odontogenic neoplasms (C41.0-C41.1)
    - C03.0 Upper gum
    - C03.1 Lower gum
    - C03.9 Gum, unspecified

Gum cancer is a kind of malignancy that happens when there is an uncontrolled expansion of cancer cells in the gums. Gum cancer is a kind of oral cancer, and is a comparatively rare kind of cancer. Gum cancer is easily curable and treatable if diagnosed in the early stages of the disease. It expands rather slowly; however, untreated and advanced forms of it can penetrate deeper into the mouth and neck tissues. In later stages, the cancer can expand through the lymph nodes and the blood to other body parts, where the cancer cells are able to make another cancerous tumor (metastasis). Gum cancer and other kinds of oral cancer hold a high risk for reoccurring after treatment.\(^{19}\)

The initial symptoms of gum cancer include a lesion or a sore on the gums that does not heal within two weeks. There may not be a single symptom that is easily visible or diagnosed in the earliest and most curable stage of this cancer. People who hold a risk of being potential victims include people who smoke and consume alcohol excessively. Using smokeless tobacco also enhances the risk of gum cancer. Risks also include being a victim of human papilloma virus (HPV).\(^{19}\) A diet that
contains less fruits and vegetables also increase the risk factors of this neoplasm.

Men are more prone to this cancer than women, and people over 60 years of age are at greater risk than younger people. Gum cancer has recently been noted in younger people at an alarming rate. The diagnosis of this disease starts with taking a full personal and family health history, including risk factors and symptoms that are involved with gum cancer. Diagnosis also entails completing a physical examination that focuses on gums, lips, mouth and tongue.

It is quite possible that the early symptoms of gum cancer, or even oral cancer, is diagnosed by the dentist doing an oral exam of the patient. The lymph node formation in the neck is also seen as a sign of swelling during the examination. Diagnostic testing for this cancer also includes biopsy. In a biopsy, a sample of tissues or cells is obtained from area of gums that lump, lesion, or exhibit any abnormal growth. The sample is then inspected under the microscope to detect the presence of cancer cells.

**Diseases Of The Blood**

This ICD-10 contains information regarding the classification of blood diseases and disorders.

**Diseases of the Blood and Blood-Forming Organs and Certain Disorders Involving the Immune Mechanism**

Excluded in this category are:

- Autoimmune disease (systemic), NOS (M35.9)
• Certain conditions originating in the perinatal period (P00-P96)
• Complications of pregnancy, childbirth and the puerperium (O00-O99)
• Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
• Endocrine, nutritional and metabolic diseases (E00-E90)
• Human immunodeficiency virus [HIV] disease (B20-B24)
• Injury, poisoning and certain other consequences of external causes (S00-T98)
• Neoplasms (C00-D48)
• Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

The ICD-10 section on blood diseases, blood-forming organs and certain disorders pertaining to the immune mechanism includes the following blocks.¹¹

• D50-D53 Nutritional anemia
• D55-D59 Hemolytic anemia
• D60-D64 Aplastic and other anemia
• D65-D69 Coagulation defects, purpura and other hemorrhagic conditions
• D70-D77 Other diseases of blood and blood-forming organs
• D80-D89 Certain disorders involving the immune mechanism

**Nutritional Anemia**¹³
• D50 Iron deficiency anemia
  Included:
  o anemia
  o asiderotic
  o hypochromic
  
  • D50.0 Iron deficiency anemia secondary to blood loss (chronic)
    a Post-hemorrhagic anemia (chronic)
  Excluded:
  o acute post hemorrhagic anemia (D62)
  o congenital anemia from fetal blood loss (P61.3)

• D50.1 Sideropenic dysphasia
  o Kelly-Paterson syndrome
  o Plummer-Vinson syndrome

• D50.8 Other iron deficiency anemia

• D50.9 Iron deficiency anemia, unspecified

• D 51- Vitamin B12 deficiency anemia
  Excluded:
  o Vitamin B12 deficiency (E53.8)

• D51.0 Vitamin B12 deficiency anemia due to intrinsic factor deficiency
  a Anemia:
    – Addison
    – Biermer
    – Pernicious (congenital)
  o Congenital intrinsic factor deficiency

• D51.1 Vitamin B12 deficiency anemia due to selective vitamin B12 malabsorption with proteinuria
Imerslund(-Gräsbeck) syndrome
- Megaloblastic hereditary anemia
  - D51.2 Transcobalamin II deficiency
  - D51.3 Other dietary vitamin B12 deficiency anemia
    - Vegan Anemia
  - D51.8 Other vitamin B12 deficiency anemia
  - D51.9 Vitamin B12 deficiency anemia, unspecified
- D52 Folate deficiency anemia
  - D52.0 Dietary folate deficiency anemia
    - Nutritional megaloblastic anemia
  - D52.1 Drug-induced folate deficiency anemia
  - D52.8 Other folate deficiency anemias
  - D52.9 Folate deficiency anemia, unspecified
    - Folic acid deficiency anemia NOS
  - D53 other nutritional anemia

Included:
- Megaloblastic anemia unresponsive to vitamin B12 or foliate therapy

- D53.0 Protein deficiency anemia
  - Amino-acid deficiency anemia
  - Orotaciduric anemia

Excluded:
- Lesch-Nyhan syndrome (E79.1)
- D53.1 Other megaloblastic anemia, not elsewhere classified
  - Megaloblastic anemia NOS
  - Di Guglielmo disease (C94.0)
• D53.2 Scorbutic anemia
  o Scurvy (E54)

• D53.8 Other specified nutritional anemia
  o anemia associated with deficiency of:
    – copper
    – molybdenum
    – zinc
  o nutritional deficiencies without mention of anemia, such as:
    – copper deficiency (E61.0)
    – molybdenum deficiency (E61.5)
    – zinc deficiency (E60)

• D53.9 Nutritional Anemia, Unspecified
  o Simple chronic anemia

Excluded:
  o Anemia NOS (D64.9)

**Iron Deficiency Anemia**

Anemia is a situation in which the body becomes unable to produce sufficient healthy red blood cells. Red blood cells are the source of oxygen for the body tissues. There are various kinds of anemia as mentioned in the ICD-10 and, therefore, the coding has been done accordingly.

Iron deficiency anemia happens when the body does not contain enough iron. Iron is a raw material in the making of red blood cells. Iron deficiency anemia is the most common anemia in the world. Healthy red blood cells are developed in bone marrow. Red blood cells travel through
body for 3 to 4 months. Parts of the body like the spleen remove the old blood cells.\textsuperscript{21}

As stated by the Centers for Disease Control and Prevention, iron deficiency is the most general nutritional deficiency in the United States. It is the biggest cause of anemia.\textsuperscript{21} There are various reasons that determine why a person becomes iron deficient.

**Insufficient Iron Intake**

Consuming too little amount of iron for an extensive period of time can lead to an iron shortage in the body. Iron can be obtained from foods like eggs, meat, and some leafy green vegetables. Pregnant females, and growing children might need even more iron in their diet, since it is important during their era of fast growth and development.\textsuperscript{22}

*Pregnancy or Severe Blood Loss Because of Menstruation*

In a female of childbearing age, the most common causes of iron deficiency anemia are blood loss during childbirth, or extreme menstrual bleeding. The Centers for Disease Control and Prevention have found that almost 9\% of females aged between 12 and 49 years, have less iron in their body than their body requires.\textsuperscript{22}

*Internal Bleeding*

Some medical situations can also lead to internal bleeding, which can cause iron deficient anemia. Examples include polyps (tissue growth) in intestines or colon, stomach ulcers, or colon cancer. Very frequent use of painkillers like aspirin can also be a cause of stomach bleeding.
Inability of the Body to Absorb Iron

Some surgeries or disorders that influence the intestine may also disturb the ability of the body to absorb iron. Even if a person gets enough iron through diet, celiac disease or an intestinal surgery like gastric bypass, might reduce the quantity of iron the body can absorb.

The symptoms of iron deficiency anemia can be quite mild initially, and may go fully unnoticed. Even most of the victims do not know they have mild anemia unless it is diagnosed in their routine blood test. Some of the moderate to severe symptoms of iron deficiency anemia include:

- general fatigue
- weakness
- pale skin
- shortness of breath
- dizziness
- strange cravings such as craving for dirt, ice, and clay
- crawling feeling in the legs
- soreness in the tongue
- cold hands and feet
- irregular heartbeat
- brittle nails
- headaches

Diagnosis

Anemia is diagnosed with the blood tests that include those listed below.

1. Complete Blood Cell (CBC) Test:
   This is the test that is generally the first test used by a doctor to determine whether or not a patient is anemic. A CBC test calculated
the quantity of all elements in the blood including red blood cells (RBCs), white blood cells, hematocrit, hemoglobin, and platelets. The CBC test gives information regarding blood that is useful in diagnosing iron deficiency anemia. This information includes hemoglobin levels, hematocrit levels (i.e., the percentage of volume of blood made up of RBCs, and size of RBCs).24

In iron deficient anemia, the hemoglobin and hematocrit levels are quite low and RBCs are generally smaller in size. A CBC test is usually carried out as a part of a routine physical inspection.24 It is an accurate indicator of the overall health of a patient. It might also be carried out prior to surgery. This test is quite helpful for diagnosing this kind of anemia since most people are not aware of their iron deficiency.

2. Other tests:

Anemia can generally be confirmed with the CBC test. However, the medical provider might suggest additional tests to determine the extent of the anemia and how to cure it. They might also inspect the blood through a microscope. These tests provide additional details or information including:24

- RBC size and color (RBCs color is pale if they are deficient in iron)
- Ferritin levels (this protein is helpful for boosting iron storage in the body. Low levels mean low iron storage)
- Iron level in blood
- Total iron-binding capacity: It is a test carried out to determine the quantity of a protein, called transferrin, which carries iron.
**Vitamin B12 Deficiency Anemia**

Being deficient in vitamin B12 implies that the body does not have enough of vitamin B12, which is required for making red blood cells, and carrying oxygen throughout the body.\(^{25}\) In case of the deficiency of this vitamin, one can suffer from anemia, since the body would not have enough red blood cells to transport oxygen. This causes weakness and fatigue on a frequent basis. Vitamin B12 deficiency may also damage nerves and can badly affect a person’s thinking ability and memory. Most people get more than sufficient vitamin B12 from eggs, meat, cheese, and milk. Usually, the digestive system, stomach, and intestines absorb the vitamin.

Vitamin B12 deficient anemia usually occurs when the digestive system is unable to absorb vitamin B12. This can occur if:\(^{25}\)

- A person has pernicious anemia, in which body spoils the cells in stomach that are good for absorbing vitamin B12.

- A person had surgery to remove part of the stomach or the last part of the small intestine, the ileum.

- A person has problems with the way his/her body digests food, for example, sprue also called celiac disease, bacteria growth in small intestine, Crohn’s disease or a parasite.

**Endocrine, Nutritional And Metabolic Diseases**

This section of the ICD-10 contains information regarding the classification of endocrine, nutritional, and metabolic diseases and disorders. All neoplasms, either active or not, are categorized in the section on endocrine, nutritional and metabolic diseases in ICD-10.
Suitable codes under this section might be used, if needed, as additional codes to denote either functional activity by the neoplasms, and hyperfunction or ectopic endocrine tissue and hypofunction of the endocrine glands that are linked with the neoplasms and other conditions classified elsewhere.\textsuperscript{12} Excluded in this section are:\textsuperscript{12}

- Complications of childbirth, puerperium and pregnancy (000-099)
- Signs, symptoms and unusual laboratory and clinical findings, not elsewhere categorized (R00-R99)
- Metabolic and transitory endocrine disorders specific to newborn and fetus (P70-P74)

The following blocks are included:

- E00-E07 Disorders of thyroid gland
- E10-E14 Diabetes mellitus
- E15-E16 Other disorders of glucose regulation and pancreatic internal secretion
- E20-E35 Disorders of other endocrine glands
- E40-E46 Malnutrition
- E50-E64 Other nutritional deficiencies
- E65-E68 Obesity and other hyper alimentation
- E70-E90 Metabolic disorders

Asterisk categories (permitting the classification of a disease according to manifestation), are as follows:

- E35 Disorders of endocrine glands in diseases classified elsewhere
E90 Nutritional and metabolic disorders in diseases classified elsewhere

Disorders of the Thyroid Gland

E00 Congenital iodine-deficiency syndrome

Included:

- Endemic situations linked with the environmental iodine lacking either directly or as a resultant of material iodine deficiency. Some of the situations have no present hypothyroidism however the result of insufficient thyroid hormone release is in the growing fetus. Environmental goitrogens might be linked.

E00.0 Congenital iodine-deficiency syndrome, neurological type

- Endemic cretinism, neurological type

E00.1 Congenital iodine-deficiency syndrome, myxedema type

- Endemic cretinism
- Hypothyroid
- Myxedema type

E00.2 Congenital iodine-deficiency syndrome, mixed type

- Endemic cretinism, mixed type

E00.9 Congenital iodine-deficiency syndrome, unspecified

- Congenital iodine-deficiency hypothyroidism NOS
- Endemic cretinism NOS

E01 Iodine-deficiency-related thyroid disorders and allied conditions

Excluded:

- congenital iodine-deficiency syndrome (E00)
- subclinical iodine-deficiency hypothyroidism (E02)
  - E01.0 Iodine-deficiency-related diffuse (endemic) goiter
  - E01.1 Iodine-deficiency-related multinodular (endemic) goiter
    - Iodine-deficiency-related nodular goiter
  - E01.2 Iodine-deficiency-related (endemic) goiter, unspecified
    - Endemic goiter NOS
  - E01.8 Other iodine-deficiency-related thyroid disorders and allied conditions
    - Acquired iodine-deficiency hypothyroidism NOS
  - E02 Subclinical iodine-deficiency hypothyroidism
  - E03 Other hypothyroidism
    Excluded:
    - iodine-deficiency-related hypothyroidism (E00-E02)
    - post procedural hypothyroidism (E89.0)
  - E03.0 Congenital hypothyroidism with diffuse goiter
    - Goiter (nontoxic) congenital:
      - NOS
      - parenchymatous
    Excluded:
    - Transitory congenital goiter with normal function (P72.0)
  - E03.1 Congenital hypothyroidism without goiter
    - Aplasia of thyroid (with myxedema)
    - Congenital:
      - atrophy of thyroid
      - hypothyroidism NOS
  - E03.2 Hypothyroidism due to medicaments and other exogenous substances
  - E03.3 Post infectious hypothyroidism
- E03.4 Atrophy of thyroid (acquired)
  Excluded:
  - congenital atrophy of thyroid (E03.1)
- E03.5 Myxedema coma
- E03.8 Other specified hypothyroidism
- E03.9 Hypothyroidism, unspecified
  - Myxedema NOS
- E04 Other nontoxic goiter
  Excluded:
  - Congenital goiter:
    - NOS (E03.3)
    - diffuse (E03.3)
    - parenchymatous (E03.3)

**Iodine-deficiency-related Goiter**

- E04.0 Nontoxic diffuse goiter
  - diffuse (colloid)
  - simple
- E04.1 Nontoxic single thyroid nodule
  - Colloid nodule (cystic thyroid)
  - Nontoxic uninodular goiter
  - Thyroid (cystic) nodule NOS
- E04.2 Nontoxic multinodular goiter
  - Cystic goiter NOS
  - Multinodular (cystic) goiter NOS
- E04.8 Other specified nontoxic goiter
- E04.9 Nontoxic goiter, unspecified
  - Goiter NOS
• Nodular goiter (nontoxic) NOS
  • E05 Thyrotoxicosis [hyperthyroidism]

Excluded:
• chronic thyroiditis with transient thyrotoxicosis (E06.2)
• neonatal thyrotoxicosis (P72.1)

• E05.0 Thyrotoxicosis with diffuse goiter
  • Exophthalmic or toxic goiter NOS
  • Graves’s disease
  • Toxic diffuse goiter

• E05.1 Thyrotoxicosis with toxic single thyroid nodule
  • Thyrotoxicosis with toxic uninodular goiter

• E05.2 Thyrotoxicosis with toxic multinodular goiter
  • Toxic nodular goiter NOS

• E05.3 Thyrotoxicosis from ectopic thyroid tissue
• E05.4 Thyrotoxicosis factitia
• E05.5 Thyroid crisis or storm
• E05.8 Other thyrotoxicosis

**Overproduction of Thyroid-Stimulating Hormone**

• E05.9 Thyrotoxicosis, unspecified
  • Hyperthyroidism NOS
  • Thyrotoxic heart disease (I43.8)

• E06 Thyroiditis

Excluded:
• postpartum thyroiditis (O90.5)

• E06.0 Acute thyroiditis
  • Abscess of thyroid
  • Thyroiditis:
- pyogenic
- suppurative

- E06.1 Sub acute thyroiditis
  - Thyroiditis:
    - de Quervain
    - giant-cell
    - granulomatous
    - nonsuppurative

Excluded:
  - autoimmune thyroiditis (E06.3)

- E06.2 Chronic thyroiditis with transient thyrotoxicosis

Excluded:
  - autoimmune thyroiditis (E06.3)

- E06.3 Autoimmune thyroiditis
  - Hashimoto thyroiditis
  - Hashitoxicosis (transient)
  - Lymphadenoid goiter
  - Lymphocytic thyroiditis
  - Struma lymphomatosa

- E06.4 Drug-induced thyroiditis

- E06.5 Other chronic thyroiditis
  - NOS
  - fibrous
  - Ligneous
  - Riedel

- E06.9 Thyroiditis, unspecified

- E07 Other disorders of thyroid

- E07.0 Hypersecretion of calcitonin
- C-cell hyperplasia of thyroid
- Hypersecretion of thyrocalcitonin
- E07.1 Dyshormogenetic goiter
- Familial dyshormogenetic goiter
- Pendred syndrome

Excluded:
- transitory congenital goiter with normal function (P72.0)
- E07.8 Other specified disorders of thyroid
  - Abnormality of thyroid-binding globulin
  - Hemorrhage
  - Infarction
  - Sick-euthyroid syndrome
- E07.9 Disorder of thyroid, unspecified

**Disorders of Thyroid Gland**

*Congenital Iodine-Deficiency Syndrome*

Congenital iodine-deficiency syndrome, or cretinism, is a situation of extreme stunted mental and physical growth because of untreated congenital deficiency of thyroid hormones (congenital hypothyroidism), generally due to maternal hypothyroidism. Congenital iodine-deficiency syndrome may be genetic, endemic or sporadic. If left untreated, it leads to mild to severe impairment of both mental and physical growth and development.

Poor height growth is visible as early as the first year of life. Adult stature without treatment ranges from 1 to 1.6 meters, which depends on gender, severity, and other genetic factors. In adults, this disorder leads to mental deterioration, loss of water and hair, and swelling of the skin. Puberty and
bone maturation are extremely delayed. Infertility and impeded ovulation is common.\textsuperscript{26}

**Iodine-deficiency-related Diffuse (Endemic) Goiter**

Goiter is a condition in which swelling of larynx or neck occurs due to the enlargement of the thyroid gland. This condition mainly arises from a thyroid gland that is not working properly. Goiter is linked with hyperthyroidism or hypothyroidism, and might show the symptoms of the underlying disorder.\textsuperscript{27} In cases of hyperthyroidism, the most common signs are linked with adrenergic stimulation, tachycardia, nervousness, tremor, palpitations, higher blood pressure, and heat intolerance.

Clinical manifestations are usually related to hyper metabolism, including excessive growth of thyroid hormone, faster metabolism, increased oxygen consumption, metabolic variations especially with proteins, immunologic stimulation of diffuse goiter and ocular changes. Hypothyroid individuals might gain weight in spite of poor appetite, lethargy, constipation and cold intolerance. However, these signs are often hard to detect. As far as morphology is concerned, the goiter may be classified as the growth pattern or the size of the growth:\textsuperscript{27}

**Growth Pattern**

- Uninodular (struma uninodosa)
- Multinodular (struma nodosa)
- Diffuse (struma diffuse)

**Size**

- Class I (Palpation struma)
- Class II (The struma is palpable and is easily visible)
- Class III (Struma is quite big and retrosternal)
The most general cause behind this disorder is iodine deficiency, which is usually found in countries where iodized salt is not in sufficient use. The deficiency of Selenium is also taken as a major factor. Goiter can also occur from cyanide poisoning, which is especially found in tropical countries where the population consumes cyanide rich foods.28

**Diabetes Mellitus**

- **E10 Type 1 diabetes mellitus**
  
  Included:
  
  o Diabetes (mellitus):
    
    - brittle
    
    - juvenile-onset
    
    - ketosis-prone
  
  Excluded:
  
  o Diabetes mellitus (in):
    
    - malnutrition-related (E12)
    
    - neonatal (P70.2)
    
    - pregnancy, childbirth and the puerperium (O24)
  
  o Glycosuria:
    
    - NOS (R81)
    
    - renal (E74.8)
  
  o Impaired glucose tolerance (R73.0)
  
  o Postsurgical hypoinsulinemia (E89.1)

- **E11 Type 2 diabetes mellitus**
  
  Included:
  
  o Diabetes mellitus (non obese, obese):
    
    - adult-onset
- maturity-onset
- nonketotic
- stable

o Non-insulin-dependent diabetes of the young

Excluded:

o Diabetes mellitus (in):
  - malnutrition-related (E12)
  - neonatal (P70.2)
  - pregnancy, childbirth and the puerperium (O24)

o Glycosuria:
  - NOS (R81)
  - renal (E74.8)

o Impaired glucose tolerance (R73.0)

o Postsurgical hypoinsulinemia (E89.1)

**Malnutrition-Related Diabetes Mellitus**

Included:

o Malnutrition-related diabetes mellitus:
  - type 1
  - type 2

Excluded:

o Diabetes mellitus in pregnancy, childbirth and the puerperium (O24)

o Glycosuria:
  - NOS (R81)
  - renal (E74.8)

o Impaired glucose tolerance (R73.0)

o Neonatal diabetes mellitus (P70.2)
- Postsurgical hypoinsulinemia (E89.1)

**Other Specified Diabetes Mellitus**

Excluded:
- Diabetes mellitus (in):
  - malnutrition-related (E12)
  - neonatal (P70.2)
  - pregnancy, childbirth and the puerperium (O24)
  - type 1 (E10)
  - type 2 (E11)
- Glycosuria:
  - NOS (R81)
  - renal (E74.8)
- Impaired glucose tolerance (R73.0)
- Postsurgical hypoinsulinemia (E89.1)

**Unspecified Diabetes Mellitus**

Included:
- diabetes NOS

Excluded:
- Diabetes mellitus (in):
  - malnutrition-related (E12)
  - neonatal (P70.2)
  - pregnancy, childbirth and the puerperium (O24)
  - Type 1 (E10)
  - Type 2 (E11)
- Glycosuria:
  - NOS (R81)
- renal (E74.8)
  - Impaired glucose tolerance (R73.0)
  - Postsurgical hypoinsulinemia (E89.1)

**Type 1 Diabetes Mellitus**

Type 1 diabetes is a long-term illness that is characterized by the inability of the body to produce insulin because of the autoimmune damage of the beta cells in the pancreas. Onset often happens in childhood; however, the disease might also develop in adults in their late 30s and early 40s.\(^{29}\) The major symptoms of type 1 diabetes include the following:

- Polyuria
- Polydipsia
- Polyphagia
- Rapid weight loss

Other symptoms include frequent nausea, fatigue and blurred vision. The occurrence of the symptoms of the disease might be sudden. It is not unusual for patients having type 1 diabetes to also have diabetic ketoacidosis (DKA).\(^{30}\)

Patients who have type 1 diabetes need lifelong insulin treatment. Most of patients need two or more insulin injections daily, with doses defined on the basis of their self-monitoring of blood glucose levels.\(^{30}\) Insulin replacement is done by preprandial insulin and basal insulin. The basal insulin can be long lasting or intermediate acting. The preprandial insulin is either rapid acting or short acting.

**Other Disorders of Glucose Regulation and Pancreatic Internal Secretion**
• E15 Nondiabetic hypoglycemic coma
   
   Included:
   
   o Drug-induced insulin coma in nondiabetic
   
   o Hyperinsulinism with hypoglycemic coma
   
   o Hypoglycemic coma NOS

• E16 Other disorders of pancreatic internal secretion

• E16.0 Drug-induced hypoglycemia without coma

• E16.1 Other hypoglycemia
   
   o Functional non-hyperinsulinemic hypoglycemia
   
   o Hyperinsulinism:
     
     – NOS
     
     – functional
   
   o Hyperplasia of pancreatic islet beta cells NOS
   
   o Posthypoglycemic coma encephalopathy

• E16.2 Hypoglycemia, unspecified

• E16.3 Increased secretion of glucagon
   
   o Hyperplasia of pancreatic endocrine cells with glucagon excess

• E16.4 Abnormal secretion of gastrin
   
   o Hypergastrinemia
   
   o Zollinger-Ellison syndrome

• E16.8 Other specified disorders of pancreatic internal secretion
   
   o Increased secretion from endocrine pancreas of:
     
     – growth hormone-releasing hormone
     
     – pancreatic polypeptide
     
     – somatostatin
     
     – vasoactive-intestinal polypeptide

• E16.9 Disorder of pancreatic internal secretion, unspecified
   
   o Islet-cell hyperplasia NOS
Pancreatic endocrine cell hyperplasia NOS

- E16.0 Drug-induced hypoglycemia without coma

Drug-induced hypoglycemia is a medical condition characterized by low blood sugar due to medication.\(^3\)\(^1\) This is common in diabetics who are on insulin therapy or other medications for controlling their illness. Below are some of the major reasons behind this disorder.\(^3\)\(^2\)

- Alcohol consumption
- Excessive level of activity
- Intentional or unintentional heavy consumption of medications
- Missing meals on a frequent basis

Even when diabetes is handled carefully, medications applied to treat diabetes can often result in drug-induced hypoglycemia.\(^3\)\(^2\) This situation may also happen when a person not having diabetes consumes medicine intended to treat diabetes. Consumption of non-diabetes related medicines can, in rare cases, cause hypoglycemia.

**Mental, Behavioral And Neurodevelopment Disorders**

This section contains information regarding the classification of mental, behavioral and neurodevelopment diseases and disorders as described by the ICD-10.

The following blocks are included in this section:\(^1\)\(^4\)

- F00-F09 Organic, including symptomatic, mental disorders
- F10-F19 Mental and behavioral disorders due to psychoactive substance use
- F20-F29 Schizophrenia, schizotypal and delusional disorders
- F30-F39 Mood [affective] disorders
• F40-F48 Neurotic, stress-related and somatoform disorders
• F50-F59 Behavioral syndromes associated with physiological disturbances and physical factors
• F60-F69 Disorders of adult personality and behavior
• F70-F79 Mental retardation
• F80-F89 Disorders of psychological development
• F90-F98 Behavioral and emotional disorders with onset usually occurring in childhood and adolescence
• F99-F99 Unspecified mental disorder

Asterisk categories of disease manifestations under this section are given as follows:
• F00 Dementia in Alzheimer’s disease
• F02 Dementia in other diseases classified elsewhere

**Mental and Behavioral Disorders**

Included:
- Disorders of psychological development

Excluded:
- Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

**Organic, Including Symptomatic, Mental Disorders**

This block is based on the range of mental disorders classified together based on their common demonstrable etiology in brain injury, cerebral diseases, and other disorder leading to cerebral dysfunction. The dysfunction might be primary, as in injuries, diseases and disorders that impact the brain in a direct and selective way, or the secondary, as in
systemic disorders and diseases that impact the brain as well as other systems or organs of the body.

Dementia (F00-F03) is a syndrome caused by a disease of the brain, generally of a progressive or chronic nature, in which there is an interruption in multiple higher cortical functions like memory, orientation, thinking, learning capacity, comprehension, judgment, language and calculations.\textsuperscript{33} The interruptions in cognitive functions usually come along, and are occasionally preceded by the deterioration in social behavior, emotional control, or motivation. This syndrome happens in Alzheimer's disease, cerebrovascular disease, and in other situations either primary or secondary, influencing the brain.

**Dementia in Alzheimer's Disease**

Alzheimer’s disease is basically a primary degenerative cerebral disease of unspecified etiology with characteristic neurochemical and pathological features. The order is generally insidious in onset and grows slowly but surely over a time frame of several years.\textsuperscript{33}

- F00.0 Dementia in Alzheimer's disease with early onset (G30.0)
  
  Dementia in Alzheimer's disease with onset before the age of 65, with a comparatively high deteriorating course and with established multiple disorders occurring in the higher cortical function. These include:
  
  - Alzheimer disease, type 2
  - Pre-senile dementia, Alzheimer type
  - Primary degenerative dementia of the Alzheimer type, pre-senile onset

- F00.1 Dementia in Alzheimer's Disease with Late Onset (G30.1)
Dementia in Alzheimer’s disease when the onset is after the age of 65, usually in late 70s, presents with a slow progression, and memory impairment as the major feature. These include:

- Alzheimer’s disease, type 1
- Primary degenerative dementia of the Alzheimer type, senile onset
- Senile dementia, Alzheimer type

- **F00.2 Dementia in Alzheimer’s disease, atypical or mixed type** (G30.8)
  - Atypical dementia, Alzheimer type

- **F00.9 Dementia in Alzheimer’s disease, unspecified** (G30.9)

- **F01 Vascular dementia**
  Vascular dementia is the outcome of an infraction of the brain due to vascular disease, including hypertensive cerebrovascular disease. The infarcts are generally small but are cumulative in terms of their effect. Onset generally occurs in later life.

  Included:
  - arteriosclerotic dementia

- **F01.0 Vascular dementia of acute onset**
  Generally grows rapidly after a succession of strokes from an embolism, hemorrhage, or cerebrovascular thrombosis. In rare cases, a single big infarction might be the cause.

- **F01.1 Multi-infarct dementia**
  It is gradual in onset, following a number of transient ischemic episodes that generate an accumulation of the infarcts in the cerebral parenchyma.
Predominantly cortical dementia

- F01.2 Sub cortical vascular dementia
  It includes cases with a history of foci of ischemic destruction and hypertension in the deep white matter of cerebral hemispheres. The cerebral cortex is preserved and this differs from the clinical picture that may look like dementia in Alzheimer's disease.\(^3^4\)

- F01.3 Mixed cortical and sub cortical vascular dementia

- F01.8 Other vascular dementia

- F01.9 Vascular dementia, unspecified

Dementia in Other Diseases Classified Elsewhere

These are the cases of dementia due, or presumed due, to causes other than the cerebrovascular disease and Alzheimer's disease. Onset may occur at any time in life, though it’s rare in old age.\(^3^4\)

- F02.0 Dementia in Pick’s disease (G31.0)
  This is a progressive dementia, beginning in middle age, and characterized by early, slowly growing changes of character and social deterioration, followed by the impairment of memory, intellect, and language functions with euphoria, apathy, and occasionally extrapyrmidal process.\(^3^5\)

- F02.1 Dementia in Creutzfeldt-Jakob disease (A81.0)
  It is a progressive dementia having extensive neurological symptoms because of particular neuropathological variations considered to be caused by a transmissible agent. Onset is generally in middle or later life; however, it may also occur at any
adult age. The course is subacute, which results in death within a year or two.

- **F02.2 Dementia in Huntington's disease (G10)**
  This is a dementia that happens as a part of an extensive degeneration of the brain. A single autosomal dominant gene transfers the disorder. Symptoms generally arise in 30s or 40s. Growth is slow, resulting in death within 10 to 15 years.
  - Dementia in Huntington's chorea

- **F02.3 Dementia in Parkinson’s disease (G20)**
  This is a dementia that grows in the course of established Parkinson’s disease. No specific clinical features have yet been shown. Dementia includes:
  - Paralysis agitans
  - Parkinsonism

- **F02.4 Dementia in human immunodeficiency virus [HIV] disease (B22.0)**
  This is the dementia that grows during the course of HIV disease, in the absence of condition other than HIV or a concurrent illness that could describe the clinical features.

- **F02.8 Dementia in other specified diseases classified elsewhere**
  - Dementia (in):
    - Cerebral lipidosis (E75)
    - Epilepsy (G40)
    - Hepatolenticular degeneration (E83.0)
    - Hypercalcemia (E83.5)
- Hypothyroidism, acquired (E01, E03)
- Intoxications (T36-T65)
- Lewy body(ies) (disease) (G31.8)
- Multiple sclerosis (G35)
- Neurosyphilis (A52.1)
- Niacin deficiency [pellagra] (E52)
- Polyarteritis nodosa (M30.0)
- Dystemic lupus erythematosus (M32)
- Trypanosomiasis (B56, B57)
- Uremia (N18.5)
- Vitamin B12 deficiency (E53.8)

- F03 Unspecified dementia

Included:
- Pre-senile:
  - dementia NOS
  - psychosis NOS
- Primary degenerative dementia NOS
- Senile
- Dementia:
  - NOS
  - Depressed or paranoid type
  - Psychosis NOS

Exclude:
- Senile dementia with delirium or acute confusional state (F05.1)
- Senility NOS (R54)
Organic Amnesic Syndrome, Not Induced by Alcohol and Other Psychoactive Substances

This is a syndrome of visible impairment of remote and recent memory while immediate recall is kept, with decreased ability to learn new material and disorientation in time. Confabulation might be a visible feature, however, perception and other cognitive functions, like the intellect, are generally intact. Prognosis is based on the course of an underlying lesion.36

Included:
- Korsakov psychosis or syndrome, nonalcoholic

Excluded:
- Amnesia:
  - NOS (R41.3)
  - anterograde (R41.1)
  - dissociative (F44.0)
  - retrograde (R41.2)
- Korsakov syndrome:
  - alcohol-induced or unspecified (F10.6)
  - induced by other psychoactive substances (F11-F19 with common fourth character .6)

Delirium, Not Induced by Alcohol and Other Psychoactive Substances

This is an etiologically nonspecific organic cerebral syndrome that is characterized by the repeated disturbances of attention, consciousness, memory, perception, emotion, psychomotor behavior, and the sleep-awake schedule.37 The duration is variable and the severity stays from mild to quite severe.
Included:
  o Acute or sub acute:
    - brain syndrome
    - confusional state (nonalcoholic)
    - infective psychosis
    - organic reaction
    - psycho-organic syndrome

Excluded:
  o Delirium tremens, alcohol-induced or unspecified (F10.4)
    - F05.0 Delirium not superimposed on dementia, so described
    - F05.1 Delirium superimposed on dementia

Conditions meeting the criteria mentioned above but growing in the course of a dementia are listed below (F00-F03).

- F05.8 Other delirium
  o Delirium of mixed origin
  o Postoperative delirium

- F05.9 Delirium, unspecific
  o Delirium, unspecified

- F06 Other mental disorders because of brain damage and dysfunction and to physical disease

Includes miscellaneous conditions that are casually related to brain disorder because of primary cerebral disease, to the systemic disease affecting the brain secondarily, to exogenous hormones, to toxic substances, to endocrine disorders or to the other of somatic illnesses.\textsuperscript{37}

Excluded:
  o Associated with:
- delirium (F05)
- dementia as classified in F00-F03

The following arise from alcohol use and other psychoactive substances (F10, F19)

- **F06.0 Organic Hallucinosis**
  
  This is a disorder of repeated or persistent hallucinations, generally auditory or visual, which takes place in clear consciousness and might or might not be identified by the subject as such. Delusional elaboration of hallucinations might take place, however delusions don’t terminate the clinical image; insight might be preserved.\(^{38}\)

  - Organic hallucinatory state (nonalcoholic)
    
    Excluded:
    
    - alcoholic hallucinosis (F10.5)
    - schizophrenia (F20)

- **F06.1 Organic catatonic disorder**
  
  This is a disorder of diminished (stupor) or excessive (excitement) psychomotor activity linked with the catatonic symptoms.\(^{39}\) There might be a difference in the extremes of the psychomotor disturbance.

  Excluded:
  
  - Catatonic schizophrenia (F20.2)
    
    Stupor:
    
    - NOS (R40.1)
    - dissociative (F44.2)

- **F06.2 Organic delusional [schizophrenia-like] disorder**
This is a disorder in which repeated and persistent delusions become dominant to the clinical picture. The delusions might be accompanied by hallucinations. Some features that are suggestive of schizophrenia, like thought disorder or bizarre hallucinations, may be present.\(^{39}\)

- Paranoid and paranoid-hallucinatory organic states
- Schizophrenia-like psychosis in epilepsy

Excluded:
- acute and transient psychotic (F23)
- persistent delusional (F22)
- psychotic drug-induced (F11-F19 with common fourth character .5)
- Schizophrenia (F20)

- F06.3 Organic mood [affective] disorders

These are disorders that are characterized by a change in affect or mood, and generally come along with a change in the overall activity level, manic or bipolar and depressive hypomanic, but are the result of an organic disorder.\(^{39}\)

Excluded:
- Mood disorders, nonorganic or unspecified (F30-F39)

- F06.4 Organic anxiety disorder

This is the disorder characterized by descriptive features of a generalized anxiety disorder (F41.1), a panic disorder (F41.0), or a blend of both, but arising as a result of an organic disorder.\(^{40}\)

Excluded:
- Anxiety disorders, nonorganic or unspecified (F41)

- F06.5 Organic dissociative disorder
This is the disorder by a complete or partial loss of the usual integration between past memories, immediate sensations, awareness of identity, and control of the bodily movements, but arising as a result of an organic disorder.40

Excluded:

- dissociative [conversion] disorders, nonorganic or unspecified (F44)

- F06.6 Organic emotionally labile [asthenia] disorder

It is a disorder that is characterized by the emotional liability or incontinence, fatigability, and a range of unpleasant physical sensations such as pains and dizziness, but arising as a result of an organic disorder.40

Excluded:

- somatoform disorders, nonorganic or unspecified (F45)

- F06.7 Mild cognitive disorder

This is a disorder that is characterized by learning difficulties, impairment of memory, and decreased ability to concentrate on a task for more than short periods. Often, there is a marked feeling of fatigue when a task is attempted, and new learning is found to be subjectively hard even when successful objectively.

Not a single symptom is so extreme that a diagnosis of either delirium (F05) or dementia (F00-F03) can be made. This diagnosis must be made in link with a specified physical disorder, and must not be made when there is any mental or behavioral disorder classified between F10-F99, present. The disorder might accompany, follow, or precede a broad range of physical disorders and infections, both systemic and cerebral; however,
direct evidence of the cerebral engagement is not essentially present. Differentiation can be made from post-concussion syndrome (F07.2) post encephalitic syndrome (F07.1) through its different etiology, more limited range of usually milder symptoms and shorter duration. 

- F06.8 Other specified mental diseases because of brain damage and malfunction and to physical disease
  - Epileptic psychosis NOS

- F06.9 Unspecified mental disorder because of brain damage and malfunction and to physical disease
  - Organic:
    - brain syndrome NOS
    - mental disorder NOS

**Personality and Behavioral Disorders Because of Brain Disease, Damage and its Dysfunction**

The alteration of the behavior or personality can be a concomitant or residual disorder of brain disease, dysfunction or damage.

- F07.0 Organic personality disorder

  This is a disorder that is characterized by a considerable alteration of the habitual trends of behavior showed by the subject pre-morbidity, consisting of the expression of needs, emotions and impulses. Impairment of thoughts and cognitive functions and the altered sexuality might also be an element of the clinical picture. 

  - Organic:
    - pseudopsychopathic personality
    - pseudoretarded personality
  - Syndrome:
- frontal lobe
- limbic epilepsy personality
- lobotomy
- post leucotomy

Excluded:

- Enduring personality change after -
  - catastrophic experience (F62.0)
  - psychiatric illness (F62.1)
- Postconcussional syndrome (F07.2)
- Postencephalitic syndrome (F07.1)
- Specific personality disorder (F60)

- F07.1 Postencephalitic syndrome

This is a disorder characterized by variable and residual nonspecific behavioral change after the recovery from either bacterial or viral encephalitis. The major difference between this and the organic personality disorders lies in its reversibility.41

Excluded:

- organic personality disorder (F07.0)

**Diseases Of The Nervous System**

This section contains information regarding the classification of nervous system diseases and related disorders as described by the ICD-10.17

Excluded in this section of the code are:

- certain conditions originating in the perinatal period (P00-P96)
- certain infectious and parasitic diseases (A00-B99)
• complications of pregnancy, childbirth and the puerperium (O00-O99)
• congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
• endocrine, nutritional and metabolic diseases (E00-E90)
• injury, poisoning and certain other consequences of external causes (S00-T98)
• neoplasms (C00-D48)
• symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This section contains the following blocks:
• G00-G09 Inflammatory diseases of the central nervous system
• G10-G14 Systemic atrophies primarily affecting the central nervous system
• G20-G26 Extra pyramidal and movement disorders
• G30-G32 Other degenerative diseases of the nervous system
• G35-G37 Demyelinating diseases of the central nervous system
• G40-G47 Episodic and paroxysmal disorders
• G50-G59 Nerve, nerve root and plexus disorders
• G60-G64 Polyneuropathies and other disorders of the peripheral nervous system
• G70-G73 Diseases of myoneural junction and muscle
• G80-G83 Cerebral palsy and other paralytic syndromes
• G90-G99 Other disorders of the nervous system
Inflammatory diseases of the central nervous system (G00-G09):

- G00 Bacterial meningitis, not elsewhere classified

  Included:
  - arachnoiditis
  - leptomeningitis
  - meningitis
  - pachymeningitis
  - bacterial

Excluded
  - Bacterial:
    - meningoencephalitis (G04.2)
    - meningomyelitis (G04.2)

Meningitis usually arises due to viral infection; however, the cause might also be a bacterial infection. In rare cases, a fungal infection might also cause meningitis. Since bacterial infections are the most severe and can prove to be life threatening, determining the source of the infection is quite important for developing a treatment plan.\(^\text{42}\)

Acute bacterial meningitis generally happens when bacteria enter the body’s bloodstream and shifts to the spinal cord and brain. It can also happen if bacteria directly attack the meninges, as a consequence of a sinus or ear infection, or a skull fracture, or in few cases, after certain surgeries.\(^\text{42}\) A range of bacterial strains can leads to acute bacterial meningitis. The most common causes are as follows:\(^\text{43}\)

**Streptococcus Pneumonia**
This bacterium is considered as the most general cause behind bacterial meningitis in young children, adults, and infants. It usually leads to pneumonia, or sinus or ear infections. With the help of vaccinations, it can be controlled and treated.

**Neisseria Meningitides**

This bacterium is one of the leading causes behind bacterial meningitis. Meningococcal meningitis usually happens when bacteria from upper respiratory infections are exposed to the bloodstream. This infection is quite contagious. It attacks mainly young adults and teenagers and might be the cause of local epidemics in boarding schools, college dormitories, and military bases. It is controlled and treated via vaccination.

**Homophiles influenza**

This bacterium is the major cause of this disease in children.

**Listeria Nonocytogenes (Listeria)**

These bacteria are found in hot dogs, soft cheeses and lunchmeats. Healthy people who are infected with listeria don’t become ill, but newborns; pregnant women, weak adults, and people with weak immune systems are more likely to become ill. Listeria can penetrate the placental barrier and infections during late pregnancy might cause a baby to die shortly after birth. People with weak immune systems, because of medication, or any disease, are the most vulnerable.

- G00.0 Homophiles meningitis
  - Meningitis due to Homophiles influenza
- G00.1 Pneumococcal meningitis
• G00.2 Streptococcal meningitis
• G00.3 Staphylococcal meningitis
• G00.8 Other bacterial meningitis
  o Meningitis due to:
    – Escherichia coli
    – Friedlander bacillus
    – Klebsiella
• G00.9 Bacterial meningitis, unspecified
  o purulent NOS
  o pyogenic NOS
  o suppurative NOS
• G01 Meningitis in bacterial diseases classified elsewhere
  Included:
  o anthrax (A22.8)
  o gonococcal (A54.8)
  o leptospirosis (A27)
  o listerial (A32.1)
  o Lyme disease (A69.2)
  o meningococcal (A39.0)
  o neurosyphilis (A52.1)
  o salmonella infection (A02.2)
  o syphilis:
    o congenital (A50.4)
    o secondary (A51.4)
    o tuberculosis (A17.0)
    o typhoid fever (A01.0)

Excluded:
- meningococcal meningitis and meningomyelitis in bacterial diseases classified elsewhere (G05.0)

- G03 Meningitis due to other and unspecified causes
  - Included:
    - arachnoiditis
    - leptomeninge
    - meningitis
    - pachymeningitis
    - due to other and unspecified causes
  - Excluded:
    - meningococcal meningitis (G04)
    - meningomyelitis (G04)

- G03.0 Nonpyogenic meningitis
  - Nonbacterial meningitis

- G03.1 Chronic meningitis

- G03.2 Benign recurrent meningitis [Mollaret]

- G03.8 Meningitis due to other specified causes

- G03.9 Meningitis, unspecified
  - Arachnoiditis (spinal) NOS

- G04 Encephalitis, mellitus and encephalomyelitis
  - Included:
    - acute ascending mellitus
    - meningococcal meningitis
    - meningomyelitis
  - Excluded:
    - Benign myalgic encephalomyelitis (G93.3)
    - Encephalopathy:
      - NOS (G93.4)
- alcoholic (G31.2)
- toxic (G92)
- Multiple sclerosis (G35)
  - Mellitus:
    - acute transverse (G37.3)
    - subacute necrotizing (G37.4)

- G04.0 Acute disseminated encephalitis
  - Encephalitis
  - Encephalomyelitis
  - Postimmunization

- G04.1 Tropical spastic paraplegia

- G04.2 Bacterial meningoencephalitis and meningomyelitis, not elsewhere classified

- G04.8 Other encephalitis, mellitus and encephalomyelitis
  - Postinfectious encephalitis and encephalomyelitis NOS

- G04.9 Encephalitis, mellitus and encephalomyelitis, unspecified
  - Ventriculitis (cerebral) NOS

Acute disseminated encephalomyelitis (ADEM) is the immune-mediated inflammatory demyelinating situation that affects predominately the white matter of the spinal cord and brain. The disorder manifests itself as an acute onset encephalopathy linked with polyfocal neurological deficits and is usually self limiting. ADEM holds a striking pathological and clinical resemblance to other acute demyelinating syndromes (ADS) of childhood, especially multiple sclerosis (MS).
In young children, ADEM is readily identifiable from various diagnoses, based on the clinical features and outcomes of neuroimaging and laboratory analysis. However, since ADEM lacks a particular identified biological marker, having a reliable laboratory assessment is difficult. Follow up in the long run is significant, as there are cases where an illness primarily diagnosed as ADEM is eventually replaced with the MS diagnosis.44

**Intracranial and Intraspinal Abscess and Granuloma**

- **G06.0 Intracranial Abscess and Granuloma**
  - Abscess (embolic) (of):
    - brain [any part]
    - cerebellar
    - cerebral
    - otogenic
  - Intracranial abscess or granuloma:
    - epidural
    - extradural
    - subdural
- **G06.1 Intraspinal abscess and granuloma**
  - Abscess (embolic) of spinal cord [any part]
  - Intraspinal abscess or granuloma:
    - epidural
    - extradural
    - subdural
- **G06.2 Extradural and subdural abscess, unspecified**
- **G07 Intracranial and intraspinal abscess and granuloma in diseases classified elsewhere**
Included:

- Abscess of brain:
  - amoebic (A06.6)
  - gonococcal (A54.8)
  - tuberculosis (A17.8)
- Schistosomiasis granuloma of brain (B65)
- Tuberculosis of:
  - brain (A17.8)
  - meninges (A17.1)

An abscess is a hollow space in the body, which contains pus and is surrounded by inflamed tissue. Abscesses may be extreme and might result in the development of gangrene or in permanent damage to the organ, if not identified in time, and left untreated.\(^{46}\)

Intraspinal abscess is a collection of infectious material and pus in the spine. The most common causes are the spread of infection in the blood, spread of an infection from the adjoining infection, or from an injury that might also take place after some kind of surgical operation carried out on the spine. The development of an abscess occurs because of a bacterial infection, presence of a parasite (which has the tendency to form an abscess), or parasitic infection.

Abscesses can develop in many places at the same time. The bacteria that causes intraspinal abscess are called Staphylococcus Aureus.\(^{46}\) Some of the symptoms include:

- Back pain
- Neck pain
- Weakness
• Numbness
• Fever
• Redness of skin

Granuloma is a small area of inflammation in the tissue. These are usually formed as a result of an infection and mostly affect lungs; however, they can also affect other parts of the body. They usually don’t show any specific symptom or sign and are found typically on an x-ray of chest done for an unrelated reason.

The most general cause of granulomas is histoplasmosis, which is a fungal infection that mainly affects the lungs. Patients suffering from pulmonary histoplasmosis that eventually leads to a lung granuloma are highly prone to have other body parts affected as well. Studies show that most of the patients have never suspected that anything was wrong since it doesn’t show any specific sign or pain in the most initial stages.

Macrophages, also called histiocytes, are the cells that form a granuloma. They usually, but not invariably, combine to develop multinucleated big cells called Langhans giant cell. The macrophages in the granulomas are usually referred to as epithelioid. This term implies the vague resemblance of these cells to epithelial cells. Epithelioid macrophages are different from ordinary macrophages in that they contain elongated nuclei that usually look like the sole of a shoe. They contain larger nuclei than ordinary macrophages and they have pinker cytoplasm when stained with the eosin. These variations are considered to be the outcome of “activation” of the macrophage by the offending antigen.
• G08 Intracranial and intraspinal phlebitis and thrombophlebitis

  Included:
  o Septic
  o embolism
  o endophlebitis
  o phlebitis
  o thrombophlebitis
  o thrombosis

  Excluded:
  o Intracranial phlebitis and thrombophlebitis
  o Complicating:
    – abortion or ectopic or molar pregnancy (O00-O07, O08.7)
    – pregnancy, childbirth and the puerperium (O22.5, O87.3)
  o Of nonpyogenic origin (I67.6)
  o Nonpyogenic intraspinal phlebitis and thrombophlebitis (G95.1)

Septic thrombophlebitis is a condition that is characterized by venous thrombosis, bacteremia, and inflammation. The severity and clinical course of the septic thrombophlebitis are highly variable. A lot of cases present as benign localized venous cords that are resolved fully with minimal intervention. Some cases present as extreme systemic infections culminating in deep shock that is refractory to aggressive handling, including intensive care and operative intervention.
Various unique clinical conditions have been diagnosed, depending on the vessel involved; however, all thrombophlebitis have the same fundamental pathophysiology. Thrombosis and the infection in the vein can happen all over the body and can involve deep or superficial vessels. Some notable examples include:

- Peripheral veins
- Pelvic veins
- Portal vein (pylephlebitis)
- Superior vena cava (SVC) or inferior vena cava (IVC)
- Internal jugular vein (Lemierre syndrome)
- Dural sinuses

Peripheral septic thrombophlebitis is a common problem that can be formed spontaneously, but usually will break the skin. Though most usually caused by indwelling catheters, septic thrombophlebitis might also arise from simple processes like venipuncture for phlebotomy and intravenous injection. While infection should always be considered, catheter-related phlebitis can also come from or sterile chemical or mechanical irritation. Septic phlebitis of the deep venous system is a rare, but life-threatening emergency that might fail to react to even the most aggressive therapy.

### Diseases Of The Eye And Adnexa

This section contains information regarding the classification of nervous system diseases and disorders as described by the ICD-10. Excluded in this section of the code are:

- certain conditions originating in the perinatal period (P00-P96)
- certain infectious and parasitic diseases (A00-B99)
• complications of pregnancy, childbirth and the puerperium (O00-O99)
• congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
• endocrine, nutritional and metabolic diseases (E00-E90)
• injury, poisoning and certain other consequences of external causes (S00-T98)
• neoplasms (C00-D48)
• symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

The following blocks are included:
• H00-H06 Disorders of eyelid, lacrimal system, and orbit
• H10-H13 Disorders of conjunctiva
• H15-H22 Disorders of sclera, cornea, iris, and ciliary body
• H25-H28 Disorders of lens
• H30-H36 Disorders of choroid and retina
• H40-H42 Glaucoma
• H43-H45 Disorders of vitreous body and globe
• H46-H48 Disorders of optic nerve and visual pathways
• H49-H52 Disorders of ocular muscles, binocular movement, accommodation, and refraction
• H53-H54 Visual disturbances and blindness
• H55-H59 Other disorders of eye and adnexa

The asterisk categories under this section are as follows:
• H03 Disorders of eyelid in diseases classified elsewhere
- H06 Disorders of lacrimal system and orbit in diseases classified elsewhere
- H13 Disorders of conjunctiva in diseases classified elsewhere
- H19 Disorders of sclera and cornea in diseases classified elsewhere
- H22 Disorders of iris and ciliary body in diseases classified elsewhere
- H28 Cataract and other disorders of lens in diseases classified elsewhere
- H32 Chorioretinal disorders in diseases classified elsewhere
- H36 Retinal disorders in diseases classified elsewhere
- H42 Glaucoma in diseases classified elsewhere
- H45 Disorders of vitreous body and globe in diseases classified elsewhere
- H48 Disorders of optic [2nd] nerve and visual pathways in diseases classified elsewhere
- H58 Other disorders of eye and adnexa in diseases classified elsewhere

**Disorders of Eyelid, Lacrimal System, and Orbit**

- H00 Hordeolum and chalazion
- H00.0 Hordeolum and other deep inflammation of eyelid:
  - Abscess
  - Furuncle
  - Stye

**Hordeolum**
Hordeolum is a common eyelid disorder which is an acute focal infection, generally staphylococcal, involving either the glands of Zeis (external hordeola or styes), or less common, the meibomian glands (internal hordeola).\(^{51}\) Hordeolum is quite painful, localized, and erythematous. It might lead to the production of an edema of the whole lid. Purulent material exudes from the eyelash line in external hordeola, while the internal one suppurates on the conjunctival surface of the eyelid.\(^{52}\)

Medical treatment for hordeola entails eyelid hygiene, massages of the lesion for 10 minutes, several times a day, warm compression, and topical antibiotic ointment in the inferior fornix if the lesion is draining or if there are any evidence of blepharoconjunctivitis. Systemic antibiotics might be given if the hordeola is complicated by preseptal cellulitis.\(^{53}\) Oral doxycycline might also be recommended if there is a history of repeated or multiple lesions or if there is a chronic and severe meibomitis. Internal hordeola frequently transform into chalazia that may need topical steroids, surgical incision, intralesional steroids, and curettage.

There is not significant evidence that the topical medications can promote healing in most of the cases. However, a blend of topical antibiotics and corticosteroids might be helpful in patients who exhibit frequent hordeola in the setting of rosacea-related blepharitis and that have not been relieved with warm compresses.\(^{53}\) These patients should be handled by an ophthalmologist, as topical steroids applied around the eye can lead to long term ocular complications.

**Chalazion**

Chalazion is the non-tender and firm nodular lesion of the eyelid that arises from obstruction, followed by chronic granulomatous inflammation of a meibomian or Zeis gland. Usually, sebaceous meibomian glands of
the eyelid secrete oily fluid called meibum, which makes the hydrophobic
l lipid layer of the tear film. If these glands become obstructed, a cyst
characterized by granulomatoud inflammation can form, making a
chalazion or a meibomian gland lipogranuloma. Sebaceous glands of Zeis,
which support eyelash follicles at the eyelid rim, may also become
obstructed and cause chalazion formation.\textsuperscript{54}

Often, chalazia can form from inflamed hordeola that scar and harden
over time. In addition, chalazia are usually observed in patients having
blepharitis of the eyelid margin and rosacea. Chalazia first become visible
with swelling of eyelid and erythema, finally turning into rubbery, painless
nodular lesion. Chalazia arising from meibomian gland obstruction occur
on the inner side of the eyelid (conjunctival).\textsuperscript{54}

The diagnosis of chalazion is clinical, though, during the first two days, it
may be unable to be diagnosed clinically. If the chalazion lies close to the
inner canthus of the lower eyelid, it should be differentiated from
dacryocystitis, which can generally be excluded by observing the location
of maximum tenderness and induration, under the medial canthus close
to the side of the nose for dacryocystitis.

Chronic chalazia that show no response to treatment should be biopsied
to exclude the possibility of a tumor of the eyelid. Incision, curettage, or
intrachalazion corticosteroid treatment may be recommended if chalazia
are large and persist for more than a few weeks in spite of the
conservative therapy.\textsuperscript{54}

- H01 Other inflammation of eyelid
- H01.0 Blepharitis

Excluded:
- Blepharoconjunctivitis (H10.5)
- H01.1 Noninfectious dermatomes of eyelid
  - Dermatitis:
    - allergic
    - contact
    - eczematous
  - Discoid lupus erythematosus
  - Xeroderma
- H01.8 Other specified inflammation of eyelid
- H01.9 Inflammation of eyelid, unspecified

Blepharitis is the inflammation of the eyelids, generally caused due to an excess growth of bacteria found on skin, blockage of eyelid’s oil glands, and is sometimes caused by allergies. Blepharitis is a common eye disorder that causes eyelids to be itchy, red, and swollen.\(^5\) It also makes the eye scaly-appearing at the base of the eyelashes. It is one of the most common causes of dry eyes. A dysfunction of the oil glands of the eyelid that causes blepharitis happens because of an imbalance in hormone levels.

Symptoms of blepharitis include:\(^5\)
- Feeling like something is in eye
- Burning of the eye
- Sensitivity to light
- Red and swollen eyes or eyelids
- Blurry vision
- Dry eyes
- Crusting of the eyelashes
The disorder cannot be treated fully; however, it can be controlled through satisfactory eyelid hygiene. If left untreated it may lead to more severe conditions, like injury or scarring to the eye’s tissues.

- **H02 Other disorders of eyelid**

  - Excluded:
    - congenital malformations of eyelid (Q10.0-Q10.3)

- **H02.0 Entropion and trichiasis of eyelid**

- **H02.1 Ectropion of eyelid**

- **H02.2 Lagophthalmos**

- **H02.3 Blepharochalasis**

- **H02.4 Ptosis of eyelid**

- **H02.5 Other disorders affecting eyelid function**
  - Ankyloblepharon
  - Blepharophimosis
  - Lid retraction
  - Excluded:
    - blepharospasm (G24.5)
    - tic (psychogenic) (F95)
    - tic (psychogenic)
    - organic (G25.6)

- **H02.6 Xanthelasma of eyelid**

- **H02.7 Other degenerative disorders of eyelid and periocular area**
  - Chloasma
  - Madarosis
  - Vitiligo

- **H02.8 Other specified disorders of eyelid**
  - Hypertrichosis of eyelid
- Retained foreign body in eyelid
- H02.9 Disorder of eyelid, unspecified
- H03 Disorder of eyelid, unspecified
- H03.0 Parasitic infestation of eyelid in diseases classified elsewhere

**Dermatitis of the Eyelid due to Demodex Species**

- Parasitic infestation of eyelid in:
  - leishmaniasis (B55)
  - loiasis (B74.3)
  - onchocerciasis (B73†)
  - phthiriasis (B85.3)
- H03.1 Involvement of eyelid in other infectious diseases classified elsewhere
  - Involvement of eyelid in:
    - herpes viral [herpes simplex] infection (B00.5)
    - leprosy (A30)
    - molluscum contagiosum (B08.1)
    - tuberculosis (A18.4)
    - yaws (A66)
    - zoster (B02.3)
- H03.8 Involvement of eyelid in other diseases classified elsewhere
  - Involvement of eyelid in impetigo (L01.0)
- H04 Disorders of lacrimal system
  - Excluded:
    - congenital malformations of lacrimal system (Q10.4-Q10.6)
- H04.0 Dacryoadenitis
- Chronic enlargement of lacrimal gland

- **H04.1 Other disorders of lacrimal gland**
  - Dacryops
  - Dry eye syndrome
  - Lacrimal:
    - cyst
    - gland atrophy

- **H04.2 Epiphora**

- **H04.3 Acute and unspecified inflammation of lacrimal passages**
  - Dacryocystitis (phlegmonous)
  - Dacryopericystitis
  - Lacrimal canaliculitis
  
  Excluded:
  - neonatal dacryocystitis (P39.1)

- **H04.4 Chronic inflammation of lacrimal passages**
  - Dacryocystitis
  - Lacrimal:
    - canaliculitis
    - mucocele
    - chronic

- **H04.5 Stenosis and insufficiency of lacrimal passages**
  - Dacryolith
  - Eversion of lacrimal punctum
  - Stenosis of lacrimal:
    - canaliculi
    - duct
    - sac

- **H04.6 Other changes in lacrimal passages**
The lacrimal system is the anatomical system containing ocular structures for tear generation and drainage. Any disruption to the production of tears or their drainage can result in lacrimal disorders, which eventually cause an acute or chronic eye discomfort.

A dry eye is one of the most common issues observed in an ophthalmologist's clinic. With age, the protective tear film found on the eye surface diminishes. This causes the delicate tissues of the eye exposed to the drying effects of wind, air, dust, and sun. The eye can still produce tears, in fact, a lot of patients who have this condition complain about wet eyes and tearing. This is because the dryness creates reflex tearing in order to keep the eye well lubricated.

Many people face their worst dryness in the evenings and afternoons. Since we blink less frequently while we read, reading can also aggravate the symptoms of dry eyes. Sometimes, external environmental factors are the cause. Dry weather, either in hot or cold temperatures, robs the eyes of required lubricants. Cigarette smoke, dust, airborne particles, and fumes are common irritants. In most patients, this situation is not linked with any systemic disease.

The symptoms of lacrimal system disorder include burning, stinging, or a gritty feeling, which might come and go, on the basis of many factors. Tearing, itching, and light sensitivity might bother patients. Often long mucus strings can be stretched from a dry eye. Excessive watering of
eyes may indicate dry eyes, similar to the tearing that occurs with lashes or foreign material in the eye.

**Disorders of the Orbit**

Excluded:
- congenital malformation of orbit (Q10.7)

- **H05.0 Acute inflammation of orbit**
  - Abscess
    - Cellulitis
    - Osteomyelitis
    - Periostitis
    - Tenonitis

- **H05.1 Chronic inflammatory disorders of orbit**
  - Granuloma of orbit

- **H05.2 Exophthalmic conditions**
  - Displacement of globe (lateral) NOS
  - Hemorrhage
  - Edema

- **H05.3 Deformity of orbit**
  - Atrophy
  - Exostosis

- **H05.4 Enophthalmos**

- **H05.5 Retained (old) foreign body following penetrating wound of orbit**
  - Retrobulbar foreign body

- **H05.8 Other disorders of orbit**
  - Cyst of orbit

- **H05.9 Disorder of orbit, unspecified**
Orbital inflammation is a common disorder among adults and children. The disorder may be severe, subacute or insidious. If there is an acute on-set, the process can be mistaken for orbital cellulites. In insidious cases, like the sclerosing subtype of inflammation, the chronic painless course might raise concerns regarding a neoplastic infiltration like lymphoma. Orbital inflammation can be grouped into specific, nonspecific, and idiopathic diagnoses. The differential diagnosis includes infectious, allergic, and neoplastic disease. Orbital inflammation affects neurologists and neuro-opthalmologists because all the entities can lead to afferent dysfunctions, like abnormal color perception, decreased vision and dysmotility.

Affected patients usually present with sudden painful redness, proptosis, and edema. Proptosis differs in accordance with the extent of inflammation, mass effect, and fibrosis. Ptosis, chemosis, optic neuropathy, and motility dysfunction is seen occasionally.

- H06 Disorders of lacrimal system and orbit in diseases classified elsewhere
- H06.0 Disorders of lacrimal system in diseases classified elsewhere
- H06.1 Parasitic infestation of orbit in diseases classified elsewhere
  - Echinococcus infection of orbit (B67)
  - Myiasis of orbit (B87.2)
- H06.2 Dysthyroid exophthalmos (E05)
- H06.3 Other disorders of orbit in diseases classified elsewhere

**Disorders of Conjunctiva:**

- H10 Conjunctivitis
Excluded:
  o keratoconjunctivitis (H16.2)

- H10.0 Mucopurulent conjunctivitis
- H10.1 Acute atopic conjunctivitis
- H10.2 Other acute conjunctivitis
- H10.3 Acute conjunctivitis, unspecified

Excluded:
  o ophthalmia neonatorum NOS (P39.1)

- H10.4 Chronic conjunctivitis
- H10.5 Blepharoconjunctivitis
- H10.8 Other conjunctivitis
- H10.9 Conjunctivitis, unspecified

Conjunctivitis is a common eye disorder that leads to inflammation and redness of the thin layer of tissue covering the front of an eye, called conjunctiva. The conjunctivitis is often referred to as red eyes. The symptoms of this disorder include watering and itchiness of eyes, and sometimes a sticky solution on the eyelashes. This disorder first affects one eye, but after few hours the other eye is affected too.

Conjunctivitis can occur as a result of:

- A viral or bacterial infection (this is called an infective conjunctivitis)
- An allergy from a substance like dust mites or pollen (this is called allergic conjunctivitis)
- Eye coming in contact with substance that can produce irritation in conjunctiva like shampoo, chlorinated water, or loose eyelash rubbish (this is called irritant conjunctivitis)
Conjunctivitis often doesn’t need treatment since the signs usually disappear within a few weeks. If treatment is essential, the kind of treatment is based on the cause. In extreme cases, antibiotic eye drops can be used to treat the infection. Irritant conjunctivitis would end as soon as the source of irritation is removed. Allergic conjunctivitis can often be treated with anti allergy medications like antihistamines.59

Patients should avoid substances that may cause an allergic reaction. It is best to avoid contact lenses until the symptoms have disappeared. Any sticky or crusty coating on eyelashes or lids can be removed with water and cotton wool. Wash your hands regularly and avoiding sharing towels and pillows help prevent the conjunctivitis.

- **H11 Other disorders of conjunctiva**
  - Excluded:
    - keratoconjunctivitis (H16.2)
- **H11.0 Pterygium**
  - Excluded:
    - pseudopterygium (H11.8)
- **H11.1 Conjunctival degenerations and deposits**
  - Conjunctival:
    - argyrosis [argyria]
    - concretions
    - pigmentation
    - xerosis NOS
- **H11.2 Conjunctival scars**
  - Symblepharon
- **H11.3 Conjunctival hemorrhage**
Subconjunctival hemorrhage

- H11.4 Other conjunctival vascular disorders and cysts

Conjunctival:
- aneurysm
- hypernemiaedema

- H11.8 Other specified disorders of conjunctiva

Pseudopterygium

- H11.9 Disorder of conjunctiva, unspecified

H13 Disorders of conjunctiva in diseases classified elsewhere

- H13.0 Filarial infection of conjunctiva (B74)
- H13.1 Conjunctivitis in infectious and parasitic diseases classified elsewhere

Conjunctivitis (due to):
- Acanthamoeba (B60.1)
- adenoviral follicular (acute) (B30.1)
- chlamydial (A74.0)
- diphtheritic (A36.8)
- gonococcal (A54.3)
- hemorrhagic (acute)(epidemic) (B30.3)
- herpes viral [herpes simplex] (B00.5)
- meningococcal (A39.8)
- Newcastle (B30.8)
- zoster (B02.3)

- H13.2 Conjunctivitis in other diseases classified elsewhere

- H13.3 Ocular pemphigoid (L12)

- H13.8 Other disorders of conjunctiva in diseases classified elsewhere
Diseases Of The Ear And Mastoid Process

This section contains information regarding the classification of ear diseases and the mastoid process as described by the ICD-10. Excluded in this section are:

- certain conditions originating in the perinatal period (P00-P96)
- certain infectious and parasitic diseases (A00-B99)
- complications of pregnancy, childbirth and the puerperium (O00-O99)
- congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- endocrine, nutritional and metabolic diseases (E00-E90)
- injury, poisoning and certain other consequences of external causes (S00-T98)
- neoplasms (C00-D48)
- symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This section is based on the following blocks:

- H60-H62 Diseases of external ear
- H65-H75 Diseases of middle ear and mastoid
- H80-H83 Diseases of inner ear
- H90-H95 Other disorders of ear

The asterisk categories under this section are as follows:

- H62 Disorders of external ear in diseases classified elsewhere
- H67 Otitis media in diseases classified elsewhere
• H75 Other disorders of middle ear and mastoid in diseases classified elsewhere

• H82 Vertiginous syndromes in diseases classified elsewhere

• H94 Other disorders of ear in diseases classified elsewhere

Diseases of the External Ear

• H60 Otitis external
  • H60.0 Abscess of external ear
    o Boil
    o Carbuncle
    o Furuncle
  • H60.1 Cellulites of external ear
    o Cellulites of:
      – auricle
      – external auditory canal
  • H60.2 Malignant otitis external
  • H60.3 Other infective otitis external
    o Otitis external:
      – diffuse
      – hemorrhagic
    o Swimmer’s ear
  • H60.4 Cholesteatoma of external ear
    o Keratosis obturans of external ear (canal)
  • H60.5 Acute otitis external, non-infective
    o Acute otitis external:
      – NOS
      – actinic
      – chemical
- contact
- eczematoid
- reactive

- H60.8 Other otitis external
  - Chronic otitis external NOS
- H60.9 Otitis external, unspecified

Otitis external (OE) is an infection or inflammation of the external auditory canal (EAC), the auricle, or both. This condition may affect all age groups. This disorder is classified as:

- Acute diffuse OE: It is the most common form and usually seen in swimmers
- Acute localized OE: Associated with infection of a hair follicle
- Chronic OE: It is same as acute diffuse OE but is of longer duration, i.e., over 6 weeks
- Eczematous OE: It entails different dermatologic conditions for example psoriasis, atopic dermatitis, and eczema that might infect the EAC and lead to OE
- Necrotizing OE: It is an infection that penetrates into deeper tissue adjacent to EAC. It occurs mainly in immune compromised adults (AIDS or diabetic patients)
- Otomycosis: It is an infection of ear canal caused by fungal species such as Candida Aspergillus

The major symptom of otitis external is the pain upon palpation of the tragus (anterior to ear canal) or an application of traction to the pinna. Affected persons might also face the following symptoms:
1. Otalia: It ranges from mild to severe, usually increasing over 1-2 days
2. Hearing loss
3. Ear pressure or fullness
4. Edema, Erythema and narrowing of EAC
5. Tinnitus
6. Fever on occasional basis
7. Itching, mostly in chronic OE or fungal OE
8. Deep pain: Immunocompromised adults might have necrotizing OE
9. Discharge: Initially clear, and quickly becomes foul smelling and purulent
10. Cellulites of neck or face or lymphadenopathy of the ipsilateral neck
11. Bilateral symptoms in rare cases
12. Exposure to water on a frequent basis like surfing, swimming, etc.
13. History of prior ear trauma for example hard ear cleaning, water in ear canal or use of cotton swabs

- **H61.0 Perichondritis of external ear**
  - Chondrodermatitis nodularis chronica helicis
  - Perichondritis of:
    - auricle
    - pinna

- **H61.1 Noninfective disorders of pinna**
  - Acquired deformity of:
- auricle
- pinna

Excluded:
  - cauliflower ear (M95.1)

- H61.2 Impacted cerumen
  - Wax in ear
- H61.3 Acquired stenosis of external ear canal
  - Collapse of external ear canal
- H61.8 Other specified disorders of external ear
  - Exostosis of external canal
- H61.9 Disorder of external ear, unspecified
- H62 Disorders of external ear in diseases classified elsewhere
- H62.0 Otitis external in bacterial diseases classified elsewhere
  - Otitis externa in erysipelas (A46)
- H62.1 Otitis external in viral diseases classified elsewhere
  Otitis external in:
  - herpes viral [herpes simplex] infection (B00.1)
  - zoster (B02.8)
- H62.2 Otitis external in mycoses
  - Otitis external in:
    - aspergillosis (B44.8)
    - candidacies (B37.2)
    - Otomycosis NOS (B36.9)
- H62.3 Otitis external in other infectious and parasitic diseases classified elsewhere
- H62.4 Otitis external in other diseases classified elsewhere
  - Otitis externa in impetigo (L01)
Abscesses in the ear canal begin as a boil or a furuncle. When the boil attacks the deeper ear canal tissues, it results in the formation of an abscess. The cause of abscess formation is bacterial infection and staphylococcus bacteria. Ear canal abscesses mainly happen due to poor hygiene, health, and inferior immune response. Tearing in the delicate ear canal skins gives bacteria the chance to grow. A broken hair follicle in the ear canal could also result in abscess formation.

**Diseases of Middle Ear and Mastoid**

- H65 Nonsuppurative otitis media
  - Included:
    - with myringitis
- H65.0 Acute serous otitis media
  - Acute and subacute otitis media
- H65.1 Other acute nonsuppurative otitis media
  - Otitis media, acute and subacute:
    - allergic (mucoid, sanguinous, serous)
    - mucoid
    - nonsuppurative, NOS
    - sanguinous
    - seromucinous
  - Excluded:
    - otitic barotrauma (T70.0)
    - otitis media (acute), NOS (H66.9)
- H65.2 Chronic serous otitis media
- Chronic tubotympanal catarrh

- **H65.3 Chronic mucoid otitis media**
  - Glue ear
  - Otitis media, chronic:
    - mucinous
    - secretor
    - transudative

Excluded:
  - adhesive middle ear disease (H74.1)

- **H65.4 Other chronic nonsuppurative otitis media**
  - Otitis media, chronic:
    - allergic
    - exudative
    - nonsuppurative NOS
    - seromucinous

- **H65.9 Nonsuppurative otitis media, unspecified**
  - Otitis media:
    - allergic
    - catarrhal
    - exudative
    - mucoid
    - secretory
    - seromucinous
    - serous
    - transudative
    - with effusion (nonpurulent)
Chronic suppurative otitis media is a middle ear inflammation that persists for more than two weeks and results in episodes of discharge from an ear. It might a complication of acute otitis media. Pain is not present in most of cases of chronic suppurative otitis. This disorder may eventually lead to hearing loss.

A major sign of acute otitis media in infants is ear pain, fever and irritability. Since the episode of otitis media is generally precipitated by an upper respiratory tract infection (URI), often other signs, such as nasal discharge and cough are observed. Discharge from an ear may be caused due to acute otitis media with perforation of eardrum, or acute otitis externa. Trauma like basilar skull fracture may also cause discharge from an ear because of cerebral spinal drainage from the brain and meninges.

Suppurative otitis media usually causes a hole in the tympanic membrane leading to a bacterial infection in the middle ear that lasts for a few weeks or more. The pus may discharge outside of the ear. Often, this pus is small enough to be seen only by binocular microscope. This disorder is more commonly found in patients having poor eustachian tube function and is more prevalent in Native North Americans.

- H70 Mastoiditis and related conditions
  - H70.0 Acute mastoiditis
    - Abscess
    - Empyema
  - H70.1 Chronic mastoiditis
    - Caries
    - Fistula
  - H70.2 Petrositis
Inflammation of petrous bone (acute, chronic)
- H70.8 Other mastoiditis and related conditions
- H70.9 Mastoiditis, unspecified

Mastoiditis is the infection of the mastoid bone of the skull. The mastoid is present just behind the ear. It is usually caused by a middle ear infection called acute otitis media. The infection might spread from ear to the mastoid bone. This bone has a honeycomb like form that gets filled with infected material. This disorder is more common in children than adults. Before the invention of antibiotics, this disorder was one of the major causes of child mortality in the world. The condition no longer happens frequently and is also less dangerous.

The symptoms of the mastoiditis include:
- Draining from an ear
- Ear pain and discomfort
- High fever on a sudden basis
- Headache
- Hearing loss
- Redness of ear or behind ear
- Swelling behind ear

Mastoiditis can be hard to cure since the medicine might not penetrate deeply into the bone. The situation sometimes needs repeated or long-term treatment. The infection is treated with antibiotic injections, along with antibiotics taken through orally. Surgery to remove the part of bone and drain mastoid may be needed if the medication doesn’t work. The patient might also need surgery to drain the middle ear. The potential complications that may arise during treatment include:
- Damage of the mastoid bone
- Vertigo or dizziness
- Epidural paralysis
- Meningitis
- Facial paralysis
- Hearing loss
- Penetration of infection in brain or entire body

**Diseases Of The Circulatory System**

This section contains information regarding the classification of circulatory system diseases and related disorders as described by the ICD-10. Excluded in this section are:

- certain conditions originating in the perinatal period (P00-P96)
- certain infectious and parasitic diseases (A00-B99)
- complications of pregnancy, childbirth and the puerperium (O00-O99)
- congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- endocrine, nutritional and metabolic diseases (E00-E90)
- injury, poisoning and certain other consequences of external causes (S00-T98)
- neoplasms (C00-D48)
- symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)
- systemic connective tissue disorders (M30-M36)
Transient Cerebral Ischemic Attacks and Related Syndromes

This section includes the following blocks:

- I00-I02 Acute rheumatic fever
- I05-I09 Chronic rheumatic heart diseases
- I10-I15 Hypertensive diseases
- I20-I25 Ischemic heart diseases
- I26-I28 Pulmonary heart disease and diseases of pulmonary circulation
- I30-I52 Other forms of heart disease
- I60-I69 Cerebrovascular diseases
- I70-I79 Diseases of arteries, arterioles and capillaries
- I80-I89 Diseases of veins, lymphatic vessels and lymph nodes, not elsewhere classified
- I95-I99 Other and unspecified disorders of the circulatory system

Asterisk categories under this section are as follows:

- I32 Pericarditis in diseases classified elsewhere
- I39 Endocarditic and heart valve disorders in diseases classified elsewhere
- I41 Myocarditis in diseases classified elsewhere
- I43 Cardiomyopathy in diseases classified elsewhere
- I52 Other heart disorders in diseases classified elsewhere
- I68 Cerebrovascular disorders in diseases classified elsewhere
• I79 Disorders of arteries, arterioles and capillaries in diseases classified elsewhere

• I98 Other disorders of circulatory system in diseases classified elsewhere

**Acute Rheumatic Fever**

• I00 Rheumatic fever without mention of heart involvement
  
  Included:
  
  • Arthritis, rheumatic, acute or subacute

• I01 Rheumatic fever with heart involvement
  
  Excluded:
  
  • chronic diseases of rheumatic origin (I05-I09) unless rheumatic fever is also present or there is evidence of recrudescence or activity of the rheumatic process.

• I01.0 Acute rheumatic pericarditis
  
  • Any condition in I00 with pericarditis:
  
  • Rheumatic pericarditis (acute)
  
  Excluded:
  
  • when not specified as rheumatic (I30)

• I01.1 Acute rheumatic endocarditic
  
  • Any condition in I00 with endocarditic or valvulitis
  
  • Acute rheumatic valvulitis

• I01.2 Acute rheumatic myocarditis
  
  • Any condition in I00 with myocarditis

• I01.8 Other acute rheumatic heart disease
  
  • Any condition in I00 with other or multiple types of heart involvement
Acute rheumatic pancarditis

- **I01.9 Acute rheumatic heart disease, unspecified**
  - Any condition in I00 with unspecified type of heart involvement
  - Rheumatic:
    - carditis, acute
    - heart disease, active or acute

- **I02 Rheumatic chorea**
  - Included:
    - Sydenham chorea
  - Excluded:
    - chorea:
      - NOS (G25.5)
      - Huntington (G10)

- **I02.0 Rheumatic chorea with heart involvement**
  - Chorea NOS with heart involvement
  - Rheumatic chorea with heart involvement of any type classifiable under I01.

- **I02.9 Rheumatic chorea without heart involvement**
  - Rheumatic chorea, NOS

Acute Rheumatic fever is a sequel of streptococcal infection, usually following two to three weeks after group “A” streptococcal pharyngitis, which takes place mostly in children and entails cardiac, rheumatologic and neurologic manifestations. The incidence of this condition has diminished in most of the developed countries, and a number of physicians have little or no practical experience with the management and diagnosis of this situation. Diagnosis is based on a combination of various
clinical manifestations that may develop in relation to group “A” streptococcal pharyngitis. These include carditis, chorea, subcutaneous nodules, migratory polyarthritis, and erythema marginatum. Since an inciting infection is treatable, the main focus has been on prevention.

Though the inciting bacteria causing this condition are known, the risk factors are still unclear. The site of the streptococcal infection seems to play an important part. The clinical syndrome usually follows streptococcal pharyngitis, however, streptococcal Cellulites is never indicated.

Chronic Rheumatic Heart Diseases

- I05 Rheumatic mitral valve diseases
  - Included:
    - conditions classifiable to (I05.0) and (I05.2-I05.9), whether specified as rheumatic or not
  - Excluded:
    - when specified as nonrheumatic (I34)
- I05.0 Mitral stenosis
  - Mitral (valve) obstruction (rheumatic)
- I05.1 Rheumatic mitral insufficiency
  - Rheumatic mitral:
    - incompetence
    - regurgitation
- I05.2 Mitral stenosis with insufficiency
  - Mitral stenosis with incompetence or regurgitation
- I05.8 Other mitral valve diseases
  - Mitral (valve) failure
- I05.9 Mitral valve disease, unspecified
106 Rheumatic aortic valve diseases
   Excluded:
     o when not specified as rheumatic (I35)

I06.0 Rheumatic aortic stenosis
   o Rheumatic aortic (valve) obstruction

I06.1 Rheumatic aortic insufficiency
   Rheumatic aortic:
     o incompetence
     o regurgitation

I06.2 Rheumatic aortic stenosis with insufficiency
   o Rheumatic aortic stenosis with incompetence or regurgitation

I06.8 Other rheumatic aortic valve diseases

I06.9 Rheumatic aortic valve disease, unspecified
   o Rheumatic aortic (valve) disease NOS

Mitral stenosis is a disease in which the mitral valve doesn’t completely open. This limits blood flow. Blood flowing in between different heart chambers must pass through a valve. The valve present between two heart chambers on the left side of the heart is known as the mitral valve. It opens up fully to enable the flow of blood from the upper to the lower chambers of the heart. It closes and then keeps blood from flowing backwards.

Mitral stenosis leads to less blood flow to the body. The upper heart chamber swells as pressure accumulates. Fluid and blood might collect in the lung tissue, making it difficult to breathe. Mitral stenosis in adults happens mostly among people with rheumatic fever. This is a disorder,
as explained earlier, which can develop after an illness from strep throat that was not correctly treated.

The valve issues continue to grow 5-10 years or more after having rheumatic fever. Symptoms of mitral stenosis might not be visible for an even longer term. The other factors that can cause mitral stenosis in adults include: 73

- Calcium accumulation around mitral valve
- Radiation treatment done to the chest
- Certain medications

The symptoms in adults are usually not noticeable. However, symptoms may appear and get worse with physical activity like, exercise that increases heart rate. Symptoms most often develop in adults between the ages of 20 and 50. 72

The symptoms usually start with an episode of atrial fibrillation, in particular if it causes a fast heart rate. The symptoms may also be initiated by stress, pregnancy, infection in lungs or heart, and other heart disorders. Symptoms can be summarized as follows: 71

- Chest discomfort increasing with activity and arm, neck, jaw or other areas
- Cough, with bloody phlegm
- Difficulty in breathing during exercise
- Fatigue
- Recurring respiratory infections like bronchitis
- Feeling of palpitations
- Swelling of ankles or feet
Treatment is based on the symptoms and the condition of the lungs and heart. People with mild symptoms may not require treatment. For severe symptoms, complete diagnosis and treatment are required. Medications used for treating mitral stenosis include:73

- Diuretics (water pills)
- Nitrates, beta-blockers
- Calcium channel blockers
- ACE inhibitors
- Angiotensin receptor blockers (ARBs)
- Digoxin
- I07 Rheumatic tricuspid valve diseases
  - Included:
  - whether specified as rheumatic or of unspecified origin
  - Excluded:
  - when specified as nonrheumatic (I36)
- I07.0 Tricuspid stenosis
  - Tricuspid (valve) stenosis (rheumatic)
- I07.1 Tricuspid insufficiency
  - Tricuspid (valve) insufficiency (rheumatic)
- I07.2 Tricuspid stenosis with insufficiency
- I07.8 Other tricuspid valve diseases
- I07.9 Tricuspid valve disease, unspecified
  - Tricuspid valve disorder NOS
- I08 Multiple valve diseases
  - Included:
  - whether specified as rheumatic or of unspecified origin
  - Excluded:
Endocarditis, valve unspecified (I38)

- multiple valve diseases of specified origin other than rheumatic heart disease; use appropriate codes in (I34-I38, Q22-Q23, Q24.8)

- rheumatic diseases of endocardium, valve unspecified (I09.1)

- I08.0 Disorders of both mitral and aortic valves

- Involvement of both mitral and aortic valves whether specified as rheumatic or of unspecified origin

- I08.1 Disorders of both mitral and tricuspid valves

- I08.2 Disorders of both aortic and tricuspid valves

- I08.3 Combined disorders of mitral, aortic and tricuspid valves

- I08.8 Other multiple valve diseases

- I08.9 Multiple valve disease, unspecified

Tricuspid valve disorder can arise from morphological changes in the valve or from functional deviation of the myocardium. Tricuspid stenosis is mostly rheumatic in origin and is usually come along with mitral and aortic valve disorders.\(^7^4\)

Most of the stenotic tricuspid valves are lined with clinical evidence of regurgitation, which can be documented by executing a physical examination, angiography, echocardiography, etc. Stenotic tricuspid valves are always anatomically abnormal, and the cause is confined to few conditions.\(^7^4\) With the exceptions of congenital causes and active infective endocarditis, the tricuspid stenosis takes years to grow.

Tricuspid stenosis results from the changes in tricuspid valve structure that precipitates insufficient excursion of the valve leaflets. The most
general etiology is rheumatic fever and the tricuspid valve involvement is present with aortic and mitral valve involvement. In rheumatic tricuspid stenosis, the valve leaflets get thickened and sclerotic as the chordate tendinae shorten. The limited valve opening blocks blood flow into the right heart ventricle and thus, to the pulmonary vasculature too. This disorder is observed in more women than men, similar to the mitral stenosis case of rheumatic origin. The congenital form of the disorder however, has a somewhat higher predominance in males.

Diseases Of The Respiratory System

This section contains information regarding the classification of respiratory system diseases and related disorders as described by the ICD-10. It is to be noted that when a respiratory condition is explained as taking place in more than one location and is not indexed specifically, and should be classified to lower anatomic location (for example, tracheobronchitis to bronchitis in J40).

Excluded are the following conditions:

- certain conditions originating in the perinatal period (P00-P96)
- certain infectious and parasitic diseases (A00-B99)
- complications of pregnancy, childbirth and the puerperium (O00-O99)
- congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- endocrine, nutritional and metabolic diseases (E00-E90)
- injury, poisoning and certain other consequences of external causes (S00-T98)
• neoplasms (C00-D48)
• symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

The following blocks are identified:
• J00-J06 Acute upper respiratory infections
• J09-J18 Influenza and pneumonia
• J20-J22 Other acute lower respiratory infections
• J30-J39 Other diseases of upper respiratory tract
• J40-J47 Chronic lower respiratory diseases
• J60-J70 Lung diseases due to external agents
• J80-J84 Other respiratory diseases principally affecting the interstitium
• J85-J86 Suppurative and necrotic conditions of lower respiratory tract
• J90-J94 Other diseases of pleura
• J95-J99 Other diseases of the respiratory system

The asterisk categories under this section are as follows:
• J17 Pneumonia in diseases classified elsewhere
• J91 Pleural effusion in conditions classified elsewhere
• J99 Respiratory disorders in diseases classified elsewhere

**Acute Upper Respiratory Infections**

Excluded are:
- chronic obstructive pulmonary disease with acute exacerbation NOS (J44.1)

- J00 Acute nasopharyngitis [common cold]
  
  Included:
  - Coryza (acute)
  - Nasal catarrh, acute
  - Nasopharyngitis:
    - NOS
    - Infective NOS
  - Rhinitis:
    - acute
    - infective
  
  Excluded:
  - Nasopharyngitis, chronic (J31.1)
  - Pharyngitis:
    - NOS (J02.9)
    - acute (J02)
    - chronic (J31.2)
  - Rhinitis:
    - NOS (J31.0)
    - allergic (J30.1-J30.4)
    - chronic (J31.0)
    - vasomotor (J30.0)
  - Sore throat:
    - NOS (J02.9)
    - acute (J02)
    - chronic (J31.2)
Nasopharyngitis is a benign, acute disease, which is quite common among children; however, it also affects adults. It is an inflammation of mucus membranes of the upper pharynx or the nasopharynx, which runs between the nasal and oral palate. Nasopharyngitis is caused by a virus, such as a rhinovirus, respiratory syncytial, or corona virus. The symptoms of this disease include: 

- nasal obstruction
- coughing
- running nose
- sneezing
- sore throat
- fever

In the case of an infant, parents sometimes poorly handle the infant’s nasopharyngitis. It can often lead to severe breathing problems, coughing, and dripping of secretions from the nose, which may block the airways. Nasal obstruction should be addressed accurately because infants only breathe through their nose. Infants don’t know how to breathe through their mouth in case of any problems.

The diagnosis of the disease is easily made by an examination that indicates the presence of the signs mentioned above. A physical examination would be carried out to eliminate possible infections like sinusitis or angina, or to determine signs of the nasopharyngitis. No further review is needed for its diagnosis.

Nasopharyngitis is cured through use of paracetamol, which reduce fever and painful symptoms. Rinsing the nasal cavities with saline is necessary, six or even eight times a day, especially for children. In severe cases,
their pillow should be raised a few inches to facilitate the air flow from the nose out of the body.

Adults may use nasal decongestant. However, these drops might not be suitable for children. If there are no complications, antibiotics might not be required.

- **J01 Acute sinusitis**
  
  Included:
  
  - abscess
  - empyema
  - infection
  - inflammation
  - suppuration
  - acute, of sinus (accessory, nasal)
  
  Excluded:
  
  - sinusitis, chronic or NOS (J32)

- **J01.0 Acute maxillary sinusitis**
  
  - acute antritis

- **J01.1 Acute frontal sinusitis**

- **J01.2 Acute ethmoidal sinusitis**

- **J01.3 Acute sphenoidal sinusitis**

- **J01.4 Acute pansinusitis**

- **J01.8 Other acute sinusitis**
  
  - Acute sinusitis involving more than one sinus but not pansinusitis

- **J01.9 Acute sinusitis, unspecified**
In acute sinusitis, a patient has a stuffed up nose and feels pressure on cheekbones. It is also called acute rhinosinusitis, and is a short-term inflammation or infection of the membranes lining the sinuses.\textsuperscript{81} It restricts mucus from draining from the nose. Acute sinusitis is a common disease and affects over 40 million Americans every year.\textsuperscript{83} Conditions and illnesses causing acute sinusitis include:\textsuperscript{82}

- Colds
- Bacterial infections in upper respiratory tract
- Fungal sinus infections
- Allergies causing mucous production in sinuses
- Less cilia motility
- Nasal tumors or polyps
- Deviated nasal septum
- Infected or enlarged adenoids
- Infected tooth
- Cystic fibrosis

The symptoms of this disease are as follows:\textsuperscript{84}

- nasal congestion
- thick green or yellow mucus discharge from nose
- sore throat
- a cough
- drainage of mucus in back of your throat
- headache
- pain, tenderness or pressure behind your cheeks, nose, eyes or forehead
- earache
- toothache
- bad breath
- less sense of smell
- less sense of taste
- fever
- fatigue

Diagnosis of this disease often involves a physical examination. The doctor gently taps sinuses with fingers to detect an infection. The exam might entail looking into the nose with a light to diagnose polyps, inflammation, tumors and other abnormalities.84

- **J02 Acute pharyngitis**
  - Included:
    - acute sore throat
  - Excluded:
    - Abscess:
      - peritonsillar (J36)
      - pharyngeal (J39.1)
      - retropharyngeal (J39.0)
    - Acute laryngopharyngitis (J06.0)
    - Chronic pharyngitis (J31.2)
- **J02.0 Streptococcal pharyngitis**
  - Streptococcal sore throat
  - Excluded:
    - Scarlet fever (A38)
- **J02.8 Acute pharyngitis due to other specified organisms**
  - Excluded:
    - pharyngitis (due to):
- entero viral vesicular (B08.5)
- herpes viral [herpes simplex] (B00.2)
- infectious mononucleosis (B27)

- influenza virus:
  - identified (J09, J10.1)
  - not identified (J11.1)

- J02.9 Acute pharyngitis, unspecified
  - Pharyngitis (acute):
    - NOS
    - Gangrenous
    - infective NOS
    - suppurative
    - ulcerative
  - Sore throat (acute) NOS

Acute pharyngitis is a disorder in which inflammation occurs in the pharynx, *i.e.*, the back of the throat. This can lead to a sore throat and also a scratchy throat. This makes swallowing difficult and painful. One of the major causes of this disease are viruses, however, bacterial infections can also be the cause. People who have the cold or flu on a frequent basis, like children, are more prone to develop this disease. Patients who have allergies, sinus infections on a frequent basis, or second hand smoke exposure, also develop pharyngitis.

As far as viral infections are concerned, acute pharyngitis is mainly caused by the common cold, mononucleosis, or influenza. These infections are not treated with antibiotics. Pharyngitis can also be caused by bacterial infection, and here treatment requires antibiotics. The most common or widespread bacterial infection in this scenario is strep
throat, caused by streptococcus. Rare causes include Chlamydia, corynebacterium, and gonorrhea.

The symptoms of pharyngitis differ on the basis of underlying condition. Along with sore, scratchy or dry throat, a cold or flu can cause:

- sneezing
- runny nose
- headache
- cough
- fatigue
- body aches
- chills
- fever

The signs of mononucleosis include:

- swollen lymph nodes
- fatigue
- fever
- muscles aches
- general malaise
- loss of appetite
- rash

Strep throat may cause:

- trouble swallowing
- red throat with white patches
- swollen lymph nodes
• fever
• chills
• loss of appetite and nausea
• unusual taste in mouth
• general malaise

Acute Tonsillitis

Excluded:
  o Peritonsillar abscess (J36)
  o Sore throat:
    – NOS (J02.9)
    – acute (J02)
    – streptococcal (J02.0)
• J03.0 Streptococcal tonsillitis
• J03.8 Acute tonsillitis due to other specified organisms
  Excluded:
  o herpes viral [herpes simplex] pharyngotonsillitis (B00.2)
• J03.9 Acute tonsillitis, unspecified
  o Tonsillitis (acute):
    – NOS
    – follicular
    – gangrenous
    – infective
    – ulcerative

The tonsils are two masses of tissue found at the back of the throat, which act like filters, catching germs that could enter the airways and otherwise cause infections. They generate antibodies to fight against
infection. Tonsils often get infected. After being infected by viruses or bacteria, tonsils get swollen and inflamed. This condition is called tonsillitis. 

This is common in children in particular. It may occur on a repeated basis. Viral and bacterial infections are the causes behind tonsillitis. A common cause, as mentioned earlier, is Streptococcus bacteria, while others include:

- Adenoviruses
- Influenza virus
- Epstein-Barr virus
- Parainfluenza viruses
- Enteroviruses
- Herpes simplex virus

The major symptoms of tonsillitis include swelling and inflammation of tonsils, often severe blockage of airways. Other signs are:

- Throat pain or tenderness
- Redness of the tonsils
- A colored coating on the tonsils
- Painful blisters
- Ulcers on the throat
- Loss of voice
- Headache
- Loss of appetite
- Ear pain
- Difficulty swallowing
- Difficult breathing through the mouth
- Swollen glands in the neck or jaw area
- Fever, chills
- Bad breath

The treatment of tonsillitis is based on its cause. To identify the cause, the doctor might carry out a rapid strep test. This test involves slowly swabbing the back of the throat close to tonsils with a cotton swab. This test identifies the bacterial infection. Viral infection cannot be determined through this test, but a viral infection is assumed to be the cause if the test for bacterial infection comes back negative.88

Diseases Of The Digestive System

This section contains information regarding the classification of digestive system diseases and related disorders as described by the ICD-10. Excluded in this section are:

- certain conditions originating in the perinatal period (P00-P96)
- certain infectious and parasitic diseases (A00-B99)
- complications of pregnancy, childbirth and the puerperium (O00-O99)
- congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- endocrine, nutritional and metabolic diseases (E00-E90)
- injury, poisoning and certain other consequences of external causes (S00-T98)
- neoplasms (C00-D48)
- symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)
The following blocks are included:

- K00-K14 Diseases of oral cavity, salivary glands and jaws
- K20-K31 Diseases of esophagus, stomach and duodenum
- K35-K38 Diseases of appendix
- K40-K46 Hernia
- K50-K52 Non-infective enteritis and colitis
- K55-K64 Other diseases of intestines
- K65-K67 Diseases of peritoneum
- K70-K77 Diseases of liver
- K80-K87 Disorders of gallbladder, biliary tract and pancreas
- K90-K93 Other diseases of the digestive system

The asterisk categories under this section are as follows:

- K23 Disorders of esophagus in diseases classified elsewhere
- K67 Disorders of peritoneum in infectious diseases classified elsewhere
- K77 Liver disorders in diseases classified elsewhere
- K87 Disorders of gallbladder, biliary tract and pancreas in diseases classified elsewhere
- K93 Disorders of other digestive organs in diseases classified elsewhere

**Diseases of Oral Cavity, Salivary Glands and Jaws**

- K00 Disorders of tooth development and eruption

  Excluded:
  - embedded and impacted teeth (K01)
• K00.0 Anodontia
  o Hypodontia
  o Oligodontia
• K00.1 Supernumerary Teeth
  o Distomolar
  o Fourth molar
  o Mesiodens
  o Paramolar
  o Supplementary teeth
• K00.2 Abnormalities of size and form of teeth
  o Concrescence
  o Fusion
  o Gemination
  o Dens:
    – evaginatus
    – in dente
    – invaginatus
    – enamel pearls
    – macrodontia
    – microdontia
    – peg-shaped [conical] teeth
    – taurodontism
    – tuberculum paramolare
  Excluded:
  o Tuberculum Carabelli, which is regarded as a normal variation and should not be coded
• K00.3 Mottled teeth
  o Dental fluorosis
Mottling of enamel
Nonfluoride enamel opacities

Excluded:
- deposits [accretions] on teeth (K03.6)

- **K00.4** Disturbances in tooth formation
  - Aplasia and hypoplasia of cementum
  - Dilaceration of tooth
  - Enamel hypoplasia (neonatal, postnatal, prenatal)
  - Regional odontodysplasia
  - Turner tooth

Excluded:
- Hutchinson teeth and mulberry molars in congenital syphilis (A50.5)
  - Mottled teeth (K00.3)

- **K00.5** Hereditary disturbances in tooth structure, not elsewhere classified
  - Amelogenesis
  - Dentinogenesis
  - Odontogenesis
  - Imperfecta
  - Dentinal dysplasia
  - Shell teeth

- **K00.6** Disturbances in tooth eruption
  - Dentia precox
  - Natal
  - Neonatal
  - Tooth
  - Premature:
- eruption of tooth
- shedding of primary [deciduous] tooth
  - Retained [persistent] primary tooth
  - K00.7 Teething syndrome
  - K00.8 Other disorders of tooth development
    - Color changes during tooth formation
    - Intrinsic staining of teeth NOS
  - K00.9 Disorder of tooth development, unspecified
    - Disorder of odontogenesis NOS

Anodontia is a genetic disorder that is defined as an absence of all teeth, and is rarely found in pure form or in absence of any related abnormalities. Rare but more commonly observed than anodontia are oligodontia and hypodontia. Hypodontia is genetic and generally involves absence of one to six teeth. Oligodontia is also genetic and is the term most widely used to explain conditions where more than six teeth are absent.

These conditions might affect either primary or permanent teeth sets; most of the cases are affect the permanent teeth. These disorders are linked with a group of non-progressive nerve and skin syndromes (ectodermal dysplasias). Anodontia, in particular, is generally a part of a syndrome and rarely happens as an isolated entity.

Adodontia implies partial to complete tooth absence. Since primary teeth are usually grown by the age of 3, the absence is noticeable. Except for the wisdom teeth, all permanent teeth are present by the age of 12 or 14. If teeth still don’t appear by this age, dental x-rays are taken. When anodontia is present, abnormalities of nails, hair, and sweat glands might
also appear. In a number of cases, anodontia is a part of one of the ectodermal dysplasias, a class of hereditary disorders.\textsuperscript{89}

The full absence of permanent teeth, anodontia, is quite rare and is transferred as an autosomal recessive genetic characteristic. The site of the faulty gene has not yet been identified. The malfunctioning gene leading to the autosomal dominant form of hypodontia has been linked to two separate sites on two separate genes.\textsuperscript{90}

- **K01 Embedded and Impacted Teeth**
  
  Excluded:
  
  o embedded and impacted teeth with abnormal position of such teeth or adjacent teeth (K07.3)

- **K01.0 Embedded teeth**

  An embedded tooth is a tooth that has failed to erupt without obstruction by another tooth.

- **K01.1 Impacted teeth**

  An impacted tooth is a tooth that has failed to erupt because of obstruction by another tooth.

Embedded teeth are teeth that have not erupted due to the lack of eruptive forces. This disorder might be linked with some systemic conditions that include cretinism, rickets, and cleidocranial dysplasia.\textsuperscript{91}

The local factors restricting the eruption of teeth are fibromatosis gingive, where there is hard connective tissue that hinders the normal eruptive forces of teeth.
Impacted teeth are teeth that are not erupting because of certain physical barriers in the route of eruption. When tooth crowding happens, there is limited space for the newly erupting teeth into the jaw. In addition premature loss of milk teeth can cause subsequent closing of the area by other members; hence the late erupting teeth have very little space for growing into the mouth. Often dense fibrous connective tissue of the gingival prevents teeth from erupting normally into the oral cavity.

**Diseases of Esophagus, Stomach and Duodenum**

Excluded is the following condition:

- hiatus hernia (K44)

The following fourth-character subdivisions are for use with categories K25-K28:

- .0 Acute with hemorrhage
- .1 Acute with perforation
- .2 Acute with both hemorrhage and perforation
- .3 Acute without hemorrhage or perforation
- .4 Chronic or unspecified with hemorrhage
- .5 Chronic or unspecified with perforation
- .6 Chronic or unspecified with both hemorrhage and perforation
- .7 Chronic without hemorrhage or perforation
- .9 Unspecified as acute or chronic, without hemorrhage or perforation

- K20 esophagitis

Included:

- Abscess of esophagus esophagitis:
Esophagitis is the inflammation of the esophagus lining, which is a tube that takes food from the throat to the stomach. If left untreated it becomes highly uncomfortable and causes issues with swallowing, ulcers, and scarring of the esophagus. In rare cases, a condition called Barrett’s esophagus can occur, which is a risk factor for esophageal cancer.93

Esophagitis occurs due to the inflammation of the esophageal lining, because of an irritation or infection. The most common cause of this disease is GERD or gastroesophageal reflux disease. Other causes include:93

- Vomiting
- Surgery
- Medications such as aspirin and other anti-inflammatory drugs
- Taking a large pill with little water before bedtime and fragments getting stuck in the throat
- Swallowing a toxic substance
- Hernias
- Radiotherapy injury
Infections that may cause esophagitis could be due to bacteria, fungi, or viruses. These generally happen due to diseases or other conditions which make the immune system weak, for example steroid medications or AIDS. Infection causing esophagitis includes the following conditions.

_Candida_

This is a yeast infection that occurs in the esophagus and is caused by the same fungus that leads to vaginal thrush. The infection grows in the esophagus if the immune system of the body is weak, especially in patients with AIDS or diabetes. It is curable with antifungal drugs.

_Herpes_

Just like Candida, this viral infection may also develop in the esophagus if the body has weak immune system. It is usually treated with antiviral drugs. The signs of the esophagitis include:

- Difficult and/or painful swallowing
- Heartburn
- Mouth sores
- A feeling of something of being stuck in the throat
- Nausea
- Vomiting

The diagnosis of this disease includes upper endoscopy and biopsy.

- K21 Gastro-esophageal reflux disease
- K21.0 Gastro-esophageal reflux disease with oesophagitis
  - Reflux esophagitis
- K21.9 Gastro-esophageal reflux disease without esophagitis
Gastro esophageal reflux disease (GERD) is a condition where stomach contents leak in a backward direction from the stomach into the esophagus. This leads to irritation in esophagus, heartburn and other symptoms.

When food is eaten, it passes to the stomach from the throat, through the esophagus. A ring of muscle fibers in the lower esophagus prevents food from moving backwards. These muscle fibers are called the lower esophagus sphincter, or LES. If this muscle ring is not closed, the stomach content can flow back into the esophagus. This is called gastro esophageal reflux. Irritating stomach acids can also damage the esophagus lining. The risk factors for this disorder include:

- Use of alcohol
- Hiatal hernia (a condition where part of the stomach shifts above the diaphragm, a muscle that separates the abdominal cavities and chest)
- Obesity
- Pregnancy
- Scleroderma
- Smoking

The symptoms may include:

- Feeling that food is stuck behind the breastbone
- Heartburn
- Burning pain in the chest
- Nausea after eating
Some less common signs are:

- Ringing food back up (regurgitation)
- Cough or wheezing
- Difficulty swallowing
- Hiccups
- Hoarseness or change in voice
- Sore throat

**Diseases Of The Skin And Subcutaneous Tissue**

This section contains information regarding the classification of skin and subcutaneous tissue diseases and related disorders as described by the ICD-10. Excluded are the following conditions:

- certain conditions originating in the perinatal period (P00-P96)
- certain infectious and parasitic diseases (A00-B99)
- complications of pregnancy, childbirth and the puerperium (O00-O99)
- congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- endocrine, nutritional and metabolic diseases (E00-E90)
- injury, poisoning and certain other consequences of external causes (S00-T98)
- lipomelanotic reticulosis (I89.8)
- neoplasms (C00-D48)
- symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)
• systemic connective tissue disorders (M30-M36)

This section is based on the following blocks:

• L00-L08 Infections of the skin and subcutaneous tissue
• L10-L14 Bullous disorders
• L20-L30 Dermatitis and eczema
• L40-L45 Papulosquamous disorders
• L50-L54 Urticaria and erythema
• L55-L59 Radiation-related disorders of the skin and subcutaneous tissue
• L60-L75 Disorders of skin appendages
• L80-L99 Other disorders of the skin and subcutaneous tissue

The asterisk categories under this section are as follows:

• L14 Bullous disorders in diseases classified elsewhere
• L45 Papulosquamous disorders in diseases classified elsewhere
• L54 Erythema in diseases classified elsewhere
• L62 Nail disorders in diseases classified elsewhere
• L86 Keratoderma in diseases classified elsewhere
• L99 Other disorders of skin and subcutaneous tissue in diseases classified elsewhere

**Infections of the Skin and Subcutaneous Tissue**

Excluded are:

- Hordeolum (H00.0)
- Infective dermatitis (L30.3)
Local infections of skin, such as:

- erysipelas (A46)
- erysipeloid (A26)
- herpes viral [herpes simplex] infection (B00)
- herpes viral [herpes simplex] infection
- anogenital (A60)
- molluscum contagiosum (B08.1)
- mycoses (B35-B49)
- pediculosis, ascariases and other infestations (B85-B89)
- viral warts (B07)

Panniculitis (of):

- NOS (M79.3)
- lupus (L93.2)
- neck and back (M54.0)
- relapsing [Weber-Christian] (M35.6)

Perlèche (due to):

- NOS (K13.0)
- candidacies (B37)
- riboflavin deficiency (E53.0)
- Pyogenic granuloma (L98.0)
- Zoster (B02)

L00 Staphylococcal scalded skin syndrome

Included:

- Pemphigus neonatorum
- Ritter disease

Excluded:

- toxic epidermal necrolysis [Lyell] (L51.2)
Staphylococcal scalded skin syndrome (SSSS), also called Ritter von Ritterschein disease, Ritter disease, and staphylococcal epidermal necrolysis, involves a spectrum of superficial blistering skin disorders, resulting from exfoliative toxins of certain strains of staphylococcus aureus.99

It is a disease of acute exfoliation of the skin usually following erythematous cellulites.100 The severity of this syndrome differs from a few blisters localized to the infected site, to a severe exfoliation affecting almost the whole body. A mild condition of this syndrome involves only desquamation of skin folds after impetigo has been described.

- L01 Impetigo
  Excluded:
  - impetigo herpetiformis (L40.1)
  - pemphigus neonatorum (L00)
- L01.0 Impetigo [any organism, any site]
  - Bockhart impetigo
- L01.1 Impetiginization of other dermatoses

Impetigo is a highly contagious skin infection, which mainly attacks children and infants. Impetigo generally appears in the form of red sores on the skin, in particular over the child’s mouth and nose.101 The sores burst and then develop honey colored crusts. Impetigo might disappear on its own in 2-3 weeks; however, antibiotics would shorten the course of the disease and prevent its spread to others.

The infected child is kept at home, away from school or daycare, until he or she is no longer contagious. Without antibiotics, the disease is contagious until the sores disappear.101 Major signs of impetigo include
red sores that rupture quickly, ooze for several days, and then form a yellowish brown crust. The sores generally appear around the mouth and neck areas and can be spread to other areas as well, through fingers, towels and clothing.

A less common form of the disease is called bullous impetigo that is characterized by large blisters appearing on the trunk and diaper area of young children and infants. A severe form of impetigo is named as etyma, which enters deeper into skin, leading to painful pus filled sores that can become deep ulcers. A person is exposed to impetigo causing bacteria when he or she comes into contact with an infected person’s sores.

Impetigo can be transferred through clothing, towels, bed linen, and even toys. The risk factors of impetigo are as follows:

1. Age

Though anyone can be affected by impetigo, it mainly attacks children from age two to six.

2. Crowded areas

Impetigo is contagious and can spread easily in a day care or school settings

3. Humidity and warm weather

Impetigo infections are more common in the summer.

4. Some sports

Participating in sports in which there is skin contact increases the risk of developing the impetigo.
5. Broken skin

The bacteria that lead to impetigo often penetrate the skin through a small injury, rash, or insect bite.

Older people who have diabetes or a poor immune system are also prone to develop ecthyma, a deeper and more severe form of impetigo.

- L02 Cutaneous abscess, furuncle and carbuncle
  
  Included:
  
  - boil
  - furunculosis

  Excluded:
  
  - Anal and rectal regions (K61)
  - Genital organs (external):
    - female (N76.4)
    - male (N48.2, N49)

- L02.0 Cutaneous abscess, furuncle and carbuncle of face

  Excluded:
  
  - Ear, external (H60.0)
  - Eyelid (H00.0)
  - Head [any part, except face] (L02.8)
  - Lacrimal:
    - gland (H04.0)
    - passages (H04.3)
  - Mouth (K12.2)
  - Nose (J34.0)
- Orbit (H05.0)
- Submandibular (K12.2)

- L02.1 Cutaneous abscess, furuncle and carbuncle of neck
- L02.2 Cutaneous abscess, furuncle and carbuncle of trunk
  - Abdominal wall
  - Back [any part, except buttock]
  - Chest wall
  - Groin
  - Perineum
  - Umbilicus

Excluded:
- breast (N61)
- hip (L02.4)
- omphalitis of newborn (P38)

- L02.3 Cutaneous abscess, furuncle and carbuncle of buttock
  - Gluteal region

Excluded:
- pilonidal cyst with abscess (L05.0)

- L02.4 Cutaneous abscess, furuncle and carbuncle of limb
  - Axilla
  - Hip
  - Shoulder

- L02.8 Cutaneous abscess, furuncle and carbuncle of other sites
  - Head [any part, except face]
  - Scalp

- L02.9 Cutaneous abscess, furuncle and carbuncle, unspecified
  - Furunculosis NOS
Cutaneous abscesses are groups of pus in the dermis and deeper skin tissues. A furuncle is an infection of the hair follicle where purulent material extends into subcutaneous tissue, through dermis, and a small abscess develops. A carbuncle is a coalescence of many inflamed follicles into a single inflammatory mass having purulent drainage from various follicles.

Most abscesses develop because of infection. However, sterile abscesses can happen in the setting of injected irritants. Examples include injected drugs that might not be completely absorbed and so stay at the location of injection, leading to local irritation. Sterile abscesses can become hard solid lesions as they scar.

Cutaneous abscesses, carbuncles and furuncles, can grow in healthy people who have no predispositions other than nasal or skin carriage of staphylococcus aureus. Spontaneous infection because of community-acquired methicillin-resistance S. aureus (CA-MRSA) might develop with higher frequency than abscesses because of other pathogens.

- L03 Cellulites
  Included:
  - acute lymphangitis
  Excluded:
  - Cellulites of:
    - anal and rectal regions (K61)
    - external auditory canal (H60.1)
  - external genital organs:
    - female (N76.4)
    - male (N48.2, N49)
    - eyelid (H00.0)
- lacrimal apparatus (H04.3)
- mouth (K12.2)
- nose (J34.0)
  - Eosinophilic Cellulites [Wells] (L98.3)
  - Febrile neutrophilic dermatosis [Sweet] (L98.2)
  - Lymphangitis (chronic, subacute) (I89.1)
- L03.0 Cellulites of finger and toe
  - Infection of nail
  - Onychia
  - Paronychia
  - Perionychia
- L03.1 Cellulites of other parts of limb
  - Axilla
  - Hip
  - Shoulder
- L03.2 Cellulites of face
- L03.3 Cellulites of trunk
  - Abdominal wall
  - Back [any part]
  - Chest wall
  - Groin
  - Perineum
  - Umbilicus
  - Excluded:
    - omphalitis of newborn (P38)
- L03.8 Cellulites of other sites
  - Head [any part, except face]
  - Scalp
L03.9 Cellulites, unspecified

Cellulites are a common and potentially severe bacterial skin infection.\textsuperscript{106} It appears as a red swollen area of skin that feels tender and hot. It is not contagious, but can be spread to other body parts. The most commonly affected area is the lower legs, though Cellulites can happen anywhere on the face or body.\textsuperscript{106} This disease normally only affects the skin surface, but it can affect tissues under the skin, while spreading to the bloodstream and lymph nodes.

If it is left untreated, Cellulites can become a life threatening disease. It is quite important to have immediate medical treatment if Cellulites symptoms emerge. As far as the signs and symptoms of Cellulites are concerned, these include:\textsuperscript{107}

- Red skin area that tends to expand
- Swelling
- Tenderness
- Pain
- Warmth
- Fever
- Red spots
- Blisters
- Skin dimpling

The disease occurs mostly through bacteria like staphylococcus and streptococcus, which enter through a crack in your skin. Though it can happen anywhere, the most common site is the lower leg. Bacteria is more likely to enter the disrupted skin areas, like where there has been a
recent cut, wound, ulcer, surgery, etc. Diagnosis is usually based on symptoms and treated with antibiotics.

**Diseases Of The Musculoskeletal System And Connective Tissue**

This section contains information regarding the classification of musculoskeletal system and connective tissue diseases and related disorders as described by the ICD-10. Excluded are the following conditions:

- certain conditions originating in the perinatal period (P00-P96)
- certain disorders of the temporomandibular joint (K07.6)
- certain infectious and parasitic diseases (A00-B99)
- compartment syndrome (T79.6)
- complications of pregnancy, childbirth and the puerperium (O00-O99)
- congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- endocrine, nutritional and metabolic diseases (E00-E90)
- injury, poisoning and certain other consequences of external causes (S00-T98)
- neoplasms (C00-D48)
- symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

This section includes the following blocks:

- M00-M25 Arthropathies
- M30-M36 Systemic connective tissue disorders
- M40-M54 Dorsopathies
• M60-M79 Soft tissue disorders
• M80-M94 Osteopathies and chondropathies
• M95-M99 Other disorders of the musculoskeletal system and connective tissue

The asterisk categories under this section are as follows:

• M01 Direct infections of joint in infectious and parasitic diseases classified elsewhere
• M03 Post infective and reactive arthropathies in diseases classified elsewhere
• M07 Psoriatic and enteropathic arthropathies
• M09 Juvenile arthritis in diseases classified elsewhere
• M14 Arthropathies in other diseases classified elsewhere
• M36 Systemic disorders of connective tissue in diseases classified elsewhere
• M49 Spondylopathies in diseases classified elsewhere
• M63 Disorders of muscle in diseases classified elsewhere
• M68 Disorders of synovium and tendon in diseases classified elsewhere
• M73 Soft tissue disorders in diseases classified elsewhere
• M82 Osteoporosis in diseases classified elsewhere
• M90 Osteopathy in diseases classified elsewhere

Location of Musculoskeletal Involvement

The following sub-classification indicates the location of involvement is for optional use with suitable categories under this chapter. As local
extensions and specialty adaptations might differ in the number of characters used, it is recommended that supplementary location sub classification be put in identifiable separate position. Different sub-classifications for use with derangement of dorsopathies, knee, and biomechanical lesions not elsewhere categorized are given at M23, before M40 and M99, respectively:

0. Multiple sites

1. Shoulder region
   - clavicle
   - scapula
   - acromioclavicular
   - glenohumeral
   - sternoclavicular
   - joints

2. Upper arm
   - humerus
   - elbow joint

3. Forearm
   - radius
   - ulna
   - wrist joint

4. Hand
   - carpus
   - fingers
   - metacarpus
   - joints between these bones

5. Pelvic region and thigh
   - buttock
   - femur
• pelvis
• hip (joint)
• sacroiliac joint

6. Lower leg
• fibula
• knee joint
• tibia

7. Ankle and foot
• metatarsus
• tarsus
• toes
• ankle joint
• other joints in foot

8. Other
• head
• neck
• ribs
• skull
• trunk
• vertebral column

9. Site unspecified

• **Arthropathies (M00-M25)**
  Included:
  o Disorders affecting predominantly peripheral (limb) joints
• Infectious arthropathies (M00-M03)
It should be noted that this block contains anthropathies caused by microbiological agents. Distinction has been made based on the etiological relationships:

1. Direct joint infection, where organisms attack synovial tissue while microbial antigen is present in the joint

2. Indirect infection, that can be of two types: a reactive anthropath, in which microbial infection is present but neither antigens nor organisms can be detected in the joint; and a post infective arthropathy, where microbial antigens are there but recovery of an organism is not regular and there is insufficient evidence of local multiplication.

- M00 Pyogenic arthritis
  
  Excluded:
  
  - infection and inflammatory reaction due to internal joint prosthesis (T84.5)

- M00.0 Staphylococcal arthritis and polyarthritis
- M00.1 Pneumococcal arthritis and polyarthritis
- M00.2 Other streptococcal arthritis and polyarthritis
- M00.8 Arthritis and polyarthritis due to other specified bacterial agents
- M00.9 Pyogenic arthritis, unspecified
  
  - Infective arthritis NOS

Pyogenic arthritis can be caused by bacterial, infectious or fungal arthritis. This condition is characterized by the joint’s inflammation that occurs due to infection. Usually, the disorder affects one big joint in a body, like
the hip or knee. In rare cases, it may affect multiple joints at one time. Pyogenic arthritis generally occurs due to bacteria that spread through the blood, from one area to another.\textsuperscript{108} Bacterial infection from a wound or an opening from a surgical process, like knee surgery, may be responsible.

In children and adults, common bacteria that lead to acute pyogenic arthritis include staphylococcus, hemophilus influenza, and streptococcus.\textsuperscript{109} These organisms enter the bloodstream and infect joints, causing pain and inflammation. The signs of this disease generally appear quickly and with severe pain, fever and joint swelling. The symptoms include:\textsuperscript{110}

- Chills
- Fatigue and generalized weakness
- Fever
- Inability to move the limb in an infected joint
- Severe pain in the affected joint, particularly with movement
- Swelling (increased fluid within the joint)
- Warmth (due to increased blood flow)

For diagnosis, a process called anthrocentesis is generally used.\textsuperscript{100}
M02.8 Other reactive arthropathies
M02.9 Reactive arthropathy, unspecified

Reactive arthritis is a joint pain and swelling started by an infection in another part of the body, usually the genitals, intestines or urinary tract. The knee, ankle and foot joints are usually the target of this disorder. Inflammation may also affect, skin, eyes, and urethra under this condition. Though this disorder is often termed as Reiter’s syndrome, Reiter’s is actually a particular kind of reactive arthritis. In this condition, inflammation usually affects urethra and eyes, along with joints. Reactive arthritis is not very common. For most people, the symptoms come and go, finally disappearing within 12 months. The symptoms of this disease usually appear about from two or three weeks after the initial exposure. These symptoms include:

Pain and Stiffness:

The joint pain linked with reactive arthritis mostly happens in knees, feet and ankles. You might feel pain in heels, back, or buttocks.

Eye inflammation:

A lot of people having reactive arthritis also experience eye inflammation, leading to conjunctivitis.

Urinary problems:

Discomfort and frequent urination may occur, along with increased inflammation of cervix.
Swollen fingers or toes:

In certain cases, fingers or toes may swell.

**Systemic Connective Tissue Disorders**

Included are the following conditions:

- Autoimmune disease:
  - NOS
  - Systemic

- Collagen (vascular) disease:
  - NOS
  - Systemic

Excluded are the following conditions:

- Antiphospholipid syndrome (D68.6)
- Autoimmune disease, single organ or single cell-type (code to relevant condition category)

- M30 Polyarteritis nodosa and related conditions
- M30.0 Polyarteritis nodosa
- M30.1 Polyarteritis with lung involvement [Churg-Strauss]

- Allergic granulomatous angiitis
- M30.2 Juvenile polyarteritis
- M30.3 Mucocutaneous lymph node syndrome [Kawasaki]
- M30.8 Other conditions related to polyarteritis nodosa
- Polyangiitis overlap syndrome

Polyarteritis nodosa is a multisystem disease that might present with sweats, fever, weight loss, and extreme joint and muscle pains. It may develop in a subacute manner, over various weeks or months. Patients might face nonspecific conditions like weight loss, malaise, fever,
abdominal pain, and anorexia.\textsuperscript{114} The disease may affect any part of the body, but it has a predisposition for organs, like kidneys, skin, nerves, and the gastrointestinal tract.

A lot of patients with this disease have high blood pressure and higher erythrocyte sedimentation rates (ESR).\textsuperscript{115} The presentation of this disease may also include skin abnormalities (like ulcers and rashes) and peripheral neuropathy (the sensation of tingling, burning, \textit{etc.}). However, the disease holds a predilection for some tissues and organs. These are as follows:\textsuperscript{115}

- Nerve
- Skin
- Kidney
- Gastrointestinal tract
- Heart
- Eye
- Genitals
- M31 Other necrotizing vasculopathies
  - M31.0 Hypersensitivity angiitis
    - Goodpasture syndrome
  - M31.1 Thrombotic microangiopathy
    - Thrombotic thrombocytopenic purpura
  - M31.2 Lethal midline granuloma
  - M31.3 Wegener granulomatosis
    - Necrotizing respiratory granulomatosis
  - M31.4 Aortic arch syndrome [Takayasu]
  - M31.5 Giant cell arteritis with polymyalgia rheumatica
  - M31.6 Other giant cell arteritis
• M31.7 Microscopic polyangiitis
  o Microscopic polyarteritis
  Excluded:
  o polyarteritis nodosa (M30.0)
• M31.8 Other specified necrotizing vasculopathies
  o Hypocomplementemic vasculitis
• M31.9 Necrotizing vasculopathy, unspecified
• M32 Systemic lupus erythematosus
  Excluded:
  o lupus erythematosus (discoid)(NOS) (L93.0)
• M32.0 Drug-induced systemic lupus erythematosus
• M32.1 Systemic lupus erythematosus with organ or system involvement
  o Libman-Sacks disease (I39)
  o Lupus pericarditis (I32.8)
  o Systemic lupus erythematosus with:
    − kidney involvement (N08.5, N16.4)
    − lung involvement (J99.1)
• M32.8 Other forms of systemic lupus erythematosus
• M32.9 Systemic lupus erythematosus, unspecified

Hypersensitivity angiitis is an immune complex disease where patients suffer from palpable purpuric lesions, mostly on the lower extremities, and often linked with various organ involvements. The antigen for this disorder may be found in an infectious organism, such as the hepatitis virus, or streptococcus, a drug, or from a variety of chemicals that might be inhaled or ingested. In addition, the antigen may be a component of another systemic disease.
Under conditions of vascular turbulence or vessel wall dilation, this complex might become fixed, initiating the complement series with elaboration of chemotactic factors for neutrophils. These cells secrete lysosomal enzymes that cause vessel wall damage. Red blood cells enter the tissue, producing purpura, and the inflammatory infiltrate accounts for palpability. While many patients only have skin lesions, yet many others may face involvement of joints, kidneys, gastrointestinal tract and lungs.

- M33 Dermatopolymyositis
- M33.0 Juvenile dermatomyositis
- M33.1 Other dermatomyositis
- M33.2 Polymyositis
- M33.9 Dermatopolymyositis, unspecified

Dermatomyositis is a long term and ongoing inflammation of various muscles all over the body. These can include the muscles of the esophagus, lungs, and throat. Dermatomyositis is a rare disease, but it is treatable. In certain cases it can cause severe complications, like difficulty breathing, swallowing, gastrointestinal ulcerations, pneumonia, and lung cancer.

The cause of this disease is not yet known, but it might be an autoimmune reaction (where the immune system of the body mistakes the muscles cells as dangerous substances and attacks them). This process leads to typical symptoms of this disease, such as muscle weakness.
The symptoms can occur suddenly or they can develop slowly over time. Symptoms include muscle pain and joint pain. Symptoms cause problems in carrying out routine activities like walking, bathing, dressing, and eating. The diagnosis for this disease starts with taking a complete personal and family history, including symptoms, and completing a physical examination, including a neurological exam.

The neurological exam assesses the muscles and the nervous systems and their functions, like sensation, reflexes, balance, movement, vision, coordination and hearing. The diagnosis might need the collaborative efforts of a range of specialists. These include specialists in neurological disorders, and a rheumatologist.

- **M34 Systemic sclerosis**
  - Included:
    - scleroderma
  - Excluded:
    - scleroderma:
      - circumscribed (L94.0)
      - neonatal (P83.8)
- **M34.0 Progressive systemic sclerosis**
- **M34.1 CR (E) ST syndrome**
- **M34.2 Systemic sclerosis induced by drugs and chemicals**
- **M34.8 Other forms of systemic sclerosis**
  - Systemic sclerosis with:
    - lung involvement (J99.1)
- myopathy (G73.7)

- M34.9 Systemic sclerosis, unspecified

- M35 Other systemic involvement of connective tissue
  
  Excluded:
  
  o Reactive perforating collagenosis (L87.1)

- M35.0 Sicca syndrome [Sjögren]
  
  o Sjögren syndrome with:
    
    - keratoconjunctivitis (H19.3)
    - lung involvement (J99.1)
    - myopathy (G73.7)
    - renal tubulo-interstitial disorders (N16.4)

- M35.1 Other overlap syndromes
  
  o Mixed connective tissue disease
  
  Excluded:
  
  o Polyangiitis overlap syndrome (M30.8)

- M35.2 Behçet disease

- M35.3 Polymyalgia rheumatica
  
  Excluded:
  
  o polymyalgia rheumatica with giant cell arteritis (M31.5)

- M35.4 Diffuse (eosinophilic) fasciitis

- M35.5 Multifocal fibrosclerosis

- M35.6 Relapsing panniculitis [Weber-Christian]
  
  Excluded:
  
  o Panniculitis
    
    - NOS (M79.3)
    - lupus (L93.2)

- M35.7 Hypermobility syndrome
  
  o Familial ligamentous laxity
Systemic sclerosis is a systemic connective tissue disorder that is characterized by essential vasomotor disturbances, subsequent atrophy of skin, fibrosis, atrophy of muscles, subcutaneous tissue, and internal organs, along with immunologic disturbances.\textsuperscript{120}

Mass collagen deposits cause internal organs and skin to change. A lot of factors, including environmental ones, result in immunological system disturbances and vascular fluctuations.\textsuperscript{121} Endothelial changes might result in a cascade of stimulatory changes that affect many cells, including fibroblasts, macrophages, T-lymphocytes and mast cells. In turn, the triggered cells release a range of substances, including cytokines, with their soluble enzymes and receptors, and their inhibitors. These substances result in changes on the extracellular matrix compounds, like fibronectin, proeoglycans and collagen type 1, 3, 5 and 7.\textsuperscript{121}

Excessive deposits of collagen in tissue are a major feature of systemic sclerosis. This production can eventually lead to increased deposits of collagen in tissues. The symptoms include the following:\textsuperscript{120}

- \textit{Diffuse Scleroderma}, which affects the skin and heart, lungs, GI tract, and kidneys.
• **Limited Scleroderma**, mainly impacts the skin of the face, neck, distal elbows and knees, and late in the disease causes isolated pulmonary hypertension. **CREST syndrome** is also linked with limited scleroderma.

There is a minor increase in the risk of cancer in patients having a systemic sclerosis. No obvious cause for scleroderma and systemic sclerosis in known. Genetic predisposition seems to be limited while the genetic concordance is small; still, there often is a familial predisposition for autoimmune disease.¹²¹

**Diseases Of The Genitourinary System**

The section containing information regarding the classification of genitourinary system and diseases and related disorders as described by the ICD-10 is reviewed here. Excluded in this section are:

• certain conditions originating in the perinatal period (P00-P96)
• certain infectious and parasitic diseases (A00-B99)
• complications of pregnancy, childbirth and the puerperium (O00-O99)
• congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
• endocrine, nutritional and metabolic diseases (E00-E90)
• injury, poisoning and certain other consequences of external causes (S00-T98)
• neoplasms (C00-D48)
• symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99)

The following blocks are listed as:

• N00-N08 Glomerular diseases
• N10-N16 Renal tubulo-interstitial diseases
• N17-N19 Renal failure
• N20-N23 Urolithiasis
• N25-N29 Other disorders of kidney and ureter
• N30-N39 Other diseases of urinary system
• N40-N51 Diseases of male genital organs
• N60-N64 Disorders of breast
• N70-N77 Inflammatory diseases of female pelvic organs
• N80-N98 Noninflammatory disorders of female genital tract
• N99-N99 Other disorders of the genitourinary system

The asterisk categories in this section are as follows:

• N08 Glomerular disorders in diseases classified elsewhere
• N16 Renal tubulo-interstitial disorders in diseases classified elsewhere
• N22 Calculus of urinary tract in diseases classified elsewhere
• N29 Other disorders of kidney and ureter in diseases classified elsewhere
• N33 Bladder disorders in diseases classified elsewhere
• N37 Urethral disorders in diseases classified elsewhere
• N51 Disorders of male genital organs in diseases classified elsewhere

• N74 Female pelvic inflammatory disorders in diseases classified elsewhere

• N77 Vulvovaginal ulceration and inflammation in diseases classified elsewhere

**Glomerular Diseases**

Excluded are:
- hypertensive renal disease (I12)

• N00 Acute nephritic syndrome
  Included:
  - Acute:
    - glomerular disease
    - glomerulonephritis
    - nephritis
    - renal disease NOS
  Excluded:
  - acute infectious tubulo-interstitial nephritis (N10)
  - nephritic syndrome NOS (N05)

• N01 Rapidly progressive nephritic syndrome
  Included:
  - Rapidly progressive:
    - glomerular disease
    - glomerulonephritis
    - nephritis
  Excluded:
Acute nephritic syndrome is a set of symptoms that occur in conjunction with disorders leading to glomerulonephritis, or inflammation or swelling of the glomeruli in the kidney. This condition generally arises due to an immune response initiated by an infection or other disease. The common causes in patients include:

- Hemolytic uremic syndrome
- Henoch-Schönlein purpura
- IGA nephropathy
- Post-streptococcal glomerulonephritis
- Abdominal abscesses
- Goodpasture syndrome
- Hepatitis B or C
- Infective endocarditis
- Membranoproliferative GN I
- Membranoproliferative GN II
- Rapidly progressive (crescentic) glomerulonephritis
- SLE or lupus nephritis
- Vasculitis
- Viral diseases like mononucleosis, mumps, measles

The inflammation impacts the functions of the glomerulus, which is the component of the kidney that acts like a filter for making urine and eliminating waste. As a consequence, protein and blood enters the urine, and excess liquid accumulates in the body.

Swelling of the body occurs when blood loses albumin, which is a protein that keeps fluid in the blood vessels. If it is lost, the fluid accumulates in
body tissues. Blood loss arising due to a damaged kidney leads to blood in urine. Some of the common symptoms of this syndrome include:

- Blood in the urine (urine seems dark, tea-colored, or cloudy)
- Decreased urine yield (little or no urine might be produced)
- Swelling of the face, legs, arms, hands, eye socket, feet, abdomen, or other areas
- Blurred vision
- Cough containing pink, frothy material or mucous
- Decreased alertness, confusion, drowsiness,
- General aches and pains
- General ill feeling
- Headache
- Shortness of breath
- Slow, sluggish, and lethargic movement

During diagnostic examinations, the health care provider might find the following symptoms:

1. Irregular heart and lung sounds
2. Enlarged liver
3. Enlarged neck veins from increased pressure
4. General swelling
5. High blood pressure
6. Symptoms of acute kidney failure
7. Symptoms of fluid overload

For example:
- N02 Recurrent and persistent hematuria
Included:
  o Hematuria
  o benign (familial)(of childhood)
  o with morphological lesion specified in .0-.8 before N00.

Excluded:
  o Hematuria NOS (R31)

Hematuria is an excess number of red blood cells in urine, and is also classified as either microscopic (seen only with microscope) or macroscopic (colored urine). It can result from a kidney injury or other issue in the urinary tract. Renal hematuria may be caused due to glomerular or nonglomerular disease, such as renal cell carcinoma.124

Healthy people might discharge as many as 120 red blood cells in urine over a 12-hour time span. An acceptable level is no more than two red blood cells per high power field. The method to process urine differs from lab to lab; therefore, the number of red blood cells per high power field (which is considered an accurate measure of hematuria) might differ slightly among different labs. The urinary dipstick identifies one to two red blood cells per high power field, and it is a sensitive test. A negative dipstick exam virtually excludes hematuria.124

Hematuria might be caused by either glomerular or nonglomerular causes. In adults hematuria is generally a result of lower urinary tract abnormalities, in particular from conditions that affect the bladder, urethra, and prostate. Persistent hematuria in older patients raises the chance of malignancy. This possibility, especially when it originates in the bladder, ranges from six percent in those patients having persistent microscopic hematuria, to more than 20 percent in patients having gross hematuria. Other causes include:125
• Neoplasms
• Trauma
• Metabolic defects like hypercalciuria
• Vascular diseases, including renal vein thrombosis; renal infarctions and cystic
• Kidney diseases including medullary cystic disease, polycystic kidney disease; and medullary sponge
• Interstitial kidney diseases like hydronephrosis, papillary necrosis, and drug-induced interstitial nephritis.

Glomerular hematuria, as opposed to hematuria, is caused by an injury elsewhere in the urinary tract, and is characterized by the misshapen red blood cells that have been damaged by chemical and osmotic stress to red blood cells as they travel through the nephron.¹²⁵

• N03 Chronic nephritic syndrome
  Included:
  o chronic
  o glomerular disease
  o glomerulonephritis
  o nephritis
  Excluded:
  o chronic tubulo-interstitial nephritis (N11)
  o diffuse sclerosing glomerulonephritis (N18)
  o nephritic syndrome NOS (N05)
• N04 Nephrotic syndrome
Included:
- congenital nephrotic syndrome
- lipoid nephrosis

**Renal Tubulointerstitial Diseases**

Included are the following:
- Use additional code, if desired, to identify associated chronic kidney disease (N18).

Excluded are:
- pyeloureteritis cystica (N28.8)
  - N10 Acute tubulointerstitial nephritis

Included:
- Acute
  - infectious interstitial nephritis
  - pyelitis
  - pyelonephritis
- N11 Chronic tubulo-interstitial nephritis

Included:
- Chronic
  - infectious interstitial nephritis
  - pyelitis
  - pyelonephritis
- N11.0 Nonobstructive reflux-associated chronic pyelonephritis
  - Pyelonephritis (chronic) associated with (vesicoureteral) reflux

Excluded:
- vesicoureteral reflux NOS (N13.7)
• N11.1 Chronic obstructive pyelonephritis
  o Pyelonephritis (chronic) associated with:
    - anomaly
    - kinking
    - obstruction
    - structure

Excluded:
  o calculous pyelonephritis (N20.9)
  o obstructive uropathy (N13)

• N11.8 Other chronic tubulo-interstitial nephritis
  o Non-obstructive chronic pyelonephritis NOS

• N11.9 Chronic tubulo-interstitial nephritis, unspecified
  o Chronic:
    - interstitial nephritis NOS
    - pyelitis NOS
    - pyelonephritis NOS

Acute interstitial nephritis is a significant cause of acute renal failure arising from immune-mediated tubule interstitial injury, started due to infections, medicines and other causes.\textsuperscript{126} Acute interstitial nephritis may cause complications in up to 15 percent of patients that are hospitalized for acute renal failure.

Diagnostic features of acute renal failure include a specific physical exam, a history, and lab findings that distinguish between acute interstitial nephritis from other acute renal failure causes.\textsuperscript{127}

• N12 Tubulointerstitial nephritis, not specified as acute or chronic
  Included:
o Interstitial nephritis NOS
o Pyelitis NOS
o Pyelonephritis NOS

Excluded:
  o Calculous pyelonephritis (N20.9)

• N13 Obstructive and Reflux Uropathy

Excluded:
  o calculus of kidney and ureter without hydronephrosis (N20)
  o congenital obstructive defects of renal pelvis and ureter (Q62.0-Q62.3)
  o obstructive pyelonephritis (N11.1)

• N13.0 Hydronephrosis with ureteropelvic junction obstruction
• N13.1 Hydronephrosis with ureteral stricture, not elsewhere classified
• N13.2 Hydronephrosis with renal and ureteral calculous obstruction
• N13.3 Other and unspecified hydronephrosis
• N13.4 Hydroureter
• N13.5 Kinking and stricture of ureter without hydronephrosis
• N13.6 Pyonephrosis
  o Conditions in N13.0-N13.5 with infection
  o Obstructive uropathy with infection

• N13.7 Vescicoureteral-reflux-associated uropathy
  o Vescicoureteral reflux:
    – NOS
    – with scarring

Excluded:
- reflux-associated pyelonephritis (N11.0)
  - N13.8 Other obstructive and reflux uropathy
  - N13.9 Obstructive and reflux uropathy, unspecified
- Urinary tract obstruction NOS

Obstructive uropathy is a functional or structural hindrance of normal urine flow, often resulting in renal dysfunction. The symptoms, less likely to occur in chronic obstruction, might include pain radiating to the T11 to T12 dermatomes and abnormal voiding (for example anuria, nocturia, difficulty voiding). The diagnosis depends on the outcomes of cystourethroscopy, bladder catheterization and imaging. Treatment, depending on cause, might need immediate drainage, instrumentation, surgery, hormonal treatment or combination of these treatments.

Reflux nephropathy is a medical condition where the kidneys are damaged due to backward urine flow into the kidney. Urine flows from the kidney through the tubes (ureters) and into bladder. When the bladder is full, it pushes the urine out of the urethra. Urine should not flow back into the ureter if the bladder is being squeezed. Every ureter has a one way valve at the point it enters the bladder and this valve prevents urine from flowing back through the ureter. However, in some people, the urine flows backward to the kidney. This is called a vesicoureteral reflux. Over time, the kidneys might be scarred or damaged by the reflux, called reflux nephropathy.

Some patients don’t show any symptom of reflux nephropathy. These problems can be observed when kidney tests are carried out for other purposes. The symptoms if visible might resemble those of:
  - Chronic kidney failure
• Nephrotic syndrome
• Urinary tract infection

Pregnancy, Childbirth And The Puerperium

The section in the ICD-10 containing information regarding the classification of pregnancy, childbirth diseases and puerperium related disorders as described here. It is based on disease during pregnancy and childbirth.

Excluded in this section are certain diseases or injuries complicating pregnancy, childbirth and the puerperium classified elsewhere:

• external causes (for mortality) (V01-Y89)
• injury, poisoning and certain other consequences of external cause (S00-T88.1, T88.6-T98)
• mental and behavioral disorders associated with the puerperium (F53)
• obstetrical tetanus (A34)
• postpartum necrosis of pituitary gland (E23.0)
• puerperal osteomalacia (M83.0)
  o Supervision of:
    – high-risk pregnancy (Z35)
    – normal pregnancy (Z34)

This section is based on the following blocks:

• O00-O08 Pregnancy with abortive outcome
- O10-O16 Edema, proteinuria and hypertensive disorders in pregnancy, childbirth and the puerperium
- O20-O29 Other maternal disorders predominantly related to pregnancy
- O30-O48 Maternal care related to the fetus and amniotic cavity and possible delivery problems
- O60-O75 Complications of labor and delivery
- O80-O84 Delivery
- O85-O92 Complications predominantly related to the puerperium
- O94-O99 Other obstetric conditions, not elsewhere classified

**Pregnancy with Abortive Outcome**

Excluded:
- continuing pregnancy in multiple gestation after abortion of one fetus or more (O31.1)

- O00 Ectopic pregnancy
  Included:
  - Ruptured ectopic pregnancy

- O00.0 Abdominal pregnancy
  Excluded:
  - delivery of viable fetus in abdominal pregnancy (O83.3)
  - maternal care for viable fetus in abdominal pregnancy (O36.7)

- O00.1 Tubal pregnancy
  - Fallopian pregnancy
  - Rupture of (fallopian) tube due to pregnancy
- Tubal abortion
- O00.2 Ovarian pregnancy
- O00.8 Other ectopic pregnancy
  - Pregnancy:
    - cervical
    - cornual
    - intraligamentous
    - mural
- O00.9 Ectopic pregnancy, unspecified

In a normal pregnancy, the ovary releases an egg into the fallopian tube. If the egg is exposed to sperm the fertilized egg is moved into the uterus where it grows for the following nine months. However, in certain cases, the fertilized egg remains in the fallopian tube, which is called ectopic pregnancy or tubal pregnancy. In rare cases, the fertilized egg attaches itself to one of the ovaries, another organ in abdomen, the cornua of the uterus or even the cervix. In any of these situations, rather than initiating normal and safe pregnancy, the life of a mother to be, is in danger. Ectopic pregnancies need immediate treatment.

Usually, ectopic pregnancy occurs in the first few weeks of the pregnancy. At this point a woman may be unaware she is pregnant, so an ectopic pregnancy could be a shock. Health care experts usually determine it by the eighth week of pregnancy. Some of the signs of an ectopic pregnancy are:

- Vaginal bleeding
- Nausea
- Vomiting with pain
- Lower abdominal pain
- Severe abdominal cramps
- Pain on one side of body
- Dizziness
- Pain in shoulder, neck, or rectum

If the fallopian tube ruptures, the bleeding with pain could be severe enough to cause fainting.

- O01 Hydatidiform mole
  Excluded:
  - Malignant hydatidiform mole (D39.2)
- O01.0 Classical hydatidiform mole
  - Complete hydatidiform mole
- O01.1 Incomplete and partial hydatidiform mole
- O01.9 Hydatidiform mole, unspecified
  - Trophoblastic disease NOS
  - Vesicular mole NOS

A hydatidiform mole is a mass or growth that is formed within the womb (uterus), at the start of pregnancy. It happens in rare cases and is a kind of gestational trophoblastic disease (GTD).\(^\text{134}\) A hydatidiform mole, also called molar pregnancy, arises from excessive production of tissue that is meant to develop into the placenta, which feeds the fetus during pregnancy. In a molar pregnancy, the tissues grow into an unusual mass.\(^\text{135}\) There are two kinds of such mass:

- **Partial molar pregnancy**, which involves an unusual placenta and certain fetal development.

- **Complete molar pregnancy**, which involves an unusual placenta but no fetus.
Both of these conditions are due to problems during fertilization. The exact known cause of the fertilization problem is not yet known. There is no exact or known ways to avoid these masses to develop. The signs of a molar pregnancy include:\textsuperscript{135}

- Unusual growth of uterus, either smaller or bigger than normal
- Vomiting and nausea that might be rough enough to cause fainting
- Vaginal bleeding during initial 3 months of pregnancy
- Signs of hyperthyroidism including loose stool, nervousness, heat intolerance, fast heart rate, restlessness, moist and warm skin, unexplained rapid weight loss, or trembling hands
- Signs similar to preeclampsia that happen in the early second trimester mostly, including swelling in legs, ankles and feet, and high blood pressure

A pelvic examination might detect the symptoms resembling a normal pregnancy, however, the size of the womb might be abnormal and there might not be any heart sounds from the baby.\textsuperscript{136} There might be some vaginal bleeding as well.

- O02 Other abnormal products of conception
  Excluded:
  - papyraceous fetus (O31.0)
- O02.0 Blighted ovum and nonhydatidiform mole
  - Mole:
    - carneous
    - fleshy
    - intrauterine NOS
  - Pathological ovum
• O02.1 Missed abortion
  o Early fetal death with retention of dead fetus
    Excluded:
  o Missed abortion with:
    – blighted ovum (O02.0)
  o Mole:
    – hydatidiform (O01)
    – nonhydatidiform (O02.0)
• O02.8 Other specified abnormal products of conception
  Excluded:
  o blighted ovum (O02.0)
  o mole:
    – hydatidiform (O01)
    – nonhydatidiform (O02.0)
• O02.9 Abnormal product of conception, unspecified
• O03 Spontaneous abortion
  Included:
  o Miscarriage
  o O04 Medical abortion
  Excluded:
  o Termination of pregnancy:
    – legal
    – therapeutic

Spontaneous abortion is a non-induced fetal or embryonic death, or passage of products of conception before the 20-week gestation period. Threatened abortion is the vaginal bleeding with no cervical dilation that happens during this time period. This shows that spontaneous abortion might happen in a female who has a confirmed, viable intrauterine
Diagnosis is done through ultrasound and clinical criteria. Treatment is generally expectant observation for the threatened abortion, and if spontaneous abortion has happened or seems unavoidable, observation of the uterine evacuation.

The isolated spontaneous abortion might arise from various viruses, most probably the herpes virus, cytomegalo virus, parvo virus, and rubella virus, or from the disorders that can lead to sporadic abortions or repeated pregnancy loss for example, mendelian or chromosomal abnormalities, luteal phase defects, etc. Other causes are immunologic abnormalities, uterine abnormalities, major trauma etc. Most often, the cause is unknown. The signs of this include:

- cramp pelvic pain
- bleeding
- expulsion of tissues

Late spontaneous abortion might start with a gush of fluid if the membranes are ruptured. In rare case does a massive hemorrhage occurs. A dilated cervix shows that abortion is inevitable. If the products of conception stay in the uterus after a spontaneous abortion, vaginal bleeding may occur, often after a delay of hours to days. Infections might also arise, leading to pain, fever and sometimes sepsis.

**Edema, Proteinuria and Hypertensive Disorders in Pregnancy, Childbirth and the Puerperium**

- O10 Pre-existing hypertension complicating pregnancy, childbirth and the puerperium

Included:
- The listed conditions with pre-existing proteinuria
Excluded:
  - That with superimposed pre-eclampsia (O11)

The following include any condition specified as a reason for obstetric care during pregnancy, childbirth or the puerperium:

- O10.0 Pre-existing essential hypertension complicating pregnancy, childbirth and the puerperium
- O10.1 Pre-existing hypertensive heart disease complicating pregnancy, childbirth and the puerperium
- O10.2 Pre-existing hypertensive renal disease complicating pregnancy, childbirth and the puerperium
- O10.3 Pre-existing hypertensive heart and renal disease complicating pregnancy, childbirth and the puerperium
- O10.4 Pre-existing secondary hypertension complicating pregnancy, childbirth and the puerperium
- O10.9 Unspecified pre-existing hypertension complicating pregnancy, childbirth and the puerperium

Edema is a condition that causes swollen feet and ankles, it occurs during pregnancy, since the body is holding on to more fluid than normal.\textsuperscript{141} As the baby grows the uterus puts huge pressure on the blood vessels in the pelvis. This impacts the large vein on right hand side, which gets blood from the lower limbs. This pressure reduces blood circulation in the area and leads blood to pool. Pressure from this blood pushes the water down and out through small vessels, and into the tissues of the ankles and feet. The body usually absorbs this water, however, since a person is pregnant, she retains more water, adding to the swelling.\textsuperscript{142}
The swelling is likely to get worse with time, it is usually better in the morning after a person has been lying in bed. Later in the day, if a person presses the skin around her ankles, the ankle skin might not bounce back right away. Towards the end of pregnancy, the swelling might impact the hands. The patient’s diet is emphasized during pregnancy since eating a balanced diet reduces the severity of edema. The diet must include small portions of lean protein like poultry, meat, eggs, and beans.

**Certain Conditions Originating In The Perinatal Period**

This section of the ICD-10 contains information regarding the certain conditions arising in the perinatal period and related disorders, and is based on diseases during the perinatal. Apart from a brief description of some of the diseases, this section also mentions the codes as specified in ICD-10, so as to make readers better understand how the coding has been done and how to read it for effective reporting.

**Certain Conditions Originating in the Perinatal Period**

**Included:**

- conditions that have their origin in the perinatal period even though death or morbidity occurs later

**Excluded:**

- congenital malformations, deformations and chromosomal abnormalities (Q00-Q99)
- endocrine, nutritional and metabolic diseases (E00-E90)
- injury, poisoning and certain other consequences of external causes (S00-T98)
This section is based on the following blocks:

- P00-P04 Fetus and newborn affected by maternal factors and by complications of pregnancy, labor and delivery
- P05-P08 Disorders related to length of gestation and fetal growth
- P10-P15 Birth trauma
- P20-P29 Respiratory and cardiovascular disorders specific to the perinatal period
- P35-P39 Infections specific to the perinatal period
- P50-P61 Hemorrhagic and hematological disorders of fetus and newborn
- P70-P74 Transitory endocrine and metabolic disorders specific to fetus and newborn
- P75-P78 Digestive system disorders of fetus and newborn
- P80-P83 Conditions involving the integument and temperature regulation of fetus and newborn
- P90-P96 Other disorders originating in the perinatal period

The asterisk category in this section is as follows:

- P75 Meconium ileus in cystic fibrosis

**Fetus and Newborn Affected by Maternal Factors and by Complications of Pregnancy, Labor and Delivery**
Included:

- the listed maternal conditions only when specified as a cause of mortality or morbidity in fetus or newborn

- P00 Fetus and newborn affected by maternal conditions that may be unrelated to present pregnancy

Excluded:

- Fetus and newborn affected by:
  - maternal complications of pregnancy (P01)
  - maternal endocrine and metabolic disorders (P70-P74)
  - noxious influences transmitted via placenta or breast milk (P04)

- P00.0 Fetus and newborn affected by maternal hypertensive disorders

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**Fetus or Newborn Affected by Maternal Conditions Classifiable to O10-O11, O13-016**

- P00.1 Fetus and newborn affected by maternal renal and urinary tract diseases
  
  - Fetus or newborn affected by maternal conditions classifiable to N00-N39

- P00.2 Fetus and newborn affected by maternal infectious and parasitic diseases
- Fetus or newborn affected by maternal infectious disease classifiable to A00-B99 and J09-J11, but not itself manifesting that disease

Excluded:

- infections specific to the perinatal period (P35-P39)
- maternal genital tract and other localized infections (P00.8)

• P00.3 Fetus and newborn affected by other maternal circulatory and respiratory diseases

- Fetus or newborn affected by maternal conditions classifiable to I00-I99, J00-J99, Q20-Q34 and not included in P00.0, P00.2

• P00.4 Fetus and newborn affected by maternal nutritional disorders

- Fetus or newborn affected by maternal disorders classifiable to E40-E64

- Maternal malnutrition NOS

• P00.5 Fetus and newborn affected by maternal injury

- Fetus or newborn affected by maternal conditions classifiable to S00-T79

• P00.6 Fetus and newborn affected by surgical procedure on mother

Excluded:

- cesarean section for present delivery (P03.4)

- damage to placenta from amniocentesis, cesarean section or surgical induction (P02.1)

- previous surgery to uterus or pelvic organs (P03.8)

- termination of pregnancy, fetus (P96.4)
• P00.7 Fetus and newborn affected by other medical procedures on mother, not elsewhere classified
  
  o Fetus or newborn affected by radiology on mother

  Excluded:
  
  o damage to placenta from amniocentesis, cesarean section or surgical induction (P02.1)
  
  o fetus or newborn affected by other complications of labor and delivery (P03)

• P00.8 Fetus and newborn affected by other maternal conditions
  
  o Fetus or newborn affected by:
    - conditions classifiable to T80-T88
    - maternal genital tract and other localized infections
    - maternal systemic lupus erythematosus

  Excluded:
  
  o transitory neonatal endocrine and metabolic disorders (P70-P74)

• P00.9 Fetus and newborn affected by unspecified maternal condition

The birth process is characterized by compression, torques, traction and contractions. Injuries to the infant arise from mechanical forces (i.e., compression, traction) during the birth process, this is classified as birth trauma. Factors that contribute to this mechanical injury might present together with hypoxic-ischemic insult; one might predispose the infant to the other.

The majority of birth traumas is self-limiting and holds a favorable outcome. About one half is potentially preventable with anticipation and
identification of obstetric risk factors. The infant's outcome depends on multiple factors. Distinguishing the impacts of a hypoxic-ischemic insult from those related to traumatic birth injury is difficult. The risk factors associated with birth trauma are as follows:

- Large for date infants, particularly infants weighing above 4500 g
- Instrumental deliveries, particularly forceps or vacuum
- Vaginal breech delivery
- Excessive or unusual traction during a delivery

Occasionally, the injury may result from resuscitation. Identification of trauma necessitates a cautious physical and neurological assessment of the infant to determine if any additional injuries are present. Symmetry of function and structure should be evaluated, the cranial nerves need to be examined, and particulars, like individual joint range of motion, and skull integrity must be evaluated.

**Disorders Related to Length of Gestation and Fetal Growth**

- P05 Slow fetal growth and fetal malnutrition
- P05.0 Light for gestational age
  - Usually referred to as weight below but length above 10th percentile for gestational age.
  - Light-for-dates
- P05.1 Small for gestational age
  - Usually referred to as weight and length below 10th percentile for gestational age.
    - Small-for-dates
    - Small-and-light-for-dates
- **P05.2 Fetal malnutrition without mention of light or small for gestational age**

Infant, not light or small for gestational age, showing signs of fetal malnutrition, such as dry, peeling skin and loss of subcutaneous tissue.

Excluded:
- fetal malnutrition with mention of:
  - light for gestational age (P05.0)
  - small for gestational age (P05.1)

- **P05.9 Slow fetal growth, unspecified**
  - Fetal growth retardation NOS

Slow fetal growth, also called *intrauterine growth restriction* (IUGR), and implies that a fetus is growing slower than normal. Growth and weight of a baby are important. Small babies are more prone to problems at birth, and continuing after the delivery. Some of the causes behind slow baby growth are as follows:

- A placenta doesn’t give sufficient nourishment to the baby. The placenta is the tissue within a uterus that is joined to the baby through umbilical cord. It transports food and oxygen from a mother’s blood to the baby’s blood.
- A baby having some birth defect such as kidney or a heart problem or any genetic problem.
- High blood pressure in pregnancy
- Infections in baby
- Problems in uterus
• Very little or very high level of fluid in birth sac, or amniotic sac, surrounding the baby and is filled with fluid. This fluid imbalance prevents the baby from growing.

• Exposure to high doses of radiations or chemicals

The only sign may be that a mother doesn’t gain as much weight as expected. The healthcare provider can determine if the uterus is smaller than expected for the stage of pregnancy.

**Birth Trauma**

• P10 Intracranial laceration and hemorrhage due to birth injury
  Excluded:
  o Intracranial hemorrhage of fetus or newborn:
    - NOS (P52.9)
    - due to anoxia or hypoxia (P52)
  • P10.0 Subdural hemorrhage due to birth injury
    o Subdural hematoma (localized) due to birth injury
    Excluded:
    o Subdural hemorrhage accompanying tentorial tear (P10.4)
  • P10.1 Cerebral hemorrhage due to birth injury
  • P10.2 Intraventricular hemorrhage due to birth injury
  • P10.3 Subarachnoid hemorrhage due to birth injury
  • P10.4 Tentorial tear due to birth injury
  • P10.8 Other intracranial lacerations and hemorrhages due to birth injury
  • P10.9 Unspecified intracranial laceration and hemorrhage due to birth injury
Respiratory and Cardiovascular Disorders Specific to the Perinatal Period

- P20 Intrauterine hypoxia
  - Included:
    - Abnormal fetal heart rate
    - Fetal or intrauterine:
      - acidosis
      - anoxia
      - asphyxia
      - distress
      - hypoxia
    - Meconium in liquor
    - Passage of meconium
  - Excluded:
    - Intracranial hemorrhage due to anoxia or hypoxia
      (P52)

- P20.0 Intrauterine hypoxia first noted before onset of labor
- P20.1 Intrauterine hypoxia first noted during labor and delivery
- P20.9 Intrauterine hypoxia, unspecified
- P21 Birth asphyxia

Fetal hypoxia also called intrauterine hypoxia (IH) happens if the fetus is deprived of a sufficient oxygen supply. Fetal hypoxia happens because of various reasons, including:

- umbilical cord prolapse
- cord occlusion or cord thrombosis
- placental infarction
• maternal smoking
• intrauterine growth restriction (IUGR)

The origins of fetal hypoxia are as follows.\textsuperscript{149}

• pre-placental hypoxia
• utero-placental hypoxia
• post-placental hypoxia

The severity of this disorder can be evaluated with various Doppler parameters, including:\textsuperscript{150}

• umbilical arterial Doppler assessment
• umbilical vein Doppler assessment
• fetal MCA Doppler assessment
• ductus venosus Doppler assessment

There are multiple causes of fetal hypoxia. The most common cause is maternal smoking.\textsuperscript{148} Cigarette smoking by mothers has been determined to have a broad range of harmful impacts on the developing fetus. Among these harmful effects are carbon monoxide induced tissue hypoxia and placental inadequacy that leads to reduction in blood flow from uterus to placenta. This reduces the supply of oxygenated blood to the fetus. Placental insufficiency as a result of smoking has been termed to have a visible effect in the growth of pre-eclampsia.\textsuperscript{149}

\textbf{Congenital Malformations, Deformations And Chromosomal Abnormalities}
This section of the ICD-10 contains information regarding the congenital malformations, deformations and chromosomal abnormalities. Excluded are the following conditions:

- Inborn errors of metabolism (E70-E90)

This section is based on the following blocks:

- Q00-Q07 Congenital malformations of the nervous system
- Q10-Q18 Congenital malformations of eye, ear, face and neck
- Q20-Q28 Congenital malformations of the circulatory system
- Q30-Q34 Congenital malformations of the respiratory system
- Q35-Q37 Cleft lip and cleft palate
- Q38-Q45 Other congenital malformations of the digestive system
- Q50-Q56 Congenital malformations of genital organs
- Q60-Q64 Congenital malformations of the urinary system
- Q65-Q79 Congenital malformations and deformations of the musculoskeletal system
- Q80-Q89 Other congenital malformations
- Q90-Q99 Chromosomal abnormalities, not elsewhere classified

**Congenital Malformations of the Nervous System**

- Q00 Anencephaly and similar malformations
- Q00.0 Anencephaly
  - Acephaly
  - Acrania
  - Amyelencephaly
  - Hemianencephaly
Hemicephaly
- Q00.1 Craniorachischisis
- Q00.2 Iniencephaly

Anencephaly is a severe birth defect in which a baby is born without parts of the skull and brain. It is a kind of neural tube defect (NTD). These are the birth defects that occur during first month of pregnancy, generally before a woman knows she is pregnant. As the neural tube develops and closes, it helps the formation of a baby’s brain, skull, backbones, and spinal cord.

Anencephaly occurs if the upper portion of the neural tube doesn’t close all the way. This usually results in a baby born with no front part of brain and the coordinating and thinking part of the brain (cerebrum). The other parts of the brain are usually not covered by skin or bone.

As far as the causes are concerned, research gives significant clues regarding the things that might increase or decrease the risk of having a baby that is affected by birth defects like anencephaly. These clues greatly help prevent such defects. Researchers have revealed important findings regarding some risk factors for anencephaly.

- Low consumption of folic acid prior to pregnancy and in early pregnancy. This increases the risk of pregnancy that is affected by neural tube disorders including anencephaly.
- Babies born to Hispanic mothers are at higher risk for this disorder. Reasons for higher risk are still not known.

Prenatal tests are carried out during pregnancy to determine birth defects and other conditions. Anencephaly usually leads to an abnormal result.
on a serum or blood-screening test, or it may be observed during an ultrasound.

- **Q01 Encephalocele**
  
  **Included:**
  
  - encephalomyelocele
  - hydroencephalocele
  - hydromeningocele, cranial
  - meningocele, cerebral
  - meningoencephalocele
  
  **Excluded:**
  
  - Meckel-Gruber syndrome (Q61.9)
  
  - **Q01.0 Frontal encephalocele**
  - **Q01.1 Nasofrontal encephalocele**
  - **Q01.2 Occipital encephalocele**
  - **Q01.8 Encephalocele of other sites**
  - **Q01.9 Encephalocele, unspecified**

Encephalocele is rare kind of neural tube defect (NTD) that is present at birth and impacts the brain.\textsuperscript{154} The neural tube is a thin channel that opens and closes during the third and fourth week of pregnancy to develop the brain and spinal cord. Encephalocele is explained as a sac-like projection or protrusion of the brain and its membrane covering it through an opening in the skull.\textsuperscript{154} This disorder occurs if the neural tube does not not close fully during pregnancy. The outcome is an opening in the midline of the upper portion of skull, the area in between nose and forehead, or the back of skull.
Mostly, this disorder is found or diagnosed after birth; however, sometimes a little encephalocele in the forehead or nose region can go undiagnosed. Some of the signs of encephalocele include:

- Buildup of excessive fluid in the brain
- Complete loss of power in the arms and legs
- An oddly small head
- Uncoordinated movement of voluntary muscles, like those involved in walking and crawling
- Developmental delay
- Vision problems
- Mental and growth retardation
- Seizures

At present, there is no way to prevent this disorder, though measures have been taken to lower its risk. The latest studies show that in addition to vitamin B, folic acid added to the diet of an expectant mother can significantly decrease the number of babies born with this defect. In addition, it has been recommended that women should consume at least 400 micrograms of folic acid daily. A single serving of most fortified cereals and multivitamins provide 400 micrograms of folic acid.

- Q02 Microcephaly
  Included:
  - Hydromicrocephaly
  - Micrencephalon
  Excluded:
  - Meckel-Gruber syndrome (Q61.9)
- Q03 Congenital hydrocephalus
Included:
- Hydrocephalus in newborn

Excluded:
- Arnold-Chiari syndrome (Q07.0)
- Hydrocephalus:
  - Acquired, NOS (G91)
  - acquired, of newborn (P91.7)
  - due to congenital toxoplasmosis (P37.1)
  - with spina bifida (Q05.0-Q05.4)
- Q03.0 Malformations of aqueduct of Sylvius
  - Aqueduct of Sylvius:
    - anomaly
    - obstruction, congenital
    - stenosis
- Q03.1 Atresia of foramina of Magendie and Luschka
- Dandy-Walker syndrome
- Q03.8 Other congenital hydrocephalus
- Q03.9 Congenital hydrocephalus, unspecified

Microcephaly is also a rare neurological disorder in which a baby’s head is much smaller than normal.\textsuperscript{157} Often diagnosed at birth, this disorder results because of abnormal brain growth in the womb, or not growing as it should after birth.

This disorder can arise from a range of genetic and environmental causes. Babies with this disorder usually face developmental issues. There is no exact treatment option for microcephaly, but initial interventions and supportive treatments like speech and occupational treatments might enhance a child’s development and quality of life.\textsuperscript{158}
As far as the symptoms are concerned, the main sign of microcephaly is a head size that is much smaller than babies of the same age and gender. Head size is usually measured as the distance around the top of baby’s head. By using standardized development charts, the measurement is compared with other babies’ measurements in percentiles. Microcephalic children have a head size significantly smaller than average; possibly, smaller than the first percentile for a baby’s age and gender. A baby having more serious microcephaly might also face a backward-sloping forehead.

Cogenital hydrocephalus is the accumulation of too much cerebrospinal fluid (CSF) in the brain at birth. The excessive fluid can boost pressure in a baby’s brain, leading to damage and physical and mental problems. This medical condition is rarely found.

Determining the condition early and curing it fast can help reduce the chances of long-term problems. However, long-term impacts are usually based on what led to the fluid accumulation, how worse it gets, and how the fetus responds to the treatment. When hydrocephalus happens later in life, it is called acquired hydrocephalus.

The condition results from an imbalance between the quantity of fluid made by the brain and how well the body processes it. Usually, fluid travels through and out of brain chambers called ventricles, and then around the brain and spinal cord. The small tissue around the brain and the spinal cord then absorbs it. However, with hydrocephalus, this fluid is unable to move and is not absorbed in the way that it should. In rare cases, the brain releases too much fluid.
Congenital hydrocephalus might result because of:\(^{161}\)
- Bleeding in fetus before birth
- Certain infections in the mother, like toxoplasmosis or syphilis.
- Other birth defects, such as spina bifida.
- A genetic defect.

The clearest sign of hydrocephalus is a baby’s head that is bigger than the normal.

- Q04 Other congenital malformations of brain
  - Excluded:
    - cyclopia (Q87.0)
    - macrocephaly (Q75.3)
- Q04.0 Congenital malformations of corpus callosum
  - Agenesis of corpus callosum
- Q04.1 Arhinencephaly
- Q04.2 Holoprosencephaly
- Q04.3 Other reduction deformities of brain
  - Absence
  - Agenesis
  - Aplasia
  - Hypoplasia
  - Agyria
  - Hydranencephaly
  - Lissencephaly
  - Microgyria
  - Pachygyria
  - Excluded:
Holoprosencephaly is a rare disorder that results in the failure of prosencephalon, or forebrain of embryo, to divide into bilateral cerebral hemispheres. This leads to defects in the formation of face, brain structure and function.\textsuperscript{162} It was formerly called archinencephaly, the disorder that is based on a range of malformations of defects of brain and face.

Classically, there are three subtypes that have been identified, but additional entries are now included in the range of the disease. The three main subtypes, in terms of decreasing severity are as follows:\textsuperscript{163}
Alobar holoprosencephaly
- Semilobar holoprosencephaly
- Lobar holoprosencephaly

Though rare, this disease is the most common brain abnormality that is observed in 1 per 16,000 live births.\textsuperscript{162} The initial embryonic occurrence might even be greater than suspected, but may not be diagnosed because most fetuses with this defect will abort in early gestation. It is often obvious at birth, even if the antenatal diagnosis has not been developed, because of linked midline facial anomalies including:\textsuperscript{164}

- proboscis
- cyclopia
- cleft lip and/or palate
- ocular hypotelorism
- solitary median maxillary central incisor

The basic problem is the failure of the growing brain to divide into right and left halves that usually happens at the end of the fifth week of gestation. This leads to variable loss of midline face and brain structures as fusion of lateral ventricles and third ventricles. Environmental factors like maternal alcohol use, diabetes mellitus, and retinoic acid have been also considered in the pathogenesis.\textsuperscript{165}

**Symptoms, Signs And Abnormal Clinical Laboratory Findings, Not Elsewhere**
This section contains information regarding the symptoms, signs and abnormal clinical laboratory findings, not elsewhere, as described by the ICD-10. This section in the ICD-10 includes signs, symptoms, unusual outcomes of clinical or other investigative processes, and ill-defined situations about which no diagnosis classification elsewhere has been recorded.

The signs and symptoms that appear but have no definitive diagnosis have been allocated to a class in other sections of the classification. Generally, the categories under this section include the less explained symptoms and conditions that, without the essential study of the case to establish a final diagnosis, point may be equally to two or more diseases or to two or more body systems.

In practical terms, all categories under this section could be assigned “not otherwise specified”, “transient” or “unknown etiology”. The alphabetical index in the ICD-10 should be consulted to find which signs and symptoms are to be assigned here and which to other chapters. The rest of subcategories, numbered .8, are usually given for other related symptoms that cannot be assigned elsewhere in the classification.

The signs or symptoms of conditions included in categories R00-R99 consist of:

- cases for which no more specific diagnosis can be made even after all the facts bearing on the case have been investigated;
- signs or symptoms existing at the time of initial encounter that proved to be transient and whose causes could not be determined;
- provisional diagnoses in a patient who failed to return for further investigation or care;
• cases referred elsewhere for investigation or treatment before the diagnosis was made;

• cases in which a more precise diagnosis was not available for any other reason;

• certain symptoms, for which supplementary information is provided, that represent important problems in medical care in their own right.

    Excluded:
    
    o abnormal findings on antenatal screening of mother (O28)
    o certain conditions originating in the perinatal period (P00-P96)

This section is based on the following blocks:

• R00-R09 Symptoms and signs involving the circulatory and respiratory systems

• R10-R19 Symptoms and signs involving the digestive system and abdomen

• R20-R23 Symptoms and signs involving the skin and subcutaneous tissue

• R25-R29 Symptoms and signs involving the nervous and musculoskeletal systems

• R30-R39 Symptoms and signs involving the urinary system

• R40-R46 Symptoms and signs involving cognition, perception, emotional state and behavior

• R47-R49 Symptoms and signs involving speech and voice

• R50-R69 General symptoms and signs
• R70-R79 Abnormal findings on examination of blood, without diagnosis
• R80-R82 Abnormal findings on examination of urine, without diagnosis
• R83-R89 Abnormal findings on examination of other body fluids, substances and tissues, without diagnosis
• R90-R94 Abnormal findings on diagnostic imaging and in function studies, without diagnosis
• R95-R99 Ill-defined and unknown causes of mortality

**Symptoms and Signs Involving the Circulatory and Respiratory Systems**

• R00 Abnormalities of heartbeat
  Excluded:
  o abnormalities originating in the perinatal period (P29.1)
  o specified arrhythmias (I47-I49)
• R00.0 Tachycardia, unspecified
  o Tachycardia:
    – sinoauricular NOS
    – sinus [sinusal] NOS
• R00.1 Bradycardia, unspecified
  o Bradycardia:
    – sinoatrial
    – sinus
    – vagal
• R00.2 Palpitations
  o Awareness of heartbeat
• **R00.8 Other and unspecified abnormalities of heartbeat**

Tachycardia is a faster than normal heart rate at rest. A healthy individual’s heart usually beats 60 to 100 times per minute when at rest.\(^{167}\) If a person is suffering from tachycardia, the heart rate in upper or lower chambers of the heart increases. Heart rate is regulated by electrical signals passed across heart tissues. Tachycardia occurs when an abnormality in the heart leads to fast electrical signals.\(^{166}\)

In certain cases, tachycardia might lead to no symptoms or complications. However, tachycardia can severely damage heart function, boost stroke risk, lead to sudden cardiac arrest or death.\(^{167}\) Treatments can help control this problem.

When a heart rate is too fast, it might not pump blood effectively to the rest of the body, depriving tissues and organs of oxygen. This can lead to the following signs and symptoms:\(^{168}\)

- Dizziness
- Shortness of breath
- Lightheadedness
- Rapid pulse rate
- Heart palpitations (it happens like a racing, irregular or uncomfortable heartbeat or a sensation of flopping felt in chest)
- Chest pain
- Fainting (syncope)

Some people with tachycardia have no symptoms, and the condition is diagnosed during a physical exam or a heart monitoring test.
Tachycardia is generally caused by something that interferes with the usual electrical impulses, which regulate the heart rate.

A number of factors can cause problems with the heart's electrical system. These risk factors include:\textsuperscript{168}

- Damage to heart tissues from heart disease
- Abnormal electrical routes in the heart present at birth (congenital)
- Congenital abnormality or disease of the heart
- Anemia
- Exercise
- Sudden stress, like fright
- High blood pressure
- Smoking
- Fever
- Drinking excessive levels of alcohol
- Drinking excessive level of caffeinated beverages
- Side effects of medications
- Abuse of antidepressants and recreational drugs, like cocaine
- Imbalance of electrolytes, which are mineral-related substances required for conducting electrical impulses
- Overactive thyroid (hyperthyroidism)

- R01 Cardiac murmurs and other cardiac sounds
  - Excluded:
    - Those originating in the perinatal period (P29.8)
- R01.0 Benign and innocent cardiac murmurs
- Functional cardiac murmur
  - R01.1 Cardiac murmur, unspecified
    - Cardiac bruit NOS
    - Systolic murmur NOS
  
- R01.2 Other cardiac sounds
  - Cardiac dullness, increased or decreased
  - Precordial friction

- R02 Gangrene, not elsewhere classified
  Excluded:
  - Gangrene in:
    - atherosclerosis (I70.2)
    - diabetes mellitus (E10-E14 with common fourth character .5)
    - other peripheral vascular diseases (I73)
  
- Gangrene of certain specified sites
- Gas gangrene (A48.0)
- Pyoderma gangrenosum (L88)

Most heart murmurs are harmless and need no treatment. There are certain exceptions. Heart murmurs can be related to an overworked or damaged heart valve. Some people have valve problems at birth. Others have them as a part of aging, or are caused by other heart problems.

The murmur is the sound of blood flowing. It might be traveling through a heart valve, for instance, that has a problem, or it might be that a situation is making the heart beat faster, pushing the heart to handle excess blood faster than normal. Common conditions that can make the heart beat faster resulting in heart murmurs are as follows:
- Anemia
- High blood pressure
- Overactive thyroid
- Fever
- Problem with a heart valve

The valves are closed and open to enable blood flow through the two upper and lower chambers of heart ventricles. Valve problems may include:

- Mitral valve prolapsed
- Mitral valve or aortic stenosis
- Aortic sclerosis and stenosis
- Mitral or aortic regurgitation
- Congenital heart defects

Some kinds of heart valve disease might require medication or surgery:

- Medication to avoid blood clot, regular irregular palpitations or heartbeat and lower blood pressure
- Diuretics to eliminate excessive water and salt from body, making it feasible for heart to pump blood
- Surgery to rectify effects a person is born with
- Surgery to treat certain kinds of heart valve disease

Medical providers often ask people to take antibiotics that help prevent heart infection prior to dental work or some types of surgery.

- R04 Hemorrhage from respiratory passages
- R04.0 Epistaxis
  - Hemorrhage from nose
Epistaxis, bleeding from the nose, is one of the most common complaints. It is hardly life threatening; however, it may lead to severe consequences, especially among small children. There are no known ways to prevent epistaxis because most of the episodes are self-limited and therefore are not reported.

**Injury, Poisoning And Certain Other Consequences Of External Causes**

The ICD-10 section containing information regarding injury, poisoning and certain other consequences of external causes is discussed here. Excluded are the following conditions:

- birth trauma (P10-P15)
• obstetric trauma (O70-O71)
• malunion of fracture (M84.0)
• nonunion of fracture [pseudarthrosis] (M84.1)
• pathological fracture (M84.4)
• pathological fracture with osteoporosis (M80)
• stress fracture (M84.3)

The section on injury, poisoning and certain other consequences of external causes is based on the following blocks.

• S00-S09 Injuries to the head
• S10-S19 Injuries to the neck
• S20-S29 Injuries to the thorax
• S30-S39 Injuries to the abdomen, lower back, lumbar spine and pelvis
• S40-S49 Injuries to the shoulder and upper arm
• S50-S59 Injuries to the elbow and forearm
• S60-S69 Injuries to the wrist and hand
• S70-S79 Injuries to the hip and thigh
• S80-S89 Injuries to the knee and lower leg
• S90-S99 Injuries to the ankle and foot
• T00-T07 Injuries involving multiple body regions
• T08-T14 Injuries to unspecified part of trunk, limb or body region
• T15-T19 Effects of foreign body entering through natural orifice
• T20-T32 Burns and corrosions
• T20-T25 Burns and corrosions of external body surface, specified by site
• T26-T28 Burns and corrosions confined to eye and internal organs
• T29-T32 Burns and corrosions of multiple and unspecified body regions
• T33-T35 Frostbite
• T36-T50 Poisoning by drugs, medicaments and biological substances
• T51-T65
  o Toxic effects of substances chiefly nonmedicinal as to source
• T66-T78 Other and unspecified effects of external causes
• T79-T79 Certain early complications of trauma
• T80-T88 Complications of surgical and medical care, not elsewhere classified
• T90-T98 Sequel of injuries, of poisoning and of other consequences of external causes

This section of the ICD-10 also applies the S-section for coding various kinds of injuries that are related to single body parts and the T-section to cover the injuries related to various or unspecified body parts and poisoning and some other consequences of the external causes. Where various injury sites are mentioned in the title, the word “with” shows involvement of both sides, and the word “and” shows involvement of either or both of the sites.

The principle for multiple coding of injuries must be followed as much as possible. Combination classifications for multiple injuries are used if there is not sufficient detail as to the nature of individual situations, or for the purpose of primary tabulation when it is easier to record a single code; or else, the component injuries must be coded separately. The blocks under
the S-section and T00-T14 and T90-T98 contain injuries at the 3-character level categorized by type as listed below.

Superficial injury, including:

- abrasion
- blister (nonthermal)
- contusion, including bruise and hematoma
- injury from superficial foreign body (splinter) without major open wound
- insect bite (nonvenomous)

Open wound, including:

- animal bite
- cut
- laceration
  - puncture wound:
    - NOS
    - with (penetrating) foreign body

Fracture, including:

- Closed:
  - comminuted
  - depressed
  - elevated
  - fissured
  - greenstick
  - impacted
  - linear
  - simple
• slipped epiphysis
  • spiral

  • Open:
    • compound
    • infected
    • missile
    • puncture
    • with foreign body

Injury to spinal cord and nerves, including:

  • Complete or incomplete lesion of spinal cord lesion in continuity of nerves and spinal cord

  • Traumatic:
    • division of nerve
    • hematomyelia
    • paralysis (transient)
    • paraplegia
    • quadriplegia

Injury to blood vessels, including:

  • avulsion
  • cut
  • laceration
  • traumatic
  • aneurysm or fistula (arteriovenous)
  • arterial hematoma
  • rupture

Injury to muscle, fascia and tendon including:

  • avulsion
  • cut
• laceration
• strain
• traumatic rupture

Crushing Injury, Traumatic Amputation, Injury to Internal Organs, including:

• blast injuries
• bruise
• concussion injuries
• crushing
• laceration
• traumatic
• hematoma
• puncture
• rupture
• tear

**External Causes Of Morbidity**

This section contains information regarding external causes of morbidity as described by the ICD-10. In the previous iteration of the ICD, this section made a supplementary classification for anebeles, or the classification of environmental events and conditions as the cause of injury, poisoning and other harmful events. Where a code from this section is applied, it is mentioned that it would be used along with the code from another section of the ICD classification showing the nature of the condition.

This ICD-10 section is based on the following blocks:

• V01-V09 Pedestrian injured in transport accident
• V10-V19 Pedal cyclist injured in transport accident
• V20-V29 Motorcycle rider injured in transport accident
• V30-V39 Occupant of three-wheeled motor vehicle injured in transport accident
• V40-V49 Car occupant injured in transport accident
• V50-V59 Occupant of pick-up truck or van injured in transport accident
• V60-V69 Occupant of heavy transport vehicle injured in transport accident
• V70-V79 Bus occupant injured in transport accident
• V80-V89 Other land transport accidents
• V90-V94 Water transport accidents
• V95-V97 Air and space transport accidents
• V98-V99 Other and unspecified transport accidents

Other external causes of accidental injury:
• W00-W19 Falls
• W20-W49 Exposure to inanimate mechanical forces
• W50-W64 Exposure to animate mechanical forces
• W65-W74 Accidental drowning and submersion
• W75-W84 Other accidental threats to breathing
• W85-W99 Exposure to electric current, radiation and extreme ambient air temperature and pressure
• X00-X09 Exposure to smoke, fire and flames
• X10-X19 Contact with heat and hot substances
• X20-X29 Contact with venomous animals and plants
• X30-X39 Exposure to forces of nature
- X40-X49 Accidental poisoning by and exposure to noxious substances
- X50-X57 Overexertion, travel and privation
- X60-X84 Intentional self-harm
- X85-Y09 Assault
- Y10-Y34 Event of undetermined intent
- Y35-Y36 Legal intervention and operations of war
- Y40-Y84 Complications of medical and surgical care
- Y40-Y59 Drugs, medications and biological substances causing adverse effects in therapeutic use
- Y60-Y69 Misadventures to patients during surgical and medical care
- Y70-Y82 Medical devices associated with adverse incidents in diagnostic and therapeutic use
- Y83-Y84 Surgical and other medical procedures as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure
- Y85-Y89 Sequel of external causes of morbidity and mortality
- Y90-Y98 Supplementary factors related to causes of morbidity and mortality classified elsewhere

**Factors Influencing Health Status And Contact With Health Services**

This section of the ICD-10 contains information regarding factors influencing health status and contact with health services. It is not applied
for the international comparison or for primary mortality coding. In the ICD-10 this section includes the following blocks:

- Z00-Z13 Persons encountering health services for examination and investigation
- Z20-Z29 Persons with potential health hazards related to communicable diseases
- Z30-Z39 Persons encountering health services in circumstances related to reproduction
- Z40-Z54 Persons encountering health services for specific procedures and health care
- Z55-Z65 Persons with potential health hazards related to socioeconomic and psychosocial circumstances
- Z70-Z76 Persons encountering health services in other circumstances
- Z80-Z99 Persons with potential health hazards related to family and personal history and certain conditions influencing health status

**Persons Encountering Health Services for Examination and Investigation**

Excluded:

- Examinations related to pregnancy and reproduction (Z30-Z36, Z39)

- Z00 General examination and investigation of persons without complaint and reported diagnosis

Excluded:

- Examination for administrative purposes (Z02)
- special screening examinations (Z11-Z13)

- **Z00.0 General medical examination**
  - Health check-up NOS
  - Periodic examination (annual) (physical)
  - Excluded:
    - general health check-up of:
      - defined subpopulations (Z10); infant or child (Z00.1)

- **Z00.1 Routine child health examination**
  - Development testing of infant or child
  - Excluded
    - Health supervision of foundling or other healthy infant or child (Z76.1-Z76.2)

- **Z00.2 Examination for period of rapid growth in childhood**

- **Z00.3 Examination for adolescent development state**
  - Puberty development state

- **Z00.4 General psychiatric examination, not elsewhere classified**
  - Excluded:
    - examination requested for medical/legal reasons (Z04.6)

- **Z00.5 Examination of potential donor of organ and tissue**

- **Z00.6 Examination for normal comparison and control in clinical research program**

- **Z00.8 Other general examinations**
  - Health examination in population surveys

### The ICD-10 And Reporting

As mentioned earlier, the ICD-9 is the previous coding classification system while the ICD-10 is the latest, and the differences between the two are significant. In the area of reporting, the changes in the new classification system involve a major effort for health providers to be
informed and proficient when it comes to the proper documentation needed. For example, ICD-9 has more than 14,000 diagnostic codes and around 4,000 procedural codes. In contrast, ICD-10 has more than 68,000 diagnostic codes and over 72,000 procedural codes. Other differences are based on how the codes are presented (i.e., the number of characters), and how these are interpreted (decoding the characters to determine what specific groupings mean).

Changing over to ICD-10 is generally considered a positive change when it comes to standard classification criteria for separate medical diagnoses. Presently, medical coding and billing jobs make up one-fifth of the healthcare workforce, a number that is growing. Shifting to ICD-10 has resulted in an increased demand for medical coders, since it would make the billing and coding process more time consuming and complicated.

**Native Coding**

Native coding implies assigning an ICD-10 diagnosis code directly on the basis of clinical documentation. Medical practitioners are encouraged to natively code by using ICD-10 code reference sources, rather than using crosswalks that should be applied for general knowledge. Specific codes showing the best level of surety known for an encounter must be assessed first:

- Specific diagnostic codes need to be reported if they are supported by available medical record and clinical knowledge of the health condition of a patient.

- If a definitive diagnosis has not been made at the end of encounter, it is suitable to report codes for signs and symptoms in lieu of a definitive diagnosis.
• When adequate clinical information is needed, but not accessible, regarding a particular condition to allocate a more specific code, coding should abide by the payer guidelines for the application of unspecified codes.

• Native coding means an ICD-10 diagnosis code is assigned based directly on clinical documentation.

Unspecified Codes

The entire health industry has shown agreement on the point of adopting ICD-10 since it provides more information in order to have better health results and eventually reduced healthcare cost. The question is how would payers consider a claim submitted with unspecified codes, instead of a more specific ICD-10 code? For example, it doesn’t seem right to choose a specific code not supported by medical record documentation, or for that matter, conduct medically redundant diagnostic testing in order to find the more specific code. Conversely, if enough clinical information is available to assign a more specific code, it is fine to report a suitable unspecified code, for example, a diagnosis of pneumonia that has been found, but not the specific kind.

Summary

On July 31st, 2014, the U.S. Department of Health and Human Services (HHS) issued a rule designating Oct. 1, 2015 as the new compliance date for health care providers, health plans, and health care clearinghouses to transition to ICD-10, the tenth revision of the International Classification of Diseases. The ICD-10 compliance is mandatory for all HIPAA-covered entities, including those that do not handle Medicare claims. There are no
exceptions to any HIPAA-covered entities. Compliance to ICD-10 means that HIPAA-covered entities must utilize ICD-10 codes for healthcare services rendered on or after the compliance date. The ICD-10-CM and ICD-10-PCS code sets, as well as the official ICD-10-CM guidelines, are available free of charge at the CMS ICD-10 website.

Health care entities should plan to address claims, eligibility verification, quality reporting, and other transactions and processes that involve ICD-10 codes. The ICD-10 training is typically involves documentation, coding and overview training. The type of training required by each member of a health team depends upon the roles and responsibilities within a health care practice. It is important to ensure that members of the health team involved in the documentation of health services and interfacing with coding and billing professionals, including payers and technology vendors, be prepared for ICD-10 compliance coding changes and descriptors of medical records.

Please take time to help NurseCe4Less.com course planners evaluate the nursing knowledge needs met by completing the self-assessment of Knowledge Questions after reading the article, and providing feedback in the online course evaluation.

Completing the study questions is optional and is NOT a course requirement.

1. All member countries of the World Health Organization ("WHO") require ONLY the ICD diagnostic coding for the wide-range of healthcare services except _________________.
   a) Canada
   b) the Congo
   c) the United States
   d) Iceland
2. Medical coding and billing personnel
   a) are not part of the healthcare workforce.
   b) make up one-fifth of the healthcare workforce.
   c) make up one percent of the healthcare workforce.
   d) have decreased under ICD.

3. The second character of the medical and surgical procedures section codes reflects the general body system, for example, ____________.
   a) gastrointestinal
   b) the duodenum
   c) a device such as a synthetic substitute
   d) small intestine

4. True/False: The International Statistical Classification of Diseases (ICD) provides an international, standardized medical diagnosis and billing system.
   a) True
   b) False

5. The root operation presents the ____________ of the procedure.
   a) technique
   b) location
   c) access location
   d) goal

6. Dilation would be a ____________ operation in a coronary angioplasty procedure.
   a) approach
   b) root
   c) device
   d) qualifier
7. Every character has up to _______ possible values, each of which reflects a particular option for the general character definition.
   a) 10
   b) 234
   c) 34
   d) 100

8. True/False: The ICD-10-PCS (“Procedure Coding System”) utilizes a seven-character alphanumeric code structure.
   a) True
   b) False

9. The __________ enables the codes to be located based on an alphabetic lookup.
   a) List of Codes
   b) text explanation
   c) code tables
   d) index

10. Using the first three values of the code found in the index the corresponding table can be located and
    a) the table is then used to get the complete code.
    b) then the body system may be identified from the table.
    c) then the root operation may be determined from the table.
    d) a unique procedure code is eliminated.

11. Which of the following terms defines a procedure that is NOT a root operation under medical and surgical procedures?
    a) bypass
    b) drainage
    c) anastomosis
    d) dilation
12. The fourth character of the code specifies the ________________.
   a) approach  
   b) device  
   c) qualifier  
   d) body part or region

13. The surgical root operation __________ is applied when the whole body part is cut out.
   a) excision  
   b) resection  
   c) replacement  
   d) removal

14. Tubular body parts are explained in ICD-10 as those hollow parts of the body that give a route of passage for 
   a) solids.  
   b) liquids.  
   c) gases.  
   d) all of the above.

15. True/False: The letters O and I are used in the seven-character alphanumeric code structure to describe “Operations” and “Incisions.”
   a) True  
   b) False

16. The fifth ICD-10-PCS character, the approach, is based on three parts:
   a) the goal, the meaning and the vital component of the procedure.  
   b) revision, supplement or transfer of a procedure.  
   c) the access location, technique, and type of instrumentation.  
   d) none of the above.
17. The following is/are access locations for surgical procedures:
   a) skin membranes and external orifices.
   b) bypass and insertion.
   c) occlusion or fusion.
   d) transplantation and transfer.

18. ______________________ is an example of the “external” approach.
   a) The instrumentation method
   b) Closed reduction of a fracture
   c) The percutaneous endoscopic approach
   d) A colostomy stoma

19. The device is reflected by the ______ character of the code.
   a) second
   b) third
   c) sixth
   d) eighth

20. The letters O and I are not used in ICD-10, seven-character alphanumeric code structure
   a) because the letter “O” may be confused with the term “operation.”
   b) because the letter “I” is the beginning letter of “ICD-10.”
   c) “a” and “c” are both correct
   d) to prevent confusion with the digits 0 and 1.

21. True or False: Instruments applied to visualize the procedure location are reflected in the device value, not the approach value.
   a) True
   b) False

22. Which of the following are true of the qualifier?
   a) It is specified in the seventh character of the ICD-10 code.
b) It entails unique values for the individual procedures as required.
c) It may be used to determine the destination location in a bypass.
d) All of the above.

23. Composite terms like sigmoidectomy and colonoscopy are not the root operations because
   a) they refer to the goal of the operation.
   b) they may be external or internal operations.
   c) they specify various components in the procedure.
   d) the approach identifies the goal of the operation.

24. If multiple procedures, as reflected by the distinct goals, are carried out in between an operative episode,
   a) then multiple codes must be used.
   b) a single code is still used under ICD-10.
   c) the beauty of ICD-10 is the provider still uses a single code.
   d) the healthcare provider must find use the primary root code.

25. The partial or complete redo of an original procedure is coded
   a) as a partial or complete redo, as the case may be.
   b) to the root operation for the procedure carried out.
   c) as a revision.
   d) as a correction.

26. True or False: The seven characters contained in the obstetrics section hold the same meaning as in the medical and surgical section.
   a) True
   b) False

27. Which of the following procedures, if any, is not contained in the obstetrics section?
   a) Abortion
b) Episiotomy

c) The cesarean section
d) None of the above.

28. The manual procedure involving the movement of a joint past the physiological range of motion with no exceeding anatomical limit is
   a) an example of a single code when multiple procedures are prescribed.
   b) a procedure under the obstetrics section.
   c) the root operation under the chiropractic section.
   d) described under composite terms.

29. Imaging procedure codes hold the first character value of____.
   a) “0” (zero)
   b) “A”
   c) “I” for imaging
   d) “B”

30. The fifth character under the Imaging Section shows if the contrast material utilized in the imaging procedures
   a) is high or low osmolar.
   b) is unenhanced or enhanced.
   c) is a qualifier.
   d) densitometric or intravascular.

31. The medical and surgical procedures codes hold a first character value of____.
   a) “1”
   b) “I”
   c) “M”
   d) “0” (zero)

32. Under ICD-10-PCS, procedures carried out on the liver are now
a) coded for the left or the right lobe of the liver.
b) coded for the general body part value “Liver.”
c) coded to show the precise part of the liver involved.
d) grouped under the general anatomical regions.

33. One of the principle changes between ICD-9 and ICD-10 is
   a) ICD-10 has fewer, more simple codes.
   b) ICD-10 has different procedures with the same code.
   c) ICD-10 has more accurate, comprehensive explanations of the procedures.
   d) ICD-10 necessitates a greater learning curve than ICD-9 did.

34. The site of the base of tongue neoplasm is critical for
   a) diagnosis of malignant neoplasm.
   b) management of malignant neoplasm.
   c) prognosis of malignant neoplasm.
   d) all of the above.

35. The ICD-10 codes anemia under
   a) the various kinds of anemia.
   b) a simple, single code.
   c) the first character value “I.”
   d) blood disorders.

36. ______________ is/are excluded from the endocrine, nutritional, and metabolic diseases and disorders section.
   a) Disorders of the thyroid gland
   b) Diabetes mellitus
   c) Complications of childbirth
   d) Malnutrition
37. True or false: The ICD-10 training is typically organized into three categories, including documentation training, coding training, and overview training.
   a) True
   b) False

38. Procedures under ICD-10, as listed in the ICD-10-PCS, are divided into sections. ________________ is NOT listed as an ICD-10 section.
   a) Obstetrics
   b) Devices
   c) Imaging
   d) Chiropractic

39. The following is/are true of the ICD-10-PCS:
   a) It applies a multiaxial seven-character alphanumeric code structure.
   b) Its code structure gives a unique code for diverse procedures.
   c) It enables new procedures to be easily integrated as new codes.
   d) All of the above.

40. The ICD-10-PCS is made up of three parts:
   a) medical, surgical and rehabilitation sections.
   a) Preventative, Medical and Rehabilitation sections.
   c) Tables, Index, and List of Codes.
   d) Body Part, Approach and Device.

References Section

The reference section of in-text citations include published works intended as helpful material for further reading. Unpublished works and personal communications are not included in this section, although may appear within the study text.


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