



CHAPTER 5

Medical Terminologies and Classification Systems

Objectives

After reading this chapter, you should be able to:

- Classify various medical nomenclatures
- Differentiate common classification systems
- Determine the uses of and examine the format of the ICD-9-CM coding system
- Apply ICD-9-CM coding conventions and principles
- Review the organization of the CPT coding manual

Main Terms

Classification system	Medical terminologies
<i>Current Procedural Terminology</i>	Medical vocabulary
<i>International Classification of Diseases, 9th Revision, Clinical Modification</i> (ICD-9-CM)	Nomenclatures
	<i>Systematized Nomenclature of Medicine</i> (SNOMED)

Establishing a standard medical language is essential for ensuring continuity of patient care. Standard medical terminologies and classification systems create uniformity to enhance collection of statistical data and significantly improve the reimbursement process. It is absolutely vital in today's constantly changing medical environment to have a standard language to communicate healthcare information.

Medical Terminologies

Medical terminologies are categorized into **nomenclatures**, which are systematic listings of the proper names. Disease nomenclatures basically classify and name diseases and other medical terms. This system of medical names dates back to the 19th century and has led to the development of standardized nomenclatures for many medical disciplines.

Standardized Nomenclature of Disease

The standardized nomenclature of disease (SND) or *basle nomina anatomica* was developed by a group of anatomists in Germany and other countries known as the Anatomical Society. The name *basle nomina anatomica* was adopted in Basel, Switzerland, where the annual meeting of the German Anatomic Society was held for the first time in 1895. This nomenclature is a compilation of Latin anatomical terms.

Systematized Nomenclature of Medicine

Based on the *Systematized Nomenclature of Pathology* (SNOP) published by the American College of Pathologists in 1965, the *Systematized*

Nomenclature of Medicine (SNOMED) has been published since 1974 for other specialties. The original SNOP was a four-axis system of terms and codes specifically used by pathologists for the storage and retrieval of medical data.

In 1974, the system was expanded by Dr. Roger Cote into SNOMED, which extended its use to other healthcare settings. In 1977, the SNOMED system was converted to electronic media for medical information systems, which again expanded its use to other healthcare professionals in addition to physicians. Since that time, the system has undergone several major changes (see Table 5-1) and evolved into the *Systematized Nomenclature of Medicine Clinical Terms* (SNOMED CT).

TABLE 5-1 SNOMED Timeline of Significant Events (College of American Pathologists, 2007)

Year	Event
1965	SNOMED's earliest origins came in the form of SNOP.
1974	SNOMED contained a broad array of clinical terms crossing all medical specialties.
1979	The second edition of SNOMED was released and contained 44,587 records classified in six modules and was available in a two-volume set with an alphabetic index.
1993	The third edition of SNOMED was released and provided a multidimensional, structured nomenclature for indexing medical diagnoses and treatments.
1997	SNOMED and the logical observation identification, names, and codes (LOINC) collaborated on the cross-mapping of clinical reference terminology.
1998	SNOMED International gained 6,446 new terms, most of them in the disease module. SNOMED 3.5 consisted of 156,965 terms and term codes and was comprised of 12 modules, and four new microglossaries were enhanced with this new version of SNOMED.
2000	SNOMED RT, a concept-based reference terminology, became available in wide release, providing the infrastructure for the electronic health record worldwide.
2002	SNOMED CT first release is the most comprehensive international and multilingual clinical reference terminology available in the world.
2002	The SNOMED <i>Clinical Terms</i> , (SNOMED CT) Spanish edition April 2002 reference terminology subset, was released. This was the first foreign-language edition of SNOMED CT to be published.

Source: American College of Pathologists, 2007.

SNOMED *Reference Terms* (RT) was developed as part of a collaboration of the American College of Pathologists with Kaiser Permanente in a joint effort to change the structure of SNOMED to reflect advances in medical informatics and computer science. SNOMED CT, first released in January 2002, combined SNOMED RT's strengths in the basic sciences, laboratory, and specialty medicine with the richness of the United Kingdom's work in primary care. The end result was a comprehensive and precise clinical reference terminology that provides unsurpassed clinical content and expressivity for clinical documentation and reporting. This system is widely used as a standardized vocabulary for physicians and other healthcare professionals.

Logical Observation Identifiers, Names, and Codes

The logical observation identifiers, names, and codes (LOINC) was developed by Regenstrief Institute, Inc., in 1994. This system of clinical terminologies was designed for point of care services conducted via electronic transactions. The system was created as a response to the demand for electronic movement of clinical data from laboratories that produce the data to hospitals, physicians' offices, and payers who use the data for clinical care and management purposes. Highlights of the LOINC (Regenstrief, 2007) system include:

- The LOINC laboratory terms set provides a standard set of universal names and codes for identifying individual laboratory and clinical results.
- LOINC codes allow users to merge clinical results from many sources into one database for patient care, clinical research, or management.
- The LOINC database currently contains about 41,000 observation terms.
- Nearly 31,000 of these observational terms relate to laboratory testing.
- Each record in the LOINC database identifies a clinical observation and contains a formal, six-part name, a unique name for tests identifying code with check digit, synonyms, and other useful information.
- LOINC records apply to all tests with equivalent clinical results. They are not unique per company.

MEDCIN

MEDCIN was developed by Peter S. Goltra, who founded Medcomp as result of his attempt to develop an intelligent clinical database for documentation at the time of care. The first few years were spent in designing the structure for a knowledge engine that could be populated with relationships between clinical events. Refinement of the data model and field testing occupied most of the period from 1978 to 1983. The clinical database engine, now named MEDCIN, has been continuously expanded and refined since 1978, in collaboration with physicians on staff at the Cornell, Harvard, Johns Hopkins, and other major medical centers (Medcomp, 2004).

Classification Systems

Medical vocabulary is a system of disease names with explanations of their meanings, and a medical **classification system** is an organization of medical terms into categories. Several classification systems (see Table 5-2) are commonly used in various healthcare settings. Classification systems group or categorize healthcare terminology for various uses, which include:

- Establishing a uniform and standard system for healthcare reimbursement
- Providing treatment outcome data for indexing
- Determining, collecting, and reporting statistical data
- Maintaining a database for clinical, administrative, demographic, and statistical data
- Monitoring of fraud, abuse, and other compliance and regulatory issues
- Supporting quality and performance efforts

ICD-9-CM Coding System

The ICD-9-CM coding system is based on the official version of the *International Classification of Diseases, Ninth Revision, Clinical Modification*, developed by the World Health Organization in Geneva, Switzerland. The WHO has prepared and published the ICD every

TABLE 5-2 Classification Systems

Classification System	Description
<i>Current Procedural Terminology (CPT)</i>	Coding system established by the American Medical Association for coding of procedures and services
Healthcare common procedure coding system (HCPCS)	Standardized coding system that is used primarily to identify products, supplies, and services not included in the CPT manual
<i>International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM)</i>	Coding system used to code and classify diagnoses for inpatient and outpatient encounters and procedures for inpatient encounters
<i>International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10)</i>	Classification system used to permit the systematic recording, analysis, interpretation, and comparison of mortality and morbidity data from different countries and to translate diagnoses, diseases, and other conditions into codes
<i>International Classification of Diseases, 10th Revision, Clinical Modification (ICD-10-CM)</i>	Coding system used to report diseases and conditions of U.S. healthcare patients
<i>International Classification of Diseases, 10th Revision, Procedure Coding System (ICD-10-PCS)</i>	Coding system developed to replace Volume 3 of the ICD-9-CM manual
<i>International Classification of Diseases for Oncology (ICD-O)</i>	Coding system primarily used in tumor or cancer registries for coding the site (topography) and the histology (morphology) of neoplasms
National drug codes (NDC)	Universal product identifier for human drugs used to identify and report drug products (FDA, 2007)
Current dental terminology (CDT)	Standardized coding system used to document and communicate data about dental treatment procedures and services to agencies involved in adjudicating insurance claims
<i>Diagnostic and Statistical Manual of Mental Disorders (DSM)</i>	Standard classification of mental disorders used by mental health professionals in the United States

10 years since 1948. The original ICD-9 was created for collecting statistical data on morbidity and mortality rates. The system was later used by the Veterans Administration and the United States Public Health Service in 1950 for hospital indexing. The next year, Columbia Presbyterian Medical Center in New York City adopted the *International Classification of Diseases, Sixth Revision* with some modifications for use in its medical record department. Some years after that, the Commission on Professional and Hospital Activities in Ann Arbor, Michigan, adopted the *International Classification of Diseases* with similar modifications for use in hospitals participating in the professional activity study.

The United States National Committee on Vital and Health Statistics' hospital statistics subcommittee then decided to deal with problems associated with adapting the ICD system for hospital record indexing. The subcommittee reviewed the modifications made by the various users of the ICD system and subsequently proposed uniform revisions, which were done by a small working party. The American Hospital Association and the American Association of Medical Record Librarians conducted a study in 1956 to review the efficiency of the coding systems for diagnostic indexing with the growing interest of using the system for hospital indexing.

After the results of the study indicated that the ICD provided a suitable and efficient framework for indexing hospital records, the major users of the system consolidated and adapted the first publication in 1959. The revision was issued in 1962 entitled the *Classification of Operations and Treatments*. Then, in 1966, the international conference for revising the ICD system noted the eighth revision of ICD had been constructed with hospital indexing in mind and considered the revised classification suitable for hospital use in other countries.

It was then found that the system might be inadequate for indexing in other countries. Therefore, another study was conducted by the American Hospital Association, which developed a proposal for additional adaptations. In 1968 the United States Public Health Service published the eighth revision of the *International Classification of Diseases* (ICD-8), which was adapted for the United States. Later that year, the Commission on Professional and Hospital Activities published the *Hospital Adaptation of ICDA-8* (H-ICDA) based on the ICD-8 and ICDA-8 system. In 1973, the Commission on Professional Hospital Activities published a revision of H-ICDA, which was the H-ICDA-2. Hospitals were divided on the use of these clas-

sification systems until the development of the *International Classification of Diseases, Ninth Revision, Clinical Modification* (ICD-9-CM) replaced these classification systems.

Development of the ICD-9-CM

A steering committee convened by the National Center for Health Statistics in 1977 provided advice and counsel in developing the ICD-9-CM system. This committee included members from the following organizations:

- American Association of Health Data Systems
- American Hospital Association
- American Medical Record Association
- Association for Health Records
- Council on Clinical Classifications
- Centers for Medicare and Medicaid Services, formerly the Healthcare Financing Association
- WHO Center for Classification of Diseases for North America

The Council on Clinical Classifications was sponsored by the following:

- American Academy of Pediatrics
- American College of Obstetricians and Gynecologists
- American College of Physicians
- American College of Surgeons
- American Psychiatric Association
- Commission on Professional and Hospital Activities

Organization of ICD-9-CM

The official ICD-9-CM manual contains three volumes:

- *Volume 1: Tabular List of Diseases and Injuries*
- *Volume 2: Alphabetic Index to Diseases*
- *Volume 3: Tabular List and Alphabetic Index to Procedures*

Volume 1: Tabular List of Diseases and Injuries

The *Tabular List of Diseases and Injuries* contains the classification of diseases and injuries, which is a set of 17 chapters (see Table 5-3) that classify conditions according to cause and anatomical system.

TABLE 5-3 ICD-9-CM Classification of Diseases and Injuries

Chapter	Title
1	Infectious and Parasitic Diseases
2	Neoplasms
3	Endocrine, Nutritional and Metabolic Diseases, and Immunity Disorders
4	Diseases of the Blood and Blood-Forming Organs
5	Mental Disorders
6	Disease of the Nervous System and Sense Organs
7	Diseases of the Circulatory System
8	Diseases of the Respiratory System
9	Diseases of the Digestive System
10	Diseases of the Genitourinary System
11	Complications of Pregnancy, Childbirth, and the Puerperium
12	Diseases of the Skin and Subcutaneous System
13	Diseases of the Musculoskeletal System and Connective Tissue
14	Congenital Anomalies
15	Certain Conditions Originating in the Perinatal Period
16	Symptoms, Signs, and Ill-Defined Conditions
17	Injury and Poisoning

There are also two supplementary classifications in volume 1:

- Supplementary classification of factors influencing health status and contact with health services (V codes)
- Supplemental classification of external causes of injury and poisoning (E codes)

Thirdly, volume 1 also includes five appendices (see Table 5-4 for descriptions):

- Appendix A: Morphology of Neoplasms
- Appendix B: Glossary of Mental Disorders (Deleted)
- Appendix C: Classification of Drugs by the American Hospital Formulary Service List
- Appendix D: Classification of Industrial Accidents According to Agency
- Appendix E: List of Three-Digit Categories

TABLE 5-4 ICD-9-CM Appendix Descriptions

Appendix	Title	Description
A	Morphology of Neoplasms	A listing of all morphology types with the appropriated morphology (M code)
B	Glossary of Mental Disorders	Included definitions for psychiatric terms (prior to 2003)
C	Classification of Drugs by the American Hospital Formulary Service List	Categorizes drugs into family-related groups
D	Classification of Industrial Accidents According to Agency	Classifies industrial accident according to agency
E	List of Three-Digit Categories	A listing of each three-digit category in the ICD-9-CM manual and its corresponding title

Volume 2: Alphabetic Index of Diseases

Volume 2 of the ICD-9-CM manual has three major sections, which include:

- **Index to Diseases and Injuries:** This index includes terminology for all codes that are listed in volume 1 of the manual.
- **Table of Drugs and Chemicals:** This table contains a classification of drugs and other chemicals used to identify poisoning states and external causes of adverse reactions (see Table 5-5).
- **Alphabetic Index to External Causes of Injury and Poisoning:** This index includes terminology for all E codes that are listed in volume 1 of the manual.

Volume 3: Index to Procedures

Volume 3 of the ICD-9-CM manual contains an alphabetic index and tabular list for that volume. The format of this volume is similar to volumes 1 and 2, with a few variations. ICD-9-CM procedural codes are used to code hospital inpatient procedures only; outpatient procedures are coded using the *Current Procedural Terminology* (CPT) manual discussed next.

TABLE 5-5 External Cause Categories

Cause	Explanation
Accidental poisoning	Unintentional overdose of drug, wrong substance given or taken, drug taken inadvertently, accidents in the usage of drugs, and biological substances in medical and surgical procedures, and to show external causes of poisoning.
Therapeutic use	A correct substance properly administered in therapeutic or prophylactic dosage as the external cause of adverse effects.
Suicide attempt	Instances in which self-inflicted injuries or poisoning are involved.
Assault	Injury or poisoning inflicted by another person with the intent to injure or kill.
Undetermined	Used when the intent of the poisoning or injury can't be determined.

CPT Coding System

The *Current Procedural Terminology* (CPT) manual was developed and published by the American Medical Association in 1966 to meet the reporting and communication needs of physicians. In 1983, Medicare adopted the manual for its reimbursement system. The CPT system is currently used by physicians and outpatient service providers to report procedures and services for reimbursement (American Medical Association, 2007).

Organization of the CPT Manual

The CPT manual is organized into categories, appendices (see Table 5-6), and an index.

The CPT manual contains three categories of codes, as follows:

1. Category I: Contains a brief introduction and six main sections, which follow:
 1. Evaluation and management codes
 2. Anesthesiology
 3. Surgery
 4. Radiology

TABLE 5-6 CPT Appendix Titles

Appendix	Title
A	Modifiers
B	Summary of Additions, Deletions, and Revisions
C	Clinical Examples
D	Summary of CPT Add-on Codes
E	Summary of CPT Codes Exempt From Modifier 51
F	Summary of CPT Codes Exempt From Modifier 63
G	Summary of CPT Codes That Include Moderate (Conscious) Sedation
H	Alphabetic Index of Performance Measures by Clinical Condition or Topic
I	Genetic Testing Code Modifiers
J	Electrodiagnostic Medicine Listing of Sensory, Motor, and Mixed Nerves
K	Product Pending FDA Approval
L	Vascular Families
M	Crosswalk to Deleted CPT Codes

5. Pathology and laboratory
6. Medicine
2. Category II: Contains a set of supplemental tracking codes used for performance measurement
3. Category III: Contains a set of temporary codes for emerging technology, services, and procedures

Resources

American Dental Association
www.ada.org

American Medical Association
www.ama-assn.org

American Psychiatric Association
www.psych.org

Centers for Medicare and Medicaid Services
www.cms.hhs.gov

College of American Pathologists

www.cap.org

Food and Drug Administration

www.fda.gov

Medicomp

www.medicomp.com

Regenstrief Institute Inc.

www.regenstrief.org

World Health Organization

www.who.int/en/

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