Principles of Coding and Reimbursement for Surgeons

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This text is dedicated to Chad A. Rubin, MD, FACS, our colleague, friend, and leader of the American College of Surgeons General Surgery Coding and Reimbursement Committee. Although his name does not appear among the chapter authors, his counsel and wisdom can be found throughout the entire book. Chad passed away at an age much too young, as this work was in progress. He will be missed.

Foreword: The Early History of General Surgery Coding and Reimbursement

Formerly called the CPT/RUC Committee, the General Surgery Coding and Reimbursement Committee represents and acts in the interests of general surgeons and their clinical practices regarding regulatory, legislative, and other issues that impact coding, billing, and reimbursement for general surgical services.

In October 1988 at the American College of Surgeons Clinical Congress in Chicago, George E. Block, MD, FACS, Paul ("Skip") E. Collicott, MD, FACS, and John O. Gage, MD, FACS, met with James Haug, the then director of the ACS Socioeconomics Division (later Health Policy and Advocacy), to discuss the ACS response to the proposed Harvard Study by W. C. Hsiao. Dr. Hsiao and his associates devised a resource-based relative value study (RBRVS) as a means to standardize payments by Medicare to physicians and presented their findings to the Health Care Financing Administration (HCFA) as Phase I in September 1988. The Omnibus Budget Reconciliation Act (OBRA) of 1989 was signed by President George Bush, enacting a physician payment schedule based on an RBRVS.

The Harvard Study findings and conclusions were based upon surveys and interviews of selected physicians and surgeons in the United States. Many of the physician participants were selected by their respective specialty organizations represented in the American Medical Association's House of Delegates. Since, at that time, the ACS had elected not to take their seat in the House of Delegates (HOD), organized participation by the ACS did not occur. General, colorectal, pediatric, and peripheral vascular surgeons were randomly sampled according to specialty designation in the AMA Physician Profile database.

Unfortunately then, there were no centralized communication among the randomly selected surgeons and no organized educational process to inform them as to what parameters should be utilized in completing their questionnaires. Most of these surgeons at the time thought primarily of procedures and "skin-to-skin times" based upon the individual's bravado and experience and were totally subjective. Since they were accustomed to global fees, little thought was given to pre- and postoperative encounters or evaluation and management codes. Thus, unfortunately, several codes were undervalued. Additionally, several procedures that many of the aforementioned surgeons performed were not even listed in the then current CPT

manual. Again there was no official participation of the ACS in the CPT process until later.

The first "official" encounter by ACS representatives (Drs. Block, Collicott, and Gage) to the review of the RBRVS payment schedule was in Baltimore prior to the implementation of OBRA '89. They were overwhelmed and impressed with the support and data that were presented by the other physician organizations and were totally "at sea without a compass." Following that experience, a commitment was obtained from ACS to begin to address this issue. The ACS CPT/RUC Review Committee was then established in 1990 and staffed by the ACS appropriately. Initial members included general, colorectal, pediatric, and vascular surgeons, and it was chaired by Dr. John O. Gage, MD, FACS.

The ACS resumed its seat in the AMA HOD represented by Dr. Block. Subsequently, the initial meeting of the AMA/Specialty Society RVS Update Committee (RUC) took place in November 1991, and Dr. Gage was named the general surgery representative, and Dr. Collicott was named to the Specialty Advisory Committee. Essentially all the general surgery codes were reviewed by the ACS committee since the original data were inaccurate. Accurate data from initial surveys of ACS members regarding intraservice times, work intensity, frequencies of procedures, practice expenses, etc. were difficult to elicit. The initial participants were ACS governors and various ACS committee members. The RUC submitted its first set of recommendations (with ACS input) to HCFA in 1992 and has subsequently reviewed the RBRVS values to be submitted every 5 years.

Eventually, hard work, persistence, and help from data consultants and staff and a financial commitment from the ACS Board of Regents culminated into an organized survey process to enable ACS to effectively participate in the RUC process. Many members of the initial committee were instrumental in refining the orderly process that is in place today.

Paul E. "Skip" Collicott, MD, FACS
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Introduction

Physicians in academic practice generally develop an area of focused academic interest and spend a portion of their professional lives performing research in that field developing expertise. For most surgeons, these areas are generally clinical, basic science, translational, or population studies. The scientific method is employed and a body of research is developed. The surgeon publishes papers in professional journals and presents findings at scientific meetings.

For the two of us, our professional interests have included coding and reimbursement. Although not an area of scientific study in the traditional sense, coding and reimbursement as an academic field share some similarities with the more academic sciences. There is a unique vocabulary, with some very specific definition of terms. There is a large body of specialized knowledge, portions of which are specific areas of a focus of experts. Articles are written. Discoveries are made, policies developed, and conferences held. Advanced certification is available for those who complete additional training. Most importantly, there is a (mostly) rational underpinning to the subject matter.

Coding and reimbursement are two related but distinct topics. For the purposes of this text, they are considered together. Reimbursement has a much longer history than coding. We explore much of the history of reimbursement for medical services in several of the chapters in Part I of the text.

Our authors are experts in this field and are for the most part practicing surgeons. Some of them have institutional knowledge of the involvement of the American College of Surgeons in this process from its outset. Many serve roles in the reimbursement process as relates to national healthcare policy, both private and public, in addition to those for the American College of Surgeons (ACS). Other authors are relative newcomers, who have spent considerable time and effort from their professional lives to learn the history and current state of affairs.

The coding process is also discussed in Part I. The history of coding is much shorter than that of reimbursement. Coding arose as a necessity from the changes in reimbursement that occurred in the 1980s and 1990s. It was necessary to standardize the language in order to quantify the value, thus arose Current Procedural Terminology (CPT) and Diagnosis-Related Groups (DRGs), along with the older

systems of International Classification of Disease (ICD) and the Healthcare Common Procedure Coding System (HCPCS). It becomes apparent how the two subjects are intertwined and dependent upon each other as the reader progresses through the first few chapters.

The text then takes a brief look at the current state and future of quality measures which affect reimbursement. The challenge here was to present information that would not be dated by the time of publication, as this is an area that must be considered in its youth, with changes in policy occurring every year.

We then delve into the areas of alternative payment models. If quality is in its youth, alternative payment must be considered in its infancy, with only demonstration projects to showcase. A whole new model for healthcare payment will certainly emerge from this field.

Part II of the text focuses more on coding and reimbursement for specific fields which most general surgeons are likely to encounter. Authors of these chapters have subspecialty expertise that applies to the field of focus, as well as knowledge and experience in the coding arena. Each section is written to help the reader understand not just how the coding is done but why the rules for coding and reimbursement are the way they are.

This is not a "how-to" coding text. There are plenty of manuals and other commercial products available to help the surgeon and his staff perform the tasks of coding properly and maximizing reimbursement. There are also many articles in print and on the Web addressing specific topics. We refer readers to our own work in the *Bulletin of the American College of Surgeons*, for example. Our purpose in creating this text was to explain the historical basis for the rules we use in coding and reimbursement and to give the reader a more in-depth and academic view of the world of coding and reimbursement.

Both authors got into the world of coding and reimbursement as members of the ACS General Surgery Coding and Reimbursement Committee. The ACS has dozens of active committees. The GSCRC is the only one without term limits. This illustrates the specialized knowledge expected in the realm. Senior members of the GSCRC have over 20 or even 30 years in the arena. Dr. Savarise's area of focus has been CPT, where he has served as an advisor for the ACS. Dr. Senkowski's focus has been the RUC, where he serves as the ACS representative on the Committee. Both of us are also involved in shaping the future of payment policy, having worked on payment bundles, episode grouping, and design of Accountable Care Organizations. The nature of the work done in these organizations requires that each of us understand most of what the other knows. Most physician "experts" in this field are like us: expertise is an acquired asset, through long hours of work and countless additional hours of reading.

We hope that this text distills some of the "expertise" that we and our authors have gained through the years into information that will help surgeons, other physicians, their staff, and administrators understand much of the complexity of the subject of coding and reimbursement.

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Part I
Coding and Valuation

Chapter 1
Medical Coding in the United States: Introduction and Historical Overview

Karen R. Borman

The Merriam-Webster definition of "code" includes the concepts of a system of principles or rules, a system of letter and number symbols used to represent assigned meanings, and a set of instructions for a computer [1]. Medical diagnostic and procedural coding as we know it today incorporates all of these concepts and has diverse applications including vital statistics tracking, hospital medical record indexing, clinical research abstraction, health care delivery analytics, and medical service reimbursement. The origins of modern medical coding, however, lie in medieval epidemiology. Europe was being ravaged by recurring epidemics of bubonic plague, and efforts at infection control included determining when deaths were due to plague or to other causes. In early sixteenth century London, the causes of death were assigned by "searchers" who viewed the bodies and reported their findings as either plague or other; physicians were consulted only when searchers were uncertain. In Northern Italy, boards of health undertook similar initiatives but required that final diagnoses be certified by a physician or surgeon [2]. Although the plague subsided, interest in the population health data stored in death registries grew as the Industrial Age unfolded. The need for standardized language and systematic classification of the data became apparent, leading to products such as the *Nomenclature of Diseases Presented by the Royal College of Physicians*, first published in 1869. The Royal College of Surgeons also contributed to this work. Multinational efforts undertaken under the auspices of the International Statistical Institute resulted in the release of the *International List of Causes of Death* in 1893, which recently had become known as "ICD." Supplements to its first revision ("ICD-1") included guidelines for data entry clerks and an alphabetized index with mapping to the tabular main list; these features continue in ICD as we know it today [2].

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Medical coding in the United States (US) also was derived from death registration, mandated in Massachusetts in 1842. The first standardized compilation appeared as the *Nomenclature of Diseases* from the American Medical Association (AMA) in 1872. In response to the growing data needs of military medicine and of hospitals, the US Census Bureau produced the *Standard Nomenclature of Diseases and Pathological Conditions, Injuries and Poisonings for the United States* in 1919, in which numbers were assigned to an extensive alphabetized list of conditions. Collaboration among hospital representatives, medical societies, public health organizations, and the armed forces led to a new US nomenclature first published in 1930. Maintenance and periodic revision of this product was assumed by the AMA. A supplement listing commonly performed operations was added in 1942, marking the beginning of formal, widespread attention to classifying and coding procedures. The Fifth and final edition of *Standard Nomenclature of Diseases and Operations (SNDO)* was released by the AMA in 1961 [2]. In contrast to the statistical and epidemiologic focus of ICD, SNDO was designed for clinical use by hospitals and physician practices [3]. The successor to SNDO, titled *Current Medical Terminology (CMT)*, was first published in 1963, incorporating information about symptoms, signs, diagnostic testing, pathology, and treatment for listed diseases [4]. Revisions to the 1964 second edition were designed to facilitate adaptation to emerging computer-based medical applications. Later editions of CMT were renamed *Current Medical Information and Terminology (CMIT)*, and incorporated two-digit preferred disease term codes linked to four-digit identification numbers for supplemental information. A new numeric index enhanced computerized uses. The exponential growth of medical knowledge, however, rendered CMIT unsustainable; the final (fifth) edition appeared in 1981. Procedure listings were dropped during the transition from SNDO to CMT but were resurrected by the AMA in 1966 and released separately as *Current Procedural Terminology (CPT)* [2]. Copyrighted by the AMA, CPT assigned numeric codes varying from two to four digits to standardized terms for most surgical procedures in current use.

In the meantime, ICD had morphed into the *International Classification of Diseases* that was revised every decade. ICD maintenance responsibilities were transferred from the International Statistical Institute's Committee on Health Statistics to the League of Nations' Health Section and later to the World Health Organization, where they remain today. Major changes by the time of ICD-7 (in use through 1967) included expansion to address causes of morbidity not just mortality, incorporation of primary multi-digit codes with subdivisions arranged in a decimal format, and separation into (Volume I Tabular List and Volume II Alphabetic List). Many of these changes were championed by US participants and built upon work done by the Census Bureau, Bureau of the Budget, Public Health, State Department, the American Public Health Association, and the American Hospital Association [2]. Adaptations of ICD to support its increasing multifunctional use by hospitals were developed by several countries; the US adaptation was first known as *ICDA*, later retitled as ICD-*CM* or Clinical Modification [4]. Of note, ICDA added a procedure classification in 1962 [5], around the time that SNDO was replaced by CMT which had no procedural listing component and before CPT first appeared. CM

maintenance is provided by the Centers for Disease Control's National Center for Health Statistics for diagnoses and by CMS for procedures [6].

Application of ICD-CM and CPT to US health care reimbursement was significantly stimulated by the inception of the Medicare and Medicaid programs in 1965, when the federal government joined large employers as a major source of medical insurance. Coincident with this expanded access to care, the rapid emergence of more treatments with greater efficacy for more diseases led to exponential growth in health care service volumes. Payment processes for medical services changed from direct encounters between patients and their physicians or hospitals to third-party transactions through insurers. Fee-for-service medical practice, the dominant US health care delivery format, now depended upon information transmission about "what" was done to patients (services rendered) and "why" (medical necessity as captured through diagnoses). Numerous approaches emerged to report services delivered; many were home grown, paper based, geographically constrained, far from uniform and of limited utility. Useful, reliable health care information transmission required efficient, standardized reporting of diagnoses and services, ushering in the era of modern medical coding.

Convergence to a standard was more easily achieved for the "why" than the "what" of medical billing. ICD-CM, in whose development the American Hospital Association had participated since its inception, underwent frequent updating and met most diagnostic reporting needs of hospitals by 1979 through that year's ICD-9-CM. Physicians provided input into CM through the Council on Clinical Classifications beginning in 1977; the Council included the American College of Surgeons [5]. However, most practicing physicians were uninterested in ICD coding, delegating it to office staff members. Hospital coders thus found new opportunities in outpatient settings as physicians faced growing pressure to submit their charges using ICD-CM diagnoses.

Standardized reporting of physician services evolved more slowly due to content and relevance issues. Procedural code lists were created by multiple and diverse entities such as physician specialty societies, insurance companies, and state-based workers' compensation programs. The content and format of each code list reflected its intended user group, sharply limiting generalization to additional potential users. Payments by commercial and government insurers were based upon usual, customary, and reasonable (UCR) charge lists. The earliest UCR rates were typically set at the mean or median of physician charges for a specific service provided within a defined catchment area or population [7]. The terminology describing services on UCR lists most often reflected physician practice patterns within a catchment area. Surgical descriptors tended to be more consistent since the nature and extent of common operations were similar across geographic areas, while definitions of diagnostic services and office visits were more variable. Over 250 different procedural coding systems were believed to be in use during the first decade of the Medicare program [8].

As federally sponsored health insurance costs continued to rise rapidly, Medicare moved to better understand its fund flows and to assure that the services it purchased were consistent for beneficiaries nationwide. Analysis was hampered

significantly by variable descriptions and incomplete code sets for physician services. While the 1966 first edition of CPT (CPT-1) offered systematically organized service descriptors and coding structure, most services listed were surgical. CPT-2 in 1970 increased capacity by converting to a five-digit system, and chapters were added or greatly expanded to cover anesthesia, radiology, laboratory and pathology, and specialized medicine services (e.g., physical therapy, audiometry, pulmonary function testing). In 1973 CPT-3 introduced two-digit modifiers, designed for appending to multiple codes to provide additional information about a service without redefining the service provided. For example, both the primary surgeon and an assisting surgeon report the same surgical five-digit code, but the assistant adds a modifier that clearly specifies his/her role. CPT-4 was released in 1977 and included multiple changes stemming from rapid technological advances, Simultaneously a process was created for periodic updating that incorporated broad opportunities for input from the physician community and other stakeholders. Each CPT revision also contained increasing amounts of explanatory language and guidance for proper code selection. The progression of CPT toward a current, relevant, and comprehensive code set was recognized in 1983 when the Health Care Financing Administration adopted CPT exclusively for reporting of physician services to Medicare as Level I of the Healthcare Common Procedure Coding System (HCPCS); ICD-9-CM was mandated for diagnostic coding and for hospital inpatient service reporting. In 1986 CPT was adopted into the Medicaid Management Information System and in 1987 CPT was mandated for reporting services delivered to federal health program beneficiaries at outpatient hospital and other ambulatory care sites [7, 8]. Under a 1983 agreement between the Department of Health and Human Services and the AMA, CMS pays no fees for its use of CPT and a CMS representative serves on the Editorial Panel that is responsible for maintaining CPT [6].

Despite more tightly defined diagnostic and procedural coding, Medicare expenditures for physician services continued to climb steadily; during 1981–1990, the annual rate of rise averaged 13.7 % [9]. Policy makers responded with the 1992 implementation of a nationwide Medicare Physician Fee Schedule, at whose core was a Resource-based relative value scale (RBRVS) based largely on work by economist William Hsiao and colleagues from the Harvard School of Public Health. The RBRVS shifted attention from “procedural” to “cognitive” services. Anticipating this shift, starting in 1989 the CPT Editorial Panel created an Ad Hoc Committee on Visits and Levels of Service, joined with the federal Physician Payment Review Commission on a Consensus Panel and reviewed the Harvard research group findings. The Editorial Panel thereafter adopted into CPT-1992, a new framework and language for coding cognitive services [8]. Key features of the new evaluation and management (E/M) codes were more detailed descriptors, site-of-service categorization, and multiple levels of complexity within site-of-service-based code families. The Editorial Panel also collaborated with HCFA in developing E/M documentation guidelines to accompany the new codes. The new codes answered some of the criticisms of CPT as a code set raised in the 1993 annual report of the National Committee on Vital and Health Statistics [10].

Government-funded health care programs continued to grow in scope, cost, and health care industry impact. Legislation, such as the Health Insurance Portability and Accountability Act of 1996 (HIPAA, Kennedy-Kassebaum), affected all patients, providers, and payers. Of particular importance to medical coding was HIPAA Title II, containing the Administrative Simplification provisions (AS). Reflecting the transition from paper to electronic medical recordkeeping, AS mandated national standards for health care information transmission along with patient safeguards. AS also directed that the Secretary of Health and Human Services (HHS) designate specific code sets as national standards for describing health-related services. In August 2000, HHS adopted ICD-9-CM Volume 3 for reporting inpatient hospital procedures and CPT for reporting physician services plus other medical services including outpatient hospital procedures [6]. The decision to utilize a combination of two code sets for procedural reporting, rather than a single system, reflected strengths and weaknesses of each system identified by the HHS Secretary; the decision was viewed as counterintuitive to administrative simplification by some commenters. Their concerns attracted Congressional attention and the House Subcommittee on Health of the Committee on Ways and Means asked the Government Accountability Office (GAO) to review the HHS decision. The GAO reviewed related literature and interviewed stakeholders, concluding that "there are no data or studies to demonstrate or measure the potential benefits or costs of adopting a single procedural code set" [6]. The use of two standard coding sets for reporting procedures continues today though advocates for each system continue to debate. A summary of code sets adopted in 2000 in response to HIPAA is given in Table 1.1.

Between HIPAA's enactment and the Secretary's decision, CPT embarked on the CPT-5 Project designed to help CPT meet the AS criteria for an ideal procedural code set. The 1996–1997 Exploratory Workgroup spawned 6 major subgroups reporting through the Executive Project Advisory Group to the CPT Editorial Panel during 1998–2000. Project participants represented all stakeholder communities. Over 100 recommendations for changes in structure and linguistics were made and considered; goals of the changes included eliminating ambiguity, enhancing electronic search capabilities, addressing new technology, and meeting the needs of the emerging managed care community [7]. While CPT-4 was not renamed CPT-5, many of the project recommendations were implemented through the 2000–2003 annual updates. CPT Category II Performance Measures codes were an outgrowth of the CPT-5 Managed Care Workgroup while CPT Category III Tracking/new Technology codes incorporated concepts from the CPT-5 Research Workgroup [11].

Evolution of CPT and its associated maintenance processes now more often occurs through continuous improvement efforts than intermittent, extensive, revision projects. Responsibility for CPT content remains with the CPT Editorial Panel, which includes representatives from physician, allied health, managed care, hospital, and health information management organizations as well as from CMS and private payers. Technical support for the Panel is provided by AMA-CPT staff, and the coding change process is enabled through the work of the CPT Advisory Committee which submits and reviews hundreds of proposals annually. Panel

Table 1.1 A summary of code sets adopted in 2000 in response to HIPAA

Standard code set	Health service uses	Maintenance responsibility
CPT (HCPCS Level I)	Physician services Hospital outpatient medical procedures and other medical services (includes radiology, laboratory, physical and occupational therapy, and hearing and vision services) Home health services	American Medical Association through the CPT Editorial Panel
ICD-9-CM Volume 3	Hospital inpatient procedures	CMS through ICD-9-CM Coordination and Maintenance Committee
ICD-9-CM Volumes. 1 & 2	Diagnoses	National Center for Health Statistics through ICD-9-CM Coordination and Maintenance Committee
HCPCS Level II	All other medical services not covered by CPT (includes medical supplies, orthotic and prosthetic devices, durable medical equipment, and transportation services including ambulance)	HCPCS National Panel (CMS, Blue Cross Blue Shield Association, Health Insurance Association of America)
National Drug Codes (NDC)	Drugs and biologics	Department of Health and Human Services in collaboration with drug manufacturers
Code on Dental Procedures and Nomenclature	Dental services	American Dental Association (ADA) through the ADA Code Revision Committee

meetings, once conducted behind closed doors and attendance limited to Panel members, are now open to CPT Advisory Committee members and their association staff members, all change request presenters, and members of the press. Conflict of interest and confidentiality processes are robust and applied to all participants [7, 12]. Concerns involving multiple codes or code categories are often first addressed at workshops during the annual CPT Advisory Committee meeting and may trigger formation of Panel Workgroups. Workgroups, which consist primarily of Advisory Committee members, are facilitated by Panel members and report back to the Editorial Panel about potential code or process changes. Since the implementation of the Medicare RBRVS in which relative values are assigned at the CPT code level, coordination between CPT and the AMA Relative Value Update Committee (RUC) has been facilitated by the exchange of representatives between the Panel and the RUC. Overarching, broad issues have led to the episodic formation of targeted CPT-RUC joint taskforces. Questions about individual codes arising during RUC deliberations may be referred to the Panel for clarification and some result in code changes. Information presented to the Panel by code requestors is forwarded to the RUC. Panel and RUC members often have served previously as CPT or RUC specialty society advisors, further enhancing the dialogue.

ICD also has continued to evolve in recent times. The World Health Assembly adopted ICD-10 for 1993 implementation. The US National Center for Health Statistics (part of the Centers for Disease Control and Prevention) secured permission from the WHO to create an ICD clinical modification for use in the United States. The modification comprised two parts: ICD-10-CM for diagnoses (replacing ICD-9-CM Volumes 1 and 2) and ICD-10-PCS for procedures (replacing ICD-9-CM Volume 3). ICD-10-CM expanded diagnostic codes to 7 characters, each of which may be a number or a letter, allowing increased diagnostic specificity. Available diagnostic codes have increased from around 13,000 to nearly 70,000. Some codes now combine symptoms and diagnoses. ICD-10-PCS also adopted a seven-character alphanumeric format and was developed by 3 M under contract to CMS [13]. Each of the seven character positions has a tightly defined of values with highly specific meanings that are not intuitive from the codes themselves. In 2008, HHS proposed full implementation of both ICD-10 code sets for October 2013. Resistance from the health care industry was substantial. The expanded alphanumeric systems required major software changes and computer reprogramming. Mapping from ICD-9-CM was difficult at best, and clear crosswalks were few. Education about the new systems required substantial initiatives by the professional associations of the user community. Implementation was further delayed by Congressional action until October 2015. The ICD-10 Coordination and Maintenance Committee, comprised of CMS and NCHS representatives, is responsible for maintaining ICD-10-CM and ICD-10-PCS. The World Health Organization already is engaged in developing ICD-11 and an International Classification of Health Interventions (ICHI) [14, 15].

During the modern medical coding era in the United States, the American College of Surgeons (ACS) has evolved into a prominent participant, both as the primary representative of general surgeons and as an advocate for surgeons as a whole when CPT, RUC, or other physician reimbursement issues affect multiple surgical disciplines. With only brief breaks, the CPT Panel and the RUC since their beginnings have included ACS members, as have the CPT and RUC Advisory Committees. Many of these members have served on the CPT or RUC Executive Committees, chaired RUC standing committees, or led Panel workgroups. ACS-nominated surgeons have also served regularly on the ICD-CM Coordination Committee, providing input into diagnostic and inpatient procedure codes. Fellows nominated and supported by the ACS have become engaged in health care delivery processes that extend beyond CPT codes and RUC values such as the Medicare Payment Advisory Commission (MedPAC), the Patient-Centered Outcomes Research Institute (PCORI), the Blue Cross Association Technical Advisory Panel, the CMS Hospital Outpatient Payment Advisory Panel (HOP), and Robert Wood Johnson Foundation initiatives. Surgeons have become knowledgeable about other code sets including DRG (Diagnosis-Related Group), APC (Ambulatory Payment Classification), HCC (Hierarchical Condition Classification), and HCPCS Level II (Healthcare Common Procedure Coding System). More recently the ACS has become heavily involved in representing surgeons in the performance and quality arenas (e.g., National Quality Forum, Performance Measures Advisory Group). Staff of the ACS Washington, DC

office with input from Fellows regularly review and submit comments on Congressional, HHS, CMS, and other governmental health care delivery system proposals such as Accountable Care Organizations and Physician-Focused Alternative Payment Models. The mission of the ACS, improving the care of the surgical patient and safeguarding standards of care in an optimal and ethical practice environment [16], continues to be enabled today by the unselfish, voluntary investment of time and energy of Fellows in coding and other health care system-related activities as described in the chapters of this book.

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Chapter 2
ICD-10

Lee R. Morisy

ICD-10 is the 10th revision of the international classification of diseases. This is a medical classification list prepared and sponsored by the World Health Organization (WHO); it is designed to collect statistical data on the causes and progress of diseases and other health conditions. It includes codes for diseases, signs and symptoms, abnormal findings, complaints, social circumstances, and external causes of injury or disease.

According to the World Health Organization, it is the standard diagnostic tool for epidemiology health management and clinical purposes. This includes the analysis of the general health situation of population groups. It is used to monitor the incidence and prevalence of diseases and other health problems, providing a picture of the general health situation within and between countries and populations.

It is used around the world by physicians, nurses and other providers, and policymakers to classify diseases and other health problems. This includes use in both health records and death certificates. It enables the storage and retrieval of diagnostic information for clinical, epidemiological, and quality purposes. These records also provide the basis for the compilation of national mortality and morbidity statistics by WHO member states.

In the United States, unlike many other countries, it is also used in reimbursement and resource allocation both on a national and individual level.

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ICD-10-CM

Many different versions of ICD-10 exist. Countries have often chosen to "personalize" it for their particular health system and particular needs. In the United States, the agency responsible for ICD-10 is the national Center for Health Statistics (NCHS), a branch of CMS. NCHS developed a diagnostic coding system for the United States, and titled ICD-10-CM, the CM standing for clinical modification. In the original WHO version, ICD-10 had approximately 14,400 codes. In contrast, the ICD-10-CM released in the United States had some 68,000 codes. (The ICD-10-PCS procedure coding system, which is only used in the United States, contains an additional 76,000 codes). Specific reasons for the enlarged code set include the addition of information relevant to ambulatory and managed care encounters, expansion of injury codes, creation of combination diagnosis and symptom codes to reduce the total number of codes needed to fully describe the condition, the addition of sixth and seventh characters, laterality, and greater specificity in code assignment.

History

Initial Work on ICD-10 began in 1983 and was completed by the WHO in 1992. ICD-10-CM was completed by NCHS and their vendor 3M in February 1998 and field tested in 2003. Significant modifications and improvements were made from 2003 until shortly before the time of implementation in 2015. ICD-10 coding of death certificates and mortality data was mandated in 1999. The initial proposed implementation date was October 1, 2011. In January 2009 that was pushed back to October 1, 2013 which was subsequently postponed to 2014 and ultimately October 1, 2015 when the use of ICD-10 diagnosis codes was mandated for all “HIPAA covered entities,” which is essentially all health care encounters in the United States. ICD-10 has been used in most other developed countries from the late 1990s or early 2000s. ICD-10-PCS procedure codes are only used in the coding of *inpatient* hospital procedures at this time.

ICD-10-CM Code System

Although the ICD-10 system is generally based on the ICD-9 system that preceded it, it has been substantially modified and revamped, both for organizational reasons and to reflect advances in clinical knowledge. ICD-9 codes contained only numbers and were three to five characters in length. ICD-10-CM codes contain letters

and numbers and can be up to seven characters in length. The first character of all ICD-10-CM codes is an alphabetical letter. All letters of the alphabet are used with the exception of the letter U which had been reserved by WHO for assignment of new diseases of uncertain etiology and for bacterial agents resistant to all antibiotics. In most cases all the diagnoses in a chapter begin with the same letter but in some of the larger chapters, for example, neoplasms, more than one first letter is required. The first three characters are used to find the category of the diagnosis, followed by a period. The second three characters define etiology, anatomic site, and severity. The seventh character, when present, is called an extension. The seventh character is only used in obstetrics, injuries, and external causes of injuries. The character "X" is defined as a placeholder and does not have any specific meaning on its own.

ICD-10-CM Chapters

Chapter	Initial characters	Description
1	A00–B99	Infectious and parasitic diseases
2	C00–D48	Neoplasms
3	D49–89	Diseases of blood formation
4	E00–E90	Endocrine
5	F00–F99	Mental and behavioral disorders
6	G00–G99	Diseases of the nervous system
7	H00–H59	Eye
8	H60–H95	Ear
9	I00–I99	Circulatory system
10	J00–J99	Respiratory
11	K00–K93	Digestive
12	L00–L99	Skin and SubQ
13	M00–M99	Musculoskeletal
14	N00–N99	GU
15	O00–O99	Pregnancy and childbirth
16	P00–P96	Perinatal
17	Q00–Q99	Congenital
18	R00–R99	Signs, symptoms, and abnormal lab findings
19	S00–T98	Injuries and poisoning
20	V00–Y98	External causes of injuries
21	Z00–Z98	Factors influencing health status
22	U00–U99	Codes for special purposes

Note that Chap. 20, External Causes of Injuries, is roughly similar to the ICD-9-CM section of E codes. Also Chap. 21, Factors Influencing Health Status, correlate with ICD-9 V codes

Using ICD-10

Just as in ICD-9, ICD-10 is composed of a tabular list and an index. The index (officially the index to diseases and injuries) lists diagnoses and conditions in alphabetical order. Main topics are listed in boldface and subtopics are indented below them. In many cases there are multiple levels to increase the specificity. The tabular list is in numerical order corresponding to the chapters above.

When using the index to find a code, it is always advisable to then go to the tabular list to verify that the correct code and specificity is present. The index is more of a general tool to find the correct place in the tabular list to locate the exact diagnosis code that best expresses the patient's condition. While some index entries are sufficiently specific to create the whole code, oftentimes they are not, and relying on the index alone can lead to inaccurate coding and therefore inaccurate data.

Another part of the index is the index of external causes of injury. There are also two main tables included in the ICD-10-CM system, the table of neoplasms and the table of drugs and chemicals. The neoplasm tables are similar in format to those contained in ICD-9. They are for the most part organized by anatomic location (lung, breast, colon) rather than morphology (squamous, adeno, undifferentiated). However, certain neoplasms, such as melanoma, are categorized by their histology rather than their anatomic location. Within each neoplasm location, they are further subdivided into benign, in-situ, malignant, or of uncertain behavior. If malignant, secondary, or metastatic, sites should also be coded. If the purpose of an encounter is for treatment of malignancy, then the malignancy should be listed as the first or primary diagnosis. The only exception to this rule is if the encounter is solely for the administration of chemotherapy, immunotherapy, or radiation therapy. Then the primary diagnosis code would be the appropriate code from the Z51 category of administration codes, Z51.0 (radiation), Z51.11 (chemotherapy), or Z51.12 (immunotherapy), with the neoplasm code as the secondary diagnosis. While all malignant tumors are located in the neoplasm section, a few benign lesions such as prostatic adenomas are indexed in the body part section.

Conventions Used Throughout the Coding System

Two abbreviations used throughout the coding system are NEC and NOS. NEC stands for *not elsewhere classified*. This is used when a diagnosis is specified but a specific code does not exist for that specific diagnosis. Often the index will direct you to the “other specified” code in the tabular list. For example, hepatic failure is broken down into alcoholic liver disease, K70, toxic liver disease K71, and hepatic failure NEC, K 72. NOS stands for *not otherwise specified* and is the equivalent of unspecified. For example, colon cancer C18 is broken down by all of the various

parts of the colon. C18.9 malignant neoplasm of colon, unspecified, is used if the site of the colon cancer is unknown or not specified.

Inclusion terms are lists of terms included under some codes. These terms may be synonyms of the title code, or in the case of "other specified" codes, the terms are a list of various conditions assigned to that code. Some additional terms may be found only in the alphabetical index and not represented in the tabular listing but are referred to that particular code.

Exclusions are very important in ICD-10-CM. There are two types of exclude notes. Although they are similar, they have important differences. Excludes 1 codes indicate mutual exclusivity. An "Excludes 1" code can never be used with the original code. For example, under that category C18., colon cancer, there is an Excludes 1 note for malignant carcinoid tumor of the colon which are coded under C7A., malignant neuroendocrine tumors.

An "Excludes 2" note however is not mutually exclusive but just indicates that the secondary code is not included under the primary code. This occurs when a primary code may or may not be accompanied by the secondary code. An example is other diseases of the liver (K76.). This includes an Excludes 2 note for hepatic vein thrombosis, (I82.0) so that if the patient had liver disease due to hepatic vein thrombosis, both codes would be used.

Coding Diseases and Their Manifestations

In general, in ICD-10-CM, if an underlying disease has caused multiple manifestations, the underlying disease is coded first. For example, dementia (F02.) may be due to multiple underlying diseases. If the dementia was due to multiple sclerosis, G35. would be coded first followed by F02., to indicate that the dementia was a manifestation of the multiple sclerosis. In many conditions, however, where the manifestations are a common part of the disease, they are all covered by one code so the disease and the manifestation do not need to be coded separately. An example of this would be E10.36, type 1 diabetes mellitus with diabetic cataract.

Level of Detail and Coding

ICD-10-CM diagnosis codes are composed of codes with three, four, five, six, or seven characters. The first three characters are the heading of a category of codes which may be further subdivided by fourth, or fifth, or sixth characters. A three-character code can only be used if it is not further subdivided. A code is invalid if it is not been coded to the full number of characters required for that code.

Each unique ICD-10-CM diagnosis code may only be reported once for a given encounter. This applies to bilateral conditions if there are no distinct codes for laterality or two different conditions that are classified to the same ICD-10-CM diagnosis code. Many, but not all ICD-10-CM codes indicate laterality to specify whether the condition which occurs on the right or left is bilateral. If no bilateral code is provided and the condition is bilateral, then assign separate codes for the left and right side. The unspecified side code is only to be used if the laterality is unknown.

Signs and symptoms and unspecified codes are perfectly acceptable for use in coding an encounter if the exact diagnosis is not known. For example, if the patient has pneumonia but the type is not known, the code for unspecified pneumonia would be perfectly appropriate.

The Seventh Character

The seventh character of an ICD-10-CM diagnosis code is primarily found in Chap. 19: Injury, Poisoning, and Certain Other Consequences of External Causes. Most codes in this chapter require a seventh character to be complete. If the fifth and sixth characters are not needed, they are taken by the character X as a placeholder.

For most of the codes in this section, there are three choices for the seventh character: A, for initial encounter; D, for subsequent encounter; and S, for sequela (there are additional seventh character values for traumatic fractures). Unlike in the (Current Procedural Terminology) CPT system, the seventh character is related to the treatment received by the patient and not whether the same or different provider.

The seventh character A, for initial encounter, is used for as long as the patient is receiving active treatment for their condition. It is to be used no matter how many different providers or specialties the patient sees during this period. Thus, the initial encounter may include emergency room visits, hospitalization, and office visits, as long as the patient is continuing to receive active treatment.

The seventh character D for subsequent encounter is used for encounters after the patient has completed active treatment and is receiving routine care for the condition during the healing or recovery phase. This would include all types of follow-up care and visits after an injury or poisoning. It is important for surgeons to note that the typical Z codes used for aftercare for post-op visits should not be used in cases of injury or poisoning, but instead they should be coded using the same initial injury code but with the seventh character of D.

The seventh character S, for sequela, is for use for complications or conditions that arise as a direct result of the initial injury. One example is scar formation after a burn. In such cases there would need to be two codes, one code to describe the actual sequela itself and a second for the initial injury with the seventh character S. The sequela (new condition) would always be coded first.

Whenever coding for injuries, assign separate codes for each injury unless a combination code is provided. Traumatic injury codes (S00–T14.9) are *not* to be used for normal *surgical* wounds/incisions or complications of *surgical* wounds/incisions. The code for the most serious injury or the focus of treatment should be sequenced first.

Many cases of drug toxicity are coded using the codes in the poisoning section, including adverse effects, poisoning, drug toxicity, and over- and underdosing. Many other complications of care are also coated using the T codes. Intraoperative and post-procedural complication codes are more typically found in the body system chapters.

External Causes of Morbidity

The external cause codes can be looked on as modifying previous codes, and therefore should never be the first listed code or the principal diagnosis. Any external cause code can be used to modify any diagnosis, when appropriate. Oftentimes more than one external cause code may be necessary and as many causes as needed can be added. There is no national requirement to report external causes. Some states or insurance carriers may mandate them however.

Factors Influencing Health Status

Factors influencing health status are listed in Chap. 21 (Z codes). Z codes may be used in any health care setting. They may be used as a principal diagnosis or a secondary diagnosis. Certain Z codes are always the first or principal diagnosis listed. Categories of Z codes include contact or exposure to disease, inoculations or vaccination, patient status, patient history, screening, and observation. Routine aftercare after treatment for a disease is also included as a Z code. As noted above, a Z code should not be used for aftercare following injuries. Follow-up care is also covered in the Z codes. Follow-up care is used to explain continuing surveillance after completed treatment of a disease, condition, or injury, when the condition has been fully treated and no longer exists. Follow-up codes are often used along with history codes to provide a full picture of the healed condition and its treatment. In such cases the follow-up code would be sequence first followed by the history code. Follow-up codes are Z08. (follow-up examination after completed treatment for malignant neoplasm) and Z09. (follow-up examination after completed treatment for conditions other than malignant neoplasm). For example, an annual checkup in a patient after breast cancer would be coded as Z08. and Z85.3. Other categories of Z codes include organ and tissue donors, counseling, obstetrical, reproductive, and infant services, and routine and administrative examinations. There is also a section of miscellaneous Z codes which include prophylactic surgery (Z40).

Office or Ambulatory Coding

Although there is only one set of diagnosis codes for inpatient, outpatient, and ambulatory coding, the guidelines differ. In particular if a patient is in a facility and the diagnosis is uncertain, it is then coded as though the diagnosis was established. For example, a patient discharged as possible pneumonia would be coded as pneumonia. In the office setting, uncertain diagnoses should not be coded, but instead the diagnosis with the greatest degree of certainty should be used, in this example, perhaps cough or fever or shortness of breath. Chronic diseases can be coded whenever they impact the care given to the patient. This may be important for surgeons as comorbid conditions such as diabetes, COPD, and obesity may affect the treatment given to a surgical condition such as a hernia. Therefore the chronic medical conditions should be coded as part of the encounter as well as the principal diagnosis of the surgical condition. In the case of an ambulatory surgery encounter, the surgical condition (preoperative diagnosis) should always be the principal diagnosis even if the procedure was canceled for an unrelated reason. If the postoperative diagnosis differs from the preoperative diagnosis, it should be used as the principal diagnosis, since it is the most definitive diagnosis.

Future Directions

With all the disruption which accompanied the recent switch from ICD-9 to ICD-10, it is easy to overlook the fact that there are still areas of improvement that can be made. A great deal of publicity emphasized the fact that there are many more diagnosis codes in ICD-10, but that obscures the reality that in many ways the coding system is not fundamentally changed. Many of the new codes are in the optional sections on external causes, or simply expand the laterality or specificity of the current system. The numbers and characters are unfamiliar but the verbiage describing the diagnoses in many cases has been carried over intact. While that means that the diagnosis verbiage is familiar, in many cases the uncertainties or ambiguities that were present before have been inadvertently retained. In other cases, terminology has evolved over the decades, since it was written and older terminology no longer describes current understanding of diseases and conditions. Modern medical understanding advances at a very rapid pace but coding terminology only evolves at a much slower pace and so that some tension between the two is inevitable. As an example, the coding verbiage from inguinal hernia is carried over essentially unchanged. Inguinal hernias are divided into bilateral or unilateral, recurrent or not specified as recurrent, and with or without obstruction or gangrene. Most modern terminology would describe an irreducible hernia as incarcerated rather than obstructed, so there

was always confusion whether the obstruction meant the hernia or a resulting bowel obstruction. Another example is heart failure divided into systolic and diastolic, where more modern terminology refers to heart failure with low ejection fraction, or preserved ejection fraction.

This is where the American College of Surgeons, working along with the American Medical Association and other surgical and medical specialty organizations, can cooperate with the *four* organizations that make up the Cooperating Parties for the ICD-10-CM:

- The American Hospital Association (AHA)
- The American Health Information Management Association (AHIMA)
- Centers for Medicare and Medicaid Services (CMS)
- National Center for Health Statistics (NCHS)

to appropriately revise and update the current diagnostic coding system. As long as there is a need to measure and quantify the work of physicians and surgeons, there will be a need for a coding system to enable that, and the ACS is in the forefront of making sure that the system achieves all of its desired objectives.

Procedure Codes ICD-10-PCS

There has always been a procedure coding system within the ICD framework, but prior to ICD-10, it has basically described procedures the same way as physicians do. Almost all physician work is described by a coding system named the Current Procedural Terminology (CPT) which was developed by and for physicians and is owned by the American Medical Association. In keeping with its physician-driven organization, it is largely organized along specialty grounds, so that procedures performed by similar physicians and surgeons tend to be grouped together.

The ICD-10-PCS system, on the other hand, was designed from scratch and is not necessarily based on the specialty of the physician or surgeon performing the procedure. The system was designed to enable more rapid and complete data collection, so that similar types of procedures could be collected no matter what part of the body they were performed on or what specialty the physician was performing them.

At the very beginning of this discussion, it is important to remember that this system will only apply to procedures done on *hospital inpatients*. These codes will not apply to procedures done in the hospital outpatient departments, ambulatory surgery centers, physician offices, and other nonhospital settings. In addition physicians will not use these codes to report their work. Medicare and all private payers require physicians to report their work using CPT codes just as they have always done.

So why is it important for a surgeon to understand ICD-10-PCS? If you do not do any hospital inpatient procedures or care for hospital inpatients at all, then these codes will not apply to you, and you can skip the rest of this chapter right now.

On the other hand, if you do procedures on hospital inpatients or deliver care to patients in the hospital, then a basic understanding of this coding system will be important to you. Although you will not be selecting the codes yourself, it is important that you understand how the coders select the codes, and understanding that will make your life easier and likely make your career more successful.

Organization of ICD-10-PCS

Unlike the ICD-10-CM diagnosis codes, all ICD 10-PCS procedure codes have seven characters. Each character has a specific meaning, and the positioning is of *critical* importance. You can think of the system as a seven dimensional matrix, with seven variables; each of which has a limited number of possible values. Since seven dimensional matrices are not readily displayed on either a computer screen or a paper book, the system has created a series of two dimensional tables that are arranged in an organized sequence. Characters used include the numerals 0 through 9 and the letters A through Z excluding I and O, since these would be too easily confused with numerals.

First Character Section of the Coding System

The overall sections of the coding system are listed below. The great majority of procedure codes surgeons will deal with are in the very first section: Medical and Surgical.

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

H Substance Abuse Treatment
X New Technology

The remainder of this chapter will only deal with Section 0, Medical and Surgical.

Second Character: Body System

The second character defines the body system that is the target of the procedure.

The ICD-10-PCS body systems are:

00 Central Nervous System
01 Peripheral Nervous System
02 Heart and Great Vessels
03 Upper Arteries
04 Lower Arteries
05 Upper Veins
06 Lower Veins
07 Lymphatic and Hemic Systems
08 Eye
09 Ear, Nose, Sinus
0B Respiratory System
0C Mouth and Throat
0D Gastrointestinal System
0F Hepatobiliary System and Pancreas
0G Endocrine System
0H Skin and Breast
0J Subcutaneous Tissue and Fascia
0K Muscles
0L Tendons
0M Bursae and Ligaments
0N Head and Facial Bones
0P Upper Bones
0Q Lower Bones
0R Upper Joints
0S Lower Joints
0T Urinary System
0U Female Reproductive System
0V Male Reproductive System
0W Anatomical Regions, General
0X Anatomical Regions, Upper Extremities
0Y Anatomical Regions, Lower Extremities

Note that all of them begin with the character 0, since they are part of the Medical and Surgical section. The dividing line between upper and lower systems is the diaphragm. System 2, upper arteries, contains all arteries located above the

diaphragm, while those below the diaphragm are in system 3. If the specific structure operated is not included, the convention is to go back to the next most proximal structure. For example, there is no PCS body part value for a digital nerve, so the repair of a severed digital nerve would be coded to the more proximal nerve, median or ulnar, as appropriate. The last three systems include anatomic regions where the procedure was performed on a region rather that a specific body part, i.e., drainage of a leg abscess.

Third Character: Root Operation

The root operation defines what was actually done during the procedure, including the goal or anticipated outcome. This is where the ICD-10-PCS system differs significantly from the CPT procedure coding system where physicians are more familiar. Root operations are defined independently of the organ or structure involved and independent of the specialty of the physician performing the procedure. Some of them are extremely limited and straightforward, while others are wide ranging and involve a great range of dissimilar types of procedures. They are best understood by breaking them down into groups of related root operations.

Here are all 31 root operations, along with their official definitions.

Root Operations That Take Out Some or All of a Body Part

Excision—Root Operation B Cutting out or off, without replacement, a portion of a body part (e.g., partial nephrectomy, liver biopsy, breast lumpectomy). Note that, as long as the body part is not completely removed, the coding is the same regardless of how much is removed. If more than one body part is removed, all are coded separately. Procedures done to reach the site of the operation, anastomoses, and closure are all included in the primary procedure and are not coded separately. Procedures in this root operation always involve some type of cutting, but the type of cutting instrument or energy source does not matter. Operations that vaporize or destroy tissue are coded as destruction, not excision, see below. If the purpose of the procedure is mainly diagnostic, a diagnostic qualifier (character 7) would apply.

Resection—Root Operation T Cutting out or off, without replacement, all of a body part (e.g., R. total nephrectomy, R. lower lobectomy, R. hemicolectomy). Note that PCS defines what a body part is specifically. Thus, the right colon, R. lower lobe of the lung, and R. kidney in the examples above are specific body parts that have specific body part values, see below under fourth character. Lymph nodes are a special case, as the body part is a group or region of nodes,

for example, R. axillary nodes. A node biopsy or excision would therefore be coded as an excision, where an axillary dissection would be coded as a resection.

Detachment—Root Operation 6 Cutting off all or part of an upper or lower extremity (e.g., below-knee amputation). Detachment is the PCS word for amputation. All of these operations are only found in the body systems X (upper extremities) or Y (lower extremities), since amputations involve all tissue layers, not just a single bone or joint. Some have specific qualifiers (character 7) to define a more specific level or area.

Destruction—Root Operation 5 Physical eradication of all or a portion of a body part by the direct use of energy, force, or a destructive agent. None of the body part is taken out (e.g., fulguration of rectal polyp, cautery of skin lesion, pleurodesis, radiofrequency ablation of a lesion anywhere in the body). Note by definition, there is no specimen in a destruction procedure; if a biopsy is done, it would be coded separately as an excision with a diagnostic qualifier.

Extraction—Root Operation B Pulling or stripping out or off all or a portion of a body part by the use of force (e.g., D & C, vein stripping). If the purpose of the procedure is diagnostic, then the diagnostic qualifier applies.

Root Operations That Take Out Solids/Fluids/Gases from a Body Part

Drainage—Root Operation 9 Taking or letting out fluids and/or gases from a body part (e.g, paracentesis, abscess drainage, cyst aspiration, nephrostomy placement).

Extirpation—Root Operation C
Taking or cutting out solid matter from a body part.

Explanation: The solid matter may be an abnormal byproduct of a biological function or a foreign body; it may be imbedded in a body part or in the lumen of a tubular body part. The solid matter may or may not have been previously broken into pieces.

Examples: thrombectomy, endarterectomy, and choledocholithotomy. This is another example of PCS employing a term not previously used by physicians to describe these types of procedures. These include a wide range of procedures where alteration of the body part itself is not the primary focus of the procedure. Instead, the objective is to remove solid material such as a foreign body, thrombus, or calculus from the body part.

Fragmentation—Root operation F Breaking solid matter in a body part into pieces

The physical force (e.g., manual, ultrasonic) is applied directly or indirectly and is used to break the solid matter into pieces. The solid matter may be an abnormal byproduct of a biological function or a foreign body. In contrast to extirpation, the pieces of solid matter are not taken out (e.g., extracorporeal shockwave lithotripsy, transurethral lithotripsy). This root operation includes both direct and extracorporeal fragmentation procedures.

Root Operations That Involve Cutting or Separation Only

Division—Root Operation 8 Cutting into a body part without draining fluids and/or gases from the body part in order to separate or transect that body part. The body part is then separated into two or more parts (e.g., tenotomy, myotomy, sphincterotomy). The purpose of the procedure is to divide the body part.

Release—Root Operation N Freeing a body part from an abnormal physical constraint by cutting or by use of force. Some of the restraining tissue may be taken out but none of the body part itself is taken out (e.g., lysis of adhesions, carpal tunnel release). Release and division are similar; the key difference is that division involves cutting the body part itself, while release involves cutting around the body part.

Root Operations That Put In/Put Back or Move Some/All of a Body Part

Transplantation—Root operation Y 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. This is quite clear and in accordance with usual medical terminology. Note that it specifies living tissue, thereby excluding preserved tissue such as porcine heart valves.

Reattachment—Root operation M Putting back in or on all or a portion of a separated body part to its normal location or other suitable location. While this obviously would apply to severed extremity part, it may also apply to internal organs disrupted from their normal location. Neurologic and/or vascular connection may or may not be established.

Transfer—Root operation X 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. The body part moved retains its original vascular supply (e.g., pedicle flap). By convention, the body system value (muscle, subcutaneous, or skin) is the deepest layer of the flap.

Reposition—Root operation S Moving to its normal location or other suitable location all or a portion of a body part (e.g., undescended testicle, reduction of a fracture).

Root Operations That Alter the Diameter/Route of a Tubular Body Part

Restriction—Root operation V Partially closing an orifice or the lumen of a tubular body part (e.g., fundoplication, clipping of a cerebral aneurysm).

Occlusion—Root operation L Completely closing an orifice or the lumen of a tubular body part (e.g., tubal ligation, PDA ligation, embolization). Note the difference between partial occlusion (restriction) and complete occlusion.

Dilation—Root Operation 7 Expanding an orifice or the lumen of a tubular body part may be either from within or outside of the body part.

Bypass—Root Operation 1 Altering the route of passage of the contents of a tubular body part. This may involve rerouting contents of a body part to a downstream area of the normal route, to a similar route and body part, or to an abnormal route and dissimilar body part. Includes one or more anastomoses, with or without the use of a device (e.g., coronary artery bypass, gastric bypass, colostomy formation). (In PCS, a colocutaneous bypass! An example of how PCS can conceptualize procedures very differently from physicians.) The body part (character 4) is the structure where the bypass originates, and the qualifier (character 7) is the structure when the bypass ends.

Root Operations That Always Involve a Device

Insertion—Root operation H Putting in a non-biological device that monitors, assists, performs, or prevents a physiological function but does not physically take the place of a body part (e.g., insertion of arterial line, PA catheter).

Replacement—Root operation R 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. The body part may have been taken out or replaced, or may be taken out, physically eradicated, or rendered nonfunctional during the replacement procedure. A removal procedure is coded in addition for taking out the device used in a previous replacement procedure. Excision or resection is generally not coded separately for removal of the native tissue being replaced, as it is considered integral to the procedure (e.g., total joint replacement, mitral valve replacement, free skin graft).

Supplement—Root Operation U Putting in or on biologic or synthetic material that physically reinforces and/or augments the function a portion of a body part. The biological material is nonliving, or is living and from the same individual (If it was from a different individual, it would be a transplant!). The body part may have been previously replaced, and the supplement procedure is performed to physically reinforce and/or augment the function of the replaced body part (e.g., hernia repair with mesh, new acetabular liner in a patient with a previous hip replacement, omental patch of perforated duodenal ulcer. Supplement highlights the importance of the PCS definition of a device. As surgeons, we tend to think of it as something in a box, on a shelf, whereas PCS has a much broader definition, which also includes placement of a patient's own tissue to reinforce another body part.

Change—Root Operation 2 Taking out or off a device from a body part and putting back an identical or similar device in or on the same body part without cutting or puncturing the skin or a mucous membrane (e.g., urinary catheter change, gastrostomy tube change). Note: All Change procedures are coded using the approach External.

Removal—Root Operation P
Definition: Taking out or off a device from a body part (e.g.,port removal, extubation). May be used in combination with replacement, if a device is removed and replaced.

Root Operations Involving Examination Only

Inspection—Root Operation J Visually or manually exploring a body part. Inspection may be direct, or via instrumentation (e.g., thoracoscopy, exploratory laparotomy).

Map—Root Operation K Locating the route of passage of electrical impulses and/or locating functional areas in a body part. Applicable only to the cardiac conduction mechanism and the central nervous system. Examples: Cardiac mapping, cortical mapping.

Root Operations That Define Other Repairs

Control—Root Operation 3 Stopping, or attempting to stop post procedural bleeding. Note that control *only* applies to post procedural bleeding, not other types of bleeding. The site of the bleeding is coded as an anatomical region and not to a specific body part.

Repair—Root Operation Q Restoring, to the extent possible, a body part to its normal anatomic structure and function. Note: repair is used only when the method

to accomplish the repair is not one of the other root operations. It is to be used only when there is no other suitable choice (e.g., suture of laceration, suture of GSW of the small bowel).

Root Operations That Define Other Objectives

Fusion—Root Operation G Joining together portions of an articular body part rendering the articular body part immobile. The body part (joint) is joined together by fixation device, bone graft, or other means.

Alteration—Root Operation 0 Modifying the natural anatomic structure of a body part without affecting the function of the body part. Principal purpose is to improve appearance. This would include all cosmetic procedures. Note: this puts the coding system in the peculiar position of potentially coding the same procedure differently depending on the indication. Given that very few cosmetic procedures are done as inpatient procedures, this anomaly may not be too significant, in reality.

Creation—Root Operation 4 Making a new genital structure that does not physically take the place of a body part. Used only for sex change operations (e.g., creation of vagina in a male, creation of penis in a female).

Fourth Character Body Part
Fifth Character Approach
Sixth Character Device
Seventh Character Qualifier

These are best considered together, as they are depicted together in the ICD-10-PCS tables. Basically these characters answer the questions where, how, and with what is the procedure performed. The fourth character names the body part operated on and is generally pretty clear. The body parts are different in different tables, depending on the system and the type of procedure performed.

The approach describes how the operator gets to that body part. In contrast to the almost limitless number of body parts, there are only eight approach values.

The approach values in ICD-10-PCS are:

Open—Approach Value 0 This approach always requires an incision, which may be in the skin, or a mucous membrane, or other epithelial service. By convention laparoscopic-assisted procedures are classified as open.

Percutaneous—Approach Value 3 This approach requires an incision by puncture or minor incision. It also specifies that nonvisualizing instruments are used, to differentiate it from endoscopic procedures. Percutaneous liver biopsy, for example, may also include indwelling devices, such as a T-tube, or nephrostomy tube.

Percutaneous Endoscopic—Approach Value 4 Defined as entry by a puncture or minor incision of instrumentation through the skin or mucous membranes and any other body layers necessary to reach the site of the procedure. The incision is made through the skin, or mucous membrane, with visualization instrumentation being used to reach the operative site (e.g., laparoscopic procedures).

Via Natural or Artificial Opening Endoscopic—Approach Value 8 In contrast this approach uses the endoscopic visualizing equipment place to a natural or artificial opening. Examples would include hysteroscopy and colonoscopy procedures.

Via Natural or Artificial Opening—Approach Value 7 Instruments are placed into the body to a natural or artificial opening *without* visualization. Examples might include placement of a Foley catheter or a nasogastric tube.

Via Natural or Artificial Opening with Percutaneous Endoscopic Assistance—Approach Value F The procedure is performed via a natural or artificial opening, but the visualization is performed with instruments placed percutaneously (e.g., laparoscopic-assisted vaginal hysterectomy).

External Approach—Approach Value X The procedure is either performed directly on the skin, or mucous membrane, or indirectly by application of external force through the skin or mucous membranes. An example of this would be closed reduction of a fracture. This would also apply to procedures that are performed within an orifice on structures that are visible without the aid of any instrumentation. An example of this would be tooth extraction. Note: all Change procedures are coded using the approach External.

Devices (Sixth Character) Types of devices are outlined in each separate procedure table. It is important to remember that devices can be artificial or biologic, living or nonliving, temporary or permanent. To qualify as a device, it must remain after the procedure, although it may be removed later, for example, central line or Foley catheter. Devices may take the place of a body part (total joint), alter the function of a body part (pacemaker), or deliver treatment on their own (contraceptive implant). The great majority of procedures will have no device, which is indicated as a Z in the Device character 6. Confusingly, the place holder in ICD-10-CM is X; in ICD-10-PCS, it is Z. Sutures, staples, clips, etc. are not considered devices in the PCS context. Generally, drains are not considered devices unless the whole purpose of the procedure was drainage.

Qualifier (7th Character) Used to provide additional information in a few specified procedure types. For example, in the root operation bypass, the body part is the proximal organ (bypassed from), the qualifier is the distal organ (bypassed to).

In the great majority of procedures, the qualifier will be Z (no qualifier). *All* ICD-10-PCS codes will have seven characters.

Probably the most common qualifier is X, which means diagnostic. This is used when the *primary* purpose of the procedure is diagnostic, i.e., a biopsy. Obviously, every procedure with a specimen is to some extent diagnostic, but this qualifier is used to separate the procedures whose purpose is diagnostic only, not therapeutic.

PCS Charts

Here is an example of a typical PCS chart, in this case Hepatobiliary resection *0FT*

Section	*0*	Medical and surgical
Body system	*F*	Hepatobiliary system and pancreas
Root operation	*T*	Resection: cutting out or off, without replacement, all of a body part

Body part	Approach	Device	Qualifier
0 Liver *1* Liver, right lobe *2* Liver, left lobe *4* Gallbladder *G* Pancreas	*0* Open *4* Percutaneous endoscopic	*Z* No Device	*Z* No Qualifier
5 Hepatic duct, right *6* Hepatic duct, left *8* Cystic duct *9* Common bile duct *C* Ampulla of Vater *D* Pancreatic duct *F* Pancreatic duct, Accessory	*0* Open *4* Percutaneous endoscopic *7* Via natural or artificial opening *8* Via natural or artificial opening endoscopic	*Z* No Device	*Z* No Qualifier

Therefore, a laparoscopic cholecystectomy would be: *0FT44ZZ*.

Open cholecystectomy differs by only the approach character: *0FT40ZZ*.

Although this table is all for resection, there are different choices of approach for some body parts. Not every type of procedure is included for every body part, in an attempt to streamline the coding system and avoid impossible combinations.

As a Second Example

Lower extremity bypass charts are even more elaborate:

041 Section	*0*	Medical and surgical
Body system	*4*	Lower arteries
Operation	*1*	Bypass: altering the route of passage of the contents of a tubular body part

Body Part	Approach	Device	Qualifier
0 Abdominal aorta *C* Common iliac artery, right *D* Common iliac artery, left	*0* Open *4* Percutaneous endoscopic	*9* Autologous venous tissue *A* Autologous arterial tissue *J* Synthetic substitute *K* Nonautologous tissue substitute *Z* No device	*0* Abdominal aorta *1* Celiac artery *2* Mesenteric artery *3* Renal artery, right *4* Renal artery, left *5* Renal artery, bilateral *6* Common iliac artery, right *7* Common iliac artery, left *8* Common iliac arteries, bilateral *9* Internal iliac artery, right *B* Internal iliac artery, left *C* Internal iliac arteries, bilateral *D* External iliac artery, right *F* External iliac artery, left *G* External iliac arteries, bilateral *H* Femoral artery, right *J* Femoral artery, left *K* Femoral arteries, bilateral *Q* Lower extremity artery *R* Lower artery
4 Splenic artery	*0* Open *4* Percutaneous endoscopic	*9* Autologous venous tissue *A* Autologous arterial tissue *J* Synthetic substitute *K* Nonautologous tissue substitute *Z* No device	*3* Renal artery, right *4* Renal artery, left *5* Renal artery, bilateral

Body Part	Approach	Device	Qualifier
E Internal iliac artery, right *F* Internal iliac artery, left *H* External iliac artery, right *J* External iliac artery, left	*0* Open *4* Percutaneous endoscopic	*9* Autologous venous tissue *A* Autologous arterial tissue *J* Synthetic substitute *K* Nonautologous tissue substitute *Z* No device	*9* Internal iliac artery, right *B* Internal iliac artery, left *C* Internal iliac arteries, bilateral *D* External iliac artery, right *F* External iliac artery, left *G* External iliac arteries, bilateral *H* Femoral artery, right *J* Femoral artery, left *K* Femoral arteries, bilateral *P* Foot artery *Q* Lower extremity artery
K Femoral artery, right *L* Femoral artery, left	*0* Open *4* Percutaneous endoscopic	*9* Autologous venous tissue *A* Autologous arterial tissue *J* Synthetic substitute *K* Nonautologous tissue substitute *Z* No device	*H* Femoral artery, right *J* Femoral artery, left *K* Femoral arteries, bilateral *L* Popliteal artery *M* Peroneal artery *N* Posterior tibial artery *P* Foot artery *Q* Lower extremity artery *S* Lower extremity vein
M Popliteal artery, right *N* Popliteal artery, left	*0* Open *4* Percutaneous endoscopic	*9* Autologous venous tissue *A* Autologous arterial tissue *J* Synthetic substitute *K* Nonautologous tissue substitute *Z* No device	*L* Popliteal artery *M* Peroneal artery *P* Foot artery *Q* Lower extremity artery *S* Lower extremity vein

Therefore, an open right femorotibial in-situ bypass would be coded *041K09N*.

041 Lower arteries
K Right femoral artery
0 Open
9 Autologous venous tissue
N Posterior tibial artery

Note: No distinction between reversed and in-situ vein graft (at least for now!)

So Why Does This Matter to Me?

Physicians will not directly use ICD-10-PCS codes, which are assigned by coders for *inpatient* procedures. However, it will be in the surgeon's best interest to facilitate the work of the codes by understanding the challenges they face. They will have to translate medical terminology into ICD-10-PCS terminology, and I hope this introduction has given you an inkling of how difficult this can be. What is a Whipple procedure to you may be an excision of the stomach, resection of the duodenum, excision of the pancreas, resection of the gall bladder, excision of the bile duct, and possible even more procedures. It will therefore be more important than ever to clearly document what is done in the Operative Note, so the coder can understand it correctly, and therefore code it correctly. Specifying exactly what is and is not taken out is a good start. In surgery, we honor our forebears by innumerable eponyms, but we will need to get used to being clear. Otherwise, the coders will have no choice but to query the surgeon to decipher the procedure. It is not necessary for a surgeon to use ICD-10-PCS codes, but being able to explain what you did in a way the coder can understand and code accurately will benefit both surgeons and coders. It matters a great deal to your hospital. Most hospital admissions, not just Medicare, are paid on a DRG basis today, and for surgical patients, the procedure defines the DRG. If the procedure is coded incorrectly, then the DRG will also likely be incorrect. In addition, many quality registries are tied to these procedure codes, so if you procedures are not coded accurately, you may have an incorrect quality profile, which are increasingly becoming a de facto rating system. So clear and accurate documentation will give you the best and most accurate data possible.

Suggested Reading

1. International Diseases Classification 10th revision, Clinical Modification (ICD-10-CM), World Health Organization. American Medical Association; 2016 edition.
2. International Diseases Classification 10th revision, Procedure Coding System (ICD-10-PCS), World Health Organization. American Medical Association; 2016 edition.

Chapter 3
The CPT Code

Austin Ward and J. Scott Roth

History of the CPT Code

The Common Procedural Terminology (CPT) code set was created by the American Medical Association (AMA) in 1966 as a means to standardize procedural coding for record keeping, billing, and insurance claims. It has evolved extensively since that time and is now the most commonly used method of coding for procedures and services provided by healthcare providers. The evolution began with the publication of the second edition of the CPT code set in 1970 that broadened its inclusion of diagnostic and therapeutic procedures past the original version which mainly included only surgical procedures [1]. In 1983, the Centers for Medicaid and Medicare Services (CMS) adopted the CPT code set as part of their Healthcare Common Procedure Coding System (HCPCS). The CPT coding set has been designated as level 1 of the HCPCS, while level 2 represents codes internally developed by the CMS to address services and products not covered by the CPT code set [2]. CMS first required state Medicaid programs to use the CPT code system in 1986. The Health Insurance Portability and Accountability Act (HIPAA) of 1996 designated the HCPCS and therefore CPT codes as the standard for electronic transmission of healthcare information [3].

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Current Status of CPT Code

Today, the CPT code set is used as the primary nomenclature for procedures and services provided by healthcare providers. CPT codes are used to report healthcare information to both public (CMS) and private health insurance programs. As part of the HIPAA, a national standardized coding system is required when communicating healthcare information. This is accomplished by the CPT code set, which includes three categories.

Category 1 Codes

Category 1 codes are the most commonly utilized codes and are used to identify certain procedures or services preformed. Category 1 codes are identified as a five-character numeric code, a descriptor consistent with current medical practice. Each category 1 code has a relative value assigned to it by CMS through the resource-based relative value scale or RBRVS, which is utilized commonly in determining payment for services rendered.

CPT category 1 codes are used by CMS as the primary code set for procedures and services in their HCPCS system. Category 1 CPT codes are replicated without change as the level 1 HCPCS codes used by CMS. CMS developed HCPCS level 2 codes to address items not addressed by the CPT code set such as medical equipment, supplies, and prosthetics when used outside of a hospital or physician's office [2].

The Centers for Disease Control (CDC) developed a coding system for vaccines based upon vaccine type (CVX) and vaccine manufacturer (MVX). Together these codes are used to track immunization administration of participating providers through the immunization information system (IIS). The IIS is maintained by the CDC, allowing for surveillance of immunization programs at the population level and immunization histories at the point of care level. In order to allow billing of vaccinations, CVX codes have a corresponding category 1 CPT vaccine code. In 2006, the CPT Editorial Panel approved the addition of category 1 vaccine codes. These codes are intended for vaccination procedures not approved by the FDA. The vaccine codes are denoted by a special insignia until the time of FDA approval. Category 1 vaccine codes are updated and published every 6 months [4].

Category 2 Codes

Category 2 codes are codes meant for tracking performance data and quality assurance. These codes allow easier collection of quality control metrics and facilitate communication of data between healthcare providers and health plans.

Each category 2 code is made of five characters with the last character being F. Category 2 codes are developed based on evidence-based metrics for measurement of care. The Performance Measures Advisory Group (PMAG) assists the CPT Editorial Panel in developing category 2 codes. While the CPT Editorial Panel ultimately makes the decisions regarding implementation of category 2 codes, PMAG is responsible for initially evaluating and recommending these codes. The PMAG is made up of physician advisors from the Agency for Healthcare Research and Quality (AHRQ), the Centers for Medicare and Medicaid Services (CMS), the Joint Commission, the National Committee for Quality Assurance (NCQA), and a consortium appointed by the AMA Board of Trustees. These aforementioned organizations develop quality measures for healthcare that are then suggested as measures to be developed into category 2 CPT codes. After approval by the PMAG committee, the CPT Editorial Panel ultimately approves and implements these codes. Once approved, category 2 codes are posted to the AMA website and remain in effect for 3 months, with the process occurring four times each year. Because the category 2 CPT code set changes frequently, reviewing the code set on the website of the AMA is the most accurate method to stay abreast of changes in the category 2 codes.

Category 3 Codes

Category 3 codes are temporary codes that are used for tracking new or emerging technologies, services, or procedures. These codes are meant for data collection during the period of time in which the utility of a new procedure of service is evaluated. This often takes place during or just after the FDA approval process. Each category 3 code can be identified by a five-character code with the last character being *T*. Category 3 codes are not assigned a relative value by CMS. While the CPT Editorial Panel approves category 3 codes, they are released twice per year on January 1st and July 1st. After 5 years of use, category 3 codes may be archived and inactivated if not transferred to category 1 status. However, in some situations, category 3 codes may remain active beyond the 5-year timeline.

CPT code categories			
	Nomenclature example	Release times	Description
Category 1	35556	Annually January 1st	Used to describe current procedure or service performed-the most common category of code. EX. 35556 – fem popliteal bypass with vein
Category 1 vaccine	90632	Semiannually January 1st and July 1st	Used to describe procedure of vaccination with certain vaccine EX-90362 – hepatitis A adult vaccine

CPT code categories			
	Nomenclature example	Release times	Description
Category 2	2000F	Four times per year every 3 months	Used to describe or track performance and quality measure. EX. 2000F – measurement of BP in pt with CKD
Category 3	0397T	Semiannually January 1st and July 1st	Used to track new/emerging technologies or procedures. Temporary codes. EX. 0397T – ERCP with optical endomicroscopy

CPT Modifiers

The AMA developed CPT modifiers to indicate that a service or procedure was altered in some manner. Level 1 modifiers are two-digit numeric codes that modify CPT codes. Level 2 modifiers are two-digit alphanumeric codes published and maintained by CMS that address changes not covered by level 1 modifiers. Modifiers explain changes from the normal circumstances surrounding a procedure or service without changing its definition. Each modifier is always reported in conjunction with a CPT or HCPCS code. Each modifier has its own definition and requirements of documentation. Some modifiers are associated with changes in reimbursement from payers, while others add information or description to the coding without affecting payment. Payment changes are dependent on the third-party payer. Some examples of when modifiers would be used with brief definitions are as follows [5]:

- Modifier P4 – indicates the ASA class, indicating physical condition of patient at time of operation
- Modifier 22 – increased procedural complexity, time, or difficulty.
- Modifier 50 – bilateral procedures.
- Modifier 51 – multiple procedures performed.
- Modifier 52 – reduced services, canceled or eliminated procedure.
- Modifier 53 – procedure was discontinued prior to completion.
- Modifier 62 – used when two surgeons act as co-surgeons during an operation.

CPT Panel

The AMA's CPT Editorial Panel is responsible for maintaining the CPT code set with support from the CPT Advisory Committee staff support. With assistance from the CPT staff, the advisory committees make recommendations to the editorial panel with regard to addition, deletion, and changes to the current code set.

The panel meets three times a year with approved addition, deletions, and changes to the code set formally implemented at the beginning of the calendar year following the approval (i.e., codes approved during meetings in 2015 will be implemented on January 1, 2017).

The editorial panel is comprised of 17 members. Seven panel seats are designated by various healthcare, insurance, and governmental agencies. The AMA Board of Trustees nominates the remaining ten seats. Panel members may serve two 4-year terms. The CPT Editorial Panel's executive committee includes five members of the CPT Editorial Panel including the chairman, the vice chairman, and three panel members at large selected by the panel.

National medical societies that are represented on the AMA House of Delegates and organizations of the AMA Health Care Professionals Advisory Committee (HCPAC) select representative physicians to serve on the CPT Advisory Committee. The primary objective of the CPT Advisory Committee is to serve as an expert resource to the CPT Editorial Panel. They review prospective new CPT codes, suggest changes to CPT codes, educate and promote the use of the CPT code set, and provide information to both the editorial panel and CPT staff regarding their expertise.

CPT Process/Application

Category 1 and 3 Application

Any person can request an addition, change, or deletion of CPT codes. The process for category 1 and 3 codes is similar. The process begins with online submission of a request. The application is downloaded from the AMA website at the following address:https://download.ama-assn.org/resources/doc/cpt/x-pub/cpt-code-change-request.docx

Following submission, the code set is reviewed by the CPT staff to ensure all application requirements have been met and determine whether the application describes either procedures not represented in the current CPT code or a procedure previously addressed by the panel. If the proposal has been addressed before or is addressed by a current code, the staff will notify the submitting party in writing of this, and no further action will be taken. If the issue is new and not currently addressed, the proposal will be passed to the appropriate CPT Advisory Committee members who are able to comment, although proposals are then assigned to the editorial committee without any required support from a representative of the advisory committee. Code change applications without support from the advisory committee will prompt notification to the applicant 14 days prior to the meeting of the editorial panel. Applicants may withdraw the application up until the time of discussion at the editorial meeting. CPT staff

Requirements for CPT Code Application	
Common Requirements for CPT I and III Codes	
The proposed descriptor is unique, well-defined, and describes procedure or service which is distinguished from existing procedures or services in CPT.	
The descriptor structure, guidelines and instructions are consistent with current Editorial Panel standards for maintenance of code set.	
The proposed descriptor is neither fragmentation of an existing procedure or service nor currently reportable as complete service by one or more existing codes.	
The descriptor does not propose a means to report extraordinary circumstances related to the performance of a procedure or service already described in the code set.	
The structure and content of the proposed code descriptor accurately reflects the procedure or service as it is typically performed.	
Category I Code Requirements	**Category III Code Requirements**
All required devices and drugs necessary for performance of procedure or service must be FDA approved	The procedure or service is currently or recently performed in humans **AND**
The procedure or service is performed by many physicians or healthcare professionals across the US	The application is supported by one CPT or HCPAC advisor who would use procedure or service **OR**
The procedure or service is performed with frequency consistent with intended clinical use	The clinical efficacy is supported by peer reviewed literature in English **OR**
The procedure or service is consistent with current medical practice	There is an IRB approved protocol or clinical trial or other evidence of efficacy and clinical utilization
The clinical efficacy is documented-in-literature meeting CPT application requirements	
From: AMA. Applying for CPT Codes AMA Website: American Medical Association; 2015 [cited 2015]. Available from: http://www.ama-assn.org/ama/pub/physician-resources/solutions-managing-your-practice/coding-billing-insurance/cpt/applying-cpt-codes.page?	

Fig. 3.1 General requirements and category-specific requirements

prepares each new proposal to include application and information, advisory committee comments, and a ballot for decision.

Once reviewed by the editorial committee, the panel can take one of many actions: make proposed change, modify the code change proposal, request work group review of issue, request additional information on matter from the applicant, or reject the proposal. The editorial panel performs initial presentation and discussion of code change approvals with opportunities for further comments from the advisory committee members. Code change applications are frequently modified during this process. Modifications can range from nuances in the code descriptor to a change in code designation between categories 1 and 3. The panel then releases approved code changes which are published on AMA website and effective in next code set. If additional information is requested, the additional information is collected, and the proposal is reviewed again by the advisory committee, generally at the following editorial panel meeting. If rejected, then the applicant is notified by the CPT staff. All decisions made by the editorial panel are published online at http://www.ama-assn.org/go/panel-actions [6] (Fig. 3.1).

Category 1 Literature Requirements

As part of the application process, applicants must submit literature to support their application. The AMA has developed defined requirements for supporting literature. These requirements are broken into four categories based on new vs. existing technology and typical utilization vs. limited or humanitarian. Very few submitted applications will be considered under the limited or humanitarian category. New applications for category 1 codes under the typical utilization for new technology must meet the following requirements:

- Must have five peer-reviewed publications.
- Three of those peer-reviewed publications must be US based.
- The technique or device must be studied in at least two different populations.
- Must have minimum of level 2a, systematic review of cohort studies, or be higher in at least one of the publications.

If a typical application is submitted but involves an existing code, then the level of evidence requirement is decreased to level 3a/3b, case-control series or systematic review of case-control series. The advisory committee reviewing applications for category 1 codes will use the above criteria as a guide for evidence basis when making recommendations for changes or additions to the code set [7] (Fig. 3.2).

Category 2 Code Application and Process

Category 2 codes are proposed by certain national groups including the following: NCQA, AHRQ, Joint Commission, and the consortium. Individuals wishing to make category 2 changes must make requests through one of the above agencies. New proposals are reviewed by the CPT staff just as category 1 and 3 codes but then are sent to the PMAG for review. The PMAG then decides based on evidence if the code is necessary or not. Proposals must receive a two-thirds vote approval by the PMAG. If deemed necessary, then the proposal is sent to the advisory editorial committee for approval with PMAG recommendations. Proposals then go through the same process as category 1 and 3 codes.

Reconsideration of Rejected Proposal

When the editorial panel decides to reject a proposal, the applicant or interested party can request reconsideration. This request must include the original proposal, reason for reconsideration, and supporting information for reconsideration. The CPT staff must receive request for reconsideration within 14 days of the

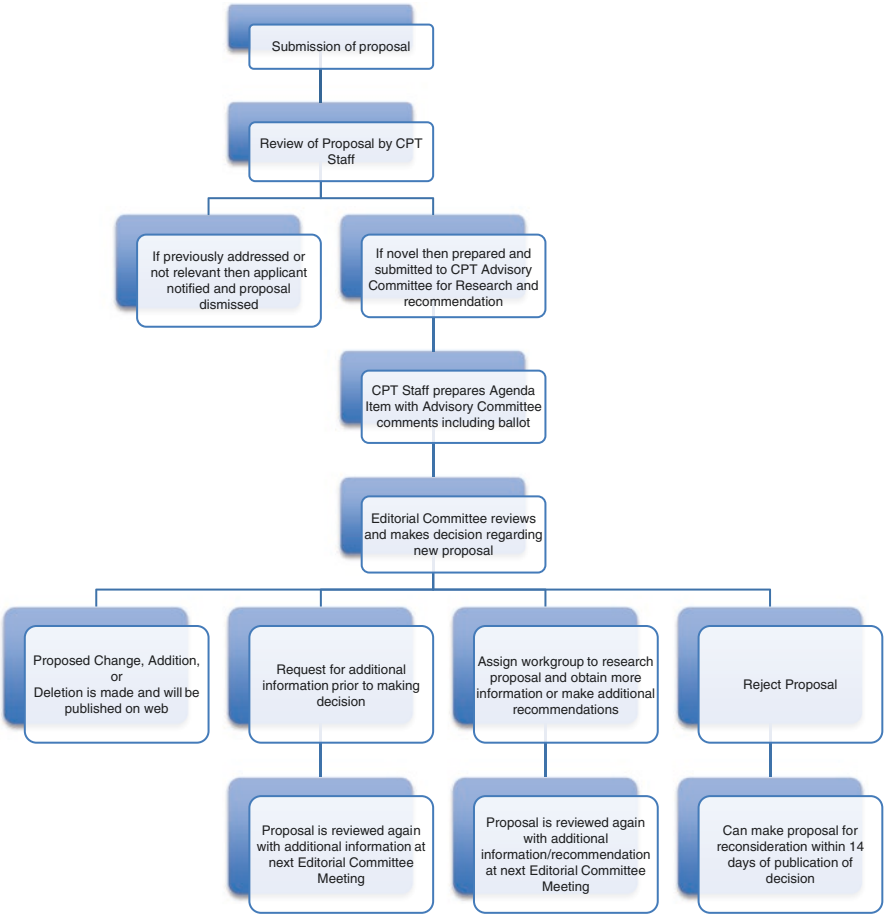

Fig. 3.2 Flowchart of application process

online publication of the original decision. The CPT Editorial Panel's executive committee then reviews requests for reconsideration. They then make the decision to either not reconsider or reconsider in which case the proposal is reconsidered by the whole editorial panel with the new information [1].

Clinical Examples of CPT Coding

Example 1

A 34-year-old male presents with a ventral hernia following laparotomy for trauma 2 years prior. On initial evaluation, he is found to have a midline hernia; it is easily reducible, and he has no signs/symptoms of obstruction. A surgeon takes patient to operating room and performs open ventral hernia repair with implantation of mesh.

CPT codes submitted for billing:

49560 Repair of initial ventral incisional hernia, reducible

49568 Insertion of mesh for open incisional hernia repair

If the same patient underwent operation for strangulated hernia and needed small bowel resection with hernia repair performed with inlay placement of mesh

CPT code submitted for billing:

44120 Enterectomy, resection of the small intestine; listed as separate procedure

49561-51 Repair of initial ventral incisional hernia, incarcerated or strangulated

49568 Insertion of mesh for open incisional hernia repair

In these examples the addition of CPT code 49568 does not require the use of a modifier as it is designated as an add-on code. Add-on codes are designated with a **"+"** in the CPT code and may be utilized only in conjunction with specified codes.

Note that in the second scenario, the lower value of the two codes (49561) is modified with the -51 modifier as multiple procedures performed at the same site and at the same setting.

Example 2

A 56-year-old male presents to the emergency department with acute onset of abdominal pain. Workup of patient reveals acute mesenteric ischemia. Patient is in new-onset atrial fibrillation. CTA was performed and it appears the source of ischemia is embolus to SMA. Decision is made to take patient to the operating room for definitive care. Patient has history prior sigmoid colon resection for cancer with radiation. Exploratory laparotomy results in small bowel resection and SMA embolectomy. The small bowel resection was very difficult because of dense adhesions and friable tissue from previous treatments.

CPT code submitted for billing:

34151-22 Embolectomy of the mesenteric vessel, modifier for increased procedural difficulty due to previous abdominal surgery and radiation

44120-51 Enterectomy, resection of the small intestine with primary anastomosis; modifier for additional procedure

The Current Procedural Terminology code is a complex system, which facilitates communication between providers, hospitals, and payers. Level 1 codes are the most commonly utilized codes for practicing physicians and adequately describe the majority of patient encounters and procedures. The CPT Editorial Panel of the AMA manages and oversees this complex code system with input from representatives from the majority of medical professional societies. In light of the continuous

evolution of medical technology, the CPT code requires frequent update and revision to adequately represent the work of physicians. While not entirely all inclusive, the CPT code successfully describes the overwhelming majority of procedures performed. Rare procedures without designated codes may be coded utilizing the unlisted procedure codes located within an anatomic region of the CPT manual. CPT codes are frequently utilized by hospitals and payers to quantify and define physician work. While CPT codes are often utilized for determining payment, the process by which the inherent work associated with an individual CPT code is performed through an entirely separate process, the Resource-Based Relative Value Scale Utilization Committee (RUC).

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Chapter 4
A Resource-Based Relative Value Scale (RBRVS) System

Charles D. Mabry and Jan Nagle

The Medicare Physician Fee Schedule (MPFS) is a resource-based relative value scale (RBRVS) that has been the basis for payment for the care of Medicare beneficiaries since its implementation on January 1, 1992. The MPFS is also used as the basis for payment schedules used by many commercial insurers. It is therefore very important for surgeons to understand the legislation that mandated an RBRVS system for payment and how the RBRVS system was developed, implemented, and maintained. It is also important to understand how resource-based relative values are currently determined and how the valuation process has been modified over time. This understanding will provide an insight into why physician payment is changing and what the future holds for physician reimbursement.

Legislation Mandating an RBRVS System

The development of the concepts and methodology underlying the MPFS began with the Congressional mandates contained in the Consolidated Omnibus Budget Reconciliation Act (COBRA) of 1985 (Public Law 99–272). Prior to the implementation of the MPFS, physicians submitted claims for payment to CMS, and payment was determined by the *usual*, *customary*, *and reasonable* (UCR) rate of prevailing charges in a geographic area for the same or similar services. Due to the progressive rise in payments for physicians' services across America, COBRA 1985 directed

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the Secretary of Health and Human Services to describe the factors to be used in determining if a reasonable charge is inherently reasonable and provide, in those cases where the reasonable charge is not inherently reasonable, for factors to be considered in establishing a reasonable charge that is realistic and equitable.

COBRA 1985 also directed the appointment of a Physician Payment Review Commission (PPRC) that would annually make recommendations to the Congress regarding adjustments to the reasonable charge levels for physicians' services and changes in the methodology for determining the rates of payment for physicians' services under Medicare Part B. In addition, the Secretary was directed to develop a relative value scale that established a numerical relationship among the various physicians' services for which payment may be made under Medicare Part B or State plans approved under title XIX (Medicaid) of the Act. The PPRC was tasked with advising and making recommendations to the Secretary concerning the development of this relative value scale.

In 1988, in its report to the Congress, the PPRC recommended that the UCR payment system should be replaced with a Medicare Fee Schedule based primarily on the resource costs incurred in an *efficient* medical practice [1]. Under the statutory mandates of COBRA 1985, OBRA 1986, and OBRA 1987, CMS submitted three reports to the Congress in October of 1989:

- Volume and intensity of physicians' services
- Relative value scales for physicians' services
- Implementation of a national fee schedule

Only 2 months after the submission of these reports, the 101st Congress delivered a major change to how Medicare would reimburse physicians and other providers by passage of OBRA 1989. This Act was signed into law (PL 101–239) by President George H. W. Bush in December 1989. Section 6102 of OBRA 1989 amended title XVIII of the Social Security Act by adding a new Section 1848, "Payment for Physicians' Services." The new section contained nine major elements. These elements became the legislative basis for development of an RBRVS.

1. Replacement of the reasonable charge payment mechanism with a new fee schedule for physicians' services
2. Development of national uniform relative values for all physicians' services with the relative value of each service equal to the sum of relative value units (RVUs) representing physician work, practice expenses net of malpractice expenses, and the cost of professional liability insurance (malpractice insurance)
3. Requirement for periodic review and adjustments in relative values no less often than every 5 years
4. Adjustment of nationally uniform relative values for each locality by a geographic adjustment factor (GAF)
5. Development of a conversion factor (CF), converting total RVUs into dollar payment amounts that must be budget neutral, so that had the fee schedule been applied during 1991, it would have resulted in the same level of aggregate payments as would be made under the reasonable charge system
6. Replacement of the maximum actual allowable charge (MAAC), which constrained the total amounts that nonparticipating physicians can charge Medicare beneficiaries for covered services, with a new limiting charge

7. Phase-in of the new fee schedule over 4 years, beginning in 1992, with the new rules fully effective in 1996
8. Establishment of volume performance standard rates of increase for physicians' services expenditures
9. A prohibition against payment differentials by specialty

Developing an RBRVS System

Relative value scales (RVS) were in use for many years before the implementation of the MPFS. The California Medical Committee on Fees developed an RVS, first published in 1956, that they named the California Relative Value Studies (CRVS). The values published were based on existing median charges of California physicians. The CRVS was updated periodically from 1957 through 1974 when the Federal Trade Commission decided that the studies might constitute a price-fixing scheme, and updates were no longer provided. The CRVS was not resource based nor were the scales that were developed by workers' compensation agencies in many states and many other payers that adopted their own scales based on the original California studies.

In the late 1970s, a team of researchers headed by William C. Hsiao, PhD of the Harvard School of Public Health, began to study the relationship of medical services and physician work, with the aim of determining the resources consumed in delivery of those services [2]. The general concept behind a *resource-based* fee scale is an economic theory that if fees for medical services are based upon the cost (resources) of providing those services and that if the fees are arranged in a relative fashion proportional to one another and the underlying cost of production, then medical decision-making will not be influenced by the price of medical services. Since this research originated at Harvard, the initial version of this methodology was often referred to as the "Harvard Resource-Based Relative Value Scale" or the "Harvard scale." The Harvard group performed their work in a series of four phases, based upon work contracts issued by CMS.

In Phase I (1986–1988), the Harvard group identified three components to the cost of providing care: physician work, practice expense (including professional liability insurance), and the amortized value of the opportunity costs of postgraduate specialty training [3]. Although the Harvard group calculated this opportunity cost due to delay in starting practice for specialty training, it is important to note that in its 1989 report to the Congress [4], the PPRC recommended that the opportunity cost *not* be used and the Congress chose to not include this opportunity cost as one of the major elements of Section 1848 of OBRA 1989, "Payment for Physicians' Services." However, *we should not forget* that Harvard found the costs of delayed practice due to increased *training* requirements ranged from 2.8 % for general internal medicine to 9 % for cardiothoracic surgeons [5].

The CMS contract for Phase I of the Harvard RBRVS study included (and paid for) research for 12 specialties. An additional six specialties were added with the aid of outside funding. An important element to the Harvard study and subsequent actions taken by CMS was the input Harvard and the PPRC received from the

American Medical Association who supplied technical assistance, as well as providing access to their physician database which was used as the source of physician participants for study surveys. In addition, Harvard had the help of a Technical Consulting Group (TCG) which was composed of 100 physicians nominated by national societies and chosen to represent a good mixture of geographic and academic/private practices.

The team also determined that physician work could be broken down into three components: preservice work, intraservice work, and post-service work. With minor variations over time, the following service period definitions have been used as guidelines to describe time elements of physician work that were considered in developing the RBRVS:

Preservice period. For surgical services, the preservice period includes physicians' services provided from the day before surgery until the operative procedure begins and may include the following elements: hospital admission work-up, preoperative evaluation (e.g., the procedural work-up; review of records; communicating with other professionals, patient, and family; and obtaining consent), and "other" preoperative work (e.g., dressing, scrubbing, and waiting before the operative procedure, preparing the patient and needed equipment for the operative procedure, positioning the patient, and non-skin-to-skin work performed in the operating room). Preservice work for surgical services does not include the consultation or evaluation at which the decision for surgery was made, distinct evaluation and management services provided in addition to the procedure, and/or mandated services. For nonsurgical services, such as evaluation and management (E/M) services, physician work during the preservice period includes preparing to see the patient, reviewing records, and communicating with other professionals.

Intraservice period. For surgical services, the intraservice period includes all "skin-to-skin" physician work that is a necessary part of the procedure. The time measurement for the intraservice work is from the start of the skin incision until the incision is closed. For nonsurgical services, such as E/M services, the intraservice work includes the work provided while the physician is with the patient and/or family. This includes physician time (typically face-to-face time) for obtaining a history, performing an examination, making decisions, and communicating with the patient and/or family.

Post-service period. For surgical services with a global period of zero days, the post-service period includes all postoperative care following skin closure, on the day of surgery, including non-skin-to-skin work in the OR, patient stabilization in the recovery room or special unit, communicating with the patient and other professionals (including written and telephone reports and orders), and patient visits on the day of the surgery. For surgical services with a global period of 10 or 90 days, the post-service work includes the same work as a surgical service with a global period of zero days and, in addition, includes postoperative hospital visits, discharge day management services, and office visits within the assigned global period of 10 or 90 days. For nonsurgical services such as E/M services,

the post-service work includes arranging for further services, reviewing results of studies, and communicating further with the patient, family, and other professionals, which may include written and telephone reports, as well as calls to the patient.

The Harvard researchers constructed the RBRVS by first investigating the resource inputs of physicians' services and developing methods to measure them. For each of the 18 specialties included in Phase I of the Harvard study, 23 cases or types of patients were selected, and the TCG then tried to select typical patient scenarios for these cases, as well as attempt to get CPT codes that reflected both hard and easy services to deliver. In Phase I, vignettes or descriptions of physicians' services were developed for 372 services performed by one or more of 18 specialties. About 200 codes were represented by these 372 services and weren't necessarily limited to just those services used by Medicare patients. Specialty-specific surveys were developed, and a national random sample of 3164 physicians were surveyed by mail, followed up by phone contact, with 1977 survey interviews completed. About 100 physicians in each specialty evaluated services described by each vignette in terms of requirements of work, time, and intensity.

Calculation of work For intraservice work, a process of magnitude estimation was used to obtain relative value measurements. Magnitude estimation is a technique that ranks work in relation to a reference using a ratio scale.[1] Pre- and post-service work was then calculated from survey data of selected codes, using the survey's time (geographic mean) multiplied by an assigned intensity factor. This pre- and post-service data were then extrapolated to all codes by:

1. Identifying small homogeneous families of services
2. Assigning a surveyed service as a benchmark for the family
3. Calculating charge-based ratios of the non-surveyed services to the family's benchmark service
4. Applying these ratios to the total work of the benchmark service [6]

Although only 200 CPT codes were investigated through surveys in Phase I of the study, by algorithms and extrapolation, the Harvard team developed a relative value scale for about 1400 codes. This combination of magnitude estimation (intra-work) and extrapolation (pre- and post-work) was the basis for recommendations for the initial RBRVS submitted to CMS as part of the Phase I study.

After Phase I was complete, the cooperative agreement between CMS and Harvard was extended. Phase II focused on further review and development of values for global surgery services, using a newly adopted broader global fee policy (i.e., including postsurgery visits within 90 days after surgery). Work performed during Phase II also determined that a well-organized, structured panel consisting of 11–14 physicians in a specialty can produce estimates of work that are quite similar to sur-

[1] For example, if the work of Reference Procedure A is given an arbitrary value of 100 on a scale of 0 to infinity, using magnitude estimation, survey respondents would be asked to place Procedures B through Z on this scale, *relative* to Procedure A.

vey estimates from a larger sample. Phase III of the Harvard study focused primarily on using the small-group process tested in Phase II to generate RBRVS values for the remaining codes, for the revised E/M visit codes, and for other new code descriptors that had been developed by the CPT Editorial Panel after Phase II was complete in contrast to the use of surveys of representative physicians used in Phase I.

With respect to E/M services, a consulting group analyzed the results of the Harvard E/M code surveys and found wide and inconsistent variations in the values for E/M services [7]. The AMA, PPRC, and CMS reviewed the findings of the E/M analysis and decided to rework and redefine the E/M code descriptors to better fit the new national Medicare fee schedule. By 1992, this revision of E/M codes was completed, and the newly described E/M codes were established. The new codes were accompanied by vignettes that described the typical services for a given code as well as well-defined descriptors for each code.

With respect to practice expense, the initial relative values were assigned to each code by a formula that applied specialty-specific costs of practice expense to codes typically performed by that specialty. For codes used by multiple specialties, the PE values were assigned by an amalgam of the individual specialty PE costs [8]. Subsequent analyses of the original PE-assigned values by the PPRC showed that these values resulted in some overpayments and inaccuracies across the fee schedule [4].

The results of the Harvard study was then published in three separate phases (Phase I [9], Phase II [10], and Phase III [11]); as the study progressed, the researchers enlarged the original numbers of CPT codes studied and added increasing numbers of surveyed physicians. They also used the small-group/expert panel method to validate or refine values obtained from these surveys. Harvard found that both the results of a mail survey as well as the small-group method to be reliable and useful for definition of work values [12, 13]. The PPRC analyzed the Harvard work and adopted many of its findings in the Commission's recommendations to the Congress, which then incorporated a substantial number of those recommendations into subsequent laws.

All of these values for CPT codes were then subsequently reviewed by the American Medical Association/Specialty Society Relative Value Update Committee (RUC). The next section will describe what the RUC is, how it works, and how the original values from the Harvard study have been refined and changed over time.

Implementing the Medicare RBRVS

As noted above, OBRA 1989 required the Secretary to submit to the Congress and make available to the public a "model fee schedule" by September 1, 1990, in order to provide an early opportunity for public review of the fee schedule methodology. When published, the addenda to the model fee schedule notice provided preliminary estimates of the relative value units (RVUs) associated with the approximately 1400 services studied as part of the Harvard Phase I RBRVS study. RVUs were separately

assigned for physician/provider work, practice expense, and professional liability insurance. For purposes of this chapter's nomenclature, we will use the terms: Relative Value of Work (RVW) interchangeably with work Relative Value Units (wRVU). The sum of relative values of work, practice expense, and professional liablity combine to make the Relative Value Unit (RVU) used by Medicare to value each CPT code.

In Phase II, 14 additional medical and surgical specialties were studied that were not studied in Phase I. In addition, seven Phase I specialties were restudied, with four of these restudies funded by the specialty societies. Not only did Phase II almost triple the number of services for which values were published, but it refined the RVUs for the original 1400 services.

CMS considered the comments received on the model fee schedule and incorporated the results of Phase II and some of Phase III of the Harvard study into a proposed rule that was published in the Federal Register on June 5, 1991 [14]. This proposed rule contained RVUs for more than 4000 services, representing about 85 % of Medicare payments. In response to the publication of the proposed rule, CMS received approximately 95,000 timely items of correspondence during the 60-day comment period. The final rule implementing the first MPFS was published on November 25, 1991 [15].

Revising and Maintaining the Medicare RBRVS: Formation of the AMA RUC

In 1991, in response to the new physician payment methodology, the AMA formed the Specialty Society Relative Update Committee (RUC) to act as an expert panel in developing relative value recommendations to CMS. It is important to remember that this process was established in the course of the AMA's normal activities and as a basis for exercising its First Amendment right to petition the federal government as part of its research and data collection activities, for monitoring economic trends and in connection and related to the CPT development process [16]. In addition, the AMA Office of the General Counsel finalized a memorandum on the antitrust aspects of the RUC's proposed relative value scale update process which concluded that the process would not violate antitrust laws if it were properly managed. Although there are several important reasons that the RUC and its process are legal, the major reason is that it qualifies for an exemption from antitrust liability under the *Noerr-Pennington* doctrine. This doctrine allows all persons to exercise their right to petition the government free from potential antitrust liability. The doctrine allows competitors to engage in joint petitions to the government and to ask the government to mandate or authorize activities that would ordinarily violate federal antitrust laws [17].

The RUC original criteria for a permanent seat on the RUC (listed in priority order) included:

1. The specialty is an American Board of Medical Specialties (ABMS).
2. The specialty comprises 1 % of physicians in practice.
3. The specialty comprises 1 % of physician Medicare expenditures.
4. Medicare revenue is at least 10 % of the mean practice revenue for the specialty.
5. The specialty is not meaningfully represented by an umbrella organization, as determined by the RUC.

In November 1991, at its first meeting, the RUC was comprised of 26 members: 24 voting seats and 2 nonvoting seats. As the structure and functions of the RUC evolved, the number of RUC members has increased. Currently, in 2016, there are 31 RUC members: 26 voting seats and 5 nonvoting seats. In addition to the original committee composition listed above, five additional seats have been added including the Co-Chair of the RUC Health Care Professionals Advisory Committee (HCPAC) comprised of limited license practitioners and allied health professionals required to report CPT codes, the Chair of the RUC Practice Expense Subcommittee that is charged with reviewing direct practice expense inputs for all codes, one additional "rotating" seat for any internal medicine *subspecialty* society, one "rotating" seat dedicated to a primary care specialty, and one permanent seat for geriatrics.

AMA/Specialty Society Relative Value Update Committee (RUC)
Nonvoting seats (3)
Chair (appointed by the AMA Board of Trustees)
CPT Editorial Panel Representative
Chair, Practice Expense Subcommittee
Voting seats (28)
Co-Chair (appointed by the AMA Board of Trustees)
Co-Chair, Health Care Professionals Advisory Committee
American Osteopathic Association
Anesthesiology
Cardiology
Cardiothoracic surgery
Dermatology
Emergency medicine
Family medicine
General surgery
Geriatric medicine
Internal medicine
Neurology
Neurosurgery
Obstetrics/gynecology
Ophthalmology
Orthopedic surgery
Otolaryngology
Pathology
Pediatrics

AMA/Specialty Society Relative Value Update Committee (RUC)
Plastic surgery
Psychiatry
Radiology
Urology
Two-year rotating seat, primary care specialty
Two-year rotating seat, internal medicine subspecialty
Two-year rotating seat, internal medicine subspecialty
Two-year rotating seat, non-internal medicine subspecialty

Advising the RUC: Role of the Advisory Committee

The work of the first RUC was supported by an Advisory Committee (AC) made up of representatives of all 85 specialty societies in the AMA House of Delegates. The AC members were the technical arm to the RUC on update issues pertinent to each specialty. As described in the "Rules and Procedures" of the RUC, these AC members and their specialty committees are responsible for developing relative value estimates using protocols and materials supplied by the RUC.

AC functions and responsibilities shall include but shall not be limited to:

- Advising the RUC concerning the agenda for the development of relative values for new or revised codes
- Identifying specialties affected by proposed relative value revisions
- Assisting with the cooperative research agenda
- Serving on subcommittees
- Providing advice on the update process
- Serving as liaison with national medical specialty societies

Similar to the RUC composition, the RUC Advisory Committee has also grown over time. Currently, in 2016, there are 124 Advisory Committee members based on the specialty societies with a seat in the AMA House of Delegates. To avoid confusion as to their role, those specialties that are represented on the RUC and the Advisory Committee have assigned roles or specific appointments to distinguish the separate roles that each plays: RUC member, evaluator of relative value, and advisor, advocate for their society's codes and comments. Each society also typically has an expert Advisory Committee or "panel of experts" to assist the society in conducting surveys, evaluating the results, and formulating recommendations.

Assigning New RVUs or Updating RVUs in an RBRVS System

It is important to understand the annual cycle that coordinates the CPT Editorial Panel, with the CMS proposed and final new rules, and the meetings of the RUC. The cycle begins each fall of the year with the CMS publication of the annual update to

the Medicare RVS in the Federal Register. About the same time, the AMA publishes the new CPT book for the coming year. The meetings of the RUC are timed in the year leading up to those two publications to allow new CPT codes to be valued and sent to CMS in time for the final values to be published in the Federal Register. This sequence is important to allow organized medicine to comment and have meaningful input into the final values assigned by CMS. It is important to remember that although the values for new and existing CPT codes have their RVUs based upon recommendations from the specialty societies and the RUC, CMS actually makes the final decision regarding the final value for a CPT code [18]. CMS can also ask for the RUC to evaluate and revalue existing codes.

New CPT codes are typically proposed by a specialty society, so that a given service can be described and eventually billed for. CPT code proposals can also come from other sources, such as equipment manufactures or other industrial producers of medical devices. Once the CPT Editorial Panel receives an application for a new CPT code, then other specialties are invited to comment on the new code proposal by means of a "Level of Interest" form. Once the CPT Editorial Panel receives these comments, they then deliberate and decide upon a new CPT code and its descriptor. Each code typically also has a short description of the typical patient that applies to the CPT code.

Once a new CPT code is so developed, communication goes to all of the RUC advisors regarding the new code. Each specialty society then decides its response to the new code in one of three ways: (1) the specialty can conduct a survey of its members so that it can get data on work, time, and pre- or post-procedural visits involved with the delivery of the service; (2) the specialty won't survey the CPT code, but will submit written comments on the values recommended by other specialties; or (3) they decide to take no action, typically because the CPT code in question doesn't involve members of its specialty. In cases of revised CPT codes, the specialty society also has a fourth option of declaring that the revised code requires no action by the RUC, due to the fact that the coding revision didn't alter the value of the CPT code.

Assuming that the specialty society decides to survey for values for the CPT code, then a standard AMA RUC survey instrument is used. The specialty society then conducts a survey of its members regarding the work and time involved in delivering the particular service. The respondents are asked to assign a RVW value to the CPT code based upon comparison with a list of reference services supplied with the survey material, thus giving the whole process the name "relative," since the code is valued in relationship to the reference codes. Once the survey is completed, the specialty society and their RUC advisors review the survey and, using the information from the survey and the expertise of the review committee, prepare a summary of recommendations. These recommendations are then forwarded to the RUC members as well as the other specialty advisors in advance of the RUC meeting. The specialty advisors then present their data and recommendations for RVU values to the RUC, in a question and answer session. The RUC then deliberates and can take one of the three actions: (1) approve the recommended value, (2) refer the matter back to the specialty society for further analysis, and (3) modify the recommended value prior to sending to CMS. In addition

to the work component of a given CPT code, the RUC also reviews and then recommends the practice expense and professional liability components.

Once the recommendations are completed and voted on by the RUC, those recommendations are then sent to CMS for its review. CMS then publishes its final decision of the relative value in the Federal Register in late fall.

The RUC has submitted over 5800 relative value recommendations over its 23-year history with CMS accepting the RUC's recommendations in 90 % of the cases [19]. It is important to note that acceptance of RUC-recommended values is not the same as the society-recommended value, and very often the value is reduced in deliberation at the RUC meeting. The work of evaluating the values associated with CPT codes is ongoing, with the Relativity Assessment Workgroup (RAW) being assigned the task of reviewing all CPT codes with a series of screens to detect or flag CPT codes that may be misvalued. Those CPT codes that are so identified are then assessed by the specialty advisors associated with those codes, and those codes can be revalued, resurveyed for new time and work data, or recommended to maintain the current values. Since 2006, the RAW has identified potential misevaluations in over 1800 CPT codes. Of those codes, 305 were deleted, 731 had values that were decreased, 151 received increased values, and 508 CPT codes were reaffirmed as being correctly valued.

Over time, despite concerns and criticisms to the contrary, the expertise assembled has never been surpassed, and the value delivered to CMS and the American taxpayer has never been equaled.

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Part II
Reimbursement

Chapter 5
CMS, the SGR, and MACRA

Kenneth Simon and Susan Roberts

Introduction

When the Congress implemented the Medicare program in 1965, gross domestic product (GDP) was 8 % and the annual Medicare per capita spending was approximately $292 per beneficiary. It became apparent a few years after implementation of the program that the cost of the program was growing significantly without any clear method to predict or restrain the increasing costs for healthcare services. Physician services were reimbursed by the "usual and customary method" which resulted in variations in payment for similar services by various specialties, variations in geographic payments for similar services, and increasing growth in the cost and utilization of physician services [1, 2]. By 2012, the average annual cost per Medicare beneficiary had risen to $12,210 [3].

OBRA

The Omnibus Budget Reconciliation Act (OBRA 89, P.L. 101-239) required the Health Care Financing Administration (HCFA), now known as the Centers for Medicare and Medicaid Services (CMS), to develop a resource-based payment methodology for reimbursement of physician services. The resource-based relative value system (RBRVS) was created and implemented January 1, 1992. The RBRVS fractionated payment for a physician service into three components:

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1. Physician work – this reflects the time, intensity, and effort required to perform the service.
2. Practice expense – the element required to maintain an office practice (rent, utilities, personnel, etc.).
3. Practice liability insurance.

The Medicare Volume Performance Standard (MVPS) was implemented and designed to control the rate of increase in expenditures for physicians' services in 1990. The update affected expenditures under the MVPS starting in 1992 [5].

MVPS

The MVPS did not control the rate of expenditures but rather was used to target expenditures and adjust the physician fee schedule update. When the spending target was exceeded, the update was adjusted to establish the rate of increased or decreased spending for the next year [5]. The following factors were considered when establishing MVPS rates, such as:

1. Inflation
2. Changes in the number and age composition of Medicare enrollees under Part B
3. Changes in technology
4. Evidence of inappropriate utilization of services
5. Evidence of lack of access to necessary physicians' services
6. Other appropriate factors as determined by the Secretary

MVPS sets rates for all physicians' services equal to the product of the four following factors, updated annually, and then the aggregate is reduced by a performance standard factor [5]:

Factor 1 – 1.0 plus the secretary's estimate of the weighted average percentage increase (divided by 100) in fees for all physicians' services or for the category of physicians' services

Factor 2 – 1.0 plus the secretary's estimate of the percentage change (divided by 100) in the average number of Part B enrollees (excluding risk health maintenance organization enrollees)

Factor 3 – 1.0 plus the secretary's estimate of the average annual percentage growth (divided by 100) in the volume and intensity of all physicians' services or of the category of physicians' services

Factor 4 – 1.0 plus the secretary's estimate of the percentage change (divided by 100) in expenditures for all physicians' services that will result from changes in law or regulations

The physician fee schedule update is also based on the Medical Economic Index (MEI) that is adjusted based on the aforementioned statutory factors. Physician services make up approximately 90 % of the total expenditures for physician services for purposes of MVPS rates of increase, and laboratory services compose approximately 10 % of services.

Medicare beneficiaries have the option of changing programs from the traditional fee-for-service program to the HMO program, on an annual basis. This makes it difficult to accurately forecast whether the charges for physician services, surgical services, or nonsurgical services will increase or decrease in an upcoming year [6].

The average growth in volume and intensity of all physician services is derived from information contained in the Board of Trustees of the Supplemental Medical Insurance Trust Fund [7]. Determination of the percentage of increase in volume and intensity of services is based on historical trends in allowed charges, which are not impacted by the Part B deductible. Increases in expenditures are impacted by the Part B deductible. The trustees report uses a definition of physician services that includes certain supplies and nonphysician services not included in computing the volume performance standard rates (e.g., durable medical equipment, ambulance services). It was felt that including these elements into the estimate would not have a significant effect on measuring the rates of change. Services performed in independent laboratories as well as laboratory tests performed in the hospital outpatient setting were also incorporated into the calculation.

MVPS was used to establish an annual update beginning in fiscal year 1990. This update was applied to all physician services, which reflected the adjustment based on expenditures beginning in 1992. In 1993, MVPS was used to establish three annual updates, one for surgical services, one for nonsurgical services, and one for primary care services [4].

Surgical services were defined as the following: the service is classified as "surgery," and the service is performed by surgical specialists more than 50 % of the time.

Primary care services were defined as "office medical services, emergency department services, home medical services, skilled nursing, intermediate care, and long-term care medical services, or nursing home, boarding home, domiciliary, custodial care medical services, intermediate and comprehensive office visits for eye examinations and treatments for new patients."

Nonsurgical services are those services not meeting surgical or primary care definitions.

The three categories were consolidated into one annual update when MVPS was replaced with the sustainable growth rate.

The use of the MVPS worked well to identify the rate of growth of spending on physician services on an annual basis and adjust the update accordingly, but did not meet the desired objective of controlling the costs of spending on physician services [4].

SGR

The Balanced Budget Act of 1997 (BBA) (Public Law 105–33) was enacted on August 5, 1997, to replace the Medicare Volume Performance Standard with a sustainable growth rate (SGR) standard. The SGR was intended to control the actual growth in Medicare expenditures for physicians' services. The fee schedule update

was adjusted positively or negatively based on whether expenditures were above or below the SGR targets.

The SGR is the product of:

Factor 1 – 1 plus the secretary's estimate of the weighted average percentage increase (divided by 100) in the fees for all physicians' services in the fiscal year involved.

Factor 2 – 1 plus the Secretary's estimate of the percentage change (divided by 100) in the average number of individuals enrolled under this part (other than Medicare + choice plan enrollees) from the previous year to the fiscal year involved.

Factor 3 – 1 plus the secretary's estimate of the projected percentage growth in real gross domestic product per capita (divided by 100) from the previous fiscal year to the year involved.

Factor 4 – 1 plus the secretary's estimate of the percentage change (divided by 100) in expenditures for all physicians' services in the fiscal year (compared with the previous fiscal year) which will result from changes in law or regulations, determined without taking into account estimated changes in expenditures resulting from the update adjustment factor determined under subsection (d) (3) (B), minus 1 and multiplied by 100 [8].

The law required CMS to establish the SGR at the beginning of each fiscal year based on an estimate of the percentage increase in physicians' fees, the percentage increase in Medicare beneficiaries fee-for-service enrollment, the percentage increase in growth of the gross domestic product per capita, and the percentage change in expenditures for physicians' services due to new technology or changes in regulation or law. Establishing the SGR based on estimations of available data at the beginning of the fiscal year without the legislative authority to revise the data as more refined data from the prior fiscal year becomes available reduces the accuracy of the SGR estimate. This process created difficulty in the ability to accurately forecast upward or downward adjustments for the SGR calculation.

The Balanced Budget Act of 1997 amended the law to apply the SGR rate on a calendar year basis beginning in year 2000, transitioning the SGR rate from a fiscal year basis. During the period of 1998–2000, the SGR was calculated on both a fiscal year and calendar year basis. The combined use of calculating the SGR using the fiscal year and calendar year approach increased allowed expenditures by 1–2 % in CY 2000. This resulted in a permanent 1–2 % increase in the physician fee schedule conversion factor.

If the law had allowed revision of the estimated changes in the Medicare fee-for-service program based on the actual charges, the physician fee schedule conversion factor would have been lower. This is in part based on the inability to determine the number of Medicare enrollees who would leave the fee-for-service program and enroll in a managed care program each time when the MVPS was published.

The Balanced Budget Reduction Act (BBRA) of 1999 required development of aggregate spending criteria to help create expenditure targets that would allow comparisons to growth targets. A key difference between the MVPS and the SGR

is that the comparison of actual and allowed expenditures is made on a *cumulative* basis under the SGR as opposed to an *annual* basis in MVPS. The BBRA also incorporated the rate of growth of the gross domestic product into the SGR calculation (see Fig. 5.1). The GDP grew faster than Part B Medicare expenditures from 1997 to 2000; this resulted in positive updates each year at a rate of 4 % or more each year. As the economy began to slow in the early 2000s and the rate of Part B expenditures far exceeded the rate of economic growth, as a result, the updates became negative in an effort to bring actual expenditures in line with forecasted expenditures. During the period of 2002–2013, actual spending far exceeded the projected spending targets and the update was negative for each calendar year.

FACTOR	MVPS	SGR
Factor 1	1 .0 plus the Secretary's estimate of the weighted-average percentage increase (divided by 100) in fees for all physicians' services or for the category of physicians' services for the portions of the 1996 calendar year and the 1997 contained in fiscal year 1997	1 plus the Secretary's estimate of the weighted-average percentage increase (divided by 100) in the fees for all physicians' services in the fiscal year involved
Factor 2	1.0 plus the Secretary's estimate of the percentage change (divided by 100) in the average number of Part B enrollees (excluding risk health maintenance organization enrollees) from fiscal year 1996 to fiscal year 1997	1 plus the Secretary's estimate of the percentage change (divided by 100) in the average number of individuals enrolled under this part (other than Medicare +Choice plan enrollees) from the previous year to the fiscal year involved
Factor 3	1.0 plus the Secretary's estimate of the average annual percentage growth (divided by 100) in the volume and intensity of all physicians' services or of the category of physicians' services for the fiscal year 1991 through fiscal year 1996.	1 plus the Secretary's estimate of the projected percentage growth in real gross domestic product per capita (divided by 100) from the previous fiscal year to the year involved
Factor 4	1.0 plus the Secretary's estimate of the percentage change (divided by 100) in expenditures for all physicians' services that will result from changes in law or regulations in fiscal year 1997 as compared with expenditures for physicians' services in fiscal year 1996.	1 plus the Secretary's estimate of the percentage change (divided by 100) in expenditures for all physicians' services in the fiscal year which result from charges in law or regulations, determined without taking into account estimated charges in expenditures resulting from the update adjustment factor determined under subsection (d) (3) (B), minus 1 and multiplied by 100

Fig. 5.1 Similarities and differences in MPVS vs. SGR*. Note the relative similarities of Factors 1, 2, and 4 and significant difference in Factor 3. **MVPS* Medicare Volume Performance Standard, *SGR* sustainable growth rate

Congress intervened with legislation each year beginning in 2003 to avert significant cuts to physician payment [9].

The SGR system was amended by the Congress with the Medicare Modernization Act (MMA), enacted in 2003. The MMA required the per capita GDP rate to be measured on a 10-year average as opposed to an annual rate. This legislative change enabled SGR changes to occur more efficiently and less disruptively than the changes that could take place using targets created on an annual basis.

Despite the amendment to the SGR calculation, updates continued to remain negative from 2002 to 2010, which was very unsettling to the medical community [10, 11]. Concerns were expressed by many physician groups regarding some of the variables in the SGR calculation, namely, the calculation of office space costs and physician-administered drugs. HUD housing data was used as a proxy for physician office space as there was no other national methodological process to determine office space costs for urban, rural, and suburban communities across America.

Physician-administered drugs were another variable that physician groups argued should be excluded from the SGR calculation of expenditures, as physicians did not determine pricing for drugs. Additionally, many physicians didn't administer drugs in the office setting and felt this variable unfairly penalized many practicing physicians who didn't provide or administer drugs in their practice.

CMS began to exclude physician-administered drugs from the SGR calculation beginning in 2010, which decreased the difference between actual and targeted spending. The targets for physician spending continued to exceed projected targets, which resulted in the Congress implementing legislative action on a yearly basis since 2003 to prevent a reduction in the conversion factor due to SGR calculations. There has been a national discussion for the past several years questioning the utility and appropriateness of the SGR to help determine physician payment.

Utilization of the MVPS and SGR methodologies has been largely unsuccessful in controlling or impacting the increasing costs and utilization of healthcare services over the past 25 years. MedPAC reviews of physician services indicate the total number of Medicare enrollees in the program will increase from 50 million in 2012 to approximately 81 million in 2030. It is imperative for policy makers to ensure that sufficient funding will be available in future years to accommodate the healthcare needs of an aging population. This has resulted in CMS implementing a number of clinical demonstration projects at the direction of the Congress over the past 10–15 years to explore various ways to provide quality care that is better coordinated between clinicians and institutions with resultant lower costs. Some of the demonstration models incorporated the medical home concept with a focus on preventative healthcare services, coordination of care, and more efficient use of resources. Several of the demonstration projects (e.g., Medicare Shared Savings Program, Bundled Payments for Care Initiative, etc.) have had mixed success in realizing cost savings but fall short of being able to be utilized throughout the entire medical community [12].

MACRA

The Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) was implemented in April 2015. This legislation repealed the SGR payment methodology and outlined a physician fee schedule update of 0.0 % from January 1, 2015 to June 30, 2015, and an update of 0.5 % from July 1, 2015 to December 31, 2015 [13]. The update for 2016 through 2019 will be 0.5 % for each year beginning in 2016 [14]. The update for 2020 through 2025 will be 0.0 % for each year. For 2026 and each subsequent year, the update will be 0.75 % to the qualifying Alternate Payment Model (APM) conversion factor and 0.25 % for the nonqualifying APM conversion factor.

The MACRA legislation was enacted to eliminate the SGR methodology, and beginning in 2019 physicians will have the option of receiving physician payment for services via one of two mechanisms: the Merit Incentive Payment System (MIPS) or an APM.

Both payment systems will focus on quality, measured outcomes, and moderating resource consumption for services. The Merit Incentive Payment System (MIPS) will retain the features of the existing fee-for-service program and will be based on four categories:

1. EHR Meaningful Use
2. Quality measures
3. Clinical practice improvement
4. Physician value-based payment modifier

Under MIPS these four components will be used to create a single composite score for each clinician. Payment adjustments for each clinician would be adjusted upward or downward based on comparison of their composite score to the threshold score set by CMS each year.

Beginning in 2019 under MIPS, the update will be 0.5 % with an adjustment ranging from +4 % to −4 %. During the period of 2020 through 2025, the annual update will have a baseline of 0.0 % with performance adjustment of plus or minus 5 %. In 2026, the annual update will be 0.25 % with a performance adjustment range of +9 to −9 %.

Clinicians who do not participate in the quality measurement program, fail to adopt the meaningful use EHR program and consume more resources for management of their patients compared to their counterparts, will have significant negative payment incentives. The composite score will be calculated annually and the adjustment to one's payment will be made annually as well. Top performers will receive an annual performance payment adjustment up to 10 % from 2019 to 2024.

Under MIPS the following will occur [15]:

1. Sunset the current EHR Meaningful Use Incentive Program.
2. Establish the meaningful use program for MIPS.
3. Sunset the separate quality Reporting Incentives.
4. Establish continuation of quality measures and processes for MIPS.

5. Sunset the separate value-based payment system.
6. Establish continuation of the value-based payment modifier for MIPS.

Alternative Payment Models (APMs) represent an approach to blending fee-for-service methodology with risk-capitated payment methodology. It is believed that this hybrid approach can promote high-quality care and reduce costs, while promoting efficiency and increased productivity. APMs are a promising model to help control the cost of medical care and provide the possibility of expanding the number of patients that can be treated with a predictable budget. This methodology creates financial risk-sharing between clinicians and hospitals or medical institutions that can result in more efficient utilization of services and resources for patient care.

Patient-centered medical home is one of the practice models that will qualify as an APM. Unlike other models that will qualify as an APM, participants who practice in a patient-centered medical home would not accept financial risk.

Beginning in 2019, healthcare in the United States will transition from a payment system that has supported a volume-based practice approach to one that focuses on quality, coordination of care, and efficient use of resources and services. Clinicians and practices that excel in these areas will receive financial incentives for their efforts.

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Chapter 6
Global Period

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Overview

Inherent to the understanding of surgical coding and reimbursement is the concept of the global period. This is also often referred to as "the global," "global surgical period," "surgical global," or "global surgical package." This nomenclature is interchangeable and will be used throughout the chapter to acclimate the reader to its synonymous uses. There are currently over 4000 CPT codes with a surgical global package in the Medicare payment schedule. The design of a global period centers around two key elements. First, there is a description of care steps rendered and the technical skill required to perform them. Second, there is an element of time. A surgical CPT code incorporates both of these elements when used to report a group of services or procedures that are customarily performed together. This is the essence of a bundled code. A CPT code is a bundled code by definition [1]. A single CPT code can, therefore, incorporate multiple procedures and/or steps that are used in conjunction within a given operation for a particular etiology – as designated by an ICD-10 code. These are the care steps that will be provided by the surgeon or surgical care team. The steps or components of care can loosely be divided into preoperative, intraoperative, and postoperative care fractions that when lumped together comprise the global period. In addition, certain services performed routinely in the immediate pre- and postoperative settings can be standardized based on time and complexity of decision-making to allow for a more reliable, resource-based reimbursement consideration for the global period. The time frame for any of these components of the CPT code can be variable. For example, each third-party payer can individually determine the number of days in which the follow-up care

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may take place. Taken as a whole, the global period includes all necessary services normally performed by a surgeon, before, during, and after a procedure. As mentioned, individual insurance payers may have different definitions of time and delivery of care elements. For purposes of this chapter, the guidelines set forth by Centers for Medicare and Medicaid Services (CMS) will be the basis for discussion. It is important to note that, while commercial payers may have subtle differences, the majority of concepts for payments and reimbursements are in step with the global surgical package as defined and maintained by CMS. It is also noteworthy that CPT is a product of the American Medical Association (AMA) and as such is on occasion contradictory to Medicare global payment policies – which are the product of CMS [1]. However, for the most part, the AMA and CMS work collaboratively. Most commercial payers will follow Medicare's lead but can of course have their own caveats regarding global services and payments thereof. While there are many pros and cons to the global period as it relates to patient care and reimbursement, the history indicates that significant thought and work went into designing the framework of a global period that will make it difficult to quickly supplant.

History

In 1989 Congress passed legislation to reform how physicians are reimbursed to take care of Medicare beneficiaries. The direct result was the Health Care Financing Administration (HCFA – precursor to CMS) creation of a Medicare Fee Schedule and was based on resource-based relative value scale (RBRVS). The history and ramifications of this new payment model are discussed in more detail elsewhere in this textbook. Suffice it to say that shortly thereafter (1992), as a result of a study conducted at the Harvard School of Public Health, the concept of a global period for procedures emerged. The concept was to allow for total work ***value*** to be calculated for the surgeon's service – inclusive of resources utilized, labor, and risk. The time utilized to perform the service and the intensity with which that time is expended also are evaluated and periodically updated to reflect evolution in delivery of care. The technical expertise to perform the procedure skillfully is also noted. This is taken into account relative to other comparative procedures. For application of this model to the surgical services, the three main components of a given surgical service were carefully surveyed to assign a work value: preservices, intraservices, and postservices. These concepts and data collected from these surveys and their nomenclature would then subsequently be coalesced into modern-day designation of a global period [2–5].

The work value for these services when surveyed is described and calculated for a *typical* patient with a given indication for the service. It is well acknowledged by all stakeholders that within a typical scenario there can be wide variation; however, it was mutually agreed upon by convention to discuss global periods with respect to typical patients rather than outliers. Medicare adopted this methodology and chose to establish a national definition of a global surgical package to ensure that Medicare Administrative Contractors (MAC) make payments for the same services

consistently across all jurisdictions [6]. Many commercial payers have subsequently adopted these rules.

The constituent components of the global period were evaluated in the Harvard study [2–4]. For example, the preservice intensity was initially described as "scrub and wait." For postoperative intensity, follow-up care in an ICU setting versus inpatient floor was taken into consideration. Initially, Harvard also assigned a constant amount of time for each component of care based on the site of service. For example, preservice: 25 min for inpatient, 15 min for ambulatory, and 0 min for office based [4, 5]. These were the origins of how the current standard packages for preoperative and postoperative services were developed, and these will be discussed in more detail later in the chapter. It should also be noted that there were some post survey adjustments made to both time and intensity for the evaluation and management codes (E/M services) as they pertained to pre- and postoperative services. Despite this, however, disparities may remain as a subset of E/M codes that are bundled into global package may undervalue or overvalue the actual service performed. An example of this has been controversially debated in the field of trauma surgery. There is a viewpoint that Medicare's global service package underpays E/M services in trauma patients. It is believed that in most cases, unbundling the E/M services and not billing for the emergent operations would result in higher reimbursements [7]. On the other hand, when one considers the variability of courses that any given patient may have, trauma or otherwise, the global package rules may offer reimbursement advantages. Modifiers for multiple procedures, unplanned return trips to operating rooms, and procedures performed unrelated to the initial procedure have been devised to account for additional surgeon work that may be performed within the global period [8].

The process by which global periods are assessed and valued may help reassure surgeons that global surgical packages are carefully crafted to assign a proper reimbursement value. The work for this process is largely done by the AMA Relative Value Update Committee (RUC) and is the advisory body to CMS for this very purpose. The composition and details of this taskforce are discussed elsewhere in the text. At present, the work of the AMA and the RUC is highly regarded as it is tediously peer-reviewed and has a robust database of services performed, including claims data. The recommendations that result from this working committee are passed directly to CMS. It is interesting to note that historically, CMS has routinely agreed with over 90 % of the recommendations of the RUC [8].

Specifically, the individual components of the global surgical package, the pre-, intra-, and postservice elements, are derived from random surveys based on the estimates of surgeons who perform the procedure. The surveys are conducted by the various medical professional societies of their membership depending on which specialty performs the majority of a given procedure. The process takes into account both time and the level of difficulty and skill required to do the intraoperative component of the work. It includes the levels and number of E/M visits before and after surgery for the typical patient. It is important to note that there is no specific formula that adjusts the value of services within a global period based on any individual component. The RUC terms this magnitude estimation. The survey data provides a

proxy to physician work for the typical case scenario, and then magnitude estimation is used for valuation of the service. Special considerations are also given as applicable. For example, postoperative care in an ICU setting is accounted for as the work/service in this setting is more intense and lengthy. The practice liability or malpractice risk associated with the procedure is also included in total reimbursement of the global service package. Expenses to the practice related to getting the patient ready for the operation and immediate care postoperatively within the global period are included as well.

Classification

All of the classification schemes for global period definitions are of a typical patient with typical preoperative, intraoperative, and postoperative work being included. Each CPT code has a global period status indicator as per the CMS payment policy. While the intrinsic nature of the procedure itself (intraservice component) is the major weight for valuation, the perioperative E/M visits that may occur for a typical patient accentuate the major differences in the global classification scheme. A summary and examples of such status indicators are given below:

000 – Zero Day Global: Endoscopies or other minor procedures with preoperative and postoperative services that are included on the day of the procedure only. Evaluation and management services on the same day of the procedure are generally not payable. There is neither a preoperative period nor postoperative period (e.g., CPT 45378, 52000, 31622).

010 – 10 Day Global: Minor procedures with preoperative services inclusive on the day of the procedure and postoperative services inclusive during a 10-day postoperative period. Evaluation and management services on the day of the procedure and during the 10-day postoperative period are not reimbursable. Total global period is really 11 days – a day of procedure and 10 days following (e.g., CPT 10060, 54161, 46221).

090 – 90 Day Global: Major procedures with a one-day preoperative service period and 90-day postoperative service period are reimbursed as inclusive. Evaluation and management services on the day prior to the procedure, the day of the procedure, and during the 90-day postoperative period are not reimbursable. Total global period is really 92 days – 1 day before the procedure, the day of the procedure, and 90 days immediately thereafter (e.g., CPT 44970, 47600, 52601).

Other classifications for CPT codes:

MMM – Maternity codes; the usual global period concept does not apply (e.g., CPT 59610, 59620).

XXX – The global concept does not apply to these codes. These usually pertain to E/M services related to anesthesia, laboratory, and radiology procedures.

YYY – These are unlisted codes and subject to individual contractor-pricing (e.g., CPT 29999, 32999. 42999).

ZZZ – These represent add-on codes that must be billed related to another service and are always included in the global period of the primary service (e.g., 44139, 31620, 49905).

Services in the Global Period

The Medicare-approved payment amount based on the RBRVS in the yearly updated fee schedule includes services performed by the surgeon themselves or part of his/her team of extenders. These services may be performed in any setting, i.e., hospitals, ambulatory surgery centers, and physician's offices. Any service, procedure, and supplies related to the original surgery are inclusive of the global service package and cannot be reported as a separate claim [9]. This would include the following:

1. Preoperative visit after the decision to operate is made. For 90-day global procedures, this includes preoperative visits the day before the procedure (i.e., preadmission testing). For 0 and 10 days global, this includes any preoperative visit the day of surgery.
2. Intraoperative services that are typical and necessary parts of the surgical procedure.
3. Postoperative services including routine follow-up visits for noncomplicated procedures and all medical and surgical care for complications related to the procedure that does not require a return trip to the operating room.
4. Pain management.
5. All supplies and services related to dressing changes, wound care, operative packing changing/removal, suture/staple removal, management of cast/splints, management of tubes and drains: rectal, nasogastric, urinary, and tracheostomy.

The cost it takes to perform the procedure exclusive of the physician services (work RVU) is known as practice expense (PE). PE calculations are also part of the global service package [10]. As part of the valuation process, it is noted that many practices employ similar personnel (labor), use similar medical supplies, and have similar equipment. As a result, PE is more often than not standardized into a series of package levels that can then be applied to each global CPT code. Each CPT code is surveyed similarly for PE valuation and accounts for nonphysician clinical staff time. Included in this is the time for clinical labor provided by other health-care professionals who are paid by the practice and do not bill separately, such as registered nurses (RNs), licensed practical nurses (LPNs), and certified medical assistants (CMAs) or other personnel employed in the practice. PE does not include clinical labor provided by health-care professionals, such as physician assistants (PAs), nurse practitioners (NPs), or social workers, if they can separately bill for the service and/or their services as a substitute for the physician service. An example is

a PA acting as an assistant at surgery. Also, administrative activities provided by clerical staff, medical secretaries, or clinical staff are NOT included. Administrative activities include activities such as billing for services, scheduling appointments, transcribing and filing reports, and obtaining service authorizations. In addition, PE is classified according to the site of service as either non-facility or facility. Non-facility settings include physician offices, freestanding imaging centers, and independent pathology labs. Facility settings include all other settings, such as hospitals, ambulatory surgical centers, skilled nursing facilities, and partial hospitals. The site of service is the place where the *main* part of the procedure is performed – it is not based on the actual place of service where a particular pre- or postservice activity occurs. For example, if a procedure is performed in the hospital, then the setting is a facility, even though services associated with the procedure, such as pre/postsurgical visits might often occur outside the hospital in the physician's office. Usually the vignette that is provided for a typical patient used in the random surveys identifies the site of service and that will guide the global package on facility reimbursement. The same process is applied for non-facility payment schemes. The PE associated with each CPT code ends with the last clinic visit within the global period. Any PE, or service for that matter, that falls outside of the last clinic visit within the global period is separately billable.

On the day of procedural service there are also components of work that need to be performed that are distinct from the procedure itself. These distinct work elements can be further stratified. These components are carried out immediately prior to performance of the operation (preservice) and immediately after the operation (postservice). In most instances this work is similar for each procedure. The ability to quantify the work/service performed in each phase of this fraction of the global period is also scrutinized during the global valuation process. In recent years at the AMA, a mature progression of obtaining and collating the survey data has resulted in the creation of standardized pre- and postservice packages that can be applied to each code and facilitates discussion of these codes when they are up for their review, usually every 10 years [11]. This is a dynamic process and often identifies areas for consideration of work reimbursement changes associated with evolution in practice and health-care delivery patterns. Examples of the components of these packages as utilized by the AMA are shown in Table 6.1. The individual component times are then summated into a total preservice and postservice times that can then be categorized reliably and repetitively to each CPT code. These times are corroborated with the survey data that is obtained by the specialty society that uses that particular code. They also allow for amending if not accurate to a particular setting. For example, certain procedures (neurosurgery/urology) may have routine procedures in which the positioning time may be significantly more than is allocated by the packages. For these instances, the survey data is used to provide guidance and compelling evidence for additional service time allotment. Examples of package times for pre- and postservice times are shown in Tables 6.2 and 6.3, respectively**.** The actual time allocated to each part of the service may be modified or eliminated. It should also be noted that the concept of pre/postservice time packages is what the AMA

Table 6.1 Specific service measures in unit time (calculated in minutes) that are applied to the pre- and postservice aspects of the global service package

Preservice measures (time)	Postservice measures (time)
Perform history, physical exam, review of labs, and imaging	Application of dressing
Communication with patient for informed consent	Transfer of patient off the table
Communication with other physicians	Recovery, stabilization, and monitoring
Check/set up room/supplies	Communication with patient and/or family
Check patient readiness – gown, mark site, prep	Written postoperative note
Perform or supervise patient positioning	Postoperative order entry
Provide anesthesia care or wait for anesthesia care	
Dress and scrub and wait for prep	

Table 6.2 AMA preservice times used in the global service package (for facility codes)

Preservice package	1A	1B	2A	2B	3	4
Total time (minutes)	20	25	25	39	51	63

1A – Straightforward patient and straightforward procedure (without sedation or anesthesia care)
1B – Straightforward patient and straightforward procedure (with sedation and/or anesthesia care)
2A – Difficult patient and straightforward procedure (without sedation or anesthesia care)
2B – Difficult patient and straightforward procedure (with sedation and/or anesthesia care)
3 – Straightforward patient and difficult procedure
4- Difficult patient and difficult procedure

Table 6.3 AMA postservice times used in the global service package

Postservice package	7A	7B	8A	8B	9A	9B
Total time (minutes)	18	21	25	28	30	33

7A – Local anesthesia and straightforward procedure
7B – Local anesthesia and complex procedure
8A – IV sedation and straightforward procedure
8B – IV sedation and complex procedure
9A – General anesthesia/complex regional block and straightforward procedure
9B – General anesthesia/complex regional block and complex procedure

uses in its RUC evaluation process, and, therefore, final discretion is still with CMS and the MACs. Commercial carriers may utilize different processes.

Current Practice

In general, the surgeon usually performs an initial E/M encounter in order to determine if the patient needs an elective operation and if so which one. These initial-encounter E/M CPT codes may include ED visits, outpatient clinic visits, hospital admission visits, or consultations. In the elective setting, this initial E/M service

documents the surgeon's plan and decision-making process and therefore is outside the global surgical package and considered a separate and legitimate charge. A preoperative history and physical exam are typically documented, and the medical decision-making for or against an operation is also documented. This typically occurs greater than 1 day preceding the operation (the usual initiation point of a surgical global period). It is also possible to process a service charge for an E/M service on the day of surgery and not be part of the global service package. The most common example of this is in the acute inpatient or ED environment (urgent/emergent surgery). If the initial encounter is on the same day as the operation, the E/M initial encounter service is still billable – but with the use of the 57 modifier – "Decision to Operate." This modifier can only be used for major surgical procedures (i.e., CPT with a 90-day global). The initial evaluation for minor procedures and endoscopies, on the other hand, is included in the global service package. If the same physician performs a "significant and separately identifiable service" on the same day of the minor procedure or endoscopy, then a 25 modifier can be used to bill that E/M service. Similarly, if a patient is initially assessed and requires critical care services/intensive care unit admission for stabilization or optimization prior to an impending operation, critical care service E/M codes are also separately billable. This is because the "typical patient" undergoing a major procedure does not require critical care services preoperatively [8].

Every CPT code also has in its bundled payment the typical postoperative visits (E/M) associated with care for that procedure and also the setting/intensity that it is usually performed at. On average, the 473 10-day global period codes have one postoperative visit included, whereas the 3783 90-day global period codes average three postoperative visits. For example, laparoscopic cholecystectomy has three established outpatient visits built into the global payment, whereas a pancreaticoduodenectomy (Whipple) has a two critical care services, 10 inpatient level services and 4 outpatient level services built into the global payment. In addition, the level of postoperative E/M visits in the global surgical packages tends to be lower levels of established office or inpatient visits compared to separately reported E/M visits. There are ongoing efforts by CMS to validate the quantity and level of postoperative visits currently bundled in the global surgical packages.

Any deviation in service performed in the global period associated with each code is generally not reimbursable unless a specific modifier is used. Modifiers exist to capture and offer payment for services performed outside of the typical patient care scenario. The acknowledgment and correct application of modifiers within a global period are imperative for successful reimbursement.

Scenarios in which *modifiers* can be used *within a global period*:

1. 58 Modifier – Staged or related procedure or service by the same physician or other qualified health-care professionals during the postoperative period
2. 78 Modifier – Unplanned return to operating room by the same physician or other qualified health-care professionals following for a procedure related to the initial procedure during the postoperative period

3. 79 Modifier – Unrelated procedure or service by the same physician or other qualified health-care professionals during the postoperative period

The 58 modifier is affixed to the subsequent expected and staged or more extensive surgical procedure during the global period. This modifier is used when there is a continuum of the disease process (i.e., the ICD-10 code remains the same), and additional surgical intervention is required for the management of the whole condition. The 58 modifier can only be used during a preexisting global period and effectively restarts the global period. Under most scenarios, the reimbursement for the subsequent procedure is 100%. For example, a patient develops an infected hip after a hip arthroplasty performed many years ago, and the hardware needs to be removed and then replaced after clearance of the infection. Stage one would be removal of the hip prosthesis with insertion of antibiotic cement spacer (CPT 27091 and 11981-51), and the patient enters a 90-day global period. Note that 51 modifier is for multiple procedures and may be applied in certain cases usually indicating a unique provision (supply, vaccine, injection). The 58 modifier is not attached to these codes because the patient is not currently in a global period. A staged return to the operating room is performed in 6 weeks after clearance of the infection to remove the spacer and perform a total hip arthroplasty. The surgeon now claims codes 27132-58 and 11982-58,51 [12].

Another example would be if a diagnostic endoscopy resulted in a decision to perform an open procedure, then a 58 modifier would be appended to the open procedure. However, if the endoscopy was performed to provide anatomic information/landmarks for guidance of the open procedure, then it is not separately billable as it would fall under the global of the open procedure. To summarize, a 58 modifier can only be used for procedures that are planned prospectively at the time of the original procedure, or staged more extensive than the original planned procedure, or for therapy following a diagnostic surgical procedure.

The 78 modifier allows for identification of an unanticipated subsequent procedure performed during a global period for another procedure. This usually is indicative of a complication arising from the first procedure. As a result, it is reimbursed at a reduced amount. In addition, it does not restart the global period like 58 modifier would. It can be used regardless of the location of service-operating room or office-based procedure. An example of this would be if a patient undergoes an open reduction internal fixation of a distal radius fracture with an external fixator (CPT 25609, 20690-51). A few weeks later, the patient needs to be taken back to the operating room to treat a wound infection at the external fixator site. The external fixator is removed and debridement of the pins occurs. This would be reported as 20694 with the 78 modifier appended. This was an unplanned return to the operative room during the initial global period, and the initial global period continues despite this intervention.

The 79 modifier is used for an unrelated procedure during the global period by the same physician. The patient is currently within a global period but requires another procedure with either the same or different global period. The vital element to document in this case is the distinct ICD-10 diagnosis code. This will support

other documentation stating that this is unrelated to the initial CPT code. It is also important to note that the procedure that will be appended with the 79 modifier can be in the operating room or office-based. An example of this would be if a patient undergoes a laparoscopic cholecystectomy (47562 and carries a 90-day global period) and then went back to the same surgeon 4 weeks later for removal of skin tags (CPT 11200-79). The 79 modifier only applies to surgical procedures performed on patients while they are in a postoperative period for a different, unrelated diagnosis. This new procedure will have its own global period. The 79 modifier is an information only or tracking modifier for many insurance carriers including Medicare and does not affect reimbursement. Documentation is paramount and corresponding ICD-10 codes should corroborate the unrelated nature of the subsequent procedure.

While the global period aims to encompass a given surgical episode and provide reimbursement for the totality of the care delivered, Medicare acknowledges and allows billing and payment for some other nonoperative physician services that occur outside of the typical case. Specifically, E/M services for conditions unrelated to the initial diagnosis for which the surgical procedure was performed or due to complications of the surgery. The 24 modifier is applied in these instances to the E/M code within the global surgical period. Certain diagnostic tests and procedures such as radiologic procedures (FAST ultrasound) are also billable inside a global period under unrelated circumstances [8]. Therefore, the correct application of modifiers coupled with proper documentation provides the surgeon with robust opportunities for fair and justifiable reimbursement [13].

Future of the Global Period

The surgical global period as a physician reimbursement model was in jeopardy of being eliminated by an existing CMS policy that called for transition to a zero-day global assignment by 2018. CMS instructed the AMA and RUC to transition the 10-day global codes to zero-day global in 2017 and that the 90-day global codes transition to zero-day global by 2018. At issue was that CMS felt that certain E/M services built into these 10- and 90-day global service packages were being performed by physicians who were either not covered by the 90-day global service or those services were not being provided at the volume allotted by the global surgical package. Eliminating these and only allowing claims for E/M services as they occurred were felt to be a more accurate and cost-effective solution. Nevertheless, on April 16, 2015, President Obama signed into law the Medicare Access and CHIP Reauthorization Act of 2015 (MACRA). MACRA repealed the Medicare Sustainable Growth Rate (SGR) that was set to cut Medicare Physician Fee Schedule (MPFS) payment rates by 21 %, and instead mandated annual payment rate increases along with a transition to a value-based compensation model known as the Merit-Based Incentive Payment System (MIPS) beginning in 2019. While that was the headline-making part of the landmark legislation, embedded within MACRA legislation was

the repeal of CMS's prior decision to eliminate the 10- and 90-day global surgical package payments. However, CMS has not abandoned its quest to interrogate the value of the global period in providing quality, cost-effective healthcare. MACRA legislation requires CMS to develop innovative processes to collect information on the number and level of medical visits furnished in the global period and other items and services related to the surgery. Leveraging EMR systems of large practices (i.e., Mayo Clinic and Geisinger) to track certain codes can accurately facilitate this data collection and help justify the reimbursement patterns of any given code. For example, tracking the 99024 code could validate future allocation of E/M services performed during the surgical global period and guide subsequent reimbursement. CMS may also review the Medicare Part A (hospital reimbursements) claims data to determine length of stay. Average length of stay can be matched to current global surgical package allotment and identify variances. As such, there are numerous existing data sources currently available that can be mined to ensure services are accurately valued without undergoing a formal data collection process. This will likely take place over the upcoming years.

Payment innovation is ubiquitous as the desire to progress from a solely fee-for-service model toward value-based payments is one of the highest priorities for the Medicare program. Indeed, the US Secretary of Health and Human Services, Sylvia Burwell, mandates to have 90 % of all fee-for-service payments tied to quality by 2018 [14]. The 90-day global payment scheme is a payment bundle at the level of physician reimbursement. In addition, Medicare also has bundled payment schemes for hospitals and post-acute-care facilities separately. It is hypothesized that bundling these payment silos into a single global period payment would drive high-quality surgical care and add value to the typical fee for service model. Both private and public payers have been experimenting with these types of expanded bundled payments. The largest is CMS Bundled Payments for Care Improvement Initiative (BPCI). BPCI allows participants to enroll in bundled payment agreements for 48 predefined clinical conditions aggregated from the diagnosis-related group (DRG) system [15]. Preliminary findings for orthopedic procedures suggest that bundling the payment would decrease overall cost for care [16].

There also are currently significant variations in payment within Medicare for certain inpatient procedures exclusive of geography and severity that could yield sizeable savings for payers by instituting a bundled payment system [17]. There are provisions in MACRA that support development of alternative payment models (APM). The main focus of APM is again to divert payment schemes away from traditional fee-for-service into a more lump sum payment, similar to the current global surgical package. Interestingly, many of the APM initiatives actually extrapolate the concept of global period to include ALL aspects of care, including multiple providers and specialties into a single episodic payment. Amalgamating Medicare part A and part B into a single payment is another consideration. Therefore, it is safe to suggest that while the definition of a global period may evolve, the future of reimbursement will very likely incorporate the valuation process that is currently utilized for global surgical payments.

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Chapter 7
Medicare Part A and DRG's

John T. Preskitt

Hospital and Outpatient Facility Reimbursement for Medicare Patients

Physician reimbursement has historically been directly related to CPT codes and relative value units. But with the increasing relationship between hospitals, healthcare systems, and surgeons, it becomes even more important for us to understand how our own hospital practice and documentation can effect hospital reimbursement.

An increasing percentage of surgeons are designated as "employed," but the meaning of the term has also changed [1]. In some cases, it may mean that the surgeon works solely on a salary provided by the hospital, unrelated to her or his productivity. In other cases, such as academic programs, the surgeon's income is partially based on a set salary associated with an academic appointment, partially based on productivity (RVUs) and partially on the financial performance of the so-called service line for the hospital. In other private practice models, the practice may be purchased and owned by a hospital or healthcare system, and yet the surgeon's reimbursement will be predominantly determined by RVUs/productivity. Surgeons in these practice venues may be further aligned with the institution with some stipend for medical directorship or "coverage" needs. Finally, a surgeon's "contract" may be any blend of these three models.

A surgical practice that is aligned with a hospital and healthcare system may be tied to or dependent upon the hospital's financial performance. It is very important that a surgeon understands issues that affect hospital reimbursement. This includes understanding correct documentation of hospital conditions and activities.

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In order to better understand these kinds of business relationships, this chapter will discuss three interrelated subjects: the Medicare program, the inpatient prospective payment system with its diagnosis-related groups (OPPS and DRGs), and the outpatient prospective payment system (OPPS) with its associated Ambulatory Payment Classifications (APCs).

Medicare

In 2015 we observed the 50th anniversary of the Medicare program. In 1965, it was estimated that 45 % of US citizens over the age of 65 did not have health insurance. For many in that age group, regular health insurance cost up to three times as much as regular health insurance for working-age adults, a fact that precluded many from having coverage. In July of 1965, the US Congress created and President Lyndon Johnson signed into law Title XVIII of the Social Security Act, creating Medicare. At the time, the legislation was called the Health Insurance for the Aged (Medicare) Act. To implement the Health Insurance for the Aged (Medicare) Act, the Social Security Administration (SSA) was reorganized, and the Bureau of Health Insurance was established on July 30, 1965. This bureau was responsible for the development of health insurance policy. Medicaid was part of the Social Rehabilitation Service (SRS) at this time.

In 1977, the Health Care Financing Administration (HCFA) was established to administer the Medicare and Medicaid programs. In 2001, Secretary Tommy Thompson renamed the Health Care Financing Administration (HCFA) the Centers for Medicare and Medicaid Services (CMS), the name it holds today.

Since its creation, Medicare has been expanded to include benefits for speech and physical therapy, chiropractic services, the option for payments to HMOs, and expanded eligibility to those younger than 65 but who have permanent disabilities and those who have end-stage renal disease and those who receive Social Security Disability Insurance payments. Medicare also required racial integration of thousands of hospitals, emergency rooms, and private physician practices, by requiring desegregation as a condition of participation [2]. In 1984, hospice services became a permanent benefit of the program.

The original Medicare program included Part A (Hospital Insurance) and Part B (Medical Insurance). Today these two parts are called “Original Medicare.” Part A is currently financed primarily through a 2.9 % tax on earnings paid by employers and employees (1.45 % each) (accounting for 87 % of Part A revenue). Higher-income taxpayers (more than $200,000/individual and $250,000/couple) pay a higher payroll tax on earnings (2.35 %) [3].

Subsequently, Part C was created to allow Medicare benefits to be covered through capitated health insurance plans. With the Medicare Modernization Act of 2003, these plans were referred to as Medicare Advantage Plans. Finally in 2006, Medicare Part D was created to provide beneficiaries the option of securing a stand-alone Prescription Drug Plan or through a Medicare Advantage Plan with

prescription drug coverage. Although these drug plans are approved and regulated by the Medicare program, they are actually created and administered by private health insurance companies.

A more detailed discussion of Medicare Parts C and D is not within the scope of this chapter, and readers are referred elsewhere. Medicare Part B, physician reimbursement, will be covered under the chapter on the resource-based relative value system. The remainder of this chapter will deal with the creation and development and implementation of diagnosis-related groups (DRGs) and the outpatient prospective payment system (OPPS).

The Development of Diagnosis-Related Groups (DRGs) and the Politics of Healthcare

At the outset, Medicare reimbursed hospitals and physicians on a cost basis. Because of considerable increases in Medicare spending, the cost basis for reimbursing hospitals was abandoned in 1983, and the Congress passed the inpatient prospective payment system (IPPS), established based upon diagnosis-related groups, which replaced cost-based payments.

The 1970s marked a period of enormous change within the American healthcare system [4]. A patient came into the hospital, had a bill created that was supposedly related to the hospital costs, and had the bill paid by Medicare. Since its inception, Medicare has contracted with commercial insurance companies to directly interact with hospitals and providers to process and pay claims on behalf of Medicare. Initially these claims were actually processed and paid by Blue Cross with Medicare's money. Therefore, many of the initial rules were those of Blue Cross. Prior to that, the US government had no such "fee schedule." With rapidly increasing costs of medical care, those who paid for patients' care—employers and the government—began pursuing limits on medical expenses. Medicare's expenditures were doubling at what was perceived as an unsustainable rate of every five years, and employers' health insurance premiums were increasing by upward of 15–20 % a year [5]. In his book, Paul Starr noted "In a short time, American medicine seemed to pass from stubborn shortages to irresponsible excess. Rising costs brought medical care under more critical scrutiny, and the federal government, as a major buyer of health services, intervened in unprecedented ways"[6].

At its inception, however, in order to obtain acceptance of the Medicare program by the medical establishment, Medicare's cost control problems were actually created by what Theodore Marmor and Starr have both referred to as the program's "politics of accommodation" [4]. In attempting to gain the cooperation of doctors and hospitals, the Social Security Administration's approach to running Medicare demonstrated three accommodating characteristics: (1) a commitment to remaining primarily a distributor of popular entitlement benefits, (2) a desire to avoid controversy and have operations run smoothly, and (3) an effort to secure exclusive administration of Medicare [5].

"Medicare gave hospitals a license to spend," according to Rosemary Stevens. In her book, *In Sickness and in Wealth: American Hospitals in the Twentieth Century*, she states "The more expenditures they incurred, the more income they received. Medicare tax funds flowed into hospitals in a golden stream, more than doubling between 1970 and 1975, and doubling again by 1980" [7]. Medicare's formula for hospital reimbursement invited abuse because it operated on a "cost + 2 % basis" for all services. Since the 2 % was a percentage of costs (and added by the Congress to reflect, among other things, the expected added nursing costs for Medicare patients), it amounted to an open-ended proposition offering hospitals a small bonus for each and every cost increase. So while the consumer price index increased 89 % between 1966 and 1976, hospital costs grew a staggering 345 % [8].

The difficulty understanding this tremendous growth in costs and expenditures in Medicare hospitals was exemplified in a conversation reported by Rick Mayes and Dr. William Hsiao. In 1969, William Hsiao, an academic actuary who later helped lead the studies to change physician reimbursement, was working as a hospital examiner for the Social Security Administration. He recalled the hospital industry's opposition to even adopting standard accounting procedures:

> The first question I asked was: "Why do we pay hospitals 2 percent extra on top of their costs?" The answer was that they had bad debts, that hospitals had to grow, and so on and so forth. So I then asked: "Alright, how do the hospitals calculate their costs?" And we discovered that there was no uniform accounting system or anything close to it….So I was deputized by the SSA to meet with the AHA's leaders in Chicago and raise these issues with them….This eventually led me to Blue Cross, because the government paid the hospitals based on what Blue Cross was paying on a cost-basis to the hospitals. I came to realize that the AHA really did not know that much and that the rules were set by Blue Cross. Although I and others pushed, we could not make the hospitals adopt uniform accounting systems [4].

To address these staggering expenditure increases, President Carter began a series of efforts to control spending. In 1977, he moved Medicare from the Social Security Administration to the newly created Healthcare Financing Administration.

Carter's administration initially proposed caps on hospital spending, but the hospital associations vigorously opposed the caps. The hospitals agreed to voluntary controls. Initially successful, these eventually failed, and it fell to the Reagan administration and Republican-controlled House and Senate, to finally try to solve healthcare and Medicare spending. Ronald Reagan won a landslide victory over Carter, in large part arguing for the expansion of the free market and reduced government regulation. However, in his first year in office, hospital spending increased 17.3 %. In the following year, the country slipped into the worst recession in 50 years with unemployment rates reaching almost 11 % [9].

So the Republican takeover actually created a more favorable political climate for a Medicare reform plan. It turned out that it was one with greater government regulation. The administration's short-term goal of reducing domestic spending was not possible with the so-called free market approach, given the fact that two voluntary programs by the hospitals had been unsuccessful.

Reagan's choice for Secretary of Health and Human Services, Richard Schweiker, was a more conciliatory policymaker than Carter's Joseph Califano. With restraining

the escalation in healthcare costs his highest priority, transitioning Medicare to a prospective payment system emerged as his crowning goal. Schwieker was a frequent summer visitor to New Jersey's shores, and as such he had close personal relationships with the healthcare representatives and policymakers of New Jersey [4]. That became important.

Diagnosis-Related Groups: Connecticut and New Jersey Studies

In September 1974, *Inquiry* published an article by University of Michigan Professor William Dowling entitled, "Prospective Payment of Hospitals." It was one of the first scholarly articles on the topic of what became known as "prospective payment." The concept of prospective payment was predicated on the controversial and untested theory that the cost of medical care was relatively predictable and responsive to changing economic incentives. Determining how prospective payment could be tested and implemented fell to researchers at Yale. The system was created by Robert Barclay Fetter and John D. Thompson at Yale University. Fetter created a database structure to study medical management decision-making and published it in 1976. Called Autogrp, they had demonstrated its use in understanding the process of patient care management in a variety of settings in order to enhance the effectiveness of decision-making from both a medical and management standpoint [10]. At the same institution, Thompson was trying to explain why costs of maternity, newborn, and non-maternity medical care varied so much among Connecticut's 35 nonprofit hospitals, in some cases by as much as 100 %. Their goal together was to group all patients into diagnostic groups that were distinct and medically meaningful and then measure each patient's use of hospital resources. The work originated as a tool for quality assessment, not cost control. They were able to draw upon the large statewide Connecticut database and were assisted as well with the data from the Connecticut Hospital Association and Connecticut Blue Cross. Their research showed what hospitals actually did to patients and how much it cost them. For the first time, policymakers could compare prices across different hospitals for the same services. When they did, they found significant and inexplicable variation, which contributed to a stunning loss of confidence in the ability of doctors and hospitals to regulate their own affairs.

With this information in hand, in 1980 New Jersey began a 3-year experiment to introduce the DRG system, to alter the incentives offered to hospitals in order to improve their efficiency, and thus to reduce the growth in healthcare expenditures [11]. Although Hsiao questioned how successful it was, it was nonetheless decided 3 years later to implement the DRG system for the Medicare program. Hsaio published an in-depth and scholarly critique of the system in 1986, questioning the wisdom of DRGs and whether the system was really successful [11]. At that time it did not seem to matter.

DRGs Become an Issue of Political and Financial Urgency

In 1982, with Medicare growth and expenditures almost doubling every 5 years, Washington's concerns about the financial stability of Medicare were escalating and becoming part of even larger worries about growing federal budget imbalances. The immediate concern of leading members of the Congress was the issue of declining payroll taxes and the threat to exhaust Social Security and Medicare trust funds. The Social Security Board of Trustees stated in 1982, "that unless action was taken soon, the Social Security system would be unable to pay cash benefits on time to retirees and survivors, beginning in July 1983" [4]. Medicare trust funds were in better shape than Social Security, and the short-term solution to this crisis was for Social Security's Old Age and Survivors Insurance (OASI) trust fund to borrow from Medicare's Hospital Insurance (HI) trust fund. So interfund borrowing and the recession's effect on payroll tax revenue combined to move up the projected insolvency date of Medicare's HI trust fund to 1988. It didn't help that hospital costs increased at three times the general rate of inflation in 1982.

The Congress responded in 1982 with the Tax Equity and Fiscal Responsibility Act (TEFRA). It predominantly dealt with closing tax loopholes and other issues unrelated to Medicare [12]. The important piece of TEFRA for us is the provision that called for the Secretary of HHS to develop, in consultation with the Senate Finance and House Ways and Means Committees, a proposal for prospective reimbursement by December 31, 1982. The New Jersey system of DRGs had almost 10 years of study and data, 3 years of implementation, and the only real track record of a prospective payment system. The two most important pieces of the New Jersey experience were the fact that it was a major overhaul in terms of hospital reimbursement in moving to prospective payments and that it caused relatively little disruption to hospital function and to the hospital-physician relationships [11].

The economic dam had a huge hole in it, and the so-called New Jersey DRG plan was the best choice Medicare had to plug it up. That's what they did that got us to where we are today.

DRGs Today

Today, there are several different DRG systems that were developed in or seen in the USA. They include:

- Medicare DRGs (CMS-DRG and MS-DRG)
- Refined DRGs (R-DRG)
- All-Patient DRGs (AP-DRG)
- Severity DRGs (S-DRG)
- All-Patient, Severity-Adjusted DRGs (APS-DRG) and All-Patient-Refined DRGs (APR-DRG)
- International-Refined DRGs (IR-DRG)

The APR-DRG system (All-Patient DRG system) is now commonly used by many private payers. CMS uses the Medicare Severity-DRG (MS-DRG), which is the Medicare-focused cousin of the APR-DRG system. It was implemented in 2008 and is updated yearly in the Federal Register. This section will focus on the MS-DRGs.

The DRG system sets forth a system of payment for the operating costs of acute care hospital inpatient stays under Medicare Part A (Hospital Insurance) based on prospectively set rates. This payment system is referred to as the inpatient prospective payment system (IPPS), commonly known as the DRG system. Under the IPPS, each case is categorized into a diagnosis-related group (DRG). Each DRG has a payment weight assigned to it, based on the average resources used to treat Medicare patients in that DRG [13].

The MS-DRG system is now the most commonly used DRG system, because it governs the ever-growing ranks of Medicare patients. The three levels of severity included in the MS-DRG system include the following:

- Major complication/comorbidity (MCC)
- Complication/comorbidity (CC)
- Noncomplication/comorbidity (non-CC)

These levels are calculated based on clinical factors—principally the patient's secondary diagnosis codes (such as pneumonia or sepsis) in addition to the primary diagnosis (hip fracture, etc.). Earlier iterations of DRG systems focused more on the institutional side, with the computational logic guided more by resources used rather than the diseases and patients treated.

The MS-DRG system also represents a significant expansion in the number of DRGs—from just under 500 to 758 in the Final Rule for 2016. The codes actually go all the way to 999, leaving room for more codes in the future.

Payments are calculated by multiplying the DRG weight by the dollar rate. The dollar rate is split between a standard nonlabor component and a labor component, which is adjusted by a geographic-specific wage index to account for cost of living variations across the country. Modifiers may also be added for situations involving the following:

- Teaching hospitals
- Hospitals with a disproportionate share of Medicaid or Medicare patients sole community hospitals
- Low-volume hospitals
- Medicare-dependent hospitals
- Exceptionally short stays
- Transfers
- New technology
- Exceptionally high-cost cases (outliers)

Recently, the government has even implemented a penalty modifier for hospitals that have high rates of preventable readmissions. Other changes are specific to hospitals participating in the value-based purchasing program [14]. All of these factors go into calculating the dollar rate for a particular hospital. This is the so-called dollar

conversion factor that is multiplied by the DRG-assigned weight to arrive at a DRG payment. See the example calculation below.

This chapter cannot hope to cover each of 758 DRGs with 2 and 3 adjustments for severity of illness. We will refer readers to the Final Rule, which can be found on the CMS websites, Final Rule for 2015 [15] and Final Rule for 2016 [16].

The Final Rule for 2016, articulating 5 new DRGs for 758 total is found in the references. In both the 2015 and 2016 sites, Table 5 will be a good first stop, listing each of the currently 758 DRGs with their weight and LOS and other data (753 DRGs for 2015).

There are, however, several important points for those of us who are the "documenters" to remember:

1. MS-DRGs are assigned using the:
   - Principal diagnosis, which in some cases may function as a complication/comorbidity (CC) or a major complication/comorbidity (MCC)
   - Secondary diagnoses, which include CCs and MCCs
   - Surgical or other invasive procedures
   - Sex of the patient
   - Discharge status
2. One MS-DRG is assigned to each inpatient stay.
3. Diagnoses and procedures are designated by ICD-10-CM and PCS codes.
4. The typical decision process used to assign an MS-DRG to a case is as follows:
   A case is assigned to one of 25 major diagnostic categories (MDC), which are mutually exclusive groups based on principal diagnosis. MS-DRG assignment is based upon the considerations mentioned in no. 1 above. Each MDC is organized into one of two sections—surgical or medical. The surgical section classifies all surgical conditions based upon operating room procedures. The medical section classifies all diagnostic conditions based upon diagnosis codes. The majority of MDCs are organized by major body system and/or are associated with a particular medical specialty.
5. One group not assigned to MDCs is called Pre-MDC MS-DRGs, which consist of cases that are grouped by surgical procedure rather than principal diagnosis. The Pre-MDC MS-DRG group includes bone marrow and organ transplant cases as well as tracheostomy cases.

An example is as follows:

DRG 329 is for major small and large bowel procedures with major comorbid conditions (MCC).

It has a relative weight of 5.0709.

DRG 330 is major small and large bowel procedures with comorbid conditions (CC).

It has a relative weight of 2.5511.

Finally, DRG 331 is major small and large bowel procedures without CC/MCC.

It has a relative weight of 1.6491.

Whether the patient falls under DRG 329, 330, or 331will depend on the documentation of the comorbid medical conditions or major medical comorbid conditions (CC or MCC).

Do the math:

If the documentation supports MS-DRG 331 with secondary diagnoses (none of which are considered CC or MCC) of:

- Chronic kidney disease (ICD-9 585; ICD-10 N18.1)
- Diabetes without mention of complication (ICD-9 250; ICD-10 E11.9)
- Anemia (ICD-9 285.9; ICD-10 D50.9/unspecified)
- Obesity (ICD-9 278.0; ICD-10 E66.9/unspecified)

Then we will multiply the blended institutional DRG value of $5, 025 times the weight for DRG 331of 1.6491, to get a DRG payment of *$8286*.

On the other hand, if there are documented major medical comorbid conditions present, the figures look like this:

- Chronic kidney disease, stage IV (ICD-9 585.4; ICD-10 N18.4)
- Diabetes, uncontrolled (ICD-9 250; ICD-10 E10.x)
- Acute posthemorrhagic anemia (ICD-9 285.9; ICD-10 D62)
- Morbid obesity (ICD-9 278.01; ICD-10 E66.01)

Then if we multiply the blended institutional DRG value of the same $5025 (a value taken from a real yet anonymous hospital) times the weight assigned to DRG 329 (bowel procedure, with MCCs) of 5.0709, the DRG payment becomes *$25,481*.

Other factors go into the determination of the blended institutional DRG value, including labor and nonlabor costs, geographic wage indices, whether it is a teaching hospital, whether it is a hospital with a disproportionate share of Medicaid or Medicare patients, a sole community hospital, certain low-volume hospitals, Medicare-dependent hospitals, exceptionally short stays, transfers, whether it involves new technology, and exceptionally high-cost cases (outliers). Surgeons will not be dealing with these factors on an individual case basis, but we will be determining the presence of primary and secondary diagnoses by our documentation.

To summarize important points about MS-DRGs for surgeons, the documentation using at least code-like language of ICD-10 or ICD-9 will allow your hospital coders to correctly submit DRG claims. Admittedly the formulation is complex, but both your hospital and the Medicare claims processing intermediary will have "grouper" software to do the math.

Outpatient Prospective Payment System (OPPS) and the Ambulatory Payment Classification (APC) [17,18]

Similar to the DRG system of the inpatient prospective payment system (IPPS), which separates hospitalization reimbursement into "buckets" based on ICD-9 and ICD-10 codes, the Ambulatory Payment Classification (APC) system of outpatient

prospective payment system (OPPS) has categorized certain reimbursable outpatient charges according to CPT or HCPCS codes. The implementation of the OPPS was somewhat less contentious than DRGs since the theory and practice of prospective payments by Medicare had already been established.

On August 1, 2000, the Centers for Medicare and Medicaid Services (CMS) began using the outpatient prospective payment system as authorized by Section 1833(t) of the Social Security Act (the Act) as amended by Section 4533 of the Balanced Budget Act of 1997. The OPPS was implemented in calendar year 2000 and pays for:

- Designated hospital outpatient services
- Certain Medicare Part B services furnished to hospital inpatients when Part A payment cannot be made
- Partial hospitalization services furnished by hospitals or community mental health centers (CMHC)
- Hepatitis B vaccines and their administration, splints, casts, and antigens furnished by a home health agency (HHA) to patients who are not under a home health plan of care or to hospice patients for treatment of non-terminal illness
- An initial preventive physical examination performed within the first 12 months of Medicare Part B coverage

Certain types of services are excluded from payment under the OPPS (such as outpatient therapy services and screening and diagnostic mammography).

Simply put, APCs are the DRG units of the OPPS. They are defined by CPT procedure codes, however, or the Medicare HCPCS codes. HCPCS codes are the CPT codes approved by Medicare plus CMS's own codes for things that are not covered by CPT.

Facility and Non-facility CPT Reimbursement

To understand fees paid for these outpatient services, we will look at the Medicare fee schedule.

CPT Code Detail—38500: Biopsy of Lymph Node

Medicare fee	National
Facility	$ 263.75
Non-facility	$ 341.01
RVUs—non-facility	
Work RVU	3.79000
PE RVU	4.84000

Medicare fee	National
Malpractice RVU	0.86000
Total RVU	9.49000
Conversion factor	$ 35.93350
RVUs—facility	
Work RVU	3.79000
PE RVU	2.69000
Malpractice RVU	0.86000
Total RVU	7.34000
Conversion factor	$ 35.93350

If you perform the surgery in a facility associated with your hospital, then you will be reimbursed for your work on CPT code 38500 for 7.34 RVUs; when multiplied by the conversion factor of $35.93350, your reimbursement is $263.75. On the other hand, if you do it in your office, the RVUs are 9.49 times the same conversion factor of $35.9335, yielding a payment to you of $341.01.

Also in this table is some of the reasoning. Look at the practice expense (PE) component of your reimbursement. If you do it in your office, you are paying the practice expense component (supplies, dressings, equipment, etc.), so you receive more practice expense reimbursement, 4.84 RVUs. Contrarily, if you do it in the hospital outpatient surgery area, the hospital is paying for that part, not you, so you only receive part of the practice expense, 2.69 RVU. You will still be using some practice expense supplies, such as for dressings and wound care in the post-op visit.

So we receive less if we do the surgery away from our own office or surgery facility and we use the hospital or other designated Medicare facility.

That difference is part, but not the entire fee the facility charges for "hosting" your patient. That is the facility fee. It is greater than the difference in your facility and non-facility RVU or reimbursement.

So that explains the difference in the surgeon's reimbursement on a Medicare fee schedule. But the patient may very well see a bigger bill than that small difference.

Facility Fees

If you perform the above surgery in a hospital-owned outpatient surgery or day surgery area, the patient will likely receive a bill for their part of the procedure that is significantly greater than the difference between your facility and non-facility RVUs. This is the facility fee. It is a legitimate fee for which the hospital-based outpatient facility can expect reimbursement. Their logic has to do with the fact that the hospital has other greater ongoing expenses to just maintain the hospital as an entity, expenses for services the public expects. These are expenses such as costs for keeping the hospital open 24–7, including emergency rooms, 24 h nursing care, etc. These costs are recognized by and accepted by Medicare for providing these

services. When the hospital runs a day surgery facility, they can arguably provide greater resources to apply to getting the procedure safely done than the surgeon can in her or his office. These fees are published by CMS and seen in a final rule that is updated in an addendum usually every quarter.

The problem is that sometimes the patient gets a bill 3 times higher than they would in a surgeon's office, and they may not have expected that. With current insurance plans having high deductibles and co-pays, the 20 % co-pay that Medicare beneficiaries must pay can triple or more.

Disclosure of fees to patients

As Anna Wilde Mathews points out in her 2009 article in *The Wall Street Journal*, "When patients visit some doctors' offices and urgent-care clinics, they're increasingly running into something unexpected: billing as though they had gone to a hospital" [19].

Over the past 5 years, there have been numerous issues and complaints raised by the public over receiving these large second bills from a hospital called facility fees [20,21].

Given the concern raised by the public, many states as well as individual facilities have explored and implemented regulations to inform patients and document the disclosure to patients that they will be subject to a facility fee separate from the doctor's fee. In the Medicare program, they will be obligated to 20 % of that fee as well as that of their surgeon. Now, in a major turnabout, the CMS has proposed tighter controls over facility fees as part of a plan to redirect billions of dollars Medicare spends annually on outpatient care [21]. A 2015 law prohibits hospitals from charging facility fees when they open new hospital-owned outpatient offices that are not physically a part of the hospital. However, existing facilities are exempt from the new rule, so the practice will remain widespread for some time.

Please note, the discussions in this section relate to outpatient surgery performed in a hospital-owned facility, called a hospital outpatient department (HOPD). Ambulatory surgery centers (ASCs) are a related part of the OPPS but have a separate fee schedule from the APC schedule discussed here.

Summary

In the years since 1982, tremendous reform has taken place in medical reimbursement. This chapter has provided a brief overview of the history of Medicare as it relates to the prospective payment policies of the diagnostic-related groups. That history is a good example of the complexities of healthcare reform and its impact. The next evolution of the DRG program was the "outpatient DRG" program of the Ambulatory Payment Classification (APC). An unexpected outcome of the OPPS and APCs is the

facility fee that can have very significant impact on our patients. Our understanding of these issues and providing patient's an explanation may ease that part of their pain.

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Chapter 8
Acute Care Surgical Bundled Payment Models

Guy R. Orangio

Abbreviations

ACA	Patient Protection and Affordable Care Act
ACC	American College of Cardiology
ACE	Acute care episode
AHA	American Heart Association
AMA	American Medical Association
AMC	Academic medical center
APM	Alternative payment models
BPCI initiative	Bundled Payments for Care Improvement initiative
CABG	Coronary artery bypass graft
CCG	Conventional care group
CHIP	Children's Health Insurance Payment
CMMI	Center for Medicare and Medicaid Innovation
CMS	Centers for Medicare and Medicaid Services
CPT	Current Procedural Terminology
DRGs	Diagnosis-related groups
EHRs	Electronic health records
FFS	Fee for service
GDP	Gross domestic product
GHP	Geisinger Health Plan
HCFA	Health Care Financing Administration
HHAs	Home health agencies
HHS	Health and Human Services

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ICU	Intensive care unit
IDS	Integrated delivery system
IPPS	Inpatient prospective payment system
IRFs	Inpatient rehabilitation facilities
LOS	Length of stay
LTCHs	Long-term care hospitals
MACRA	Medicare Access and CHIP Reauthorization Act 2015
MS-DRG	Medicare Severity-Diagnosis-Related Group
NHI	National health insurance
NHR	National Healthcare Reform
NHS	National health spending
PACS	Post-acute care payment system
PCG	ProvenCare Group
PFS	Physician Fee Schedule
RBRVS	Resource-based relative value scale
SGR	Sustainable growth rate
SNFs	Skilled nursing facilities
SSTA	Social Security Tax Act
STS	Society of Thoracic Surgeons
TCP	Total compensation package
TEFRA	Tax Equity and Fiscal Responsibility Act
TPPs	Third-party payers
wRVU	Work relative value unit

Introduction

National health expenditure growth in the United States (US) is projected to average 5.8 % for 2014–2024. The healthcare cost share of the US gross domestic product (GDP) was projected to rise from 17.4 % in 2013 to 19.6 % in 2014. The overall national health spending (NHS) growth during this period is projected to average 5.8 %, thus rising to $5.4 trillion by 2024, while the GDP is projected to rise on average of 4.7 %. This is in contrast to the years following the recession through 2013, when growth rates for NHS remained near 4 %, close to historically low rates. In 2014 the projected NHS will increase to 5.5 %; this is the first time since 2007 that growth will exceed 5.0 %.

There are several reasons for this projected increase:

1. The major reason is health insurance coverage expansions under the Affordable Care Act of 2010, primarily through Medicaid or the new health insurance marketplaces.
2. Partly as a result of expensive new treatments for hepatitis C (prescription drug spending has increased dramatically in 2014 to 12.6 %).
3. A rebound in healthcare prices in 2016–2018 (from recent historically low growth rates).
4. Increase in Medicare enrollment [1].

Historical Perspectives

Historically NHS spending has been an ongoing "economic" battle on the national front, and over the last 10 years, it has moved to the forefront. This chapter will discuss some historical perspectives as to why the *fee-for-service* method of physician reimbursement has become *public enemy number one.*

Healthcare reform (HCR) has become one of the most important social movements since Franklin Delano Roosevelt signed the Social Security Tax Act (SSTA) of 1935. He was the first president to advocate federal assistance to the elderly; the SSTA was a social welfare legislative act. It included old-age insurance (Title I), unemployment compensation (Title III), aid to families with dependent children (Title IV), maternal and child health (Title V), public health services (Title VI), and aid to the blind (Title X) [2, 3]. President Roosevelt wanted to include national health insurance (NHI) in the bill; however, his advisors at the time of development of the bill were concerned that attaching NHI to the bill would prevent passage of the act [2, 3]. President Roosevelt was under tremendous pressure from the American Medical Association (AMA) not to include NHI in his Tax Act, and he did yield to that pressure [2, 3].

Over the next 30 years, there were continued federal discussions on the development of some form of federal health insurance program. President Harry Truman was a staunch supporter of national health insurance (NHI), but he did not have the political support of the Congress to pass such a bill while he was president. It wasn't until July 30, 1965, when President Lyndon B. Johnson signed Medicare and Medicaid amendments (Titles XVIII and XIX) of the Social Security Act that instituted a national health insurance program in the United States [4]. At the signing ceremony in 1965, President Johnsons' speech was dedicated to past President Truman (who was in attendance), thanking him for his efforts and influence during the development and the passage of these amendments. The reality of the cost of Medicare became evident very quickly: first-year Medicare costs were for hospital payments $2.4 billion and physician payments $640 million. Since 1965 the cost of Medicare and Medicaid has continued to rise and to this date has never been reformed.

President Barack Obama had National Healthcare Reform (NHR) as part of his campaign for president in 2006 [5]. On March 23, 2010, he signed into law the Patient Protection and Affordable Care Act (ACA) [6]. Healthcare reform in the United States is happening now, and it is moving at an unprecedented speed.

Healthcare reform is not a new topic, and the previous paragraphs point out a very important premise: that the delivery of healthcare in the United States is expensive and this cost cannot continue at the current rate of increase. One of the main targets of healthcare reform is the current method of physician reimbursement, fee for service (FFS). Since the inception of the Part B Physician Fee Schedule (PFS) and the continued increase in healthcare costs, the Congress and CMS have focused on disassembling the current FFS system and replace it with alternative payment models (APMs).

The ACA mandated many of these changes in the delivery of healthcare in the United States. One of the most significant aspects of the law is the incentive to develop APMs. With the repeal of the sustainable growth rate (SGR) by the Congress passed on April 15, 2015, the Medicare Access and Children Health Insurance Payment (CHIP) Reauthorization Act (MACRA) stabilized the Medicare PFS with a 0.5 % increase in reimbursements to physicians through 2019 [6].

These two laws are the most significant federal mandates developed to dismantle the FFS and to change the delivery of healthcare in the United States. The ACA has incorporated into physician reimbursement some quality indicators, which incentivize physicians through bonus payments or penalties.

Alternative Payment Models

The principles of the alternative payment models (APM) are to decrease the cost of healthcare and develop reimbursement models that will share the economic risks of delivering healthcare. In order to potentiate the development of APMs, the ACA authorized the creation of the Center for Medicare and Medicaid Innovation (CMMI) and provided it with $11 billion for developing pilot projects and demonstration programs to decrease the cost and still maintain high quality of care. Pilot programs are currently under way. These programs are directed toward various different methods of organizing and/or changing reimbursement for providers ("providers" are independent healthcare professionals, of which over 70 % are physicians) other than the current fee-for-service (FFS) method [7, 8]. This reorganization of physicians must be interpreted as "mandating" physician integration of some form or another: direct employment, physician network affiliation, or "virtual" integration.

The ACA, under the direction of the CMMI, developed a voluntary National Pilot Program on payment bundling, titled the Bundled Payments for Care Improvement (BPCI) initiative. In the BPCI initiative, a single healthcare provider, such as a hospital or physician group, receives a bundled payment for an acute inpatient episode of care that includes physician services and all post-acute care and outpatient services, stipulating that the episode of care starts three days prior to admission and ends thirty days after discharge [7, 8]. The BPCI is composed of four care models, which broadly defines bundled payments for multiple service beneficiaries received during an episode of care (Table 8.1). The law does stipulate that the bundle global is three days before and thirty days after discharge for acute care; however, the law does give the Secretary of Health and Human Services (HHS) very broad powers to choose an alternate episode length (60 or 90 days). The secretary in the pilot program may choose up to eight healthcare conditions to include in the program and has wide discretion in designing payment contracts for the pilot program and defining the covered in by the bundled payment. The development of BPCI is intended to potentially decrease the cost of care delivered by instituting a risk payment model that will force integration of

Table 8.1 Bundled Payments for Care Improvement (BPCI) initiative design

	Model 1	Model 2	Model 3	Model 4
Episode of care	All DRGs, all acute care patients	Selected DRGs, hospital plus post-acute care period	Selected DRGs, post-acute care period only	Selected DRGs, hospital plus readmissions
Services included in the bundle	All Part A services paid as part of the MS-DRG payment	All non-hospice Part A and B services during the initial inpatient stay, post-acute period, and readmissions	All non-hospice Part A and B services during the post-acute care period and readmissions	All non-hospice Part A and B services (including hospital and physician) during initial inpatient stay and readmissions
Payment	Retrospective	Retrospective	Retrospective	Prospective

www.cms.gov (2015-08-13)

Model 1: the episode of care is defined as the inpatient stay in the acute care hospital. The hospital is paid a discounted amount under the IPPS (original Medicare IPPS). The physicians are paid separately for their services under the Medicare Part B Physician Fee Schedule

Model 2 and 3: this is a retrospective payment system that at the time of reconciliation the total expenditures (all services during the episode of care are compared against the "target price" (bundle)) are determined by CMS. If the total expenditures are below the target bundle, then CMS shares the savings with the awardee. If the total expenditures are above the target bundle, then the awardee recoupment amount to CMS. Under this model Medicare continues to pay FFS payments to providers and suppliers furnishing services to beneficiaries

Model 4: CMS makes a single prospective bundled payment to the hospital that encompasses services for that episode: all services (hospital, physicians, and other providers during this episode of care) are encompassed in this bundled payment including the entire inpatient stay and any related readmissions. All physicians and other providers are paid through the hospital from the prospective bundled payment amount

physicians into networks and put the economic burden of delivering healthcare at a lower cost and still maintaining high quality on the providers. The ACA mandates that providers be paid for care coordination, medication reconciliation, discharge planning, transitional care, and other similar services, enhancing incentives for providing patient-centered care [9, 10].

Medicare's current reimbursement system differs for each setting in which care is delivered. In 1982 the Congress passed the Tax Equity and Fiscal Responsibility Act (TEFRA), which put a cap per case ceiling on hospital reimbursements. In 1983 the Congress passed the inpatient prospective payment system (IPPS) as amendments to the Social Security Act, the first bundled payment model. This cap payment was instituted in response to high rates of Medicare Part A payments [10, 11].

The IPPS classifies hospital cases into approximately 500 Medicare Severity-Diagnosis-Related Groups (MS-DRGs) that reflect the hospital-provided care cost (e.g., colectomy). Medicare reimburses the hospital *a flat rate* for each *episode of care provided* without any additional payment above that DRG. However, there are some exceptions: some DRGs receive a *higher* payment if patients are treated with certain approved technologies that are new and expensive and if they offer a

substantial clinical improvement over existing treatments or for cases that lead to unusually expensive episodes of care (termed, "outlier").

In 1997, the Balanced Budget Act mandated a prospective payment system for post-acute care (PAC) providers. The previous method of reimbursement was based on the costs of the services provided to patients with a ceiling for any additional services generated. The previous methodology produced powerful economic incentives to move patients from the acute care setting to the post-acute care setting, thereby increasing use and costs.

The prospective post-acute care payment system (PACS) did not completely solve the problem because there were still separate payment methods for each post-acute setting. All post-acute settings are based on the providers' average costs, which are different across providers. The skilled nursing facilities (SNFs) are reimbursed on a per diem basis, while long-term care hospitals (LTCHs), inpatient rehabilitation facilities (IRFs), and home health agencies (HHAs) are paid a fixed rate for an episode of care. These inequities in the PACS of reimbursements are also powerful economic incentives to direct patients to higher reimbursed post-acute care settings even though the care may be similar [10–12].

Surgical Bundled Payment Demonstration Projects and Models

Medicare Participating Heart Bypass Center Demonstration (1990–1996)

The Medicare Participating Heart Bypass Center Demonstration was conducted to assess the feasibility and cost-effectiveness of a negotiated all-inclusive bundled payment arrangement for coronary artery bypass graft (CABG) surgery while maintaining high-quality care. Hospitals were paid a single, negotiated global amount to hospitals covering all Part A and B inpatient services.

In 1988, the Health Care Financing Administration (HCFA) solicited bids from hospitals and physicians to participate in the Medicare Participating Heart Bypass Center Demonstration. It studied the national trends in Medicare bypass surgery (CABG) between 1990 and 1996. HCFA received 209 applications from 734 solicited hospitals, of which 42 were requested to submit extensive formal applications that detailed their qualifications and bypass volumes. Twenty-seven hospitals submitted *best price* proposals, covering all inpatient institutional and physician services for Medicare patients discharged under DRGs 106 and 107 (CABG with/without catheterization). Applicants were ranked by ten criteria and four sites were originally chosen. In the spring of 1993, Medicare expanded the demonstration to include three more sites.

Medicare paid each site a single global rate for each discharge under DRGs 106 and 107. As stated, this included inpatient hospital and physician services, also the

standard Medicare hospital pass-throughs including capital and direct medical education expenditures, and any related readmissions during the demonstration. Pre- and post-discharge physician services were excluded except for those included in the surgeon's global fee. All participants agreed to forego any outlier payments for very expensive cases. There was included in the payment an outlier payment based on the hospital's previous experience. The demonstration was set at 3 years, ending June of 1994. The hospitals and physicians were permitted to divide up the payment any way they chose; this is referred to as gainsharing. The payment rate was updated annually according to hospital prospective payment and physician fee schedule rules [13, 14].

It was a very early attempt at a demonstration project to analyze the feasibility of the government negotiating discounts with providers, to determine any Medicare program savings, hospital cost savings, changes in patient inhospital and post-discharge outcomes, lengths of stay (LOS), intensive care unit (ICU) days, complications, changes in appropriateness for surgery, and satisfaction of patients and referring physicians (determined by survey). There were study findings that addressed changes in patient care and hospital management, hospital competition and marketing, payments to physicians, achievement of participant's goals, and whether there were reimbursement difficulties.

This was a comprehensive demonstration project that is very similar to Model 4 of the BPCI of today. This is interesting because this program was prior to the Medicare Physician Fee Schedule, so the negotiations were based on usual and customary physician charges at the time the demonstration started. The negotiated global price was based on separate estimates of Medicare Part A and Part B. All hospitals began allocating the single payment according to amounts internally agreed upon in their bids. The four major specialties involved in a bypass admission, the surgeons, the anesthesiologists, the cardiologists, and the radiologists, all received fixed capitated amounts regardless of the services provided to different patients. Consulting physicians were paid their customary allowable Medicare fees out of a set-side pool in the Part B component (which meant they could not bill Medicare directly), and they did not receive any of the *shared savings* from the project (which did cause a great deal of dissatisfaction) [13, 14].

Then two very important changes occurred during this demonstration that affected physician payments during the project and nationally. The most significant occurred in 1991, when the Congress introduced the Medicare Physician Fee Schedule (PFS) based on resource-based relative value scale (RBRVS), which effectively reduced HCFA payments on Part B reimbursements across the nation. The new PFS should have affected reimbursement to the physicians within this project; however, none of the hospitals adjusted their physician payments within the demonstration. The physicians under the demonstration were effectively sheltered from the PFS rollbacks on bypass surgery, catheterization, and other procedures.

The second change in physician payments came from Saint Joseph's Hospital of Atlanta (a nonacademic medical center), which developed a cost reduction allocation program that provided bonuses (incentives) to individual surgeons who documented savings to the institution during the demonstration. To be eligible the

surgeon had to meet stringent quality and volume criteria, set by the hospital. The bonus formula not only insulated the surgeons from the fee schedule rollbacks but awarded them 25 % of any hospital cost savings they personally generated [13, 14].

Overall this project was felt to be successful in achieving many of its goals:

Medicare saved $42.3 million on bypass patients in the demonstration hospitals, basically 10 % of the $438 million of the expected national spending on bypass patients, including the 90-day post-discharge period. Eighty-six percent of the savings came from HCFA-negotiated discounts on Part A and B inpatient expected payments, 5 % on lower than expected post-acute discharge care (unexpected), and 9 % from shifts in market share in favor of lower-cost demonstration facilities.

Beneficiaries and their insurers saved another $7.9 million in Part B coinsurance payments. The total Medicare savings were estimated to have been $50.3 million over 5 years. The alignment of physicians and hospitals did result in a decrease in costs ranging from 2 to 23 % between 1990 and 1993. The one hospital that did not experience a change in physician practice patterns had an increase in cost, but by 1993 the physicians' behavior did change, and eventually hospital costs decreased. The three hospitals that did decrease average costs (statistically significant) did so by decreasing ICU days and routine nursing care expense, with total hospital savings of 10–40 %.

The nonacademic medical centers had 30 % decrease in pharmacy costs per case and a corresponding decrease in laboratory costs between 20 and 60 %. Operating room costs did increase by 10–20 % in all institutions; this was believed to be due to an increase in complexity of the procedures.

The cost savings per hospital did vary by DRG, but the nonacademic hospitals had a much higher increase in average profit, while the academic hospitals had major losses in their average per case margins [13, 14].

Patient outcomes in the all demonstration hospitals together did exhibit a lower inpatient mortality rate (4.6 % averaged over 1991–1996) as compared to Medicare national rates (6.5 % in 1990 and 5.45 in 1996).

The demonstration hospitals overall did not see the increase in market share that they thought they would at the beginning of the demonstration. In fact, the academic centers saw a significant decline during the course of the project. This could have been partly because of their teaching and research mission, but also due to the shift in CABG surgery to the private sector.

Physician referrals did not increase in the demonstration hospitals, even though 66 % of referring physicians were aware of the demonstration. Their referrals were based on their relationship with hospital staff, a demonstrated superiority of surgical outcomes in their patients, and overall hospital reputation.

There was a special panel of clinical experts that rated the appropriateness of CABG surgery along several aspects of care, including clinical presentation, surgical risk, number and type of arterial vessels occluded, extent of drug therapy, and ejection fraction. Appropriateness of care did not change across all participating hospitals in the demonstration; physicians maintained the same clinical indications for the procedure.

Table 8.2 Average length of stay for Medicare bypass patients, 1990–1996*

	1990	1991	1992	1993	1994	1995	1996
National	15.0 days	14.0 days	13.5 days	12.3 days	11.3 days	10.4 days	9.9 days
DRG							
DRG 106	15.7	15.2	14.6	13.5	12.4	10.5	10.9
DRG 107	12.2	11.5	11.2	10.3	9.5	8.7	8.2
DRG 108	17.9	15.3	15.3	14.4	13.4	12.8	12.3
Teaching status							
Major	16.5	15.3	14.6	13.6	12.6	11.5	10.4
Minor	14.5	13.7	13.2	12.2	11.2	10.3	9.7
None	14.1	13.3	12.8	11.8	10.8	10.0	9.7

Only acute care hospital stays

Includes all CABG procedures as defined by DRG 106 (with cardiac catheterization), 107 (without cardiac catheterization) and 108 may include other major vascular procedures

*Unadjusted for case mix index (Modified from National Medicare Trends in Heart Bypass Surgery: 1990–1996)

All demonstration hospitals had strong declines in length of stay when compared with all competitor hospitals, overall 2–3 days (Table 8.2).

Overall patient satisfaction was equal in the demonstration hospitals to competitor hospitals; there was a perceived trend in the demonstration hospitals that there was higher patient satisfaction due to the expertise of the nursing and ancillary care staff. During the demonstration, the hospitals introduced major innovations, for example, developing clinical nurse specialists who were in charge of each bypass patient's hospital stay.

Demonstration patients found the billing process easier, probably because they were pleased with a single bundled co-pay amount, which included the hospital and physician services. HCFA fixed the co-pay for both DRGs 106 and 107, for all payers. The caveat was that the third-party payers (TPPs) were all displeased with the flat actuarial payment calculated by HCFA. A flat rate assumes that all patients had identical supplemental polices, which was not true: patients did differ in their policies in terms of coverage, deductibles, and coinsurance amounts. Also the TPPs stated the payment model was incompatible with their computer systems, which require itemized charges, services, and payments by CPT codes; they did not have the software for a bundled payment model. Some of the TPPs wanted to pay less when their beneficiaries used fewer physician services, but this was not permitted under the demonstration.

In Michigan and Ohio, Medicaid programs refused to pay any amounts based on the flat rates for joint Medicare-Medicaid beneficiaries, because their fee schedule was less than the flat rate. One of the TPPs administrators stated, "We didn't agree to participate in the demonstration."

Most of the demonstration hospitals agreed that the single largest administrative burden was in billing and collections. The hospitals were not capable early on to assemble a complete package of bills and invoice the government nor to collect the supplements from the TPPs.

The demonstration hospitals did believe they developed a process they could use in the future to win private sector contracts and be prepared for the billing challenges. All demonstration hospitals also believed they were in a better position to negotiate managed care contracts because of their experience with the demonstration.

The demonstration project did highlight major obstacles for all academic medical centers (AMCs) under a global budget environment. The AMCs have an educational and research mission that is cumbersome in a fast-moving market. The AMCs have closed hospital staffs as well as medical student and physician-in-training teaching responsibilities that increased operative times and overhead costs for services. Some academic surgeons felt that changing their practice patterns would interfere with their teaching obligations, so they were reluctant to change physician behavior [13, 14].

Geisinger Health System's ProvenCare Program for Coronary Artery

Bypass Graft Surgery 2006

Geisinger Health System is an integrated delivery system (IDS) located in Central and Northeastern Pennsylvania comprising over 700 employed physicians across 55 clinical practice sites, providing adult and pediatric primary and specialty care. It also includes three acute care hospitals (one closed and two open staff), specialty hospitals, and ambulatory surgery campuses. It is also a health insurance company, the Geisinger Health Plan (GHP), with over 250,000 members. Geisinger serves a population of 2.5 million people of all socioeconomic levels. It is well respected for its healthcare innovation over the last two decades [15]. In 2006, Geisinger Health System's ProvenCare program developed an acute care episode-based payment for coronary artery bypass graft surgery (CABG).

This CABG surgery bundled payment model has three core components:

1. Establishing implementable best practices across the entire episode of care
2. Developing risk-based pricing, including an up-front discount to the health plan or payer for the historical readmission rate
3. Establishing a mechanism for patient engagement

The ProvenCare CABG program developed several multidisciplinary teams. A clinical leadership team systematically translated professional society guidelines into 40 discrete care process steps. The multidisciplinary clinical operations team consisting of clinical, information technology, process improvement, and operations staff integrated these care process steps into both human and electronic workflows to ensure reliability. The electronic health record (EHR) workflow sheet tracks the key clinical elements, alerts providers if a step is incomplete, automatically routes

related messages and orders to facilitate flow, and keeps the entire care delivery team informed.

The multidisciplinary steering committee established patient outcome goals, tracked progress, performed financial analyses, negotiated payment terms, oversaw claims and program administration, and investigated GHP employer-customer preferences. The ProvenCare CABG team developed patient education materials specific for this program and a "patient compact" to highlight the partnership of care between Geisinger, the patient, and the patient's family.

GHP realized early on that employer customers were attracted to a single-episode bundled package that includes all hospital and professional fees, all routine post-discharge care (e.g., cardiac rehabilitation), and management of any related complications occurring within the 90-day global period for elective CABG surgery.

Geisinger realized that not all complications could be eliminated, so the episode bundled payment rate included a 50 % discount for the average related postoperative readmission within the 90-day global period [15, 16].

Incorporated into the model were 40 best practice elements taken from the American Heart Association (AHA) and the American College of Cardiology (ACC) in the AHA/ACC Guideline update for CABG surgery. These best practice guidelines were hardwired in to the electronic health record (EHR) workflow, and clinicians were required to comply with the best practices or document the rationale for not using a specific best practice element.

The cohort of ProvenCare Group (PCG) 2006 was compared to the conventional care group (CCG) (2005) before the program was initiated. Utilizing the preoperative and operative characteristics used in the Society of Thoracic Surgeons (STS) outcome predicting algorithms, expected outcomes were similar in both groups. The CCG observed rates of adverse events were already lower than the predicted by the STS algorithms. When both groups were compared, adverse advents occurred less often in the PCG than in the CCG, but only the discharge to home group was statistically significant. There was no deterioration in outcomes in the ProvenCare Group. The performance of the reliability of the best practice element (40) physician compliance was 59 % in the CCG; after institution of the ProvenCare within 3 months, the reliability rose to 100 %. This allowed all cardiac surgeons to receive 100 % of their cardiac quality indicator incentive bonus [16].

The financial outcomes did show that, although the median postoperative length of stay was the same (4 days) for both the CCG and PCG, the mean length of stay was 16 % lower in the PCG (5.3 days) than the CCG (6.3 days), with a reduction of 5 % in hospital charges. The 30-day readmission rate fell 15.5 %, from 7.1 % in the CCG to 6 %. Interestingly, even with the clinical success, ProvenCare had little effect on market demand from employers or purchasers of healthcare [16].

Geisinger Health System's innovative experience has been able to develop payment models that are (1) aligning incentives while rewarding the creation of a enhanced healthcare value, (2) recognizing that electronic health records (EHRs) are essential but also not entirely "sufficient" to create sustainable change in healthcare delivery, and (3) creating policies that encourage organization of healthcare delivery while integrating greater collaboration between payers and providers.

Geisinger Health System did admit that the resources used to develop the ProvenCare process were substantial and required a critical mass of engagement by many parties in order to implement and sustain the project. They further discussed that expanding ProvenCare to larger systems than theirs, or to systems without a provider-owned insurance company, would add significant logistical complications. They questioned if a similar process could be applied to a nonintegrated delivery system, particularly if there was no structural alignment of hospital and physician financial incentives. They also pointed out that ProvenCare had little effect on market demand from employers or purchasers of healthcare. This may be because CABG cost is a small fraction of an employer's total healthcare spending. Geisinger realizes that the ProvenCare model and its elements continually need ongoing refinement [15, 16].

The Medicare Acute Care Episode (ACE) Demonstration for Orthopedic and Cardiovascular Surgery 2009–2012

The Medicare Acute Care Episode (ACE) Demonstration for Orthopedic and Cardiovascular Surgery was a 3-year demonstration project (2009–2012) funded by the Centers for Medicare and Medicaid Services (CMS), which used a bundled payment model for both hospital and physician services for a select set of acute inpatient episodes of care for major orthopedic and cardiovascular procedures. Under this demonstration Medicare paid the hospital a single payment for both hospital (Part A) and physician (Part B) services furnished during an inpatient stay. The procedures included Medicare Severity-Diagnosis-Related Groups (MS-DRGs): cardiac valve, and other major cardiothoracic valves, cardiac defibrillator implant, coronary artery bypass graft (CABG), cardiac pacemaker implant or revision, percutaneous coronary intervention, and hip or knee replacement or revision. Some of the key goals were:

1. To improve the quality of care
2. To increase collaboration among providers and health systems
3. To reduce Medicare payments for acute care services by using an innovative payment model (bundle) and a contractual arrangement to provide certain services

During the demonstration physicians were paid 100% of Medicare Part B Physician Fee Schedule (PFS), and hospitals did not negotiate lower rates. Medicare also utilized a mechanism to share savings with Medicare beneficiaries, as well as a mechanism for gainsharing (provider incentive program), between physicians and hospitals.

The ACE Demonstration focused on several issues: enhanced coordination of care, cost-control incentives, adoption of standardized clinical protocols, and quality improvement activities. In April 2009 five ACE sites began implementing the demonstration project. In order to estimate the impact of the demonstration on ACE sites, two comparison groups of non-ACE hospitals were included:

1. "True comparison group," located outside of the market areas of the demonstration sites
2. "Non-demonstration treatment group," located in the same market areas as the demonstration sites

The results were felt to be positive on several areas because the ACE Demonstration sites implemented and refined strategies to achieve cost savings and quality and coordination of care goals. For example:

Standardization of operating processes and materials resulted in enhanced coordination and quality of care across the hospital system at ACE sites. The physicians coordinated with administration standardized order sets and materials. The orthopedic service line had more success with standardization of materials in the hip and knee replacement bundles than the cardiovascular service line.

ACE patient navigators (specialized case managers) acted to coordinate care by tracking quality measures, while physicians focused on monitoring and improving patient outcomes.

Vendor negotiations along both service lines produced the greatest cost savings for the ACE sites. The ACE Demonstration fostered more collaboration between physicians and hospital administrators to monitor the cost of materials.

Data transparency on quality and cost augmented the level of engagement of physicians and staff to work together to meet metric goals and heightened their awareness of cost and quality outcomes. Physicians received monthly "report cards" on cost and quality data, which enhanced discussions between physicians and their peers and administrators. These reports allowed transparency of data, which led to a direct connection of the outcome measures to gainsharing.

Gainsharing strategies incentivized physicians to achieve cost and quality benchmarks and to introduce operational changes to decrease cost and increase quality. However, gainsharing payments to physicians were capped and could not exceed 25 % of the amount that is normally paid under the Medicare Part B PFS. This probably dis-incentivized any further cost or quality benefits.

Medicare beneficiaries were mostly unaware of the demonstration and did not prioritize the ACE Medicare Shared Savings. They relied on normal referral patterns through their primary care physicians or the reputation of the hospital or surgeon.

There were Medicare savings from ACE Demonstration which were attributed to discounted bundled payments to ACE sites. Medicare saved an average of $585.00 per episode from combined Part A and B, for a total of $7.3 million for all episodes (12,501 episodes) across all sites. There was an increase in PAC costs, which reduced savings by 45 %. Overall the Medicare savings across all sites for Part A and B expected payments decreased to $319.00 per episode of care (12,501 episodes), an approximate total net savings of $4 million.

Impact on quality of care was measured, utilizing 22 nationally recognized quality of care resource utilization and case mix measures, and evaluated for each group. The major aspects of quality included (1) the severity of admitted patients, (2) processes, and (3) outcomes. Eight of the 22 measures were taken directly from

the medical records of the ACE sites. There was no access to the medical records of the non-ACE sites, so a Medicare claims-based comparison analysis was utilized. ACE sites did maintain their quality of care levels without any change in clinical outcomes or in the severity index of patients admitted during the demonstration. The ACE Demonstration lacked quantitative evidence of improvements in quality; however, there was some qualitative evidence that ACE Demonstration sites did work to improve processes and outcomes more than the non-ACE sites.

ACE Demonstration sites anticipated that the demonstration would increase inpatient volume, one of the reasons some of the hospitals participated. The qualitative data found that the ACE Demonstration did not have any impact on ACE site inpatient volume. The non-demonstration sites were not affected by the ACE Demonstration. There was a large increase in home health usage in the ACE Demonstration orthopedic sites, which corresponded to a decreased length of stay [17, 18].

Evaluation of the Surgical Bundled Payment Demonstration and Private Sector Models

The core principles of a surgical bundled payment model are control of costs in the delivery of care to patients during the episode, and increased quality of care, with better outcomes and decreased readmission rates. The three models discussed all have some basic principles: each is based in the acute care setting (inpatient hospital); all are inclusive of global bundled payments based on hospital and physician costs, utilizing specific MS-DRGs; all hospitals and healthcare systems were chosen for their high volume of procedures and perceived quality, combining academic and nonacademic centers (CMS demonstration sites) and compared with "like" local hospitals, while the ProvenCare model is a "highly" IDS in the private sector (compared pre- and post-ProvenCare development); and the basic principle was to decease costs and increase quality (Table 8.3).

The underlying mechanism in order for a surgical bundle payment model to be successful is for hospitals or IDS to incentivize physicians to change behavior and increase collaboration with the sites, in order to develop highly efficient, patient-centered processes and pathways with mutual goals to decrease costs and coordinate care across an episode and to maintain or increase quality.

Overall there were many "improvements" in the delivery of care to the Medicare beneficiaries through the Medicare Demonstration Projects; these were directly related to physician and hospital collaboration. Through collaboration there was the creation of patient-centered pathways that better coordinated care, and there were programs developed that standardized operating processes and materials, development of specialty nursing (patient navigators), combined negotiations with vendors, and enhanced physician-staff interaction and innovation [14–18].

Table 8.3 Comparison of basic principles of surgery global bundles (equivalent to BPCI model 4)

Name	MS-DRGs	Global period	Physician incentives[a]	Quality metrics (part of $ incentives)	Length of stay (LOS)	Mortality	Cost savings (varied on DRG)
Medicare demonstration 1990–1996	CABG	Pre-/acute care episode/post only for outlier care	Gainsharing permitted, in some cases capped for MDs	Yes	Decreased	Decreased	Yes: pharmacy mainly
GHS ProvenCare (integrated system)	CABG	Pre-/acute care episode/30 days post discharge	Complex salary and incentive (bonus) program	Yes	Decreased	Unchanged	Yes
Medicare demonstration 2009–1012	CABG/orthopedic hips and knee replacement	Pre-/acute care episode and 30 days post discharge	Gainsharing permitted, but capped	Yes	Decreased	Unchanged	Yes pharmacy and DME (implants)

[a]Medicare Demonstration (both) – all sites were permitted to gainshare: most were based on cost savings generated but based on only 25% above Medicare PFS Part B, except for Atlanta which developed cost reduction allocation program (above the 25% of Part B) and provided individual incentives to surgeons who demonstrated quality and outcome measures

The global bundled payment projects did expose some concerns, especially with academic centers because of their mission for research and teaching physicians in training and medical students. This does highlight an existing problem in the United States, as far as paying for graduate medical education (GME). With this APM there was no increase in market share for the hospitals or systems involved; in fact, the academic centers noted a decrease in market share. Even ProvenCare did not see an increase in market share; GHS felt it was because the CABG model was not that attractive to employers and third-party payers, because of the already low cost of the procedures. GHS does feel that developing global bundles for orthopedic hip/knee replacement would be more attractive. In the Medicare ACE Demonstration, the sites did see the most cost savings on the orthopedic DRGs [17, 18].

Interestingly, in the Medicare Demonstration projects, there was no change in physician referral patterns at any of the sites. Referrals were still based on long-standing relationships of the primary care physician with the hospital staff, hospital reputation, and its outcomes. The Medicare ACE Demonstration also paid incentives to Medicare beneficiaries (shared saving) if they utilized the demonstration sites, but the patients still followed their primary physician's recommendations [18].

During the Medicare Demonstration projects, the administrations did admit that the largest burden was billings and collections. They had difficulty in putting together billing packages that the third-party payers could utilize. This was one of the reasons for failure of the introduction of the 2008 PROMETHEUS bundled payment model: market forces and third-party payers' computer systems were not ready for the global payment [19].

In the final analysis, the Medicare Demonstrations 1990–1996 and 2009–2012 did save money for Medicare and the participating sites through cost savings in pharmacy, DMEs, and decrease in intensive care unit (ICU) days and overall LOS. These savings were a direct effect of physician (surgeons) leadership and collaboration with hospital administrators, through development of specialized nursing care, patient pathways, and patient navigators and the development of shared savings at most of the ACE Demonstration sites.

These bundle payment models also proved that "incentivizing" physicians and hospitals to work together to develop patient-centered pathways that can decrease costs and maintain or increase quality can improve quality and decrease costs. It also pointed out that if incentives are "capped at low rates," there will also be an unintended "cap" on cost savings [18]. A very important fact of these "bundled payment models" discussed was that in both the Medicare and ProvenCare projects, the physicians controlled the appropriateness of care and patient-centered delivery of that care, which is a foundation of US healthcare.

What is very encouraging is that many of the physicians in these demonstrations were in private practice or group practice; this may change over the next 5–10 years, but as of the end of 2012 Medicare Demonstration; Medicare is recognizing that private practice is still powerful and dependable for the delivery of healthcare on the local level.

All of the examples discussed; prove that the *foundation* of physician reimbursement, whether in the integrated Geisinger Healthcare System or Medicare

Demonstrations (in which some of the sites became a hybrid integrated delivery system or a virtual integrated delivery systems between physicians and hospitals) *that* the RBRVS remains the foundation of physician reimbursement.

A brief discussion of the Geisinger Health System Physician Compensation Model is important because this model or a modification of this model is what physicians are faced with today and probably in the future. GHS ties the employed physician's total compensation package (TCP) to the care they deliver and to patient outcomes. The TCP has two components, 80 % base salary (based on wRVUs) and a 20 % variable (incentive) portion, which is directly dependent on annual performance of the individual or the group. The variable is paid twice a year, March (reflecting July through December performance) and September (reflecting January through June performance) (Tables 8.4, 8.5 and 8.6).

GHP is a successful model according to the metrics, which appear to be directly beneficial to the management of the delivery system. More importantly, the GHS physician compensation package shows that integrated delivery systems can be successful when a majority of physician reimbursement is provided by fee for service (FFS) [20].

Summary

The "acute care surgical bundle payment model" for a procedure as discussed is becoming one of the APMs that is moving to the forefront of healthcare reform. The Medicare Demonstrations of 1990–1996 and 2009–2012 did achieve economic

Table 8.4 Geisinger compensation plan: base salary

Work effort includes teaching, research, and administrative activities measured in wRVUs[a]
Increase or decrease depending on the physicians working above or below the expected ranges
Depends on the physician experience/specialty market rates
GHS goal is for physician to exceed the 60 percentile for their specialty area in both FFS work unit production and compensation

[a]Work RVU metric is based on the relative value based upon time, skill, training, and intensity of the service delivered

Table 8.5 Geisinger compensation plan: performance incentives for specialists

Variable portion of compensation of 20 % of incentive payment
Five general areas
Quality (40 %): defined for each specialty through discussion with specialty leaders and senior management (average 4–5 measures)
Innovation (10 %): development (e.g., Wound Care Center)
Legacy (10 %): under Geisinger's educational and research mission
Growth (15 %): increase in Geisinger's patient population
Financial (25 %): directly reflects wRVU recognized under FFS

Table 8.6 Geisinger total compensation plan

Compensation plan	Basis/metric	Incentive pool (%)	Total compensation (%)
Base salary	FFS wRVUs		80
Performance incentive specialists			
	Quality	40	8
	Financial (wRVUs)	25	5
	Innovation	10	
	Legacy	10	
	Growth	15	
	Innovation/legacy/growth	25	7

savings. The GHS ProvenCare in the private sector also has achieved some economic savings.

The most important "foundation blocks" for success are physician integration and cooperation within a hospital system or healthcare network. Physician leadership is vital to achieve the success of these payment models because we are the driving force for decreasing pharmacy and DME costs, decreasing in days in ICU and LOS, and maintaining quality patient outcomes.

Gainsharing in the Medicare models and incentives in the employed models are essential for success, where absence of financial incentive or capping incentives becomes dis-incentives for further savings.

The utilization of quality metrics in all three models was a part of the physician incentive. In the Medicare ACE Demonstration and the GHS ProvenCare, the physicians did reach very high compliance levels: in the GHS ProvenCare, it was 100 %, but in none of these models did it appear to influence patient outcomes (quality). The future of APMs may have to include incentives for specialized nursing and patient navigators who are directly responsible for most of the daily care of the patients.

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Chapter 9
Accountable Care Organizations

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What Is an ACO?

With increasing emphasis being placed on quality and cost containment in healthcare, it is difficult to ignore the shortcomings of our current system. Whereas the individual provider has traditionally borne the burden of ensuring the delivery of appropriate care and that performance falls within acceptable limits, there are clear limitations to this approach. For example, in our current healthcare system, patients often receive care from numerous providers in the inpatient and/or outpatient setting and potentially across several institutions. In this context, a thorough, longitudinal assessment of quality requires a coordinated effort across all providers and institutions with infrastructure for data collection and analysis as well as an established mechanism for feedback—an enterprise that is not only likely to be costly but also seems to lack feasibility in the current practice environment.

The Institute of Medicine (IOM) has endorsed the development of programs for coordinating performance measurement with a focus on collective accountability for the delivery of high-quality care across relevant stakeholders [1]. With these objectives in mind, Accountable Care Organizations (ACOs) were conceived and have been put forth as a part of the Affordable Care Act [2]. Broadly speaking, ACOs are healthcare organizations composed of physicians (both primary care and specialist), hospitals, and other healthcare providers who work in partnership to provide care for

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a defined patient population [3–5]. While many definitions for ACOs exist, the common underlying concept is that the organization is *collectively accountable for both the efficiency and cost of delivered care*. The main goals are similar across all types of ACOs: to provide high-value, patient-focused healthcare, to enhance the individual patient's healthcare experience, to improve the overall health of the ACO's defined patient population, and to reduce the cost of delivered care [6, 7].

Core Principles and Key Features

While an ACO's structure will be based on the needs of the organization and the patient population for which it is responsible, there are several common key features. The three core defining principles are [8]:

- A healthcare provider-led organization jointly responsible for the cost and quality of the full spectrum of care provided for a defined patient population
- Mechanisms in place that can reliably and accurately measure the quality of care and feedback data that can serve as the basis for quality improvement efforts
- Incentive bonus payments based on both the quality of care and reducing the overall costs of care

In addition, common to all types of ACOs are local accountability to a defined patient population with an emphasis on primary care, an adequately sized patient population (i.e., adequately powered sample) to allow benchmarks for quality and spending to be reliably and robustly established, a formal leadership and legal structure, and an opportunity for shared savings (i.e., a proportion of the difference between a projected target and total overall spending [with the intent for spending to be under the target]) as an incentive for delivering efficient, high-quality care [2].

Patient Attribution

Before any financial models can be developed for an ACO, a defined patient population for which the organization will be held accountable must be specified—this is known as attribution. Primary care has been deemed the foundation upon which ACOs will be built. Because primary care providers already care for an established patient population, attribution methods utilize these predefined groups of patients to define the ACO population, sometimes known as *covered lives*. Once an ACO has been established, a list of participating providers and the patients to whom they provide care is assembled and subsequently analyzed to ascertain which patients will be included. In this type of attribution model, patients are assigned based on the quantity and timing of evaluation and management services [2]. An ACO must be accountable for no fewer than 5000 patients and commit to a 3-year contract term in order to remain eligible for the Medicare Shared Savings

Program [9]. However, beyond this provision, there are no other specific mandates in terms of patient load, and further details may be left to the discretion of the individual ACO.

The Centers for Medicare and Medicaid Services (CMS) have established that a patient must receive the "plurality" of his/her care from ACO primary care providers to be attributed [10]. As a hypothetical example, a patient may see three different providers for various reasons. Of the three, one clinician provides the majority (e.g., 80 %) of the patient's health management. If that same clinician participates in an ACO, then the patient could be attributed to the organization. However, if the patient receives an equal proportion of services from all three providers, attribution might then be based on the duration of the relationship with each provider. The manner in which "plurality" is defined remains somewhat ambiguous and was not fully characterized in the Medicare Shared Savings Program Final Rule. Furthermore, it is important to note that although a patient may be attributed to an ACO, that patient is not obligated to only receive care from the ACO and may choose to see outside providers at any time. Nonetheless, the ACO to which the patient is attributed will be accountable for all healthcare spending, regardless of whether a provider is in the ACO or not. As such, the manner in which patients receiving care from multiple providers across more than one ACO are attributed will likely need to be negotiated when contracts between ACOs and payers are established.

The attribution process can occur either prospectively (i.e., the patient list is established at the beginning of a performance year and based on the use of services from the previous year [prospective attribution]) or retrospectively (i.e., the patient list is established at the end of a performance year and based on the use of services for the year that just ended [performance-year attribution]) [11, 12]. With prospective attribution, ACO providers are aware of exactly which patients are covered under the ACO and included in that year's performance evaluation and, as such, can potentially take a more proactive role in quality management and cost containment. Even though this process occurs at the beginning of the performance year and the ACO is aware of the patients it is responsible for, during that year some patients may choose to utilize a varying number of services outside the ACO. This represents a potentially significant disadvantage to prospective attribution as it may not be possible to predict or control which patients will choose to seek care outside of the ACO at any given time. Regardless, with the prospective attribution model, the ACO remains accountable for all the care (within and outside the ACO) its patients receive. Therefore, should many of the attributed patients elect to receive services outside of the organization, the ACO would remain responsible for the quality and cost of care provided outside the organization. In contrast, with performance-year attribution, patients who do not utilize many services within the ACO will be less likely to be included, ensuring the ACO is held accountable only for patients for whom care is actually being provided. In a study comparing these two attribution approaches, the performance-year method was found to be superior in terms of cost reduction for attributed patients as well as overlap of the patients attributed to the ACO and those that actually utilized ACO services [12].

A third option for attribution has been proposed and is a hybrid approach known as "preliminary prospective assignment with final retrospective reconciliation."

Much like prospective attribution, patients are assigned at the beginning of a performance year. However, the ACO population is updated quarterly, adding patients who meet criteria and removing those no longer receiving care within the ACO (i.e., retrospective reconciliation) [12, 13]. Presently, there are no data comparing this method to the other two attribution processes. Clearly, the attribution process will be the critical determinant of success or failure for the great majority of ACO models.

How ACOs Differ from Traditional Models

ACOs share some features with health maintenance organizations (HMO), preferred provider organizations (PPO), patient-centered medical homes (PCMH), and integrated delivery systems. Like HMOs and PPOs that contract with a "network" of providers, ACOs rely on member providers to deliver care to the attributed patients. However, ACO participation for patients is not tied to any specific enrollment provisions. As such, patients are not relegated to seeing "in-network" providers and are free to see clinicians outside of the ACO without financial penalty or the need for a referral [14]. Unlike HMOs and PPOs where multiple independent providers (often practicing at several different facilities that do not directly communicate with one another) can be involved in the care of a single patient, ACOs aim to mitigate these disadvantages by integrating care along the lines of an integrated health system by providing all, or most services, under one centralized umbrella organization that facilitates communication between providers through the use of health technology such as a uniform (across ACO providers) electronic health record. In so doing, the ACO attempts to improve the patient experience and decrease costs by eliminating duplicative services, improve communication between providers by incentivizing collaboration with one another for the purpose of delivering high-quality care, and improve overall efficiency. ACOs are similar to PCMH in that the patient is placed at the center of the care model with the primary care provider responsible for coordinating most of the specialty care, home healthcare, and community services [15]. However, an important difference between these models is the financial incentive (through shared savings programs) for improving care collaboration [14, 16].

ACO Organizational Structures

Not all ACOs share the same needs. As such, there are a variety of organizational structures reflecting these competing priorities. Six main individual ACO types within three broad clusters have been described, each with its own set of advantages and disadvantages [17].

Cluster One: Physician-Led ACOs

The first ACO cluster is physician-led and includes the Independent Physician Group (IPG), Physician Group Alliance (PGA), and Expanded Physician Group (EPG). IPGs are typically comprised of smaller physician groups with a single group owner and lack service contracts with other providers. The main advantage of IPGs is that they employ a lower-cost organizational structure with fewer providers, allowing them to quickly make changes to their care delivery model at less expense relative to other types of ACOs. However, IPGs only oversee outpatient care, leaving them unable to influence inpatient care for their patients. Also, these small ACOs are at higher risk for cost fluctuation and substantial losses because of their typically smaller patient population.

PGAs can be co-owned by multiple physician groups, but are otherwise similar to IPGs in that they direct only outpatient care, do not contract with outside providers for other services, and are not affiliated with a hospital system. In contrast to IPGs, PGAs have multiple stakeholders that often include more specialized providers, affording patients access to a wider spectrum of outpatient care. As such, PGAs are potentially better equipped to limit subspecialty care outside the ACO and to decrease the need for inpatient care (in theory because of the availability of specialty care) resulting in greater control over cost containment. However, component practices that comprise the PGAs may have a difficult time effectively collaborating as a larger, comprehensive unit and may also face challenges exchanging patient data across different electronic medical records (EMRs).

EPGs can have a single or multiple owners and also offer only outpatient services. In contrast to IPGs and PGAs, they may establish contracts with providers outside the ACO to offer advanced as well as inpatient services to their patients. Depending upon the size of the ACO and the number of patients it is responsible for, the ACO may choose to contract with one or more hospitals for inpatient care. The advantage of these outside contracts are that they allow the ACO to have a hand in the inpatient side of care and may also allow it to participate in this setting by hiring care coordinators and hospitalists who practice within contracting institutions. Issues with data exchange related to incompatible EMRs remain a concern. Furthermore, the details of how much control the ACO retains when contracting with hospitals have neither been defined nor well established. As such, there may be variability in contracts established with hospital partners.

Cluster Two: Hospital-Led ACOs

The second cluster is hospital led and includes Independent Hospital and Hospital Alliance ACOs. The former are single owner and offer both inpatient and outpatient services as well as advanced care. They do not contract with subspecialists or post-acute care facilities. By providing a controlled range of services, this organizational structure allows for lower operating costs and facilitates care coordination across both the outpatient and inpatient setting. However, since they may not provide specific

types of subspecialty care, patients with disease processes requiring such care would have to be referred outside the ACO, limiting the ACOs' ability to actively manage these episodes of care. By comparison, Hospital Alliance ACOs have multiple owners and are a partnership of multiple hospitals and/or physician groups. Even though they provide both inpatient and outpatient services, they will also contract with outside providers for outpatient care. They may also contract with specialized providers to offer specialty care, affording the advantage of a wide breadth of coverage and the potential to have a hand in the management of all aspects of care. Similar to PGAs and EPGs, there are multiple owners, facilities, providers, and stakeholders creating the possibility for operational issues relating to efficiency and data sharing.

Cluster Three: Integrated Delivery Systems

Full Spectrum Integrated ACOs are large, are well financed, and have an established data sharing program in place (such as a common EMR). They have the ability to deliver all facets of care across the outpatient and inpatient setting, including specialty, and post-acute care. These ACOs are in a position to minimize the redundancy of services and to directly analyze their own data in a comprehensive manner allowing the design and then application of quality-enhancing and cost-saving practices. However, these ACOs are large enterprises with a number of working components which can make ACO-wide practice changes difficult and potentially expensive. It has been estimated that a fully integrated ACO would need ~400,000 patients in order to be successful, making it limited to larger metropolitan areas with dominant healthcare systems.

Flow of Money in an ACO

Types of Payment Models

Much like ACO organizational structures, ACO payment models are flexible and can be individualized based on each organization's needs. Currently, the main reimbursement models are fee-for-service, bundled payments, and capitation. Each type of reimbursement model has unique advantages and disadvantages with regard to shared savings and financial risk for the ACO.

Fee-for-Service

With traditional fee-for-service, the clinician provides care to a patient and then bills the insurer a fee based on predetermined rates. Total healthcare costs are therefore entirely predicated on the amount of care provided. In the current

fee-for-service model, financial risk is mainly absorbed by the payer, and there is no disincentive on the provider side to perform fewer services. Although this has been the basis for reimbursement in US healthcare for some time, it places little emphasis on care coordination among providers, is thought to potentially foster a culture of doing more (without consideration for value, appropriateness, or necessity), and is believed to play a significant role in the rising cost of healthcare [18].

Bundling

In bundled payment models, a single global payment is paid for a defined episode of care (e.g., all the care required to treat a patient with a newly diagnosed colon cancer). The care episode can be based on either a diagnosis or a procedure. The predetermined amount allocated to the payment bundle is intended to compensate for the range of services administered by all the providers involved in a given episode of care. One advantage to this type of payment model is the potential for upfront risk adjustment of the bundle based on the individual patient and/or disease process. Risk adjustment would allow for the amount of a bundle associated with a specific care episode to increase for sicker or more complex patients, potentially safeguarding against providers avoiding higher-risk patients for fear of financial penalty [19]. However, there are still limited data on the efficacy of bundling. Although there are clear differences compared to fee-for-service, bundled payments do not entirely obviate the incentive for providers to increase the volume of patients seen in order to increase the number of care episodes and associated reimbursements [2]. At present, the logistics of how each provider involved in an episode of care will be compensated from the bundled payment to the ACO is still largely unclear.

Capitation

In capitation, a fixed amount is paid per enrolled patient for a defined time period, regardless of whether the patient utilizes services during that time period or not. Full capitation occurs when all services provided by all providers for a specific patient within a given time period are reimbursed under this fixed amount. However, the concept of partial capitation may also be utilized whereby certain specified services have a fixed payment, while other nonspecified services still operate under fee-for-service. Frequently, the payment amount is predetermined using actuarial insurance estimates based on historical use of services. In the ACO model, if a patient does not follow the actuarial assumptions used to calculate the capitated payment and instead requires more care and services, providers assume that financial risk. Although the capitation model encourages efficiency and incentivizes providers to control costs, it may also compel providers to avoid sicker or higher-risk patients [19] and/or potentially limit services to control spending [18].

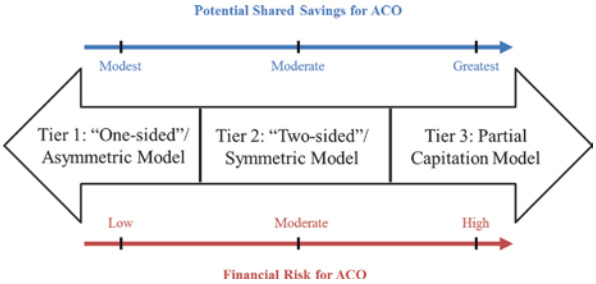

Fig. 9.1 Payment model continuum (Adapted from Shortell SM, Health Affairs, 2010 and Axene, ACO Toolkit (Part 3))

Three-Tiered Payment Model Continuum for ACOs

A three-tiered ACO payment model has been established to try to meet the varying needs of the different types of ACOs (Fig. 9.1) [2, 20]. Tier 1 ACOs, also known as "one sided" or "asymmetric," primarily operate using fee-for-service payments. As such, the tier 1 model is associated with the least amount of financial risk assumed by the ACO and has very few requirements in terms of organizational structure. Smaller ACOs with less starting capital and less established infrastructure (such as an IPG or PGA) would be more likely to adopt the "one-sided" approach. The potential shared savings bonus in the tier 1 payment model is the lowest of the three tiers because it is also associated with the least financial risk. In this case, shared savings occur when the ACO is able to contain costs such that they fall below an established projected spending target. Initially, the Medicare Shared Savings Program proposed to limit ACOs to one 3-year contract agreement within the one-sided tier 1 model in order to encourage these ACOs to advance to tier 2 and eventually accept more of the financial risk as well as more of the potential benefit from shared savings. Critics of this stipulation felt that smaller, less experienced ACOs might not be ready to advance to tier 2 after only 3 years, putting the program at risk for attrition. As such, the final rule was amended such that tier 1 ACOs could elect to enter an additional 3-year contract term within the same tier (for a maximum of two consecutive 3-year contract periods) provided that it has met quality performance standards during at least one of the first 2 years of the initial contract period and has not accrued significant financial losses [9].

Tier 2, also known as a "two-sided" or "symmetric" model, employs a fee-for-service payment structure as well as some payments through bundling and partial capitation. While ACOs in this tier take on more financial accountability and risk, they are also eligible for more shared savings bonuses. For example, since some tier 2 reimbursements come from bundles, if the total costs for a "bundled" episode of care fall below the associated payment, the ACO is eligible for a share of that difference. Conversely, if the ACO spends more than the bundled payment, it will be held responsible for at least part of the spending overage. ACOs are also required to provide clinical and patient experience data as well as comprehensive reports regarding

expenses and earnings. ACOs with more capacity for care coordination and better infrastructure (such as EPGs) are likely to consider tier 2. It is important to note that once an ACO accepts a tier 2 payment structure, it may not later decide to scale back to a tier 1 model [9].

Tier 3 adopts the "partial capitation model," in which payments occur through partial, or in some cases full, capitation as well as extensive bundled payments. While ACOs in this tier assume the highest financial risk when spending exceeds predefined targets, they also stand to earn the greatest proportion of shared savings bonuses if costs are effectively controlled. Even more than tier 2, this model mandates extensive financial, comprehensive performance, and patient-centered data reporting. Tier 3 models may be most suitable for organizations with established infrastructure, such as Full Spectrum Integrated ACOs.

Impact of ACOs on Spending and Quality

Quality/Performance Measurement

In order to critically evaluate the quality of patient care and to provide the type of comprehensive feedback necessary to inform meaningful quality improvement efforts, a mechanism for measurement and reporting is needed. In this regard, a set of well-defined and standardized quality measures need to be established with accurate, consistent, and transparent data collection and reporting. These metrics should equally reflect nationally endorsed measures of quality, the ACO's priorities for care, safety, efficiency, and cost, as well as the needs of the patient population. The measures should not only represent clinical parameters but also patient-centered metrics such as satisfaction and perceived value of care. Recognizably, implementation of a comprehensive performance measurement system requires access to and control over the entire spectrum of patient care. It also requires a well-developed infrastructure within the ACO. Most small ACOs may start with a basic level of performance measurement (such as metrics based solely on administrative data), while larger ACOs with more developed infrastructure might also implement and utilize clinically richer data sources. The largest, most integrated ACOs with the widest breadth of clinical services and oversight can theoretically record and track administrative, clinical, and patient-centered data yielding the most comprehensive and inclusive assessment of performance, outcomes, and care quality.

Once a collection of performance metrics has been established, targets or "benchmarks" for quality must then be set. A minimum level of performance is associated with each individual metric, indicating the threshold the ACO must achieve during a specified ascertainment period. Although the issue of defining benchmarks has not yet been completely resolved, budgetary and performance targets may be established by the ACO in collaboration with payers based on historical spending and performance by the ACO's providers [2]. Reaching quality

benchmarks is a prerequisite for the ACO to qualify for shared savings bonuses at the end of the performance period. The performance and financial observation periods should coincide such that care quality and accrued costs can be evaluated simultaneously. This will theoretically ensure cost reductions are not achieved at the expense of quality. Because patient-related factors outside of the control of the ACO, such as the patient's age or the burden of comorbid conditions, can negatively impact outcomes of care and lead to increased costs, appropriate risk adjustment of quality measures and benchmarks should be applied to ensure the ascertainment of the outcome(s) of interest is not confounded by non-modifiable patient factors [21].

Shared Savings Incentives and Risk Potential

"Bending the cost curve" through shared accountability, reduced spending, and healthcare reform requires incentivizing both payers and providers. For the ACO, additional earnings through shared savings are predicated upon actual spending being less than projected while, at the same time, meeting or exceeding quality benchmarks [22]. Simply stated, when an ACO provides quality care while spending less money than anticipated, the leftover difference is the "shared savings." That shared savings are then split between the ACO and the payer. The proportion of the shared savings allocated to the ACO is based upon the amount of risk the organization is willing to accept. As previously described, tier 3 ACOs are eligible for the largest proportion of shared savings because they accept the greatest financial risk.

Figure 9.2a, b and Table 9.1 provide a hypothetical example of how shared savings and shared losses work (the percentages used in this example are based on the Medicare Shared Savings Program Final Rule) [9]. Any spending over the target amount is the financial risk assumed by the ACO and/or payer with this amount depending upon the designated ACO tier. For ACO A (low risk) in tier 1, the distribution of savings according to the MSSP Final Rule is 50 % up to 10 % of the spending target, whereas the risk is 0 %. Therefore, if ACO A were to spend $40 million less than their projected target, it would be eligible for 50 % ($20 million) of that savings. By comparison, even if the ACO were to spend more than the target, the payer assumes 100 % of the risk. For ACO B in tier 2, there is a greater financial reward as it is eligible for a 60 % share up to 15 % of the spending target. However, it would also be responsible for 40–60 % of the losses up to 5 % of the spending target. As such, if ACO B were to spend $120 million less than its spending projection in a given year, it would be allocated $72 million of the savings. But, if it were to spend $50 million over the target, it would be responsible for 50 % of the losses ($25 million). Finally, ACO C in tier 3 has the greatest potential allocation of shared savings (75 % of savings up to 20 % of the spending target) and is associated with the highest level of potential risk (75 % responsibility for losses up to 15 % of spending target). In this same example, if ACO C saves $160 million, it would be eligible for 75 % ($120 million in additional capital) of the shared savings, while the other $40 million would go to the payer. On the other hand, if spending instead

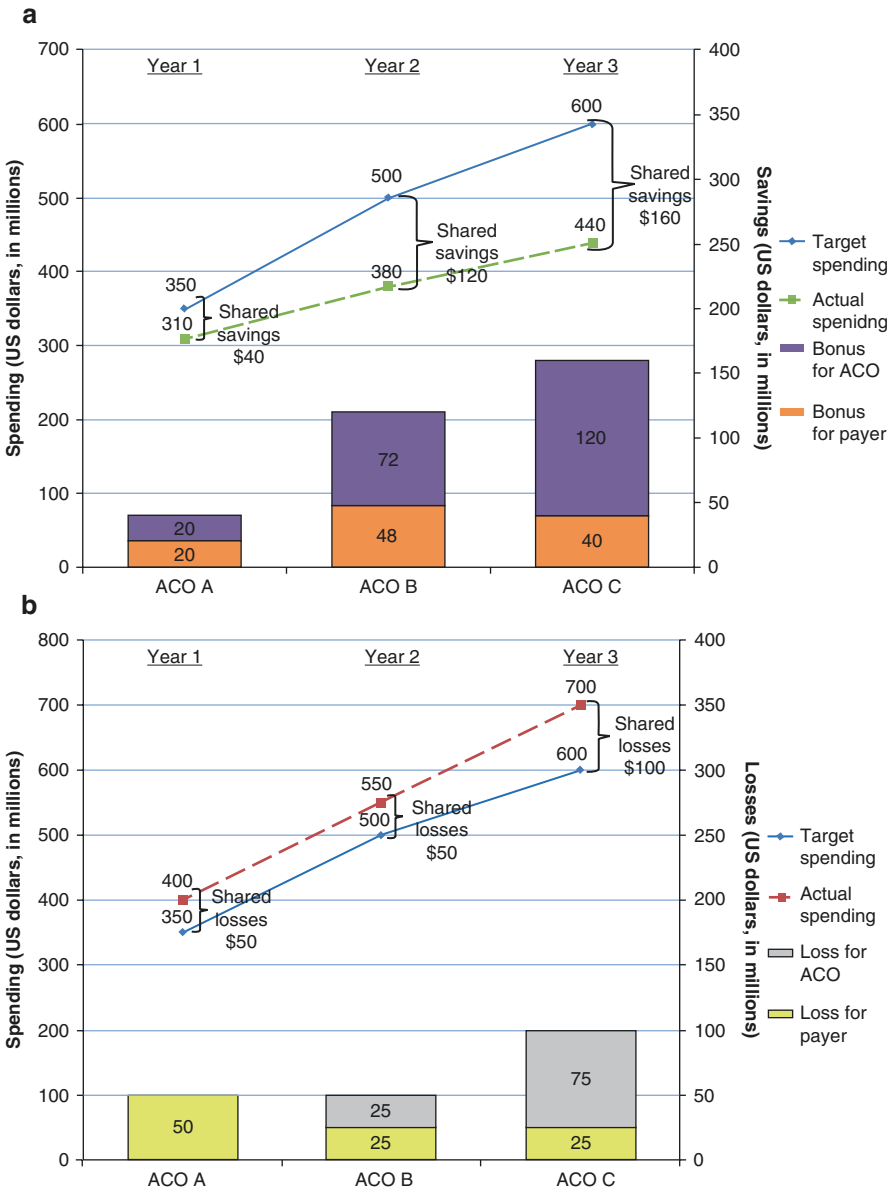

Fig. 9.2 Hypothetical examples of potential for shared savings (**a**) and shared losses (**b**)

exceeds the target by $100 million, the ACO would be responsible for 75 % ($75 million) in losses.

Much like with bundled payments, when shared savings are achieved, they are allocated to the ACO as a whole. How the money is distributed among the providers is left up to the individual ACO. However, the overall goal would theoretically be to

Table 9.1 Savings and losses examples described in Fig. 9.2a, b

Shared savings potential			
Example	**Year 1**	**Year 2**	**Year 3**
ACO A Tier 1 Savings distribution (ACO/payer) = 50/50 %	Target spending = $350 million	Target spending = $500 million	Target spending = $600 million
Actual spending ($)	$310 million	$425 million	$500 million
Total shared savings ($)	$40 million	$75 million	$100 million
Bonus for ACO ($)	$20 million	$37.5 million	$50 million
Bonus for payer ($)	$20 million	$37.5 million	$50 million
ACO B Tier 2 Savings distribution (ACO/payer) = 60/40 %	Target spending = $350 million	Target spending = $500 million	Target spending = $600 million
Actual spending ($)	$275 million	$380 million	$450 million
Total shared savings ($)	$75 million	$120 million	$150 million
Bonus for ACO ($)	$45 million	$72 million	$90 million
Bonus for payer ($)	$30 million	$48 million	$60 million
ACO C Tier 3 Savings distribution (ACO/payer) = 75/25 %	Target spending = $350 million	Target spending = $500 million	Target spending = $600 million
Actual spending ($)	$270 million	$380 million	$440 million
Total shared savings ($)	$80 million	$120 million	$160 million
Bonus for ACO ($)	$60 million	$90 million	$120 million
Bonus for payer ($)	$20 million	$30 million	$40 million
Shared losses risk			
Example	**Year 1**	**Year 2**	**Year 3**
ACO A Tier 1 Risk distribution (ACO/payer) = 0/100 %	Target spending = $350 million	Target spending = $500 million	Target spending = $600 million
Actual spending ($)	$400 million	$575 million	$700 million
Total shared losses ($)	$50 million	$75 million	$100 million
Loss for ACO ($)	$0	$0	$0
Loss for payer ($)	$50 million	$75 million	$100 million
ACO B Tier 2 Risk distribution (ACO/payer) = 50/50 %	Target spending = $350 million	Target spending = $500 million	Target spending = $600 million
Actual spending ($)	$380 million	$550 million	$660 million
Total shared losses ($)	$30 million	$50 million	$60 million
Loss for ACO ($)	$15 million	$25 million	$30 million
Loss for payer ($)	$15 million	$25 million	$30 million

Table 9.1 (continued)

ACO C Tier 3 Risk distribution (ACO/payer) = 75/25 %	Target spending = $350 million	Target spending = $500 million	Target spending = $600 million
Actual spending ($)	$410 million	$580 million	$700 million
Total shared losses ($)	$60 million	$80 million	$100 million
Loss for ACO ($)	$45 million	$60 million	$75 million
Loss for payer ($)	$15 million	$20 million	$25 million

reward providers that contribute to the savings. It may be that some of the bonuses are reinvested into the ACO to offset operational costs, while a proportion of the savings are directed toward the providers that make, or have made, substantial practice changes contributing to improved care quality and cost containment. Presently, the method of incentive bonus distribution among providers within an ACO is unclear and yet to be defined.

Impact of ACOs on Quality, Spending, and Patient Experience

At this time, there are only a few studies that have evaluated changes in quality and spending associated with the ACO-type models. A study evaluating spending trends in an early pilot program (called the Medicare Physician Group Practice Demonstration [PGPD]) compared Medicare beneficiaries who were cared for by PGPD providers to a control (non-PGPD) group of Medicare beneficiaries. This demonstrated modest overall annual savings per beneficiary in the PGPD group, and among the poorest patients, dually eligible for both Medicare and Medicaid, these savings were the most pronounced [23].

The Alternative Quality Contract, another global payment system similar to an ACO, has been compared to a standard HMO model over a 3-year period. Aggregate healthcare spending increases per patient per quarter were significantly less in the global payment system, translating into a 1.9 % savings over the HMO model, and significant performance improvements in two out of three areas of healthcare examined—pediatric care and management of adult chronic medical conditions [24]. Spending data over a longer time period (2009–2012) was later analyzed and again compared to HMO patients. Compared to the HMO, the Alternative Quality Contract group was associated with significantly smaller spending increases over time with net savings achieved in each year of the study (due to spending below budget and quality bonus payments for achieving benchmarks in patient experience, processes, and outcomes) [25]. By comparison, a separate study examining the same Blue Cross Blue Shield Alternative Quality Contract also found, compared to an HMO control, increased savings with this global payment model over time, but did not find significant performance improvements [26].

In the first year of the Medicare Pioneer ACOs, overall reductions in healthcare spending (1.2%) in patients associated with ACOs were again noted [27]. With respect to quality and value of services, the use and spending associated with "low-value" services (defined as services that provide minimal clinical benefit across a variety of clinical categories [including cancer screening, imaging, preoperative testing, cardiovascular testing/procedures, and other invasive procedures]) have been compared between Medicare beneficiaries attributed to a Pioneer ACO and a control group of Medicare beneficiaries both before (2009–2011) and after (2012) ACO contracts were enacted. In the pre-ACO period, utilization of low-value services was found to be slightly lower in the ACO group baseline, but overall spending and spending trends year over year were generally similar between the ACO and non-ACO groups. However, in the post-ACO contract year, a 1.9% differential (between the ACO and non-ACO group) reduction in quantity of low-value services in the ACO group relative to expected utilization with a 4.5% differential reduction in spending on these low-value services was noted. This suggests effectiveness in terms of both limiting utilization of and spending on these services [28].

Although purely bundled payments do not represent the operational model for all ACOs, results from the Bundled Payments for Care Improvement (BPCI) initiative are also worth noting. In the BPCI, bundled reimbursement occurs for 1 of 48 eligible clinical conditions and tied to a given episode of care [29]. Preliminary data from the BPCI suggest that most facilities that participated were large, urban, high-volume centers financially linked to post-acute care facilities, that the number of enrolled conditions significantly decreased during the risk-bearing phase of implementation, and that variation in spending was mostly driven by condition-specific post-acute care and readmission [30]. In a before-and-after study evaluating total joint (hip and knee) arthroplasties, shorter length of hospital stay, decreased readmissions, and fewer discharges to other inpatient facilities were noted in the post-BPCI period [31].

While containment of healthcare spending is clearly an important component of the ACO model, patient experience is equally emphasized. However, to date, the impact of ACOs on patient satisfaction with medical care is unclear. When patients associated with a Medicare ACO were surveyed and their responses compared to a nonaffiliated group, significant improvements in timeliness and access to care in the ACO group were noted. At the same time, there were no notable changes in patient-physician interaction, patient satisfaction with their physician, or patient perceptions of overall care [32]. By comparison, in another study examining Medi-Cal beneficiaries aligned with ACOs compared to those who were not, smaller spending increases were observed in the ACO group without a clinically meaningful difference in patient experience between the groups [33].

Overall, while the few studies that have evaluated ACOs and similar models have shown modest reductions in spending when compared to more traditional payment models, more data are clearly required to ascertain whether ACO-associated care consistently impacts quality and patient experience. Future work in these areas will be needed to better understand the consequences of broader dissemination of ACOs.

Unresolved Issues About ACOs

A number of unresolved issues and questions about ACOs that still need to be clarified remain. Despite the existing data, the most important among these is whether outcomes of care, reduced spending, and concurrent improvements in both the quality of care and patient experience can be expected by going forward with broader implementation of the ACO model. Among the remaining unanswered questions are:

- How best to maintain patient confidentiality and privacy with increased data sharing through an ACO?
- What is the ideal method of patient attribution?
- How best to address accountability for patients that seek care outside of the ACO?
- Will uninsured patients be eligible for patient attribution, and if so, how?
- What is the optimal means of risk adjustment for spending, outcome, and patient satisfaction?
- How will "shared savings" actually be shared among providers within the ACO?
- How will ACOs address the competing interests of cost containment and appropriate/necessary patient care (i.e., overcome the issues encountered by HMOs)?
- How can provider autonomy be preserved while still keeping the needs of the organization and its mission as a priority?
- What are the quality metrics on which the ACO's performance will/should be measured?
- For ACOs that establish contracts with outside providers and/or hospital partners, how will the details of operational control within these contracts be negotiated?

ACOs were conceived as a potential solution to unsustainable spending and poorly regulated quality within the current US healthcare system. While healthcare reform is both necessary and inevitable, understanding the potential consequences (both intended and unintended) will be important so that providers can understand their responsibilities and roles in within the ACO model.

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Chapter 10
Pay for Performance and Value-Based Care

Brett Tracy

The Historical P4P Framework

In the past century, the face of medical compensation has changed on multiple occasions. The care delivery model (aka fee-for-service model) has functioned for decades, by rewarding providers for the volume and complexity of services they rendered. Unfortunately, this method has been criticized for leading to excessive workups and testing for financial gain. Therefore, in order to more effectively control physician reimbursement, the Congress created the Physician Payment Review Commission in 1986. By 1992, the resource-based relative value system (RBRVS) was begun by Medicare and maintained the physician payment expenditures in a budget-neutral fashion by creating a financial conversion factor. RBRVS accounted for physician work, practice expense, professional liability, and geographic factors [1]. Although this system was equitable in rewarding physicians for the amount of care provided, it was inadequate to address quality of care, a concept that was developing at the same time.

In the early 1990s, due to a lack of performance reporting, patients had a limited ability to understand and see the quality of care they received. Therefore, many physicians had no reason to improve healthcare quality. A full century ago, a Harvard trained surgeon, Ernest Codman, collected data on his patients' treatments and their respective outcomes. He realized that determining why unsuccessful interventions occurred was essential for improving the quality of healthcare [2]. Dr. Codman was one of the first physician-surgeons to advocate for quality improvement and standardization of medicine and surgery in America. Much of his work along with that of other early founders of the American College of Surgeons work became the impetus for the development of the Joint Commission on Accreditation of

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Healthcare Organizations (JCAHO), and this group has improved healthcare quality through reportable measurements ever since [3].

Around the end of the twentieth century, JCAHO utilized physician and public health researcher Avedis Donabedian's structure-process-outcome model to drive change in surgical quality improvement. Level 1 trauma centers and Bariatric Surgery Centers of Excellence soon arose, surgeon and hospital volumes were tracked, and the presence of proven advanced technologies (i.e., high-quality imaging) at a health facility was rewarded [4, 5]. Though easily measured, Donabedian's structural measures were less successful at revealing improvements in healthcare quality than were *process* measures. One such pivotal process measure implemented in 2006 by JCAHO, the Center for Medicare and Medicaid Services (CMS), the Center for Disease Control and Prevention, and the Agency for Healthcare Research and Quality was the Surgical Care Improvement Project (SCIP). SCIP was designed to reduce surgical morbidity and mortality by 25 % within 5 years by focusing on perioperative antibiotic use, glycemic control, venous thromboembolism prophylaxis, and several other surgical variables [6]. This program originally involved a select number of guidelines applied to inpatient procedures but has since expanded to an array of criteria and now applies to many outpatient procedures as well. A study spanning from 2006 to 2008 by Stulberg et al. revealed that adherence to SCIP guidelines through a global all-or-none composite infection prevention score was associated with a lower probability of developing a postoperative infection [7]. Though others argued that SCIP resulted in little improvement in overall patient outcomes, it definitely improved compliance measures and would be linked to CMS reimbursement in 2013 [8].

Importantly, at the insistence of surgeons that *outcomes* were more important than *process*, the National Surgical Quality Improvement Project (NSQIP), which stemmed from the Veterans Health Administration work called the National VA Surgical Risk Study (NVASRS), was published. This landmark study compared surgical outcomes based upon operative morbidity, mortality, hospital stay, readmission rates, and patient satisfaction. This data was validated and risk adjusted from 44 VA medical centers and yielded a major database that could be used for comparison to achieve quality improvement [9]. In 1994, as a result of the NVASRS, VASQIP was born. Adherence to its standards resulted in a 27 % decrease in 30-day postoperative mortality over 10 years; also, length of hospital stays declined by 5 days, and postoperative complications decreased by almost 50 % in 10 years at participating VA hospitals [10]. This was the first study on a large scale to show such vast improvements in real outcomes. Private sector hospitals quickly saw the merit in enrolling in quality improvement programs, and VASQIP was then adapted and introduced at the national level in 2004 as the American College of Surgeons' NSQIP. Since its inception, Hall et al. revealed that morbidity and mortality both decreased in participating hospitals, and millions of dollars were saved each year [11]. Clearly, using outcome measures to evaluate quality improvement had a positive effect. Unfortunately, creating a healthcare system that combined both quality improvement and appropriate physician reimbursement had yet to transpire. Pay for performance was expected to be the solution to this dilemma and narrow the gap between recommended clinical guidelines and the actual clinical practice delivered [12].

Introducing P4P

Pay for performance (P4P) relies on the principle that hospitals are sensitive to revenues and reputation. Thus, by increasing these two variables through improvement of quality, P4P can in turn increase hospital utility [13]. Its approval by the public was promoted with slogans like, "The right care for every patient every time," or "payment will be determined by what is done *for* a patient rather than what was done *to* a patient" [14]. Care funded by CMS needed to be safe, effective, efficient, patient centered, timely, and equitable [15]. The incorporation of P4P into practice by physicians was financially incentivized by adherence to certain quality measures. CMS would no longer pay healthcare providers "full price" without discerning the quality of care delivered; rather payment would be made but incentives and/or penalties would also apply.

In essence, P4P provides bonuses to healthcare providers when they meet or exceed certain quality performance measures. By the same token, these providers could also be penalized financially if specific goals or savings are not met [16]. For example, providers no longer receive payment from CMS for care of inpatient-acquired pressure ulcers, mediastinitis after coronary artery bypass surgery, retained objects left during surgery, or air embolisms [17]. Thus, nonpayment for poor performance is a negative incentive built into this schema [18]. However, as long as the capacity to quantify quality performance exists and that translates into financial value, P4P can function as it has in both the private and public healthcare sectors. In fact, P4P programs are now widespread throughout the USA, with more than half of commercial health plans in the USA using this design incentive in their contracts [19]. P4P's popularity has even led to its implementation in the UK, New Zealand, Taiwan, Israel, and Germany. An example is the UK's Quality and Outcomes Framework (QOF), which focused on outcomes in chronic diseases and patient experience from 2004 to 2008 [20]. One meta-analysis of 28 studies regarding the QOF found there was rapid achievement of high quality within the first year, with a gradual improvement thereafter [21].

In 2003, to determine P4P's efficacy in the USA, CMS and Premier, a nationwide hospital system, designed the largest P4P experiment to date, entitled the Premier Hospital Quality Incentive Demonstration (HQID) project. This public sector initiative was implemented in two phases, in which CMS awarded more than 60 million dollars in bonuses with 12 million dollars in incentive payments in the final year [22]. Phase one, from 2003 to 2006, incentivized quality among 265 hospitals across the country for the inpatient care of acute myocardial infarction, heart failure, pneumonia, coronary bypass surgery, and hip and knee replacement. Hospitals scoring at or above the 90th percentile on a condition-specific composite quality measure received a 2 % bonus on condition-specific Medicare payments; however, if they fell between 80 and 90 %, they were only given a 1 % bonus [23]. Phase 1 of this program only rewarded the top performing hospitals, leaving little to motivate lower-tier hospitals to improve. Therefore, phase two was implemented from 2006 to 2009.

Phase two incentivized high-quality attainment, moderate quality attainment, and quality improvement. Providers could get payments for high and moderate attainment combinations, moderate attainment, and quality improvement combinations, but not both high-quality attainment and quality improvement [13]. Investigation of phase two showed improvement in simple pre-post analysis outcomes in cardiac and orthopedic surgery; however, after adequate adjustments (i.e., improved surgical safety, new technology, and better training) with a control group of nonparticipating hospitals, there was no improvement in mortality or serious complications for CABGs and joint replacement. Furthermore, there was no improvement among the poorest performing hospitals, which were the intended beneficiaries of the policy [24]. In another study by Jha et al., there was no difference in 30-day mortality rates from 2004 to 2009 in acute myocardial infarctions, congestive heart failure, pneumonia, and coronary artery bypass graft surgery in the HQID hospitals compared to controls. Furthermore, there were no differences in mortality trends between conditions with incentivized outcomes as compared to conditions whose outcomes were not linked to incentives [25]. However, this study may have been limited by power, and proponents for the HQID P4P state that mortality cannot be effectively evaluated within only 30 days.

In 2009, Bhattacharyya and colleagues sought to evaluate pay-for-performance metrics in orthopedic surgery through HQID data, specifically regarding total hip and knee replacement. As arthroplasty is relatively standardized, CMS included these procedures in the HQID project. The researchers in this cross-sectional analysis found that 74 % of the hospitals studied were within 10 % of the mean composite quality score and there was low variance in scores among these top performers. Furthermore, there was a trend for high-volume hospitals to have a higher composite quality score. The researchers believed a "ceiling effect" occurs with CMS' P4P program, possibly disincentivizing lower-performing hospitals [26]. Weston and colleagues regarding P4P with SCIP also noted this effect, and they argue that although compliance to SCIP and data reporting are useful, linking them to reimbursement may lead to a ceiling effect when almost all hospitals perform well. Thus, only perfect performance is rewarded, while excellent performance is punished [6].

Nevertheless, in an attempt to evaluate the overall efficacy of the entire HQID program, Werner and colleagues investigated its impact on 260 hospitals in the program compared to 780 control hospitals not involved from 2004 to 2008. They found that larger incentives had a greater effect on provider performance and that P4P had the most impact on hospitals without competition and those with good financial status [27]. In addition, their data suggested that although the P4P hospitals had improvement in the first 3 years, non-P4P hospitals matched their performance by the fourth and fifth years. This similarity in performance could have been in part due to another CMS policy occurring at the same time, which required public reporting of hospital performance, which in turn motivated all hospitals to improve for sake of their reputations [16]. This initiative, known as the Hospital Quality Alliance (HQA), was created in December 2002 as a public-private collaboration that encouraged hospitals to report quality data. In order to further investigate the relationship between the two programs, Lindenauer and colleagues

compared hospitals involved in the self-reporting HQA program and the pay-for-performance HQID program and found that programs involved in P4P had greater improvement in quality than did their self-reporting counterparts over a 2-year period. This information showed that financial incentives could generate quality improvement in hospitals already involved in public reporting [28]. Despite the many criticisms and equivocal studies regarding P4Ps, CMS nonetheless embraced this model and incorporated it into legislation.

The Affordable Care Act and P4P

Pay for performance was originally an optional program in which hospitals could partake. With the advent of the Patient Protection and Affordable Care Act (PPACA) of 2010, however, all US acute care hospitals were required to enroll, thus initiating the first nationwide implementation of P4P in the USA. Dubbed Hospital Value-Based Purchasing (HVBP), this program paid acute care hospitals under Medicare's Inpatient Prospective Payment System (IPPS) based on clinical process and patient experience measures. This style of program was distinct from previous schemas because it gave "equal weight to both quality improvement and attainment to determine incentive payments, use[d] financial penalties in addition to rewards, and incentivize[d] measures of patient experience in addition to clinical quality" [29]. HVBP was budget neutral, doing so by redistributing the withheld payments from poor performing hospitals to top performing hospitals that were equal to 1 % of hospital payments from diagnosis-related groups (DRGs). These DRGs classify cases based on diagnoses, patient demographics and comorbidities, procedures performed, and any associated complications [30]. The result of this data was then adjusted and used as the feedback and reporting components of the HVBP in order to reward or penalize performance.

The PPACA also created the first national P4P initiative for physicians in fee-for-service Medicare, called the Physician Value-Based Payment Modifier (PVBPM). Originally, physicians in practices greater than 100 or more eligible professionals (EPs) were subject in 2015, with the rest of physicians remaining in fee-for-service Medicare subject to this modifier by 2017. Practices reported their outcome measures to the Physician Quality Reporting System (PQRS), which was implemented in 2006 as a result of the Tax Relief and Health Care Act (TRHCA). PQRS consisted of more than 200 quality measures for Medicare patients, and participating physicians had to report at least 3 measures to their respective practice and have at least 50 % compliance in order to receive an incentive payment. These practices were then evaluated on all-cause readmission, acute prevention indicators, chronic indicators, total per-capita costs, and costs for patients with specific diseases [31]. Depending on the year, a 1.5–2 % incentive payment was the maximum that a physician could receive. However, as a result of the PPACA of 2010, the incentive decreased and will eventually become a payment penalty of 1.5–2 % if reporting measures are not met [32]. PVBPM mandates that physicians and physician groups

report relevant data by 2017; if they do not, they face a value modifier penalty. In summary, physicians who performed worse were paid less, those who were average experienced no change, and those who exceeded the average received bonuses up to 2 % of Medicare fees [33].

Ryan et al. reviewed the impact of HVBP on clinical quality and patient experience from 2011 to 2012, and they found that there was no improvement in the two variables when comparing HVBP hospitals to controls. However, it can be argued that this study was underpowered and did not allot for the appropriate amount of time for hospitals to respond to the financial incentives implemented [29]. Furthermore, though major changes had not yet occurred, according to the Government Accountability office in 2015, the HVBP program reinforced quality improvement beyond traditional measures and motivated hospitals to increase resources directed at quality improvement [34].

Designing a Successful P4P

After witnessing the dawn and evolution of pay-for-performance programs, many physicians, ethicists, and health policy professionals have commented on how to improve the design of P4P programs. Werner et al. believe that this schema can be enhanced through the size of the incentive, public reporting of quality data, and resource availability. They argue that the quality data depends not only on structure, process, and outcome but also on the patient experience. Furthermore, regarding resources, they believe that if funds were provided in the beginning by the payer source, improvement could better be achieved by allowing purchase of an electronic medical record or improving other technologies. If the hospital is unable to demonstrate improvement, it simply pays back the funds [27]. If the worst performing hospitals or practices, which tend to be the poorest, are better incentivized, there may be more of an impact on overall quality improvement.

A study by Gaskin and colleagues examined the impact of HVBP on racially diverse hospitals throughout the country in regard to surgical and pneumonia care. They discovered that there were differences in quality amid the worst minority-serving and racially integrated hospitals and the worst majority-white hospitals. This finding suggested that quality improvement should focus on the lower performers in the minority-serving and racially integrated hospitals rather than the top performing hospitals [35]. This agenda is especially true for the hospitals that are the most financially destitute. Research by Karve et al. has shown that lack of resources is the main reason why hospitals that serve mainly minority populations are low performing [36]. In essence, these hospitals should be incentivized for good outcomes rather than punished for being less than perfect and serving the underrepresented.

From an ethical standpoint, it would also behoove payers to better incentivize low-performing hospitals, as these are the hospitals that tend to treat the poorest and minorities. As a result of P4P, physicians may drop patients who do not meet the

quality standard and who worsen their reported profile. If low-performing hospitals were to do that, then there would be no care for minority patients. Human Rights Committee members Lois Snyder and Richard Neubauer argue that there should be incentives in P4P that encourage doctors to care for the sickest and most vulnerable patients [37]. There are methods of overcoming these obstacles, such as using larger payments that better motivate a response [38]. Furthermore, P4P is more effective when the measures are easy to track and the program is a collaboration among payers and physicians rather than an edict. It should be dynamically changing and recalibrating thresholds. Ryan and Damberg agree with these designs and also emphasize that the measures should have room for improvement, and incentives should be based on both attainment and improvement [31].

The Modern P4P

In order to grasp the current state of P4P in the USA, one must also understand the role of the sustainable growth rate (SGR), which the Congress implemented in 1997 as part of the Balanced Budget Act. The SGR was crafted to ensure that the annual Medicare payment increases to physicians did not exceed growth in the overall economy. It was believed that physicians could control growth. However, when growth increased, physicians suffered a financial cut the following year [39]. Furthermore, SGR did not differentiate the most or least efficient physicians. Keeping all of the aforementioned suggestions in mind for the design of the ideal P4P and the need to address the impending financial cut from the SGR, the Congress in 2015 passed the Medicare Access and CHIP Reauthorization Act (MACRA). MACRA repealed the SGR and replaced it with a more durable payment system. MACRA also will eventually consolidate the PQRS and PVBPM in 2018 yet continue a P4P model with implementation of the streamlined Merit-Based Incentive Payment System (MIPS) quality program. MIPS will base its scoring of physicians and their practices on quality, resource use, meaningful use, and clinical practice improvement activities. Further details of MIPS will be developed and stated by the Secretary of Health and Human Services after consultation with healthcare providers [40].

MACRA has several advantages compared to previous national P4Ps, such as a sliding scale assessment of performance metrics rather than an all-or-nothing approach. It also has flexible weighting of the four previously listed performance categories, risk adjusts patients to include socioeconomic status, gives credit for clinical practice improvements, and excuses physicians with low levels of Medicare claims. It provides $100 million for technical assistance to small practices (groups with less than 15 professionals) to help with participation in MIPS through venues, such as creation of an electronic medical record system. At the same time, MIPS still allows for bonuses for those providing the highest quality of care [41]. In fact, exceptional performers will receive an added annual performance adjustment up to 10 % from 2019 to 2024 [42]. At its core, MIPS generates positive adjustments for

those performing above the average threshold and penalizes those below the performance threshold by ±4 % in 2019, ±5 % in 2020, ±7 % in 2021, and ±9 % in 2022. When MIPS is fully realized, it will be the largest physician P4P program in the world [43].

For physicians or hospitals that do not partake in the MIPS, there simultaneously exists an Alternative Payment Model (APM) incorporated in MACRA. The APM program involves accepting financial risk for the sake of achieving quality and effectiveness of care in order to develop new models of healthcare delivery. Physicians that choose an APM will control whether their respective APM achieves cost savings, thereby yielding higher payments [42]. Starting in 2019 and ending in 2024, those participating in APMs will also receive payment for services and an amount equal to 5 % of the estimated aggregate payment amount for their services in the previous year [39]. By 2026, providers paid through the APM program would have a 0.75 % increase in payment rates each year, while for other providers, payment rates would be increased by 0.25 % [44]. These individuals would also not be held accountable to MIPS and essentially would only have to report their quality efforts. MACRA will provide an advisory panel that considers physicians' proposals for new models and chooses the metrics on which they would be evaluated [45].

MIPS and APMs sound idyllic; however, some argue that it is too early to conclude that they will save money or improve care quality and patient outcomes. MACRA components are front loaded with bonuses, yet they expire after 2024 and may not keep up with medical expense increases. It is also estimated that MACRA will increase direct spending by $145 billion, leading to a $141 billion increase in federal budget deficits [46]. MIPS seeks to determine a composite score, which takes into account physician quality, yet there is no single way to appropriately evaluate such a characteristic [47]. In addition, MIPS puts small specialties at a disadvantage, as many lack the resources to develop a registry. Furthermore, 50 % of EPs face Medicare penalties because they do not meet IT requirements [44]. Regarding the development of APMs, Oberlander states, "Medicare is set to pay physicians more to embrace innovations whose effectiveness is highly uncertain – a remarkable leap of faith [47]." Nonetheless, the chief actuary of CMS believes that APMs are the route in which all physicians will be paid in the future and may surpass MIPS [48]. Higher fees may be available to professionals who work in these APMs as they cover multiple services and limit the growth of spending through performance based methods [49].

Ultimately, physicians must be cognizant of MIPS and APMs, as well as the other provisions of MACRA, to achieve improved reimbursement and to better navigate the dynamics of the PPACA [50]. From the HQID, SCIP, and PQRS to the implementation of MACRA, P4P has greatly evolved. The role of P4P in modern healthcare will become increasingly evident in health policy and will definitely remain a source of contention for legislators, physicians, and payers, as was the repeal of the SGR. Over the next decade, we will see if the SGR repeal and subsequent implementation of MACRA was a reprieve for providers or rather, as poised by cardiothoracic surgeon Alan Speir, a Pyrrhic victory after the financial impact has taken effect [39].

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Part III
Specific Coding Issues

Chapter 11
Coding and Reimbursement of Evaluation and Management Services

Mark Savarise

Evaluation and Management (E/M) services make up a very large proportion of the codes used by physicians and are the most frequently used codes in the Current Procedural Terminology (CPT) lexicon. Payment for these codes represents the largest portion of reimbursement from Medicare and other payors. The most-used code, 99213, office or other outpatient visit, established patient, is the most frequently used code by physicians and other qualified health care professionals, with a frequency of just under 100 million uses in the Medicare population in 2014. Although Internal Medicine and Family Practice are the most frequent users of this code, general surgeons and subspecialists used the code nearly 2 million times in 2014 on Medicare patient visits, making it the most widely used code for surgeons, as well [1].

As reimbursement for surgical procedures is declining overall, surgeons must pay more attention to their E/M coding and reimbursement, as it makes up a larger and larger share of their revenues. However, E/M coding is significantly more complicated than CPT coding for procedures, with nested requirements for documentation of encounters for multiple levels of service, coded differently for different types of patients seen in different venues. In addition, because E/M coding takes such a large portion of the reimbursement pie and because the codes are used so frequently, there is increasing scrutiny of misuse of these codes being done by auditing and recovery agencies. This is especially true with the more widespread use of electronic medical record systems, which facilitate documentation of details in the history and physical exam.

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History

Codification of the use of the CPT system for coding and reimbursement of physician services began in 1983 when CMS adopted the CPT coding system as part of the Healthcare Common Procedure Coding System (HCPCS) [2]. In 1989, CMS adopted a standard fee schedule for physician reimbursement based on the first of the Resource Based Relative Value scales (covered elsewhere in this book). Initially there were code sets for E/M of patients as inpatients and outpatients, as well as some specific codes for evaluation in other locations. Over time, additional E/M codes have been added to the CPT code set to describe E/M services performed in relation to preventative care, outpatient observation care, coordination of complex care, telemedicine, and other services [3].

As new CPT codes for E/M services have been developed, valuation of these codes by the Relative Value Unit Update Committee (the RUC), has been consistently based on the value of the work of similar E/M services already in existence, based on the complexity and typical time involved in a given encounter. For example, when the CPT codes for subsequent evaluation and management of patients on observation care (99224–99226) were created in 2011, they were valued at 0.54–1.44 Relative Value Units (RVU). This is in comparison to the RVU of 0.76–2.00 for subsequent evaluation and management of inpatients (99231–99234) [1].

Over time, the RVUs for E/M services have tended to increase. For established outpatient code 99213, the value was 0.58 RVU in 1992, increasing to 0.67 RVU at its first 5-year review in 1997, then taking a jump to 0.97 RVU in 2007, where it remains. For the outpatient observation codes, the value of 99224 jumped from its initial 0.54 RVU to 0.76 RVU in 2012, matching the RVU for 99234, the equivalent level subsequent inpatient code. The highest level subsequent outpatient observation code, 99226, also rose to the equivalent value of the highest level subsequent inpatient code, 99234, at 2.00 RVU.

Likewise, we see upward trends in valuation of nearly all codes for consultation and initial care, both for inpatients and outpatients. (Table 11.1) Independent of this increase has been a shift in the *use* of the codes to higher levels of complexity by physicians. There is a great deal of discussion about how much of this is due to actual increasing complexity of these patients in general and how much is due to more diligent documentation of bullet points of history and physical examination in the record. At the end of this chapter, there is further discussion of the later phenomenon.

The Structure of the E/M Code set

CPT coding of E/M services such as new patient visits, established patient visits, hospital admission, and consultations is done at various levels of service. Typically there are three (eg. For hospital admission) or five (eg. For outpatient visits)

Table 11.1 Trends in valuation of E/M codes, 1992–2015

CPT code	1992 RVU	2003 RVU	2015 RVU
99201	0.40	0.45	0.48
99203	1.14	1.34	1.42
99205	2.22	2.67	3.17
99211	0.21	0.17	0.18
99213	0.58	0.67	0.97
99215	1.46	1.77	2.11
99221	1.13	1.28	1.92
99222	1.84	2.14	2.61
99223	2.54	2.99	3.86
99238	1.14	1.28	1.28

From the RUC database, AMA/specialty society RVS update committee, Copyright, 2015, American Medical Association

levels of service based on the amount of documentation of *key* and *contributory* components.

The E/M codes are grouped by place of service and type of service, starting with 99201, new patient office and other outpatient visits, through 99498, advanced care planning.

E/M coding depends on physician documentation in three fields, which CPT calls *key* components [4]:

1. History
2. Physical Examination
3. Medical Decision Making

In most circumstances, all three elements must be included, but there are exceptions to this requirement for established patient encounters, which require only two. These exceptions are for office or other outpatient visits for established patients (99211–99215), subsequent observation care (99224–99226), subsequent hospital care (99231–99233), and subsequent care of established patients in other settings, such as nursing homes.

In addition, CPT defines three components that it considers *contributory* factors in the majority of encounters. It is not required that these services be provided at every encounter. They are:

1. Counseling
2. Coordination of Care
3. Nature of Presenting Problem

A final component, considered separately in specific circumstances, is time. Time becomes the determinant of level of service in the circumstance where greater than 50 % of the encounter is spent in counseling and coordination of care [5]. CPT has explicit definitions of the encounter for which the 50 % is considered: it is the face-to face time spent with the patient and/or family in an outpatient

encounter, or floor/unit time in a hospital setting. CPT does not consider the additional time a physician spends in his office away from the patient coordinating care to apply.

Categories of Patients and Places of Service

Attention to the correct category and subcategory of service when selecting E/M codes is critical to ensure payment for services, as most payors have software which will automatically reject claims that do not follow the rules. CPT defines two classes of patients, new and established. An established patient is one who has received professional services from the physician or another physician of the exact same specialty and subspecialty who belongs to the same group practice, within the past 3 years [6]. For example, if your general surgery partner saw the patient for appendicitis and you, a general surgeon, are seeing the patient for the first time for a hernia 3 years later, this is an established patient encounter. However, if your vascular surgery partner saw the patient for claudication and you, a general surgeon, are now seeing the patient for a hernia, this is a new patient encounter.

A third type of encounter is the consultation. For consultations, CPT and CMS have differences of opinion. In CPT parlance, a consultation must be requested verbally or in writing by another physician or qualified health care provider. Either the requesting or consulting physician can document the request. The consulting physician can initiate treatment and/or accept responsibility for the patient's care. The main prohibition here is that the patient cannot request his or her own consult—it must come from another physician. Medicare eliminated payment for consultation codes in 2010 [7]. This was a result of a 2006 Office of the Inspector General (OIG) report that showed that 75 % of consultations did not meet Medicare requirements, resulting in $1.1 billion in improper payments [8]. However, many commercial insurers continue to follow CPT convention and allow the use of consultation codes.

Place of service is generally self-explanatory, with two notable exceptions of importance to surgeons. The first is the designation of inpatient hospital versus outpatient observation. Although the services provided in terms of physician work are virtually identical and the patient is generally unaware of the difference between inpatient and outpatient observation status, the incorrect code will result in denial of payment for these E/M services. The difference in coding is due to the CMS regulations pertaining to outpatient observation status. As many physicians are aware, over the past several years there has been a great deal of confusion over which patients should be admitted to which status. Note that the relative values for inpatient admission (99222 = 2.6 RVU) and initial observation (99219 = 2.6 RVU) are generally identical [1]. Incongruity between the hospital's designation of status and the physician's E/M coding (for instance, the hospital has designated the patient to be on observation status, but the physician has coded a hospital admission) can result in denial of payment for the physician service [9].

Table 11.2 Comparison of RVUs for similar services

	Total 2015 Facility RVUs			Total 2015 Non-facility RVUs	
CPT	Initial hospital care	CPT	Emergency Dept. Visit	CPT	Outpatient consultation
99221	2.87	99281	0.59	99241	1.37
		99282	1.16	99242	2.57
99222	3.87	99283	1.75	99243	3.51
		99284	3.33	99244	5.19
99223	5.73	99285	4.93	99245	6.35

From CodeManager Online: Elite, copyright American Medical Association, 2015. https://www.ocm.ama-assn.org
Note: Total RVUs equal wRVU + PE + malpractice RVU

The second is tied to the CMS policy disallowing consultations. For commercial insurers, the correct coding of encounters with patients seen in the Emergency Department (ED) at the request of the ED physician would be using the outpatient consultation codes (99241–99245). However, Medicare directs differently. If the patient is seen and not admitted to the hospital, the surgeon consultant codes the encounter as an ED visit (99281–99285). If the patient is seen and admitted to the hospital, the surgeon codes for hospital admission (99221–99223). If the patient is admitted to observation status, the correct codes are 99218–99220 [10]. Note that the relative value of these codes is similar: 99285 = 3.8 RVU, 99223 = 3.9 RVU, and 99220 = 3.6 RVU. (Table 11.2)

For Medicare beneficiaries who are hospital inpatients, the codes for inpatient consultation may not be used; however most other inpatients on whom a surgeon consults in the hospital, the codes for inpatient consultation (99251–99255) are used. For non-Medicare patients on outpatient observation status, outpatient consultation codes (99241–99245) are used. Medicare inpatient visits are coded as initial (99221–99223) or subsequent (99231–99233) inpatient encounters. Again, there is relative equipoise of the valuation: 99255 = 4.0 RVU, 99223 = 3.9 RVU. (Table 11.1) Medicare sorts out the admitting physician from consults by requiring the former to add the modifier –AI to the E/M code. To confuse matters further, Medicare patients who are on outpatient observation status in a hospital are considered outpatients, and consultation on these patients follow the rules for outpatient new (99201–99205) or established (99211–99215) visits [10].

Calculating the Appropriate Levels of E/M Service

As previously discussed, the level of service for E/M is based on documentation of the three elements of history, physical exam and medical decision making (MDM) for new patient encounters, and for two of the three elements for established patients. CMS specifies that MDM must be one of the two elements in established patients. There are four levels of each component. All of the required key components must meet or exceed the stated requirements to qualify for a particular level of service [11].

Stated otherwise, the highest level of E/M code that may be used for an encounter is determined by the lowest level of documentation of the required elements. There are many excellent references that deal with specific coding examples, which are beyond the scope of this book. The three following sections describe an overview of the key components of E/M services.

History

There are four levels of history: problem focused, expanded problem focused, detailed, and comprehensive.

A *problem focused* history contains a chief complaint and only one of the elements of the history of present illness (HPI). CPT defines the elements of the HPI: duration, location, quality, severity, timing, context, modifying (alleviating and/or exacerbating) factors, and associated symptoms.

An *expanded problem focused* history contains chief complaint, one of the elements of HPI, and a pertinent review of at least one system. CPT defines the areas in the review of systems (ROS): constitutional, eyes, ENT, respiratory, cardiovascular, gastrointestinal, genitourinary, musculoskeletal, neurologic, integumentary, psychiatric, endocrine, hematologic and allergic/immune.

A *detailed* history contains chief complaint, at least 3 elements of HPI, at least 2 areas of ROS, and 2 of the three areas of past medical, family and social history (PMFSH).

A *comprehensive* history contains chief complaint, 4 elements of HPI, 10 areas of ROS and all three areas of PMFSH.

There are special rules related to the documentation of these items set forth by CMS. For instance, only the provider may document the HPI, but the ROS and PMFSH may be documented by staff if the provider notes that he/she reviewed them. Also, positive and negative items in the ROS may be documented separately, or the physician may document the pertinent positive findings and state that all other elements were negative if such is the case [12].

Physical Exam

The initial guidelines for the mutli-system physical exam were established in 1995, and a second set of guidelines was established in 1997. Known as the 95 and 97 guidelines, they differ somewhat. CMS recognizes either set of guidelines, and a physician can use the 95 guidelines in one encounter and the 97 guidelines in another. However he or she may not combine the two for a single encounter in order to determine a level of service [13]. The primary difference between the two systems is the comprehensive examination of a single system in the 97 guidelines.

Just as with history, there are four levels of physical exam. For the purpose of the exam CPT recognizes seven body areas:

- Head (including face)
- Neck,
- Chest (including breasts and axilla),
- Abdomen
- Genitalia, groin and buttocks
- Back
- Each extremity

and 12 organ systems:

- Constitutional
- Eyes
- Ears, nose, mouth and throat
- Cardiovascular
- Respiratory
- Gastrointestinal
- Genitourinary
- Musculoskeletal
- Skin
- Neurologic
- Psychiatric
- Hematologic/lymphatic

In the 1997 guidelines, CMS established single organ system exams for cardiovascular, respiratory, ENT, eye, genitourinary, hematologic/lymphatic, musculoskeletal, neurologic, skin and psychiatric exams [13]. Each of these have bullet points in each of the organ systems for use in the single organ system exam (Table 11.3). Some systems have only two bullets (eg. Constitutional: general appearance and any 3 vital signs); others have multiple bullets, such as the musculoskeletal examination, which has four bullets in each of six areas of the body and additional bullets for gait and station.

A *problem focused* physical exam is a limited exam of one body area or system.

An *expanded problem focused* exam is an examination of at least 2 body areas or organ systems (95 exam) or 6 bullets (97 exam).

A *detailed* exam is also an examination of at least 2 body areas or organ systems (95) or 12 bullets (97).

A *comprehensive* exam requires examination of 8 organ systems (not body areas) from the 95 exam or at least 18 bullet points from at least 9 systems from the 97 exam.

Most general surgeons use the 1995 guidelines, as there is no single organ system exam for the abdomen or gastrointestinal system, the breasts, or the vascular system in the 1997 guidelines.

Table 11.3 General multi-system examination

System/body area	Elements of examination
Constitutional	Measurement of 3 vital signs (blood pressure, pulse, respiration, temperature, height, weight) General appearance of patient (development, nutrition, body habitus, deformities, attention to grooming)
Eyes	Inspection of conjunctiva and lids Examination of pupils and irises (eg, reaction to light and accommodation, size and symmetry) Ophthalmoscopic examination of optic discs (eg, size, C/D ratio, appearance) and posterior segments (eg, vessel changes, exudates, hemorrhages)
Ears, Nose, Mouth & Throat	External inspection of ears and nose (eg, overall appearance, scars, lesions, masses) Otoscopic examination of external auditory canals and tympanic membranes Assessment of hearing (eg, whispered voice, finger rub, tuning fork) Inspection of nasal mucosa, septum and turbinates Inspection of lips, teeth and gums Examination of oropharynx: oral mucosa, salivary glands, hard and soft Palates, tongue, tonsils, posterior pharynx
Neck	Examination of neck (eg, masses, overall appearance, symmetry, tracheal position, crepitus) Examination of thyroid (eg, enlargement, tenderness, mass)
Respiratory	Assessment of respiratory effort (eg, intercostal retractions, use of accessory muscles, diaphragmatic movement) Percussion of chest (eg, dullness, flatness, hyperresonance) Palpation of chest (eg, tactile fremitus) Auscultation of lungs (eg, breath sounds, adventitious sounds, rubs)
Cardiovascular	Palpation of heart (eg, location, size, thrills) Auscultation of heart with notation of abnormal sounds and murmurs Examination of: carotid arteries (eg, pulse amplitude, bruits) abdominal aorta (eg, size, bruits) femoral arteries (eg, pulse amplitude, bruits) pedal pulses (eg, pulse amplitude) extremities for edema and/or varicosities
Chest (Breasts)	Inspection of breasts (eg, symmetry, nipple discharge) Palpation of breasts and axillae (eg, masses or lumps, tenderness)
Gastrointestinal (Abdomen)	Examination of abdomen with notation of presence of masses or tenderness Examination of liver and spleen Examination for presence or absence of hernia Examination (when indicated) of anus, perineum and rectum, including sphincter tone, presence of hemorrhoids, rectal masses Obtain stool sample for occult blood test when indicated

Table 11.3 (continued)

System/body area	Elements of examination
Genitourinary	*MALE:* Examination of the scrotal contents (eg, hydrocele, spermatocele, tenderness of cord, testicular mass) Examination of the penis Digital rectal examination of prostate gland (eg, size, symmetry, nodularity, tenderness) *FEMALE:* Pelvic examination (with or without specimen collection for smears and cultures), including Examination of external genitalia (eg, general appearance, hair distribution, lesions) and vagina (eg, general appearance, estrogen effect, discharge, lesions, pelvic support, cystocele, rectocele) Examination of urethra (eg, masses, tenderness, scarring) Examination of bladder (eg, fullness, masses, tenderness) Cervix (eg, general appearance, lesions, discharge) Uterus (eg, size, contour, position, mobility, tenderness, consistency, descent or support) Adnexa/parametria (eg, masses, tenderness, organomegaly, nodularity)
Lymphatic	Palpation of lymph nodes in *two or more* areas: Neck Axillae Groin Other
Musculoskeletal	Examination of gait and station Inspection and/or palpation of digits and nails (eg, clubbing, cyanosis, inflammatory conditions, petechiae, ischemia, infections, nodes) Examination of joints, bones and muscles of *one or more of the following six* areas: (1) head and neck; (2) spine, ribs and pelvis; (3) right upper extremity; (4) left upper extremity; (5) right lower extremity; and (6) left lower extremity. The examination of a given area includes: Inspection and/or palpation with notation of presence of any misalignment, asymmetry, crepitation, defects, tenderness, masses, effusions Assessment of range of motion with notation of any pain, crepitation or contracture Assessment of stability with notation of any dislocation (luxation), subluxation or laxity Assessment of muscle strength and tone (eg, flaccid, cog wheel, spastic) with notation of any atrophy or abnormal movements
Skin	Inspection of skin and subcutaneous tissue (eg, rashes, lesions, ulcers) Palpation of skin and subcutaneous tissue (eg, induration, subcutaneous nodules, tightening)
Neurologic	Test cranial nerves with notation of any deficits Examination of deep tendon reflexes with notation of pathological reflexes (eg, Babinski) Examination of sensation (eg, by touch, pin, vibration, proprioception)
Psychiatric	Description of patient's judgment and insight Brief assessment of mental status including: orientation to time, place and person recent and remote memory mood and affect (eg, depression, anxiety, agitation)

From CMS 1997 documentation guidelines for evaluation and management services. http://www.cms.gov/MLNProducts/downloads/MASTER1.pdf

Medical Decision Making

Medical decision making (MDM) is the most important of the key elements, and also the most complicated. There are three components to MDM:

- The complexity of diagnoses or management options
- The amount and/or complexity of data to be reviewed
- The risk of complications and/or morbidity/mortality

For each of these, there are four levels of complexity: straightforward (minimal), low (limited), moderate (multiple), and high (extensive). The level of MDM is then determined by the two highest of these three elements. Table 11.4 gives examples from CMS of each of these levels in the three components of MDM.

Table 11.4 Levels of risk in medical decision making

Level of risk	Presenting problem(s)	Diagnostic procedure(s) ordered	Management options selected
Minimal	One self – limited or minor problem e.g., cold, insect bite, tinea	Laboratory tests requiring venipuncture Chest x-rays EKG/EEG Urinalysis Ultrasound, e.g., echocardiography	Rest Gargles Elastic bandages Superficial dressings
Low	Two or more self-limited or minor problems One stable chronic illness, e.g., well controlled hypertension or non-insulin dependent diabetes, cataracts, BPH Acute uncomplicated illness or injury, e.g., cystitis, allergic rhinitis, simple sprain	Physiologic tests not under stress, e.g., pulmonary function tests Non-cardiovascular imaging studies with contrast, e.g., barium enema Superficial needle biopsy Clinical laboratory tests requiring arterial puncture Skin biopsy	Over-the-counter drugs Minor surgery with no identified risks Occupational therapy IV fluids without additives
Moderate	One or more chronic illnesses with mild exacerbation progression or side effects Two or more stable chronic illnesses Undiagnosed new problem with uncertain, e.g., lump in breast Acute illness with systemic symptoms, e.g., pyelonephritis, pneumonitis, colitis Acute complicated injuries, e.g., head injury with loss of consciousness	Physiologic tests under stress, e.g., cardiac stress tests, fetal contraction stress test Diagnostic endoscopies with no identified risks Deep needle or incisional biopsy Cardiovascular imaging studies with contrast and no identified risks, e.g., arteriogram, cardiac catheter Obtain fluid from body cavity, e.g., lumbar puncture, thoracentesis, culdocentesis	Elective major surgery (open percutaneous or endoscopic) with no identified risks Prescription drugs Therapeutic nuclear medicine IV fluids with additives_ Closed treatment of fracture or dislocation

Table 11.4 (continued)

Level of risk	Presenting problem(s)	Diagnostic procedure(s) ordered	Management options selected
High	One or more chronic illness with severe exacerbation, progressions, or side effects Acute or chronic illness or injuries that may pose threat to life or bodily function, e.g., multiple trauma, acute MI, pulmonary embolus, severe respiratory distress, progressive severe rheumatoid arthritis, psychiatric illness with potential threat to self or others, peritonitis, acute renal failure An abrupt change in neurologic status, e.g., seizure TIA, weakness, or sensory loss	Cardiovascular imaging studies with contrast Cardiac electrophysigiological tests Diagnostic endoscopies with identified risks Discography	Elective major surgery (open or endoscopic) with identified risks Emergency major surgery (open percutaneous or endoscopic) Parenteral controlled substance Drug therapy requiring intensive monitoring for toxicity Decision not to resuscitate or to de-escalate care because of poor prognosis

From Department of Health and Human Services, Centers for Medicare & Medicaid Services, Evaluation and Management Services Guide, November 2014/ICN 006764

Important for surgeons are some key points about MDM:

- Complexity of management options of the presenting problems for surgeons are often moderate (undiagnosed problem such as abdominal pain or breast lump, or acute illness or injury) or severe (illness or injury that poses a threat to bodily function).
- Diagnostic tests ordered or reviewed count equally. Documentation of review of the actual images is considered an additional level of complexity. This applies to radiographic images, photo documentation from endoscopy, pathology slides, tracings from noninvasive vascular studies, and others.
- Any operation done in the OR or endoscopy suite is considered major surgery for coding purposes, and is at least a moderate level of MDM; major surgery with identified risk factors is considered high level MDM.

Because of the definitions of the levels of complexity, it is frequently the case that patient encounters with surgeons qualify for moderate or high levels of MDM.

Valuation of E/M Services

Like all CPT codes, E/M services are valued by the RUC and resurveyed periodically (see also Chapter 4). The total relative value is a sum of the work, practice expense and malpractice expense. The work RVU is a sum of the pre-service,

intra-service and post-service times. E/M codes do contain pre- and post-service time valuations.

For example, the initial hospital care codes 99222 and 99223 both have 15 min of pre-evaluation time and 20 min of post-evaluation time in their wRVU calculations. The vignettes for these codes describe the pre-service, *"Review data (eg, diagnostic and imaging studies) not available at the unit. Communicate with other health care professionals and with patient and/or family. Obtain and review past results or records not available at the unit. Perform evaluation and management related to 'observation status' in other sites of service (eg, office or ED) earlier the same day."* and the post-service, *"Address interval data obtained and reported changes in condition. Communicate results and additional care plans to other health care professionals and to the patient and/or family."* The codes differ on their intra-service. Both services require a comprehensive history and a comprehensive physical exam, and these additional services: *"Discuss diagnosis and treatment options with patient and/or family. Consider discharge needs of patient. Communicate with other health care professionals as necessary. Write and/or review admission orders, including arranging for necessary diagnostic testing, consultation(s), and therapeutic intervention(s). Complete medical record documentation."* Where the codes differ is that 99223 requires MDM of high complexity and 99222 involves MDM of moderate complexity. The median intra-time for 99222 is 40 min, and its value is 2.61 RVU; median intra-time for 99223 is 55 min, and its value is 3.86 RVU [1].

Table 11.2 illustrates the relative values of some E/M codes at various levels. Note that codes for outpatient evaluation have more granularity than codes for hospital admission and visits, but that the relative values of the lower and higher codes in the sets are consistent. When the RUC data for pre-, intra-, and post-service are analyzed, there is consistency of the relative values of E/M codes.

Economics of E/M Coding

As stated in the introduction to this chapter, E/M services are the most frequently used of the CPT codes, and represent a large share of physician expenditures from the Medicare budget. In 2010, 442,000 physicians provided 370 million E/M services to 30 million Medicare beneficiaries. Medicare payments for E/M services totaled $33.5 billion in 2010, 30 % of all physician expenditures by Medicare, and a 48 % increase since 2000 [14].

There are two concurrent trends, which are resulting in significant overall increases in the amount of money spent on E/M services:

1. There is a trend of increasing reimbursement for E/M codes over time.
2. There is a trend toward the use of higher level of E/M services over time.

We can consider these separately.

First, consider the gradual increase in valuation of E/M services over the past 20 years, and especially over the past 10 years. For example, initial outpatient evaluation,

moderate complexity (99203) was valued at 1.14 RVU in 1995, 1.34 RVU in 2005, and 1.42 RVU in 2015, an increase of 25 %. More impressive, initial hospital care, high level (99223) was valued at 2.57 RVU in 1995, 2.99 RVU in 2005, and 3.86 RVU in 2015, an increase of 50 %.

In comparison, laparoscopic cholecystectomy (47562) was valued at 10.68 RVU in 1995, increased to 11.07 RVU in 2005, but decreased to 10.47 RVU in 2015.

There are several purported reasons for this increase. The RUC points to survey data that show increased times spent during these services. There has also been political pressure to improve relative reimbursement to primary care, the most frequent users of the E/M codes. CMS has supported the RUC recommendations for increasing RVUs of these codes, but in recent years has rejected RUC recommendations for increasing RVUs for some surgical codes, such as open cholecystectomy (47600). In 2011, CMS directed the RUC to review the code for mis-valuation. The RUC re-surveyed surgeons, recognizing that the typical patient undergoing open cholecystectomy had become more complicated over time, and made a recommendation of 20.00 RVU. CMS rejected the value, assigning 17.48 RVU instead.

The second consideration is the trend toward higher E/M coding levels. Miscoding is not a new problem. Some blame can be attributed to the complexity of the process of calculating the correct E/M code using the complicated set of rules that have been set forth. It is also widespread among all specialties. A 2000 study of family physicians in Ohio showed that 43 % of visits were mis-coded, with equal numbers overcoded and undercoded [15]. This study preceded the widespread use of EMR, and this type of data led some proponents of EMR to argue that more accurate coding would be a benefit of the technology.

More recent studies show that inaccurate coding continues to be widespread. In 2006, the OIG reported that 75 % of consultations did not meet Medicare coverage requirements, and consultations billed at the highest level were miscoded 95 % of the time [8].

An OIG study in 2010 analyzed the trends in coding from 2001–2010, and noted marked trends toward increasing use of the highest levels of codes in any given code family [16]. For established patient office visits, the OIG found a shift in billing from the three lowest level E/M codes to the two highest levels (99214–99215) by 17 % over 8 years. Subsequent inpatient hospital care billing of the lowest level (99231) decreased 16 %, while higher levels (99232–99233) increased 6 % and 9 %, respectively. For emergency department visits, physicians' billing of the highest-level code (99285) rose 21 %, comprising by 2010 48 % of all ER visits.

CMS guidelines state that "medical record documentation supports the level of service reported to a payer [but] the volume of documentation should not be used to determine which specific level of service is billed." [17] Some studies suggest that, in fact, the opposite is done in many cases. Medicare auditing agencies are not unaware of these trends. Combined with the afore mentioned findings of the OIG and other recovery agencies, the OIG is engaged at the time of publication of this chapter in a study of the (mis)use of EMR in incorrect coding of evaluation and management services [18]. CMS has already been able to use analysis of claims data to identify physicians who are outliers in E/M coding, identifying in its 2010 analysis 1669

physicians who billed the two highest level E/M codes 95 % of the time, and who were in the top 1 % in their specialties. Medicare paid $108 million to these physicians, which the OIG estimated to be a $54 million overpayment [16]. Although the report did not specify the means of recovery of these payments, CMS has at its disposal Recovery Audit Contractors and Zone Program Integrity Contractors with the authority to recover these funds from physicians. It is unknown at this time what actions CMS will be taking toward repayment of funds or punishment.

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Chapter 12
Skin and Soft Tissue

Scott Collins and Dinakar Golla

Introduction

The integumentary system of CPT defines procedures on skin, subcutaneous tissue, and accessory structures and contains approximately 344 unique codes. These can be broadly classified into a large group of codes dealing with the treatment of skin lesions and skin trauma and a smaller group of codes that includes treatment of superficial abscesses and assorted cosmetic procedures (e.g., blepharoplasty, chemical peeling and dermabrasion, hair replacement surgery, and panniculectomy). This chapter will focus on the diagnosis of skin lesions, their removal, and the subsequent repair of the surgical defect. The repair codes are also used for reporting the treatment of various types of skin trauma as well as flaps and skin grafts for soft tissue reconstruction.

Skin surgery (nasal reconstruction) was described as early as approximately 3000 BC in ancient India. A more detailed description is presented in the Indian medical treatise *Sushruta Samhita* in 700 BC. In Egypt, both sutures and wound dressings were described in the Edwin Smith Surgical Papyrus dating to 1800 BC. As history advanced the written record became more complete starting in the fourteenth century and continues on to this day. In contrast, the biopsy is a relatively new concept, having been introduced by the French dermatologist Ernest Besnier in 1879 [1].

Generally, patients are provided these cutaneous surgical services for one of two reasons: either they have a skin lesion which requires diagnosis and possible

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treatment or they have skin trauma that requires surgical treatment for appropriate functional and cosmetic healing. Practically, the pathway becomes common for either type of patient. In one case, a patient enters this pathway by presenting with a skin lesion. The lesion is clinically evaluated and, if necessary, the lesion is biopsied, either via partial removal (incisional biopsy) or complete removal (excisional biopsy). It is then submitted for histological examination. In some cases, the wound created by the biopsy requires repair, and in others it does not. Also, in some cases the biopsy constitutes complete therapy for the lesion, either because the lesion was found to be benign, and further treatment is not necessary, or the lesion was completely removed (e.g. in an excisional biopsy). In other cases, the biopsy histopathology dictates further treatment of the lesion.

Further treatment of the lesion can be accomplished in several ways. In some cases, the lesion can be destroyed via a variety of interventions, and the resulting wound is then allowed to heal without repair (called secondary intention or granulation healing). In other scenarios, the lesion is surgically excised. Although, in rare cases, wounds resulting from surgical excision are not repaired, most are. At this point, the pathways of the "lesion" patient and the "trauma" patient merge. In either case, there is a skin defect that needs to be surgically repaired. These repair techniques can be broadly aggregated under three broad categories: linear repair, flap repair, or skin graft repair.

The Skin, Its Lesions, and Basic Dermatoeconomics

To understand the coding structure for the integumentary system, a rudimentary understanding of skin anatomy is useful. The skin is comprised of three layers:

1. A relatively thin epidermis, which can be thought of as an outer veneer
2. A significantly thicker dermis, which is mostly collagenous tissue which gives skin its tensile strength
3. The subcutaneous tissue, comprised mostly of fat but which also includes the superficial nonmuscular fascia, lymphatics, and small blood vessels

The epidermal thickness is relatively uniform over the entire body and measures on average 0.1 mm. The thickness of the dermis varies greatly, ranging from less than 1 mm on the eyelid to over 4 mm on the back. The subcutaneous thickness varies the most and is dependent not only on anatomic site but also on body mass index.

Skin lesions can broadly be divided into two categories, which are neoplastic and inflammatory. Infections are mostly grouped under the inflammatory category. While either category can require biopsy for diagnosis, further surgical intervention is typically applied only within the neoplastic category. Neoplasms can then be divided into benign, premalignant, and malignant. While a complete description of these is beyond the scope of this chapter, a general characterization is useful. Common benign neoplasms of the skin include melanocytic nevi (moles), seborrheic keratoses, dermatofibromas, lipomas, and sebaceous hyperplasia. Common malignant neoplasms include basal cell carcinoma, squamous cell carcinoma, and

melanoma. There are also premalignant lesions, which include actinic keratoses (which can develop into squamous cell skin cancer). Atypical nevi, which may evolve into melanoma, can be considered premalignant although this characterization is controversial. It is worth noting that the majority of melanomas arise "de novo" from normal skin and not from a preexisting melanocytic nevus.

Many of the procedures discussed here are undertaken because of the diagnosis of a malignant skin neoplasm (hereafter skin cancer). The estimated current incidence of nonmelanoma skin cancer (mostly basal cell and squamous cell) is 5.4 million cases per year [2], while invasive melanoma is 76,380 cases per year [3]. Multiple studies show that over the last several decades, skin cancer incidence has been increasing significantly, with one study showing a 77 % increase in treatment of nonmelanoma skin cancer between 1992 and 2006 [4]. The incidence of melanoma is also increasing. In fact, compared to the seven most common cancers, it is the only one whose incidence is increasing. Between 2000 and 2009, incidence climbed 1.9 % annually [5].

Understandably, the treatment of these many tumors comes with a huge cost burden. Within the Medicare population, the treatment of skin cancer accounts for approximately 2 % of Medicare part B physician service payments [6]. For the entire population, the annual cost of treating all skin cancer is 8.1 billion dollars: about $4.8 billion dollars for nonmelanoma skin cancer and $3.3 billion for melanoma [7]. These are direct costs—they do not account for indirect costs such as lost productivity.

Because of both the human and economic impacts of skin cancer, there has been an effort to codify appropriate treatment. From the human side of the equation, the underlying motivation is to attempt to ensure that lesions are treated appropriately, with an eye toward evidence-based medicine and outcomes. From the economic side, the motivation is to guide appropriate treatment and to attempt to moderate overtreatment or overutilization of more complex, more expensive modalities. In general, all of these efforts focus on the first two components on the treatment triad (diagnosis and removal) and ignore the third component (repair). Further guidelines to codify appropriate repair services are perhaps urgently needed.

Generalized treatment guidelines for skin cancer are provided by the National Comprehensive Cancer Network (NCCN) flow charts. These are "algorithms of care" developed out of an alliance of 23 leading US cancer centers. They are developed by a working group, which engages in an informal evidence-based literature review leading to a consensus-based agreement. NCCN guidelines exist for basal and squamous cell skin cancer, melanoma, Merkel cell cancer, and dermatofibrosarcoma protuberans (DFSP). Additionally, portions of the soft tissue sarcoma guidelines apply to those rare tumors that occur as primaries in the skin.

Mohs micrographic surgery is a skin cancer removal technique in which a single physician acts as both the surgeon (removing the tumor) and the pathologist (interpreting the margins as clear or involved). This technique yields excellent cure rates for nonmelanoma skin cancer, as well as certain soft tissue sarcomas (especially dermatofibrosarcoma protuberans and superficial pleomorphic sarcoma). It is seeing increased acceptance as a first-line treatment for melanoma in situ (stage 0) and early-stage invasive melanoma in cosmetically sensitive areas. Because of the integration of surgical and pathology elements, Mohs offers both excellent cure rates

and maximum tissue-sparing removal. However, Mohs is expensive, and utilization is growing rapidly. Parsing out the amount of increase that is due to increased disease incidence versus expansion of indications is difficult.

In an attempt to control indication expansion, a group of stakeholder organizations convened to write an Appropriate Use Criteria (AUC) for Mohs. This followed a prescribed RAND process and was a synthesis of evidence-based medicine, literature review, and expert judgment. A ratings panel reviewed abstracted literature with evidence tables, and 270 possible indications for Mohs were rated as either appropriate, uncertain, or inappropriate. This AUC covers basal and squamous cell cancers, melanoma, and other rare cutaneous malignancies (including Merkel cell cancer, DFSP, pleomorphic and other sarcomas).

The American Joint Committee on Cancer (AJCC) also promulgates guidelines. Staging categories appropriate here include nonmelanoma skin cancer (though the focus is primarily oriented toward cutaneous squamous cell carcinoma), melanoma, and Merkel cell cancer. These staging systems do not specifically suggest treatment types, but they do help both identify and standardize risks for these cutaneous tumors. Once the level of risk is known, appropriate treatment is easier to determine.

As stated previously, Mohs is an effective but expensive skin cancer treatment technique. Currently, approximately one in four skin cancers are treated by Mohs. Mohs utilization has increased by 400 % from 1995 to 2009 [8]. The author's analysis of Medicare claims data from 2008 to 2012 shows shifts in the treatment of nonmelanoma skin cancer, with more destruction and excision procedures on the body (trunk, arms, and legs) and more Mohs everywhere.

An Overview of the Integumentary Coding Structure

The skin codes follow the basic paradigm already outlined: diagnosis, removal, and repair. In some cases, certain codes are modality specific. Mostly, though, the codes are organized both based on the size of the treated lesion (or the size of the repaired defect) and the anatomic site of the lesion or defect. It is important to note that neither the size nor site criteria are consistent, and therefore one has to look within each specific code family to determine the exact division points between codes. Unfortunately, the skin is carved up differently depending on the specific procedure in question. These differences will be highlighted in the individual code discussions.

Diagnosis: The Skin Biopsy

Most "lesional" work on the skin starts with a skin biopsy. Accurate identification of the lesion and its biological potential allows selection of an appropriate treatment modality. Many surgical procedures in the integumentary system include any

submission of removed materials for pathologic examination in the base payment—these include excisions, destructions, and shave removals. A biopsy may be performed as a stand-alone procedure on days proceeding further work on the same lesion or may be a stand-alone procedure if performed on a different lesion on the same day as other procedures. The exception to this is frozen section histopathology, which could lead to the case of a biopsy being performed on the same day as the definitive treatment procedure.

Biopsies may either be incisional (removing a portion of the lesion) or excisional (removing the entire lesion). Further, they may be partial-thickness removals (staying within the dermis—so called "shave" biopsies) or full-thickness removals (entering the subcutaneous fat). Full-thickness biopsies are often performed with a trephine, also called a punch, which is a circular cutting instrument typically available in diameters from 2 to 8 mm.

Regardless of the sampling technique, partial- and full-thickness biopsies, as well as shave and punch biopsies, are reported with the same codes. There is a base code (for the first biopsy performed) and an add-on code (for each additional biopsy performed on the same day). These two codes include sampling of the skin and/or mucous membranes and include simple closure if performed. The current RVUs for these services are listed in Table 12.1.

There are some site-specific biopsy codes as well. These are lip (40490), eyelid and lid margin (67810), and external ear (69100). There are also codes for biopsy of penis (54100) and biopsy of vulva/perineum, first lesion (55605), and an add-on code (for each additional lesion 55606). These site-specific biopsy codes should be reported as appropriate. It is important to note that add-on codes do not exist for lip, eyelid, ear, and penis. Therefore, the same code would be used to report multiple biopsies on the same anatomic structure (with units being used to identify the number of biopsies performed). Subsequent same day biopsies on the site-specific code anatomic sites would be subject to a multiple procedure payment reduction.

A common source of confusion arises when determining whether to code for a biopsy or a removal (shave or excision codes). General coding guidance suggests that if the intent is merely to establish a histopathologic diagnosis, then the biopsy codes are appropriate. If the intent is to remove the entire lesion (even though histopathology may be performed on the tissue removed), then the removal codes are appropriate. This often arises with a pigmented lesion suspicious for a melanoma. Accurate histopathologic diagnosis and staging require being able to evaluate the entire lesion—both depth and breadth. For this reason, an excision may have two valid intents—one being a diagnosis and the other being complete removal.

Table 12.1 RVUs for biopsy codes

Code	Work RVU	Non-facility PE RVU	Facility PE RVU	PLI RVU	Non-facility total RVU	Facility total RVU
11100	0.81	2.00	0.48	0.11	2.92	1.40
11101[a]	0.41	0.46	0.25	0.06	0.93	0.72

[a]As an add-on code, this is exempt from the multiple procedure payment reduction (MPPR)

Removal: Destructions, Shaves, and Excisions

Both the removal and repair codes are classified and divided based on both size and site. This granularity promotes more accurate classification of services rendered, but also leads to confusion. Unfortunately, neither size nor site classifications are consistent across the integumentary CPT code set. Therefore, to ensure correct reporting of services, the exact procedure should be referenced to a coding resource to ensure that the most correct code is used. Because of the lack of uniformity, differences will be pointed out within both the removal and repair sections that follow. Regarding size, one helpful note is that size is reported using the greatest lesion diameter, as skin lesions are often not symmetrically round. Regarding site, one helpful note is that anatomic substructures of the face (lips, nose, eyelids, lips) are identified separately, but are always grouped together within the same code.

Destructions

Destruction means the ablation of benign, premalignant, or malignant lesion via a variety of modalities (including cryosurgery, electrosurgery, laser, and surgical curettement). While some variation exists, the following are typical lesions and typical examples of treatment:

1. Benign warts with cryosurgery
2. Premalignant actinic keratoses with cryosurgery
3. Basal and squamous cell skin cancers with curettage and electrosurgery (usually electrodessication)

Typically, closure is not required for any of these treatment modalities.

Shaves

Shave removals describe a surgical technique where the path of the cutting instrument transverses the dermis and does not enter the subcutaneous tissue. This creates a partial-thickness wound, which is typically not repaired but rather allowed to heal by secondary intention. These codes, therefore, include no compensation for closure work nor materials. As with all of the removal codes, local anesthesia and hemostatic efforts are included. The shave codes are divided into three anatomic sites, with four size divisions at each site. The anatomic sites are:

1. Trunk, arms, or legs
2. Scalp, neck, hands, feet, or genitalia
3. Face, ears, eyelids, nose, lips, and mucous membranes

The size divisions are based on greatest lesion diameter and are:

1. Less than 0.5 cm
2. 0.6–1 cm
3. 1.1–2.0 cm
4. Greater than 2.0 cm

Note that none of these codes are add-on codes, and if multiple codes are reported on the same day, the multiple procedure payment reduction rule would apply.

Excisions

Excisions describe a surgical technique where the path of the cutting instrument enters the subcutaneous compartment. These codes are divided into the excision of benign lesions and of malignant lesions. The two code sets (benign and malignant) are identical with regard to size divisions and anatomic site specificity, and both include a simple closure, if preformed. Further, with both code sets, if closure requires more involved techniques (intermediate or complex linear closure, skin graft or skin graft/substitute closure), these are separately reportable. Importantly, however, if the wound is closed with a flap (adjacent tissue transfer), excision is NOT separately reportable (meaning that the flap codes include the primary lesion excision).

Measuring the size to report the service includes both the greatest diameter of the apparent lesion plus whatever margin is deemed appropriate to remove it. So the total size is the margin on one side + greatest lesion diameter + the margin on the other side. With benign excisions, margins will typically be narrow, on the order of 2–3 mm. With malignant lesions, the margins will typically be wider. For deep melanomas, for example, the margins could be 2.0 cm (on each side, for a total of 4 cm of margin). Both the site and size codes are identical for benign and malignant excisions.

The three anatomic site divisions are identical to the shave codes (described previously). The (total) size divisions are:

1. Less than 0.5 cm
2. 0.6–1 cm
3. 1.1–2.0 cm
4. 2.1–3.0 cm
5. 3.1–4.0 cm
6. Greater than 4.0 cm

One important note with malignant lesions: if frozen section pathology if performed and shows that the margins were not adequate, additional excisions may be necessary for complete lesion extirpation. In this case, multiple excision codes are not reported but rather the ultimate widest diameter required for complete lesion removal is reported. With either benign or malignant lesions, if permanent section

pathology is obtained and a reoperation to achieve complete lesion removal is necessary, then subsequent reoperation would be reported with the new size appropriate excision code. If this reoperation occurs within the ten-day global period, a modifier −58 should be appended to the subsequent code(s).

Repairs: Linear Closures, Flaps, Grafts, and More Complex Variants

Skin may need repair as the result of trauma or because of other surgical procedures. While in some cases the optimal repair strategy is obvious, in many it is not. "Best" may be described as some optimal combination of functional outcome, cosmetic outcome, minimal morbidity, and minimal cost. These are not only closure type and site specific but also patient specific. An elderly patient may prefer to have "less" done and to minimize cost, perhaps trading ultimate cosmetic outcome. A younger patient may be less likely to engage in the same calculus, but not necessarily. In all cases, careful preoperative counseling should attempt to define the best repair for the patient, based on these and other factors.

Linear Closures

Linear closure, defined more simply by CPT as "repair" or "closure" describes suturing a wound in a side-to-side fashion. As noted previously, simple repair is included with both the skin biopsy and skin lesion excision codes. Also, these linear repair codes include the work of local anesthesia and hemostatic effort. Unlike the excision codes, neither the size nor anatomic site divisions are consistent between the three types of linear repairs described by CPT. Thus, each family will be discussed separately.

Simple repair describes the use of a single layer of suture material to affect wound closure. Simple repair includes only two anatomic divisions:

1. Scalp, neck, axillae, external genitalia, trunk, extremities, hands, and/or feet
2. Face, ears, eyelids, nose, lips, and mucous membranes

Frustratingly, perhaps, the size division between these two anatomic sites is not exactly the same, either. For the first anatomic division (scalp et al.) it is:

1. Less than 2.5 cm,
2. 2.6–7.5 cm,
3. 7.6–12.5 cm,
4. 12.6–20.0 cm,
5. 20.1–30.0 cm, and
6. Over 30.0 cm.

The face et al. size division is similar except that the 2.6–7.5 cm division is subdivided into two: 2.6–5.0 cm and 5.1–7.5 cm. Emergency medicine is the primary provider of services here, with smaller codes being mostly reported from hospital emergency room and larger codes from either the outpatient or inpatient hospital setting. These codes are mostly reported with the ICD open wound codes and likely report the suturing of traumatic wounds.

Intermediate repair is defined as a two-layer closure—with one layer being the closure of the subcutaneous and superficial (non-muscle) fascia and the other being closure of the dermis/epidermis. Also, single layer repair of a wound that also requires extensive cleaning or removal of particulate matter (such as after trauma) is reported with these codes. These codes have three anatomic divisions, which are:

1. Scalp, axillae, trunk, and/or extremities
2. Neck, hands, feet, and/or external genitalia
3. Face, ears, eyelids, nose, lips, and/or mucous membranes

Here, size mirrors the divisions of the simple closures. The first two divisions (scalp et al. and neck et al.) are the same as the scalp et al. in the simple closures, and the face et al. here is the same (with the breaking of the 2.6–7.5 cm into two smaller divisions) as above.

Complex repair becomes more complicated. An intermediate repair becomes complex if the work requires scar revision, debridement, extensive undermining, or the placement of stents or retention sutures. Neither the anatomic site nor size divisions are the same as the intermediate repair family. The complex family has four anatomic divisions, which are:

1. Trunk
2. Scalp, arms, and/or legs
3. Forehead, cheeks, chin, mouth, neck, axillae, hands, and/or feet
4. Eyelids, nose, ears, and/or lips

For the following anatomic divisions: trunk; the scalp, arms, and/or legs; and the forehead, cheeks, chin, mouth, neck, axillae, hands, and/or feet, there are not codes to describe complex closures of 1.0 cm or less. The theory is that wounds that small would rarely ever require a surgical intervention more extensive than an intermediate repair. In addition to this, the size divisions are also different. For the first three anatomic divisions, the sizes are:

1. 1.1–2.5 cm
2. 2.6–7.5 cm
3. Each additional 5.0 cm (which is reported in units in addition to one of the prior codes)

The fourth anatomic division (eyelids, nose, ears, and/or lips) does have a code for 1.0 cm or less.

To report linear repairs, the length of the repair should be measured. If multiple defects are repaired on the same day, the length of repairs within the same family (simple, intermediate, or complex) and same anatomic site (trunk, face, etc.) should

be added together. This means that if three separate intermediate repairs are performed on the face, measuring 2.4, 4.6, and 7.3 cms, respectively, they should be added together (which gives 14.3 cms total in this example) and reported with the single code 12055 (repair, intermediate, face, 12.6–20 cm). If an additional complex repair was performed at the same time, then that code would be separately reportable based on location and length.

If a closure requires the repair of muscle or muscular fascia—some common examples would be galea, frontalis muscle, nasalis muscle, etc.—then this would qualify as a complex repair. Remember that intermediate repair includes only the repair of superficial (nonmuscular) fascia. A common conundrum is whether or not the excision of Burow's triangles ("dog ears") impacts the selection of an intermediate or complex code. According to CPT Assistant [9], the work of excising Burow's triangles may be included as part of either code family. Therefore, the act of converting a circular defect to a circle to tangent (fusiform) shape by the removal of Burow's triangles does not differentiate between intermediate and complex, and doing so does not necessarily define a complex repair.

Another challenging issue is how much undermining is necessary in order to qualify as "extensive." Unfortunately, there is no good answer to this question. Clearly, because CPT chose to qualify the term undermining, the implication is that some undermining can occur within the intermediate repair family. However, under coding guidance for the flap codes CPT states "Undermining alone of adjacent tissues to achieve closure, without additional incisions, does not constitute adjacent tissue transfer; see the complex repair codes" [10]. Taking this at face value suggests that any undermining may qualify a repair as complex. At this point, lacking more specific guidance, it is up to each surgeon to determine when undermining transitions from intermediate to complex. However, from a documentation/audit perspective, the operative note for a complex repair should use the words "extensive undermining" and should address why this intervention was necessary to achieve wound closure. Common reasons would be to achieve adequate tissue mobilization and to decrease central wound edge tension to an appropriate level (and that this could not be achieved with more limited undermining). Simply undermining to allow placement of deep sutures does not necessarily constiute extensive undermining, and does not therefore automaticaly imply a complex closure.

Table 12.2 compares the difference in RVUs between intermediate and complex closures on the cheek.

Table 12.2 Intermediate and complex closures: RVUs

Length	Intermediate closure work RVU	Complex closure work RVU	Difference
2.5 cm or less	2.53	3.73[a]	1.20
2.6–5.0 cm	2.87	4.78	1.91
5.1–7.5 cm	3.17	4.78[b]	1.61
7.6–12.5 cm	3.50	6.97	3.47

[a]The complex code is from 1.0 to 2.5 cm
[b]The complex code is from 2.6 to 7.5 cm

In this example, the RVU difference could be attributable just to the extra undermining that satisfies the term extensive. The RVU amount is substantial as a percentage increase from the entire work on the corresponding intermediate closure. This should guide the surgeon's judgment regarding whether the work entailed in the undermining justifies moving from an intermediate to a complex code.

A less clear coding issue arises when an M-plasty is performed at either end of a linear repair. There are actually two issues here. The first concerns the total measured length of the wound (so, e.g., do you measure both limbs of an M-plasty and add them together or just one limb?). The second concerns whether this surgical maneuver changes the level of linear repair coded or does performance of an M-plasty constitute an adjacent tissue transfer. Again, coding guidance is lacking, but the medical record should document (if coded with a linear repair code) whether the measurement includes one or both limbs of the M as well as why the M-plasty was necessary. Generally, small terminal M-plasties are not adjacent tissue transfers.

Flaps

Flaps can be divided into two broad categories: adjacent tissue transfer or rearrangement and more complex vascular pedicled, muscle, myocutaneous, or fasciocutaneous, tubed or walking, or free flaps. These closure modalities are typically utilized where linear closure is either not technically possible, not functional or not cosmetically indicated. For clarity, the somewhat more cumbersome term "adjacent tissue transfer" will be used to refer to "simple" flaps.

Simple Flaps

Adjacent tissue transfer includes a wide variety of skin flaps, including Z-plasty, W-plasty, V-Y plasty, rotation, rhombic, random island pedicle, and advancement. Remember that these repairs include excision of a primary lesion, if performed. Further, for traumatic wounds, if direct closure or rearrangement results in something that looks like one of these flaps, it is not billable as such. These codes are also size (though area, rather than length) and site based. Area is calculated by adding the area of the primary defect (the "hole") and the secondary defect (the skin mobilized to fill the "hole"). Complex geometric calculations for area are not necessary, as measuring the longest axis of each and multiplying this by the length of the perpendicular dimension of each, respectively, determine the areas for both the primary and secondary defect. Then the primary defect area (in cm^2) is added to the secondary defect area (in cm^2) to determine a total area.

The anatomic sites here mirror the complex closure code family. However, the measurements, now being area (versus length), are different as well. There are four anatomic sites:

1. Trunk
2. Scalp, arms, and/or legs
3. Forehead, cheeks, chin, mouth, neck, axillae, genitalia, hands, and/or feet
4. Eyelids, nose, ears, and/or lips

The size groupings are the same for all four site groups and are less than or equal to 10 and 10.1–30.0 cm^2. Also different from everything discussed above, larger flaps do not have site-specific codes and require only two size codes, which are 30.1–60.0 cm^2 and then each additional 30 cm^2. The "each additional code," 14302, can be billed in as many units as needed to describe the procedure.

One area of incorrect coding is the miscoding of a linear closure as a flap. While it is the case that one advances both side of a linear repair into the defect, this does not make it an advancement flap. *If it looks like a line when the operation is completed, then the repair was linear*. This is true even if the line is angulated, curved, crescent shaped, etc.

Another issue is when two (or rarely more) flaps are used to repair a defect. Lateral forehead defects, for example, can sometimes be repaired with a lateral rotation and medial advancement flap or two advancement flaps. This is correctly coded as a single flap, measuring both the primary defect as well as the two secondary defects created by each flap. Occasionally, a secondary defect caused by flap movement cannot be closed, and that secondary defect is repaired with a skin graft. In this case, the skin graft repair of the secondary defect would be billable. Similarly, if a defect is large enough that it can only be partially closed by a flap and the rest of the defect is repaired with a skin graft, that graft procedure is separately reportable.

There are times when the surgical excision of larger lesions or lesions in complicated areas like the ear, nose, eyelid, etc. mandates use of skin grafts. Oftentimes for skin lesions, these grafts are full thickness, which means that the whole epidermis and dermis are grafted. Appropriate coding for this type of lesions is as follows: code for the lesion excision as one code as described previously in this chapter based on the location and size and then add the code for the skin graft based on the rules of thumb below:

- Full-thickness graft, free, including direct closure of the donor site, scalp, arms, and/or legs; 20 sq cm or less (15220)
- Full-thickness graft, free, including direct closure of the donor site, scalp, arms, and/or legs; each additional 20 sq cm (15221)
- Full-thickness graft, free, including direct closure of the donor site, forehead, cheeks, chin, mouth, neck, axillae, genitalia, hands, and/or feet; 20 sq cm or less (15240)
- Full-thickness graft, free, including direct closure of the donor site, forehead, cheeks, chin, mouth, neck, axillae, genitalia, hands, and/or feet; each additional 20 sq cm (15241)

In some cases defects are repaired using partial (split) thickness skin grafts, non-autologous human skin, xenografts, etc. Specific codes exists for all of these procedures, but because of rapid technological innovation the reader is directed to consult current coding resources. Also, the surgical preparation of the graft recipient site (in the case of burn eschars, other scars, etc.) are separately coded. Importantly, these codes are based on size (in the case of adults) or percentage of body surface area (in the case of children younger than 10 years of age).

Soft Tissue Excision Codes

Most soft tissue masses of the body are benign in nature falling into one of two categories:

- Cyst—a closed sac having a distinct membrane and developing abnormally in a cavity or structure of the body (examples being ganglion cysts and digital mucous cysts, amongst others)[1]
- Lipoma—a tumor of fatty tissue

However, masses can be malignant as well such as sarcomas of all types. Deep inflammatory processes (e.g. pannicuilitis) that require a significant tissue sample for histopathologic diagnosis may occasionally be reported with the soft tissue biopsy codes, which are different than the excision codes being discussed here. Coding for soft tissue masses are based on the location, depth of excision, and size extent of excision.

There are over 30 codes within the musculoskeletal section of the CPT book that describe by precise anatomic location the excision of soft tissue tumor whether benign or malignant. These codes fall into three broad categories, but share the common feature of the inclusion (bundling) of simple or intermediate repair. Also, there are specific anatomic divisions, although the divisions here do not mirror the codes discussed above. Further, the size divisions between codes is not consistent, and depends both on the anatomic area and the exact proceudure being performed. The first category is excision of subcutaneous soft tissue tumors, not involving the deep fascia. These tumors are usually benign, and usually do not require the removal of significant surrounding normal tissue. The second category is excision of fascial or subfascial soft tissue tumors. These tumors are also usually benign, muscular in origin, do not involve bone (there are separate codes for those tumors), and similarly to not requrie the removal of significant surrounding normal tissue. The third category is the radical resection of soft connective tissue tumors. These tumors are usually (but not always) malignant, and usually (but also not always) bridge the subcutaneous and fascial/subfascial tissue compartments. It is important to note that extensive undermining, dissection, or elevation to remove the tumor and appropriate

[1] Note that epidermal inclusions cysts (also called sebaceous cysts) typically originate from the dermis, and their removal is most appropriately coded using the benign excision codes described previously.

tissue margins is included in this code, and just this does not justify the billing of a complex repair code. Note that the excison (resection) of cutaneous melanoma should be coded using the malignant excision codes (11600–11646), and not these codes. The last point of note is that appreciable vessel exploration and/or neuroplasty should be reported separately.

For the face and scalp, the size division is less than 2 cm and 2 cm and greater for all three code categories. For neck/thorax, back/flank, abdomen, upper arm/elbow, pelvis/hip, thigh/knee, and leg/ankle the size divisions are less than 3 cm and 3 cm and greater for subcutaneous excision, and less than 5 cm and 5cm or greater for subfacial and radical resections. For forearm/wrist the size divisions are less than 3 cm and 3 cm and greater for all three excision/resection categories. For hand/finger and foot/toe the size divisions are less than 1.5 cm and 1.5 cm and greater for subcutaneous and subfascial excsion, but less than 3 cm and 3 cm or greater for radical resection. To make things even more complicated, the CPT codes that describe these procedures are, in some cases, out of numerical rank order. This makes it imperative for the surgeon (or their coder) to consult and accurate coding manual to insure that the correct code is reported.

Conclusion

Coding for the skin and soft tissue is fairly well structured and granular once understood. It would behoove the busy surgeon to understand the documentation requirements in order to insure appropriate reimbursement.

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Chapter 13
Breast Coding

Eric B. Whitacre

Introduction

At coding courses and symposia, surgeons often ask about seemingly nonsensical coding issues relating to breast surgery:

- Why is there not a lumpectomy code that includes image guidance, similar to the breast biopsy codes that exist for both palpable and image-localized lesions?
- Why is there a composite code for modified radical mastectomy while total mastectomy and sentinel lymph node biopsy require three separate codes and a multiple procedure modifier?
- Why do the image-guided needle breast biopsy codes have six separate bundled codes, when a simple two-dimensional array of biopsy device and image guidance would be much more intuitive?
- Why does postoperative insertion of a brachytherapy catheter, an office-based procedure, have a higher reimbursement than any other breast procedural code?

The purpose of this chapter is to provide the historical background to clarify these and other similar questions. As is the case for other surgical specialties, current coding policy represents the intersection of evolving surgical practice and existing regulatory and policy guidelines for coding and reimbursement. The evolution of breast coding involves application of many of the principles articulated in previous chapters, including:

- The required "5-year review" of all CPT codes.
- Resolution of rank order anomalies.
- Evaluation of the "typical case" for physician work.

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- Bundling of codes commonly billed together.
- The importance of practice expense in reimbursement, especially when combined with site of service.

Mastectomy and Lumpectomy

The principles of Halsteadian surgery were the norm when the AMA first published a list of CPT codes in 1966 and for the early editions of the AMA CPT manual. At that time, "mastectomy" included not only simple/total mastectomy but also modified radical, radical, and various extended radical mastectomy procedures [1] (see Fig. 13.1). However, in 1992, during the development of the RBRVS, open surgical biopsy (19120) and modified radical mastectomy (19240) had become the predominant breast procedures. The physician surveys of these procedures in the initial Hsiao study included responses from approximately 100–200 physicians [2].

In contrast, the initial evaluation of physician work for simple/total mastectomy (19180), which was much less common at the time, included a survey of only 30 surgeons. The Harvard-based work estimate of approximately 8 RVUs – compared to 15 for modified radical mastectomy – remained the accepted value for total mastectomy until CMS submitted 19180 ("simple/total mastectomy") for reevaluation as part of the 5-year review in 2005. At that time, considering that the more radical procedures were declining in frequency and that sentinel lymph node biopsy was increasingly accepted as a substitute for axillary dissection, it made sense to use total mastectomy as the potential future anchor code for the family of breast surgical procedures. In addition, there was accumulating evidence, based on NSQIP (ACS National Surgical Quality Improvement Program) data and consensus panel review, that the Harvard work value was incorrect.

The result of the mandated 2005 review was that the work value for mastectomy almost doubled from just over 8 to more than 15 RVWs. There is no evidence in the literature to suggest that the surgical work significantly increased over the preceding interval. Indeed, the number of postoperative visits would have markedly decreased from previous decades when patients were often hospitalized until drains were removed. Instead, the increase was due to two factors: (1) a more extensive survey, consisting of 300 responses to the formal RUC questionnaire, and (2) the use of the recently reviewed reduction mammoplasty code 19318 with total RVWs of 15 and laparoscopic cholecystectomy with RVWs of 14.5 as anchor codes in the survey.

The increased value for mastectomy, however, resulted in a rank order anomaly compared to lumpectomy that was still based on the 1992 Harvard value of 5–6 RVUs. In the 2006 final rule, CMS noted the obvious discrepancy, and at least one commenting professional society argued that the discrepancy in reimbursement might actually motivate surgeons to preferentially recommend to their patients mastectomy over lumpectomy. CMS therefore mandated a reevaluation of lumpectomy to correct the apparent anomaly.

EXCISION

(All codes for bilateral procedures have been deleted. To report, add modifier -50 or 09950)

19100* Biopsy of breast; needle (separate procedure)

19101 incisional

19120 Excision of cyst, fibroadenoma or other benign tumor, aberrant breast tissue, duct lesion or nipple lesion (except 19140), male or female, one or more lesions

19140 Mastectomy for gynecomastia through circumareolar or other incision

19160 Mastectomy, partial (quadrectomy or more);

19162 with axillary lymphadenectomy

19180 Mastectomy, simple, complete

(For immediate or delayed insertion of implant, use 19340 or 19342)

(For gynecomastia, see 19140)

19182 Mastectomy, subcutaneous

(When performed in conjunction with reduction mammaplasty, use also 19318)

(19184-19187 have been deleted. To report, use 19182 with 19340 or 19342)

19200 Mastectomy, radical, including pectoral muscles, axillary lymph nodes

(19211-19216 have been deleted. To report, use 19200 with 19340 or 19342)

19220 Mastectomy, radical, including pectoral muscles, axillary and internal mammary lymph nodes (Urban type operation)

(19224-19229 have been deleted. To report, use 19220 with 19340 or 19342)

19240 Mastectomy, modified radical, including axillary lymph nodes but leaving pectoral muscles

(19250-19255 have been deleted. To report, use 19240 with 19340 or 19342)

19260 Excision of chest wall tumor including ribs

19271 Excision of chest wall tumor involving ribs, with plastic reconstruction, without mediastinal lymphadenectomy

19272 with mediastinal lymphadenectomy

Fig. 13.1 Breast CPT codes published in the 1985 AMA CPT manual. Note the emphasis on various radical procedures and the absence of a needle wire localization biopsy code

In 2007, therefore, lumpectomy (19160, renamed 19301) underwent a formal RUC survey. However, unlike the lumpectomy procedure current at the time of the initial Harvard review, when lumpectomy was usually performed for palpable breast cancers (which were indeed "lumps"), the typical lumpectomy procedure in 2007 was for a non-palpable lesion typically diagnosed via image-guided needle biopsy and requiring imaged-guided localization prior to surgery. Accordingly, the clinical vignette for the revalued lumpectomy procedure included surgery for a non-palpable

imaged localized tumor. The lumpectomy code (19301) in use today includes the work embedded in 19125 (breast biopsy with image localization) and not just 19120 (breast biopsy of a palpable lesion.) Note that 19301 differs from 19120 and 19125 not in the size or palpability of the target lesion, but rather in the intent to achieve negative margins.

Table 13.1 shows how the 2005 and 2006 reviews of total mastectomy and lumpectomy established an appropriate rank of physician work within the family. The more radical mastectomy procedures, which are infrequent, have never undergone a formal RUC survey. Indeed, the work values for radical and extended radical mastectomy are slightly anomalous, but are so infrequently performed that they would be difficult to survey and will only likely continue to decline in frequency.

Finally, the recent increasing trend for nipple-sparing mastectomy over the more traditional total mastectomy for many breast cancer patients may soon warrant development and survey of a new CPT code for nipple- and areola-sparing mastectomy. For the present, however, there still exists a wide variety of nipple-sparing procedures performed via different incisions, some following separate devascularization procedures and most, but not all, combined with immediate reconstructive procedures. The American Society of Breast Surgeons is currently sponsoring a registry of patients undergoing nipple-sparing mastectomy that may help clarify these issues [3].

Sentinel Lymph Node Biopsy and Axillary Surgery

Optimal clinical management of the axilla in patients with breast cancer is currently undergoing rapid change, moving from regional anatomic dissection to minimal interventions such as sentinel lymph node biopsy. Sentinel lymph node biopsy alone is currently considered adequate for selected patients with positive sentinel nodes [4] and for some patients with locally advanced carcinoma who have responded well to neoadjuvant therapy [5]. At this time, it is not entirely clear what the optimal management of every patient with positive axillary lymph nodes should be and how it should depend on the number of lymph nodes involved, the response to systemic therapy, or other pathologic features, such as presence of extracapsular extension in the lymph nodes. Understandably, when the sentinel lymph node mapping code was being valued, it was even less clear what the future "typical case" would be.

In 2010, when the SLN code (+38900) was initially being developed, independent codes existed for lumpectomy and mastectomy, for superficial and deep axillary dissection, and for superficial and deep lymph node biopsy. What was missing was the work associated with the "mapping" procedure itself. Because use of the SLN procedure was in rapid evolution, development of a separate add-on code to the lymph node biopsy codes was the most appropriate solution. It is certainly possible that in the future, combined codes for lumpectomy or mastectomy with sentinel lymph node mapping and biopsy would be indicated based on standard clinical practice and the RUC principle of "bundling" of codes commonly billed together.

Table 13.1 Breast surgical procedures ranked by estimated surgical work

		Harvard (1992 review)	RUC review		Current (2015)	Claims data (average 2011–2013)	2011	2012	2013
	Code description	RVW	Date	RVW	RVW				
Breast biopsies									
19120		5.09–5.56	1995	5.56	5.92	18,420	20,145	18,614	16,501
19125		NA	1993	6.06	6.69	23,288	25,033	23,170	21,662
Lumpectomies									
19301	Lumpectomy	5.55–5.98	2007	10	10.13	45,213	43,668	45,298	46,674
19302	Lumpectomy with ALND	10–45–13.88	2010	13.99	13.99	6186	6831	6094	5633
Mastectomy									
19304	Mastectomy, SQ	7.67	Never		7.95	818	804	836	815
19303	Mastectomy, simple, complete	8.59–8.79	2006	15.67	15.85	24,085	22,978	24,672	24,606
19307	Mastectomy, modified radical	15.00–18.13	Never		18.23	11,296	11,955	11,637	10,295
19305	Mastectomy, radical	13.08–17.46	Never		17.46	463	531	463	395
19306	Mastectomy, extended radical	13.18–18.23	Never		18.13	74	67	73	82

Note that 2015 RVWs for biopsy, lumpectomy, and simple mastectomy are appropriately ordered based on a clinically accepted estimate of work. The radical mastectomy procedures are slightly anomalous and declining in frequency. Slight variations in the RVWs since 1992 are largely due to changes in E&M values that are part of the total procedural values

Note: breast codes were renumbered in 2007

Alternatively, other changes in practice, such as molecular analysis of the primary tumor or changes in imaging technology, may replace the routine need for lymph node surgery, so that sentinel lymph node mapping may remain as an add-on code to lymph node biopsy.

Image-Guided Breast Biopsy

When CPT was first introduced, the standard practice was to perform immediate mastectomy for biopsy proven carcinoma. Over time, however, the recognition that biopsy of suspicious lesions with subsequent therapeutic surgery was oncologically safe, and open surgical biopsy of palpable and non-palpable breast lesions became the norm prior to lumpectomy or mastectomy. The subsequent development of effective image-guided needle biopsy and its attendant advantages to patients further changed the typical management of patients with breast cancer and has become the new standard approach [6].

During the evolution of image-guided breast biopsy, improvements in biopsy instrumentation influenced development of specific biopsy CPT codes. The most important was development of a vacuum-assisted, rotating cutter device (e.g., "Mammotome™") that rapidly became the preferred biopsy tool for stereotactic imaging and soon after became the norm for ultrasound-guided biopsy. In addition, vacuum-assisted needle biopsy later became available for alternative imaging platforms such as MRI and even PET mammography. Coding for needle biopsy evolved, therefore, to accommodate a variety of options specifying the type of imaging, the biopsy device used, as well as the placement of a biopsy marker and use of post-biopsy imaging for verification of accurate marker placement. This worked well from a clinician standpoint, since a combination of two to four codes could be used for every type of needle biopsy (see Table 13.2).

The more favorable reimbursement associated with the vacuum-assisted rotating cutter devices spawned an entire industry devoted to development of tools that met the definition of "vacuum-assisted" or "rotating cutter." As these tools usually provided superior sampling of lesions biopsied under stereotactic and MRI guidance as well as of complex lesions under ultrasound guidance, they quickly became the standard of care for biopsy of many lesions.

The research subcommittee of the RUC, however, determined that bundling of frequently billed codes resulted in a more accurate assessment of total physician work than a simple sum of the parts. The percutaneous breast biopsy codes were identified on a screen of codes that were frequently billed together (>75 %), and accordingly, in 2013, a series of six new bundled codes were developed. The typical case when the codes were developed included use of a vacuum-assisted biopsy device, placement of a biopsy marker, and post-biopsy imaging. As anticipated, bundling the codes resulted in an overall decrease in the total RVW's and non-facility reimbursement compared to the component coding. Table 13.3 shows a comparison for ultrasound-guided needle biopsy.

Table 13.2 Component-based coding of image-guided breast biopsy procedures prior to 2014

Procedure component	Options
Image guidance	Stereotaxis, ultrasound, MRI
Biopsy device	Core needle biopsy, vacuum-assisted/rotating cutter device
Marker placement	If performed
Post-biopsy imaging	If performed

Table 13.3 Effect of bundling components of the ultrasound-guided needle biopsy on total RVW's and RVU's (18.43 vs. 28.18 total RVU's)

	CPT code	Description	RVW	Non-facility RVU
Bundled	19083	US-guided needle biopsy	3.1	18.43
Component	19103	Vacuum-assisted biopsy	3.69	16.62
	76942	US guidance for biopsy	0.67	6.13
	19295	Marker placement	0	2.81
	77055	Postbiopsy mammogram	0.7	2.62
		Total	5.06	28.18

In addition to new biopsy codes, a series of eight new preoperative image-guided localization codes were developed and valued based on the same bundling rationale. While the bundled codes (each with complementary add-on codes for multiple procedures) may seem more cumbersome from the coder's standpoint, it results in more accurate reimbursement for the service provided.

Partial Breast Irradiation

Innovative radiation therapy techniques following lumpectomy for breast cancer include the Canadian hypofractionation technique, external beam IMRT, accelerated partial breast irradiation using brachytherapy catheters, and, more recently, intraoperative radiation therapy. While many of these involve changes performed by the radiation oncologist alone, intraoperative RT and brachytherapy include surgical work. Publication in the federal register in 2005 of the total reimbursement of >$5000 for delayed placement of a brachytherapy catheter following lumpectomy (19296) caused considerable surprise as the surgical work was initially valued as very comparable to an ultrasound-guided needle biopsy at 3.63 RVWs.

The answer to this apparent dilemma is all in the practice expense component, and artifactual rules embedded in CMS internal policy. Total reimbursement for a procedure depends on a total calculation of work, practice expense, and malpractice RVUs adjusted with a geographic modifier. Initially, during development of the RBRVS, only work RVUs were resource based, and practice expense was based on historical average charges. In 1999, federal legislation required resource-based values for practice expense to be phased in over a 4-year period. This resource-based

system was based on two databases of practice expense data: the Clinical Practice Expert Panel data and the AMA's Socioeconomic Monitoring System data.

Over the next decade, CMS and the RUC worked to more accurately assess the most accurate practice expense associated with every specialty. This included refinements to the practice expense databases, improved estimates of indirect expenses with new calculations for hourly nonphysician work, and fixed equipment costs. This resulted in a 19-step process to calculate total PE RVUs in the facility and non-facility setting [7]. This formula includes not only the direct costs of equipment (in the case of partial breast irradiation, this included a $2000 disposable device), but a complex calculation of additional expenses that depend largely on estimated practice costs of the primary specialty. Because traditionally most surgeons utilized only basic materials such as a scalpel and suture in the office setting, the multiplier effect of this calculation remained essentially imperceptible in surgical practices for many years.

With the introduction, however, of a $2000 partial breast irradiation device, which was now being used by general surgeons in the office setting, the existing PE calculation resulted in an effective two-fold multiplier effect based on the cost of the disposable catheter (Table 13.4). Confusion about the source of the high reimbursement continues to confound at least some breast surgeons, who believe that the reimbursement is related to physician work and that other radiation techniques involving surgeons – such as intraoperative radiation therapy, which is often performed in the facility setting – should be reimbursed accordingly.

Future Directions

CPT coding for breast surgery will need to evolve as new procedures are developed and new standards of surgical care are defined. New codes for ablative techniques for cancer, intraoperative radiation therapy, and intraoperative margin assessment will need to be developed and valued; changes in the typical case will warrant other changes, such as a possible bundled code for total mastectomy and sentinel lymph node biopsy. The rules of CPT code development as well as periodic review based on strategies developed by the RUC research subcommittee, and mandated by CMS policies such as the 5-year review and frequently billed code combinations, will continue to guide this evolution. An appreciation of the combined effect of changing clinical practice and application of these somewhat arcane policies provides insight into some of the apparent dilemmas in clinical coding in breast procedures and will likely do so for the near future.

Table 13.4 Effect of site of service and PE multiplier for practice expense for 19296 – delayed insertion of a brachytherapy catheter [8]

Site of service	RVW	PE	Total RVU	Total reimbursement
Non-facility	3.63	106.48	110.94	$3966.63
Facility	3.63	1.62	6.08	$217.39

Note: As this chapter goes to press, a new CPT code for intraoperative radiation therapy (IORT) at the time of lumpectomy has been approved by CPT and is about to undergo a formal RUC review.

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Chapter 14
Gastrointestinal Endoscopy

Christopher Kim and Glenn Littenberg

General Concepts for All GI Endoscopy Procedures

Each type of endoscopy is considered a "family," in which the diagnostic procedure is considered the "head" of the family, while the surgical procedures listed below the diagnostic procedure are each considered as a family member. The Current Procedural Terminology (CPT) guidelines provide instructions to guide the user to report codes for the appropriate anatomic site. For example, if a diagnostic evaluation of the esophagus is performed, it would fall in the esophagoscopy family; however, if a procedure also involved the stomach and duodenum, it would be appropriate to report from a different family of codes, EGD (*43233*, *43235–43259*, *43266*, *43270*). The concept is to report a code from the family of codes that describes the most extensive anatomy examined…

CPT 2015 has deleted the traditional but confusing language of "Surgical endoscopy always includes diagnostic endoscopy." Because those terms were never clear, payers would sometimes separate groups of endoscopic codes for facility payment based on their unique notions of what was "diagnostic" and what was "surgical," without specifying which CPT codes were being referenced. The revised definition, however, still maintains the CPT coding principle that the parent or diagnostic code (not separate procedure) within the family of codes is not reported if a more complex procedure is performed within the series.

In recent years, the CPT Editorial Panel has been replacing the terminology "with or without" in codes throughout the CPT book with "including, when

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performed" in an effort to standardize the language and make the code descriptors more accurate. Previously, all GI endoscopy family base codes contained the language "*diagnostic*, *with or without collection of specimen*(*s*) *by brushing or washing* (*separate procedure*)." In CPT 2014, "with or without" was replaced by "including, when performed" for esophagoscopy, EGD, and ERCP. The same terminology reconciliation will be made to ileoscopy, pouchoscopy, flexible sigmoidoscopy, and colonoscopy through stoma and colonoscopy in CPT 2015. This represents an editorial change and does not change the way the codes are reported.

The CPT Editorial Panel has also been replacing "bowel" with "intestine" throughout the CPT book. This represents an editorial change and does not change the way the codes are reported.

Placement of Stent

GI endoscopy codes for placement of endoscopic stents now include pre-dilation, post-dilation, and guide wire passage, when performed. Separate reporting of dilation or guide wire passage is not appropriate, as these services are bundled into the code for the placement of the stent.

Control of Bleeding

Previously, CPT code descriptors for control of bleeding codes included a list of examples such as injection, bipolar cautery, unipolar cautery, laser, heater probe, stapler, and plasma coagulator. The current descriptor for control of bleeding replaces all examples with "any method" throughout all GI endoscopy families. Submucosal injection may not be separately reported if the injection was part of the control of bleeding procedure. When bleeding occurs as the result of an endoscopic procedure (such as polypectomy), control of bleeding is not separately reported during the same operative session.

Endoscopic Mucosal Resection

Endoscopic mucosal resection (EMR) can include injection-assisted, cap-assisted, and ligation-assisted techniques. All techniques involve (1) identification and demarcation of the lesion, (2) submucosal injection to lift the lesion, and (3) endoscopic snare resection. Separate reporting of submucosal injection, banding, or snare polypectomy is not appropriate, as these services are bundled into the code for EMR. When biopsy is performed on the same lesion as EMR, biopsy is not reported (Table 14.1).

Table 14.1 Endoscopy CPT code families

Type of endoscopy	CPT code range
Esophagoscopy	*43191–43232*
Esophagogastroduodenoscopy (EGD)	*43233, 43235–43259, 43266, 43270*
Endoscopic retrograde cholangiopancreatography (ERCP)	*43260–43265, 43273–43278*
Enteroscopy (small intestine endoscopy)	*44360–44379*
Ileoscopy	*44380–44384*
Endoscopic Evaluation of Pouch	*44385–44386*
Colonoscopy through stoma	*44388–44408*
Proctosigmoidoscopy	*45300–45327*
Flexible Sigmoidoscopy	*45330–45350*
Colonoscopy	*45378–45392*
Anoscopy	*46600–46615*

Esophagoscopy

In 2014, the CPT codes for "traditional" esophagoscopy were separated to specifically identify and differentiate rigid esophagoscopy (*43191–43196*), transnasal esophagoscopy (*43197–43198*), and flexible esophagoscopy (*43200–43232*). There is a perceived need to separately identify and track the codes' usage, and the physician's work for these codes differs. Rigid esophagoscopy is typically performed in an operating room under deep sedation or general anesthesia. Transnasal esophagoscopy was designed for office exams with topical anesthesia but no intravenous (moderate) sedation, and primarily for evaluation of reflux symptoms to recognize Barrett's esophagus.

When it is medically appropriate to examine the stomach and duodenum, codes from the EGD family (*43233*, *43235–43259*, *43266*, *43270*) are reported. If the exam extends beyond the duodenum, codes are reported from the enteroscopy family (*44360–44373*; *44376–44379*). Even if a shorter scope is used initially and exchanged for a longer scope, only the procedure reflecting the greatest extent of the exam is reported.

In the Current Procedural Terminology (CPT) 2015 (*CPT Professional 2015*, page 260), a new definition was included in the esophagus/endoscopy section:

> Esophagoscopy includes examination from the cricopharyngeus muscle (upper esophageal sphincter) to and including the gastroesophageal junction. It may also include examination of the proximal region of the stomach via retroflexion when performed [1].

The new definition makes clear that a complete esophagoscopy must include the GE junction, and a retroflexion view of the cardia is part of esophagoscopy, when it is performed. This definition clarifies that entry into the stomach just to

view the gastroesophageal junction in retroflex does not justify use of the esophagogastroduodenoscopy codes. Using a code from the flexible esophagoscopy code family (*43200–43232*) or to use a code from the esophagogastroduodenoscopy (EGD) family (*43233*, *43235–43259*, *43266*, *43270*) depends on the medical necessity to perform a diagnostic or therapeutic exam of the stomach and/or duodenum.

Codes *43191–43196* are used to report rigid esophagoscopy, which is performed transorally, and these codes are further distinguished by the nature of the services provided. The procedure described in code *43191* is performed for diagnostic purposes, which include the collection of specimen(s) by brushing or washing. Codes *43192–43196* describe interventional procedures performed via rigid esophagoscopy.

Esophagogastroduodenoscopy

EGDs are procedures in which the endoscope is passed through the pyloric channel or gastroenterostomy (in cases of surgically altered anatomy). EGD services are reported with codes *43233*, *43235–43259*, *43266*, and *43270* (see Table 14.2). If the exam extends beyond the duodenum (>50 cm beyond the pylorus), codes are reported from the enteroscopy (endoscopy, small intestine) sections (*44360–44373*; *44376–44379*). A common question related to the reporting of codes in the EGD

Table 14.2 CPT codes for esophagogastroduodenoscopy

CPT code	Code descriptor
43235	Esophagogastroduodenoscopy, flexible, transoral; diagnostic, including collection of specimen(s) by brushing or washing, when performed
43236	Esophagogastroduodenoscopy, flexible, transoral; with directed submucosal injection(s), any substance
43237	Esophagogastroduodenoscopy, flexible, transoral; with endoscopic ultrasound examination limited to the esophagus, stomach or duodenum, and adjacent structures
43238	Esophagogastroduodenoscopy, flexible, transoral; with transendoscopic ultrasound-guided intramural or transmural fine needle aspiration/biopsy(s), (includes endoscopic ultrasound examination limited to the esophagus, stomach or duodenum, and adjacent structures)
43239	Esophagogastroduodenoscopy, flexible, transoral; biopsy; single or multiple
43240	Esophagogastroduodenoscopy, with transmural drainage of pseudocyst (includes placement of transmural drainage catheter[s]/stent[s], when performed, and endoscopic ultrasound, when performed)
43241	Esophagogastroduodenoscopy, flexible, transoral; insertion of intraluminal tube or catheter
43242	Esophagogastroduodenoscopy, flexible, transoral; with transendoscopic ultrasound-guided intramural or transmural fine needle aspiration/biopsy(s) (includes endoscopic ultrasound examination of the esophagus, stomach, and either the duodenum or a surgically altered stomach where the jejunum is examined distal to the anastomosis)

Table 14.2 (continued)

CPT code	Code descriptor
43243	Esophagogastroduodenoscopy, flexible, transoral; injection sclerosis of esophageal/gastric varices
43244	Esophagogastroduodenoscopy, flexible, transoral; band ligation of esophageal/gastric varices
43245	Esophagogastroduodenoscopy, flexible, transoral; with dilation of gastric/duodenal stricture(s) (e.g., balloon, bougie)
43246	Esophagogastroduodenoscopy, flexible, transoral; with directed placement of percutaneous gastrostomy tube
▲43247	Esophagogastroduodenoscopy, flexible, transoral; with removal of foreign body(s)
43248	Esophagogastroduodenoscopy, flexible, transoral; insertion of guide wire followed by passage of dilator(s) through esophagus over guide
43249	Esophagogastroduodenoscopy, flexible, transoral; transendoscopic balloon dilation of esophagus (<30mm)
43233	Esophagogastroduodenoscopy, flexible, transoral; with dilation of esophagus with balloon (30 mm diameter or larger) (includes fluoroscopic guidance, when performed)
▲43250	Esophagogastroduodenoscopy, flexible, transoral; with removal of tumor(s), polyp(s), or other lesion(s) by hot biopsy forceps
43251	Esophagogastroduodenoscopy, flexible, transoral; with removal of tumor(s), polyp(s), or other lesion(s) by snare technique
43252	Esophagogastroduodenoscopy, flexible, transoral; with optical endomicroscopy
43253	Esophagogastroduodenoscopy, flexible, transoral; with transendoscopic ultrasound-guided transmural injection of diagnostic or therapeutic substance(s) (e.g., anesthetic, neurolytic agent) or fiducial marker(s) (includes endoscopic ultrasound examination of the esophagus, stomach, and either the duodenum or a surgically altered stomach where the jejunum is examined distal to the anastomosis)
43254	Esophagogastroduodenoscopy, flexible, transoral; with EMR (endoscopic mucosal resection)
43255	Esophagogastroduodenoscopy, flexible, transoral; with control of bleeding, any method
43256	43256 has been deleted. To report, use 43266
43266	Esophagogastroduodenoscopy, flexible, transoral; with placement of endoscopic stent (includes pre-and post-dilation and guide wire passage, when performed)
43257	Esophagogastroduodenoscopy, flexible, transoral; with delivery of thermal energy to the muscle of lower esophageal sphincter and/or gastric cardia, for treatment of gastroesophageal reflux disease
43258	43258 has been deleted. To report, use 43270
43270	Esophagogastroduodenoscopy, flexible, transoral; with ablation of tumor(s), polyp(s), or other lesion(s) (includes pre- and post-dilation and guide wire passage, when performed)
43259	Esophagogastroduodenoscopy, flexible, transoral; with endoscopic ultrasound examination, including the esophagus, stomach, and either the duodenum or a surgically altered stomach where the jejunum is examined distal to the anastomosis

series is how to code for an EGD that involves testing for *Helicobacter pylori*. A number of commercial kits are available to detect the presence of urease produced by *H. pylori*, and these tests typically involve obtaining a tissue biopsy via the endoscope. The appropriate way to report the EGD portion of the procedure is with code *43239*, *whether the tissue is used just for urease test and/or sent for histologic exam*.

Endoscopic Ultrasound in the Digestive Tract

In the entire family of EUS codes, no separate code can be reported from the radiologic supervision and interpretation series because that work is included in the EUS. In addition, for every code in this family, the parent codes (*43200*, *43235*, *44388*, *45330*, and *45378*) cannot be reported separately. Neither should a fine needle aspirate (FNA) code be reported in conjunction with the diagnostic EUS code.

Every code in the EUS series also now has a parenthetical note, which states that the specific code cannot be reported more than once per session. For the diagnostic EUS codes, this is to indicate that even if multiple modalities were used (radial, curved linear array, mini probe, etc.), the code can only be reported once. Likewise, for the therapeutic EUS codes, even if multiple lesions were sampled or treated, the code can only be reported once (Table 14.3).

Table 14.3 CPT codes for endoscopic ultrasound

CPT code	Descriptor
43231	Esophagoscopy, flexible, transoral; with endoscopic ultrasound examination
43232	Esophagoscopy, flexible, transoral; with transendoscopic ultrasound-guided intramural or transmural fine needle aspiration/biopsy(s)
43237	Esophagogastroduodenoscopy, flexible, transoral; with endoscopic ultrasound examination limited to the esophagus, stomach or duodenum, and adjacent structures
43238	Esophagogastroduodenoscopy, flexible, transoral; with transendoscopic ultrasound-guided intramural or transmural fine needle aspiration/biopsy(s), (includes endoscopic ultrasound examination limited to the esophagus, stomach or duodenum, and adjacent structures)
43240	Esophagogastroduodenoscopy, flexible, transoral; with transmural drainage of pseudocyst (includes placement of transmural drainage catheter[s]/stent[s], when performed, and endoscopic ultrasound, when performed)
43242	Esophagogastroduodenoscopy, flexible, transoral; with transendoscopic ultrasound-guided intramural or transmural fine needle aspiration/biopsy(s), (includes endoscopic ultrasound examination of the esophagus, stomach, and either the duodenum or a surgically altered stomach where the jejunum is examined distal to the anastomosis)

Table 14.3 (continued)

CPT code	Descriptor
43253	Esophagogastroduodenoscopy, flexible, transoral; with transendoscopic ultrasound-guided transmural injection of diagnostic or therapeutic substance(s) (e.g., anesthetic, neurolytic agent) or fiducial marker(s) (includes endoscopic ultrasound examination limited to the esophagus, stomach, and either the duodenum or a surgically altered stomach where the jejunum is examined distal to the anastomosis)
43259	Esophagogastroduodenoscopy, flexible, transoral; with endoscopic ultrasound examination, including the esophagus, stomach, and either the duodenum or a surgically altered stomach where the jejunum is examined distal to the anastomosis
●44406	Colonoscopy through stoma; with endoscopic ultrasound examination, limited to the sigmoid, descending, transverse, or ascending colon and cecum and adjacent structures
●44407	Colonoscopy through stoma with transendoscopic ultrasound-guided intramural or transmural fine needle aspiration/biopsy(s), includes endoscopic ultrasound examination limited to the sigmoid, descending, transverse, or ascending colon and cecum and adjacent structures
45341	Sigmoidoscopy, flexible; with endoscopic ultrasound examination
45342	Sigmoidoscopy, flexible; with transendoscopic ultrasound guided intramural or transmural fine needle aspiration/biopsy(s)
▲45391	Colonoscopy, flexible; with endoscopic ultrasound examination, limited to the rectum, sigmoid, descending, transverse, or ascending colon and cecum and adjacent structures
▲45392	Colonoscopy, flexible; with transendoscopic ultrasound-guided intramural or transmural fine needle aspiration/biopsy(s), (includes endoscopic ultrasound examination limited to the rectum, sigmoid, descending, transverse, or ascending colon and cecum and adjacent structures)

Endoscopic Retrograde Cholangiopancreatography

In CPT 2014 and 2015, revisions were made to the CPT ERCP code series to better reflect current medical terminology and standard of care. These guidelines address the definition of a complete ERCP service, stent placement, delineation of which ductal systems can be considered separate, reporting of services for altered postoperative anatomy, and clarification regarding stone destruction and removal. Several code modifications involve bundling a combination of procedures, which are commonly performed together into a single code. These modifications replace what was typically a single component reporting in the past. Thus, there are changes to procedures, such as calculi removal, ablation, stent placement, dilation, and several procedures, in which sphincterotomy is now a bundled component of a therapeutic procedure.

Besides the revised guidelines, new guidelines were also added to clarify that therapeutic ERCP includes diagnostic ERCP service (*43260*) and that ERCP includes passage of guide wire(s), when performed. The definition of a complete or successful ERCP is clarified to indicate that ERCP should be reported only when one or more ductal system(s) is visualized. In addition, instructions about reporting multiple modalities of ERCP during the same session, optical endomicroscopy of bile duct and pancreas, and coding multiple stent placements during ERCP (*43274*) were also added.

According to the guidelines in the ERCP subsection of the CPT 2014 and 2015 code set, an "ERCP is considered complete if one or more of the ductal system(s), (pancreatic/biliary) is visualized." An attempted ERCP but with unsuccessful cannulation of any ductal system is to be reported with EGD codes (see *43235–43259*, *43266*, *43270*) (Table 14.4).

Fluoroscopy supervision and interpretation (S&I) codes are also highlighted in the following parenthetical note, which precedes the ERCP code series.

Table 14.4 CPT codes for endoscopic retrograde cholangiopancreatography

CPT	Description
43260	Endoscopic retrograde cholangiopancreatography (ERCP); diagnostic, including collection of specimen(s) by brushing or washing, when performed (separate procedure)
43261	Endoscopic retrograde cholangiopancreatography (ERCP); with biopsy, single or multiple
43262	Endoscopic retrograde cholangiopancreatography (ERCP); with sphincterotomy/papillotomy
43263	Endoscopic retrograde cholangiopancreatography (ERCP); with pressure measurement of sphincter of Oddi
43264	Endoscopic retrograde cholangiopancreatography (ERCP); with removal of calculi/debris from biliary/pancreatic duct(s)
43265	Endoscopic retrograde cholangiopancreatography (ERCP); with destruction of calculi, any method (e.g., mechanical, electrohydraulic, lithotripsy)
43274	Endoscopic retrograde cholangiopancreatography (ERCP); with placement of endoscopic stent into biliary or pancreatic duct, including pre- and post-dilation and guide wire passage, when performed, including sphincterotomy, when performed, each stent
43275	Endoscopic retrograde cholangiopancreatography (ERCP); with removal of foreign body(s) or stent(s) from biliary/pancreatic duct(s)
43276	Endoscopic retrograde cholangiopancreatography (ERCP); with removal and exchange of stent(s), biliary or pancreatic duct, including pre- and post-dilation and guide wire passage, when performed, including sphincterotomy, when performed, each stent exchanged
43277	Endoscopic retrograde cholangiopancreatography (ERCP); with trans-endoscopic balloon dilation of biliary/pancreatic duct(s) or of ampulla (sphincteroplasty), including sphincterotomy, when performed, each duct
43278	Endoscopic retrograde cholangiopancreatography (ERCP); with ablation of tumor(s), polyp(s), or other lesion(s), including pre- and post-dilation and guide wire passage, when performed

(*If imaging of the ductal systems is performed, including images saved to the permanent record and report of the imaging, see 74328, 74329, 74330.*)

The parenthetical note's instruction is further reinforced with the following codes and their parenthetical notes as well. Throughout the ERCP family, if radiologic S&I are performed at the time of the ERCP, codes *74328*, *74329*, or *74330* may be reported separately, if documented. The code choice is clear in the code descriptors.

74328	Endoscopic catheterization of the biliary ductal system, radiological supervision and interpretation
74329	Endoscopic catheterization of the pancreatic ductal system, radiological supervision and interpretation
74330	Combined endoscopic catheterization of the biliary and pancreatic ductal systems, radiological supervision and interpretation

Documentation should indicate that the endoscopist was the provider who did the radiologic S&I. Modifier *26* would be appended to indicate interpretation services and not ownership of equipment. Often, the hospital will submit a radiology report that indicates the total amount of technical time without a radiologist's interpretation, which supports the hospital billing for the technical component with a TC modifier.

Enteroscopy

The CPT codes for small intestine endoscopy (also called enteroscopy) describe the direct inspection of the small intestine beyond the duodenum with an endoscope passed through the mouth. This family of codes also describes some, but not all, endoscopic therapies that may be applied to the small intestine, such as submucosal injection; stent placement; and balloon dilation. Some other services that are performed within the small intestine currently have no specific CPT codes, although similar procedures performed via EGD or colonoscopy have assigned codes. Because of the considerably lower frequency of use of enteroscopy, the idea of extending the use of existing technology into other parts of the gastrointestinal (GI) tract is not necessarily accompanied by evidence-based literature, which is a requisite to obtaining CPT Category I codes. Therefore, rather than risk being assigned the CPT Category III codes for long-used "standard" endoscopic techniques, the GI societies decided not to pursue new CPT Category I codes within the enteroscopy code families (Table 14.5).

Antegrade transoral small intestinal endoscopy (enteroscopy) is defined by *the most distal segment of the small intestine that is examined*. Codes *44360*, *44361*, *44363*, *44364*, *44365*, *44366*, *44369*, *44370*, *44372*, and *44373* are endoscopic procedures to visualize the esophagus through the jejunum using an antegrade approach.

Table 14.5 CPT codes for enteroscopy

CPT code	CPT code descriptor
▲44360	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, not including ileum; diagnostic, including collection of specimen(s) by brushing or washing, when performed (separate procedure)
44361	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, not including ileum; with biopsy, single or multiple
▲44363	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, not including ileum; with removal of foreign body(s)
44364	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, not including ileum; with removal of tumor(s), polyp(s), or other lesion(s) by snare technique
44365	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, not including ileum; with removal of tumor(s), polyp(s), or other lesion(s) by hot biopsy forceps or bipolar cautery
44366	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, not including ileum; with control of bleeding (e.g., injection, bipolar cautery, unipolar cautery, laser, heater probe, stapler, plasma coagulator)
44369	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, not including ileum; with ablation of tumor(s), polyp(s), or other lesion(s) not amenable to removal by hot biopsy forceps, bipolar cautery or snare technique
44370	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, not including ileum; with transendoscopic stent placement (includes predilation)
44372	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, not including ileum; with placement of percutaneous jejunostomy tube
44373	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, not including ileum; with conversion of percutaneous gastrostomy tube to percutaneous jejunostomy tube
44376	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, including ileum; diagnostic, with or without collection of specimen(s) by brushing or washing (separate procedure)
44377	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, including ileum; with biopsy, single or multiple
44378	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, including ileum; with control of bleeding (e.g., injection, bipolar cautery, unipolar cautery, laser, heater probe, stapler, plasma coagulator)
44379	Small intestinal endoscopy, enteroscopy beyond second portion of duodenum, including ileum; with transendoscopic stent placement (includes predilation)

An endoscope must be passed at least 50 cm beyond the pylorus. These are the traditional "push enteroscopy" codes in which part of the jejunum is visualized most typically using a pediatric colonoscope or more complete jejunoscopy performed using "deep enteroscope" instruments that employ single- or double-balloon technology and some form of overtube.

Codes *44376*, *44377*, *44378*, and *44379* are endoscopic procedures to visualize from the esophagus through the ileum using an antegrade approach. The loose mobile small intestine loops are made to "pleat" over the scope and the overtube to stabilize the intestine, which then allows for further antegrade passage of the scope.

It is common practice to leave India ink tattoos (submucosal injection, which is an unlisted procedure reported with code *44799*) at the distal extent of scope passage.

Endoscopy (44385-44386, 45300-45393, 45398)

See Tables 9.1, 9.2, and 9.3 for the specific CPT codes for small intestine pouch endoscopy, proctosigmoidoscopy, sigmoidoscopy (rigid, flexible) and colonoscopy. Two Healthcare Common Procedural Coding System (HCPCS) codes (*G0105* or *G0121*) were developed by the Centers for Medicare and Medicaid Services (CMS) to differentiate between screening and diagnostic colonoscopies for the Medicare population. Therefore, to report screening and diagnostic colonoscopies for services rendered to Medicare beneficiaries, see Table 9.4 (Tables 14.6, 14.7, and 14.8).

Table 14.6 CPT codes for pouch endoscopy

CPT code	Code descriptor
▲44385	Endoscopic evaluation of small intestinal pouch (e.g., Kock pouch, ileal reservoir [S or J]); diagnostic, including collection of specimen(s) by brushing or washing, when performed (separate procedure)
▲44386	Endoscopic evaluation of small intestinal pouch (e.g., Kock pouch, ileal reservoir [S or J]); with biopsy, single or multiple

Table 14.7 CPT codes for rigid proctosigmoidoscopy

CPT code	Code descriptor
45300	Proctosigmoidoscopy, rigid; diagnostic, with or without collection of specimen(s) by brushing or washing (separate procedure)
45303	Proctosigmoidoscopy, rigid; with dilation (e.g., balloon, guide wire, bougie)
45305	Proctosigmoidoscopy, rigid; with biopsy, single or multiple
43307	Proctosigmoidoscopy, rigid; with removal of foreign body
45308	Proctosigmoidoscopy, rigid; with removal of single tumor, polyp, or other lesion by hot biopsy forceps or bipolar cautery
45309	Proctosigmoidoscopy, rigid; with removal of single tumor, polyp, or other lesion by snare technique
45315	Proctosigmoidoscopy, rigid; with removal of multiple tumors, polyps, or other lesions by hot biopsy forceps, bipolar cautery or snare technique
45317	Proctosigmoidoscopy, rigid; with control of bleeding (e.g., injection, bipolar cautery, unipolar cautery, laser, heater probe, stapler, plasma coagulator)
45320	Proctosigmoidoscopy, rigid; with ablation of tumor(s), polyp(s), or other lesion(s) not amenable to removal by hot biopsy forceps, bipolar cautery or snare technique (e.g., laser)
45321	Proctosigmoidoscopy, rigid; with decompression of volvulus
45327	Proctosigmoidoscopy, rigid; with transendoscopic stent placement (includes predilation)

Table 14.8 CPT codes for flexible sigmoidoscopy

CPT code	Code descriptor
▲45330	Sigmoidoscopy, flexible; diagnostic, including collection of specimen(s) by brushing or washing, when performed (separate procedure)
45331	Sigmoidoscopy, flexible; with biopsy, single or multiple
▲45332	Sigmoidoscopy, flexible; with removal of foreign body(s)
▲45333	Sigmoidoscopy, flexible; with removal of tumor(s), polyp(s), or other lesion(s) by hot biopsy forceps
▲45334	Sigmoidoscopy, flexible; with control of bleeding, any method
45335	Sigmoidoscopy, flexible; with directed submucosal injection(s), any substance
▲45337	Sigmoidoscopy, flexible; with decompression (for pathologic distention) (e.g., volvulus, megacolon), including placement of decompression tube, when performed
●45338	Sigmoidoscopy, flexible; with removal of tumor(s), polyp(s), or other lesion(s) by snare technique
●45346	Sigmoidoscopy, flexible; with ablation of tumor(s), polyp(s), or other lesion(s) (includes pre- and post- dilation and guide wire passage, when performed)
▲45340	Sigmoidoscopy, flexible; with transendoscopic balloon dilation
45341	Sigmoidoscopy, flexible; with endoscopic ultrasound examination
45342	Sigmoidoscopy, flexible; with transendoscopic ultrasound guided intramural or transmural fine needle aspiration/biopsy(s)
●45347	Sigmoidoscopy, flexible; with placement of endoscopic stent (includes pre- and post-dilation and guide wire passage, when performed)
●45349	Sigmoidoscopy, flexible; with endoscopic mucosal resection
●45350	Sigmoidoscopy, flexible; with band ligation(s) (e.g., hemorrhoids)
G0104	Colorectal cancer screening; flexible sigmoidoscopy

Lower GI Endoscopy: Colonoscopy, Sigmoidoscopy, Proctosigmoidoscopy, and Pouchoscopy

For CPT 2015, several of the definitions related to colon endoscopy and some of the important terms and guidelines related to endoscopy were revised.

- *Proctosigmoidoscopy* is the examination of the rectum and may include examination of a portion of the sigmoid colon.
- *Sigmoidoscopy* is the examination of the entire rectum, sigmoid colon, and may include examination of a portion of the descending colon.
- *Colonoscopy* is the examination of the entire colon, from the rectum to the cecum, and may include examination of the terminal ileum or small intestine proximal to an anastomosis (Tables 14.9 and 14.10).
- *Colonoscopy through stoma* is the examination of the colon, from the colostomy stoma to the cecum or colon-small intestine anastomosis, and may include examination of the terminal ileum or small intestine proximal to an anastomosis.
- Ileoscopy through stoma (*44380*, *44381*, *44382*, *44384*) is reported for endoscopic examination of a patient who has an ileostomy.
- Anoscopy, proctosigmoidoscopy, or sigmoidoscopy, as appropriate, is reported for endoscopic exam of a defunctionalized rectum or distal colon in a patient

Table 14.9 CPT codes for colonoscopy

CPT code	Code descriptor
▲45378	Colonoscopy, flexible; diagnostic, including collection of specimen(s) by brushing or washing, when performed (separate procedure)
▲45379	Colonoscopy, flexible; with removal of foreign body(s)
▲45380	Colonoscopy, flexible; with biopsy, single or multiple
▲45381	Colonoscopy, flexible; with directed submucosal injection(s), any substance
▲45382	Colonoscopy, flexible; with control of bleeding, any method
●45388	Colonoscopy, flexible; with ablation of tumor(s), polyp(s), or other lesion(s) (includes pre- and post-dilation and guide wire passage, when performed)
▲45384	Colonoscopy, flexible; with removal of tumor(s), polyp(s), or other lesion(s) by hot biopsy forceps
▲45385	Colonoscopy, flexible; with removal of tumor(s), polyp(s), or other lesion(s) by snare technique
▲45386	Colonoscopy, flexible; with transendoscopic balloon dilation
●45389	Colonoscopy, flexible; with endoscopic stent placement (includes pre- and post-dilation and guide wire passage, when performed)
▲45391	Colonoscopy, flexible; with endoscopic ultrasound examination limited to the rectum, sigmoid, descending, transverse, or ascending colon and cecum, and adjacent structures
▲45392	Colonoscopy, flexible; with transendoscopic ultrasound guided intramural or transmural fine needle aspiration/biopsy(s), includes endoscopic ultrasound examination limited to the rectum, sigmoid, descending, transverse, or ascending colon and cecum, and adjacent structures
●45390	Colonoscopy, flexible; with endoscopic mucosal resection
●45393	Colonoscopy, flexible; with decompression (for pathologic distention) (e.g., volvulus, megacolon), including placement of decompression tube, when performed
●45398	Colonoscopy, flexible; with band ligation(s) (e.g., hemorrhoids)

Table 14.10 HCPCS codes for colonoscopy

HCPCS code	Code descriptor
G0105	Colorectal cancer screening; colonoscopy on individual at high risk
G0121	Colorectal cancer screening; colonoscopy on individual not meeting criteria for high risk

who has undergone colectomy, in addition to colonoscopy through stoma or ileoscopy through stoma, if both portions of the colon are examined on the same date.

- Flexible sigmoidoscopy (*45330–45347*) is reported for an endoscopic examination of a patient who has undergone resection of the colon proximal to the sigmoid (subtotal colectomy), and who has had an ileosigmoid or ileorectal anastomosis. A short scope can typically be utilized for these circumstances.
- Pouch endoscopy codes (*44385* and *44386*) are reported for endoscopic examination of a patient who has undergone resection of the colon with ileoanal anastomosis (e.g., J-pouch).

- Colonoscopy (*45378–45398*) is reported for endoscopic examination of a patient who has undergone segmental resection of the colon (e.g., hemicolectomy; sigmoid colectomy, low anterior resection).
- The terminology, "proximal to the splenic flexure," is no longer used; therefore, if the scope does not reach the cecum, modifier *53* should be appended to the claim, which only applies to screening or diagnostic colonoscopy. This convention addresses CMS policy regarding the allowed frequency of colonoscopy exams. If an incomplete colonoscopy is performed for screening purposes and a second procedure is performed to complete the exam, appending modifier *53* will ensure the contractor pays for the second (complete) procedure and prevent a denial based on the exam being "premature" (eg, less than 10 years if low-risk screening, 2 years for high-risk screening).
- If therapeutic colonoscopy (*44389–44407*, *45379*, *45380*, *45381*, *45382–45398*) is performed and does not reach the cecum or colon-small intestine anastomosis, modifier *52* should be appended to the claim. At this time, it is unknown how Medicare or other payers will be addressing the use of modifier *52* for any of these circumstances.

Screening examinations that become therapeutic (e.g., a polyp is found and removed, a lesion biopsied, etc.) must be reported with special modifiers. If a screening procedure is converted into a therapeutic procedure, modifier *33* should be appended for the commercial payer and modifier *PT* for Medicare to trigger preventive benefits coverage. Appending the appropriate modifier for both Medicare and commercial payers results in the deductible being waived. Commercial payers will also waive the co-payment. Due to an oversight in the Affordable Care Act by Congress, Medicare beneficiaries are still responsible for paying the co-payment when a screening colonoscopy also involves the removal of polyps or other tissues during the screening encounter. Unfortunately, this technicality in current law comes as a surprise to most patients, resulting in frustration by the patient when they receive a bill for the co-payment of a screening colonoscopy that turned therapeutic. As of 2015, Medicare patients may also elect to have propofol sedation provided by anesthesia personnel for colorectal cancer screening exams, not limited by policies of restricted medical circumstances. Similar to the colonoscopy service, if screening becomes therapeutic, the deductible but not the co-payment for anesthesia services will be waived.

Multiple Procedure Valuation for Endoscopy Codes

Endoscopy codes are unique in CPT for the method of valuation when more than one endoscopy procedure is done at the same setting. For most CPT codes, when a second procedure is done at the same operative setting as another procedure (e.g., partial mastectomy and axillary lymph node biopsy), the lesser-valued CPT code is appended with a modifier (in most instances modifier −51), and the RVU value for reimbursement is reduced to half. For endoscopy codes *in the same family*, however,

Table 14.11 Incremental valuation of interventional endoscopy procedures

CPT code	Short descriptor	wRVU (2016 value)	wRVU difference from base code for family
43235	EGD, diagnostic	2.19	
43236	With directed submucosal injection	2.49	0.3
43239	With biopsy, single or multiple	2.49	0.3
45530	Flexible sigmoidoscopy, diagnostic	0.84	
45331	With biopsy, single or multiple	1.14	0.3
45378	Colonoscopy, diagnostic	3.36	
45381	With directed submucosal injection	3.66	0.3

the calculation of valuation for multiple procedures is calculated using the RVU of the base code for that family (EGD, flexible sigmoidoscopy, colonoscopy, etc.), with addition of the incremental value of each intervention (biopsy, snare removal of lesion, submucosal injection, etc.). The incremental values of each intervention are consistent among the different families of endoscopy codes. Table 14.11 illustrates this for EGD and colonoscopy. Note that this rule does not apply to the performance of two separate endoscopy procedures (e.g., EGD and colonoscopy) at the same setting. In this case, the standard rules of multiple procedure payment reduction apply, and most payers will reduce the payment for the lesser-valued procedure by one half.

Procedures with Moderate Sedation

Most endoscopic procedures include the physician work of providing and monitoring moderate sedation, even though this work was not factored explicitly into the original resource-based relative value scale studies. Therefore, no additional code for moderate sedation (*99143–99150*) or for anesthesia service (*00100–01999*) is reported by the physician performing the endoscopy service.

The codes that include sedation (i.e., inherent in the procedure or bundled into the code) are indicated in the CPT codebook by a bull's-eye symbol (/); these codes are also listed in Appendix G of the CPT codebook. However, sedation can be reported separately under the following two general circumstances:

If a second physician, other than the one performing the procedure, provides moderate sedation in a facility setting (e.g., hospital, outpatient hospital or ambulatory surgery center, or skilled nursing facility), then the second physician can report a code from the moderate sedation code series *99148–99150*.

When it is medically appropriate and necessary to have monitored anesthesia care (MAC) (e.g., propofol) administered, the second physician can report the appropriate code from the anesthesia section, provided that the physician continuously monitors the patient and is not acting as a surgical assistant.

In circumstances in which no sedation is required or when a second person administers sedation or MAC and submits a separate claim, the endoscopist is not required to report the procedure as a reduced service with modifier *52* appended.

Note *Payer policies vary on MAC. Some payers require the patient comorbidity and risk factor, instead of the GI indication, as primary for the procedure. Not all payers cover MAC on healthy patients. Physicians should include patient comorbidities and risk in the decision-making portion of the H&P to support the medical necessity for MAC. As of 2015, CMS will cover MAC for screening colonoscopy without deductible or copayment, a decision which supersedes some of the local coverage determination (LCD) restrictions previously in place through local CMS contractors.*

History of Moderate Sedation in GI Endoscopy

The inclusion of moderate sedation and its value within a variety of endoscopic services has a long and circuitous history. Many of the technicalities are a result of the resource-based relative value scale (RBRVS) and the processes of the CPT Editorial Panel and American Medical Association (AMA)/Specialty Society RVS Update Committee (RUC) in establishing codes and their values. Thus, in order to understand the role of moderate sedation today and when and how to use separate codes to report this service, it would be valuable to have some detailed background information. Besides the background information, this chapter will also discuss anesthesia codes that may be reported in conjunction with endoscopic procedures for reference purposes.

What makes understanding the historical perspective and the inclusion of moderate sedation and its value within endoscopy procedures even more pertinent today is that the entire notion of moderate sedation as an *inherent* part of gastrointestinal (GI) endoscopy is currently being examined by the Centers for Medicare and Medicaid Services (CMS) and the AMA. The AMA in 2014 convened a work group to develop codes that could be used to report moderate sedation *separately* from the endoscopy or other CPT codes that are now in Appendix G (Summary of CPT Codes That Include Moderate (Conscious) Sedation) of the CPT codebook.

In the RBRVS system, payment for services is determined by the resource costs needed to provide them. The cost of providing each service is divided into three components: physician work (PW), practice expense (PE), and professional liability insurance (PLI). Payments are calculated by multiplying the combined costs of a service by a conversion factor that is a monetary amount, which is determined by CMS, and is budget-neutral. Payments are also adjusted for geographical differences in resource costs.

The PW component accounts, on average, for nearly 50 % of the total relative value units (RVUs) for each service. The initial PW RVUs were based on the results of the Harvard study. The factors used to determine PW include the time it takes to perform the service, the technical skill and physical effort, the required mental effort

and judgment, and stress due to the potential risk to the patient. PW RVUs are updated each year to account for changes in medical practice.

The legislation enacting the RBRVS requires CMS to review the entire scale at least every 5 years, known as the 5-year review. At the 2000 5-year review, the gastroenterology specialty was unsuccessful in its argument that there should be an across-the-board increase in endoscopic payments due to an increase in physician work and documentation requirements for the endoscopist's administration of sedation. As a result, in the Medicare Physician Fee Schedule (MPFS) Final Rule of December 31, 2002, CMS stated, "In the absence of a specific RUC recommendation affirmatively stating that specific physician work is associated with conscious sedation, we do not believe it is appropriate to assign a work [relative value unit] RVU for CPT code *45340* that is based on the presumption that a portion of the work value is for using conscious sedation."

Because there is no PW associated with the administration of moderate sedation, then an interpretation is that it would not be double billing when an anesthesia professional administers sedation for endoscopic procedures nor does the endoscopist need to report a reduced service (modifier *52*) in this circumstance.

In the *CPT 2005* codebook, Appendix G was established and in it, and more than 230 codes for which moderate sedation is considered an inherent part of the procedure were identified. The CPT code set distinguishes between *moderate sedation* performed by the physician doing the procedure (e.g., the endoscopist) and *anesthesia* provided by a second clinician. The introduction of Appendix G states, "The inclusion of a procedure on this list does not prevent separate reporting of an associated anesthesia procedures/service (CPT codes *00100–01999*) when performed by a physician other than the operating physician or a qualified professional under the responsible supervision of a physician other than the operating physician."

In 2006, six new codes were established to describe moderate sedation administered by a physician who performs the diagnostic or therapeutic service (codes *99143–99145*) or when provided by a physician other than the healthcare professional who is performing the diagnostic or therapeutic service (codes *99148–99150*). RUC recommended a value of approximately $25 for the first 30 min of moderate sedation when administered by the *physician who performs the service* and $9 for each additional 15 min. RUC recommended a value of approximately $62 for the first 30 min of moderate sedation when administered *by a physician other than the person who performs the service* and $18 for each additional 15 min.

When these codes were introduced in 2006, CMS did not pay for these codes. Since 2007, when a second physician other than the healthcare professional performing the procedure provides moderate sedation *in the facility setting* for the procedures listed in Appendix G, the second physician may bill codes *99148–99150*. However, when these services are performed by the second physician in the *nonfacility* (e.g., *office*) *setting*, CPT codes *99148– 99150* should not be reported. As these are time-based codes, utilization of them would allow payers to correlate the use of anesthesia services with procedure times. Medicare does not pay an additional amount when moderate sedation is provided by the physician performing an endoscopic procedure identified in Appendix G.

Coding for Sedation for Endoscopy Procedures

The CPT codes that include moderate sedation are identified in the CPT code set with a bull's-eye symbol (/). Because these services include moderate sedation, it is inappropriate for the same physician to report both the service and sedation codes *99143–99145*. It is the expectation that if moderate sedation is provided to the patient as part of one of these services, it will be provided by the same physician who is also providing the service. Intraservice time begins with the administration of the sedation agent(s), requires continuous face-to-face attendance, and ends at the conclusion of personal contact by the physician providing the sedation.

Moderate sedation does not include minimal sedation (anxiolysis), deep sedation, or monitored anesthesia care (MAC) (*00100–01999*).

Note that the inclusion of a procedure in Appendix G does not prevent separate reporting of an associated anesthesia procedure or service (CPT codes *00100–01999*) when performed by a physician other than the healthcare professional performing the diagnostic or therapeutic procedure. In such cases, the person providing the anesthesia services should be present to continuously monitor the patient; however, he or she should not act as a surgical assistant. Anesthesia services may include but are not limited to general, regional, or supplementation of local anesthesia or other supportive services, in order to provide a patient the anesthesia care that is deemed optimal by the anesthesiologist during any procedure.

Anesthesia time begins when the anesthesiologist prepares the patient for the induction of anesthesia in the operating room or in an equivalent area and ends when the anesthesiologist is no longer in personal attendance (e.g., when the patient may be safely placed under postoperative supervision). Note that these parameters differ from those for moderate sedation.

In CPT 2000, the codes for anesthesia services for endoscopic procedures were revised to provide the following clarification:

Table 14.12 Moderate sedation codes

99143	Moderate sedation services (other than those services described by codes *00100-01999*) provided by the same physician or other qualified healthcare professional performing the diagnostic or therapeutic service that the sedation supports, requiring the presence of an independent trained observer to assist in the monitoring of the patient's level of consciousness and physiological status; younger than 5 years of age, first 30 minutes intra-service time
99144	age 5 years or older, first 30 minutes intra-service time
✚*99145*	each additional 15 minutes intra-service time (List separately in addition to code for primary service) (Use *99145* in conjunction with *99143*, *99144*)
99148	Moderate sedation services (other than those services described by codes 00100-01999), provided by a physician or other health care professional other than the health care professional performing the diagnostic or therapeutic service that the sedation supports; younger than 5 years of age, first 30 minutes intra-service time
99149	age 5 years or older, first 30 minutes intra-service time
✚*99150*	each additional 15 minutes intra-service time (List separately in addition to code for primary service) (Use *99150* in conjunction with *99148*, *99149*)

00500 Anesthesia for all procedures on esophagus
00740 Anesthesia for upper gastrointestinal endoscopic procedures, endoscope introduced proximal to duodenum
00810 Anesthesia for lower intestinal endoscopic procedures, endoscope introduced distal to duodenum

Future Relationship of Moderate Sedation and Endoscopy

The use of propofol to provide a fast-acting, fast-resolving sedation that is rapidly adjusted for fluctuations of comfort level has led to a rapidly expanding utilization of propofol for GI procedures. Endoscopists were set to administer or supervise propofol sedation themselves, commonly at a level of moderate rather than deep sedation, until two developments stopped this practice abruptly in 2010. First, a Food and Drug Administration (FDA) "black box" warning was affirmed, which was then followed by CMS adopting the policy requiring anesthesia professionals to be present to administer and monitor its use, regardless of the level of sedation, equating the use of propofol with deep sedation. Nonetheless, because of the perception by patients and endoscopists that propofol does afford an effective and desirable means of sedation for endoscopy, its use has rapidly expanded since 2010.

Foreseeing this development, and being aware that CMS would be requiring the revaluation of virtually all GI endoscopy code families in 2012–2014, the GI societies approached the CMS in 2011 and advocated for divorcing moderate sedation for endoscopy. Because anesthesia-provided propofol was becoming commonly used, the GI societies realized it would soon be inappropriate to regard moderate sedation as "inherent" to endoscopy as defined by the RUC, as it was no longer the method of sedation most commonly performed. In addition, the GI societies could not defend moderate sedation as "typical" in certain endoscopic procedures based on the RUC's definition of typical, which is at least 50 % of the time. The GI societies submitted the CPT coding change proposal (CCP) for moderate sedation codes specific to GI endoscopy; however, CMS ultimately declined to consider unbundling moderate sedation from the work of endoscopy, and the CPT Editorial Panel tabled the proposal.

Between 2012 and 2014, over 110 GI endoscopy codes were reviewed and surveyed through the AMA CPT and RUC processes and, ultimately, sent to CMS for consideration with moderate sedation remaining inherent to these procedures.

In the calendar year (CY) 2015 MPFS Final Rule, CMS delayed the revaluation of colonoscopy, flexible sigmoidoscopy, ileoscopy, and stoma endoscopy codes. In the rule, CMS stated:

> In light of the substantial nature of this code revision and its relationship to the policies on moderate sedation, CMS is delaying revaluation of the colonoscopy codes until CY 2016 when we will be able to include proposals in the proposed rule for their valuation, along with

consideration of policies for moderate sedation. Accordingly for CY 2015, we are maintaining values for the lower gastrointestinal endoscopy codes at the CY 2014 levels.

Beginning in 2014, an AMA work group considered the implications, first for coding, and then for valuation, of moderate sedation. The implication of CMS' change is that moderate sedation would be paid for, in addition to the diagnostic or therapeutic procedure performed, *when provided by the endoscopist*, but it will no longer be paid to the endoscopist, in addition to the diagnostic or therapeutic procedure performed, when an anesthesia professional was present to provide anesthesia. In other words, the valuation of the moderate sedation will be extracted from all of the endoscopy codes for which it is inherent and paid to the physician providing the sedation. Further CMS plans related to this issue are anticipated in actual coding or payment policy in calendar year 2017.

Suggested Readings

Ahlman, J, et al. Current procedural terminology, 2016. Professional Edition. Copyright American Medical Association, Chicago.

Medicare Physician Fee Schedule, final rule for 2003. https://www.cms.gov/Newsroom/MediaReleaseDatabase/Fact-sheets/2003-Fact-sheets-items/2003-02-27.html.

Chapter 15
Coding for Laparoscopic Surgery

Jennwood Chen and Eric T. Volckmann

Introduction

Laparoscopic approaches to conventional surgery are a fundamental technique in every general surgeon's armamentarium. While the origins of laparoscopy dates back more than a century [1], the technique, as practiced today, is relatively new. That said, once introduced to the United States, the development of laparoscopy grew exponentially.

The objectives of this chapter are to provide a basic understanding regarding the factors influencing the current valuation of laparoscopic procedures and to consider the future of reimbursement in the context of ongoing payment remodeling. We begin with a brief history of modern-day laparoscopy.

History

Laparoscopic surgery, a subset of minimally invasive surgery (MIS), is one of the great innovations in health care. The laparoscopic revolution as we know it began more than three decades ago. Contrary to its current prominence, however, the technique was initially met with skepticism by much of the general surgery community [2]. In fact, it was the German gynecologist and engineer, Kurt Semm, who initially championed the laparoscopic surgical approach, treating gynecological disorders in

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the 1970s [3]. In 1982, he would perform the first laparoscopic appendectomy [4]. The general surgeon, Erich Mühe, aware that internists had already encroached on classical fields of surgery such as endoscopic retrograde cholangiopancreaticography (ERCP), recognized an opportunity slipping away: "I was convinced that if we passed up [laparoscopic surgery], internists and gynecologists would again take away a piece of our competence" [5].

Inspired by Semm's accomplishment, Dr. Mühe envisioned the possibility that the cholecystectomy could be performed laparoscopically. On September 12, 1985, Mühe performed the first laparoscopic cholecystectomy (lap chole) [2]. It was not until 1988 that the American general surgeon Barry McKernan and gynecologist William Saye performed the lap chole in the United States [6]. Initially, many academic surgeons called for caution in adopting laparoscopic surgery, arguing that the procedure should be evaluated and validated first in specialized centers. Driven by the media and patient demand, however, the 1990s were swept by the tidal wave of enthusiasm in minimally invasive surgery, and soon every abdominal operation was attempted and eventually performed by laparoscopic technique [3].

As is often the case with technology, however, medical innovation frequently progresses more rapidly than its implications or its value can be assessed.

Assessing Value

During the early days of the laparoscopic revolution, surgeons, health economists, and policy makers were faced with two important challenges: (1) evaluating the safety and efficacy of evolving laparoscopic procedures and (2) accurately assessing the value of said procedures as compared to their open counterparts.

The laparoscopic approach over conventional surgery was initially fueled by the belief among the medical community and the general public that laparoscopic procedures are less invasive, associated with less pain and faster recovery [7]. Indeed, laparoscopy has proven to be a safe, effective, and less painful technique for many types of surgery and in some instances has become the current standard of care, as is the case for cholecystectomy, for example [8].

Regarding the later, accurately assigning value for a particular laparoscopic procedure is a more nebulous, complex process. From an economic point of view, the laparoscopic approach to conventional surgery frequently offers a fiscal advantage. Assuming that the laparoscopic approach to a particular procedure has proven safe and efficacious and the surgeon has performed a sufficient number of said procedures to fall within an acceptable standard, the laparoscopic approach is often times of greater value secondary to decreased resource utilization and earlier return to work or usual activities [9]. This has proven to be true for numerous laparoscopic procedures [7, 8, 10–12].

As previously discussed in this book, it is the responsibility of the American Medical Association (AMA) via Current Procedural Terminology (CPT) codes to

assign a descriptor or CPT nomenclature to a particular procedure. The AMA Relative Update Commission (RUC) is charged with recommending the total relative value unit (RVU) from CPT codes, thus influencing physician reimbursement [13].

While coding for laparoscopic procedures is generally straightforward, arriving at an RVU and hence monetary value for a given laparoscopic procedure is nuanced and dynamic.

Several factors are inherent in the complexity of valuing a given procedure. The cost of the procedure itself is just one component in determining the overall value. Quality of life metrics, postoperative pain, time to recovery, length of stay (LOS), and postoperative complications are just some of the variables that must be taken into consideration when deriving value. While this is true of all surgical procedures, it is particularly convoluted for laparoscopic procedures due to having an open counterpart. Additionally, the value of a laparoscopic procedure may not reflect the most current evidence regarding the above metrics.

Laparoscopic Cholecystectomy

Until 1990, the primary treatment of symptomatic gallstones was an open operation through a subcostal abdominal incision to remove the gallbladder. The typical course of recovery was a 5-day hospital stay and a 3–6-week period of convalescence.

In 1992, a National Institute of Health (NIH) panel concluded that laparoscopic approach to cholecystectomy results in decreased pain and disability compared to open cholecystectomy (OC) without increased morbidity and mortality, thus making it the preferred method for the treatment for symptomatic gallstones [14]. At that time, the work RVU for lap chole (CPT code 47562) and its open counterpart (CPT code 47600) were equivalent, 9.73 [15].

Since then, numerous randomized trials have compared the benefits of lap chole to open cholecystectomy. A *Cochrane* meta-analysis of thirty-eight randomized trials concluded that lap chole is associated with less complications, shorter hospital stay, and a decreased period of recovery [8]. If one considers value to be benefit divided by cost (Value = Benefits/Cost) or any derivation thereof, it is clear that lap chole has more value than OC.

Curiously, the current work RVU for lap chole and OC are 10.47 and 17.48 respectively, and the corresponding Medicare Pay is $679.34 and $1103.39, a difference of $424.05 [15].

Recognizing the factors contributing to the discrepancy in reimbursement between the laparoscopic and open approaches to gallbladder removal is fundamental to understanding the complexity in valuation of laparoscopy and deserves further consideration.

From a health economic perspective, the lap chole is more *valuable* than the OC in part due to the reduced burden on the health-care system in the form of decreased resource utilization and recovery time [9, 14, 16]. As more surgeons opt to approach gallbladder removal laparoscopically, the greater the benefits to the health-care system

as a whole. One could argue then the incentive for performing the lap chole should be greater than for OC.

On the other hand, one may consider reimbursement in terms of the difficulty in performing the procedure. Three major components are considered in the work RVU: work intensity, duration, and emotional stress [13]. These components are a function of survey data based on a vignette of the "typical patient."

With the rapid adoption of lap chole, practiced patterns and thus the "typical patient" have changed. Today, the typical patient undergoing an open procedure for gallbladder disease has likely been converted from a laparoscopic approach due to disease severity, anatomical anomalies, or adhesions from prior abdominal [15]. In fact, more than 80 % of Medicare patients undergoing open cholecystectomy are scheduled and started as laparoscopic [15]. Implied in this data is an increased level of difficulty when performing open gallbladder removal. Indeed, upon review of the open approach to gallbladder removal, the RUC agreed to an increase in work RVU for the OC over the lap chole [15], thus accounting for the higher reimbursement. A subtle but important point to reiterate is the shift in practice patterns influencing the RVU. Initially, the valuation for almost every single laparoscopic code was based on a vignette of the typical patient, which generally, was the more straightforward case. As technology and skill sets change, so do surgical indications and practice patterns, making valuation of these procedures a dynamic process.

Laparoscopic Colectomy

First described in 1991 [17, 18], laparoscopy continues to gain popularity as the preferred approach for a number of colorectal operations. By 2009, laparoscopic approaches represented 30–35 % of all colorectal surgical procedures [17, 19].

As is the case with gallbladder removal, the minimally invasive technique for colon surgery offers numerous advantages over its open counterpart, including lower postoperative complications, lower mortality, shorter hospital stays, and decreased overall costs. By some estimates, laparoscopy decreases total hospital cost by $4000–$7500 [10, 17]. In 2015, Crawshaw et al. concluded: "Laparoscopic colectomy [LC] results in a significant reduction in health care costs and utilization in the short- and long-term postoperative periods" [10]. Still, laparoscopy has yet to become the "gold standard," and surgical approach continues to be influenced by surgeon preference. In 2002, code 44204 was added to describe LC [20]. The corresponding works RVU for 44204 and 44140 (Open Colectomy [OC], partial; with anastomosis) were 25.08 and 21.00 respectively.

In deriving the RVU for laparoscopic versus open colectomy, the RUC focused on increased intraservice time (180 min for 44204 vs. 150 min for 44140) and survey data from 38 colorectal surgeons and concluded that LC was more labor intensive than OC [15]. Compared to the open approach, the laparoscopic approach to colon resection lacks three-dimensional optics. Thus, in contrast to the open approach, as the colon is mobilized laparoscopically, the operation becomes more

challenging, not less, hence the higher reimbursement for 44204. As mentioned previously, intensity is also part of the magnitude estimation for work (RVU). As there is no appreciable open and closing time for the laparoscopic approach, the intensity throughout the procedure remains uniformly high, which is also reflected in the increased RVU.

It should be noted that in the interest of simplicity, the method of hand-assisted laparoscopic colectomy was intentionally omitted from the discussion above. It has been decided at present that an entire family of codes in the "hand-assisted" category is unwarranted and that the surgeon needs to make the determination if a particular operation has been performed predominately open or laparoscopic and code appropriately.

Laparoscopic Appendectomy

Appendicitis is the most frequent intra-abdominal emergency in the United States with more than 250,000 appendectomies performed each year [21, 22]. Roughly 11 in 10,000 people will suffer appendicitis in their lifetime [23]. The majority of these patients are young people between 10 and 19 years of age [21, 23]. While there is a growing body of evidence investigating nonoperative management of appendicitis [24], the treatment of choice remains surgical removal of the inflamed appendix. First described by McBurney in 1894 via an open approach, it was Semm who would perform the appendectomy using laparoscopy in 1983 [4, 25]. Today, more than 75 % of appendectomies are performed laparoscopically, and while both methods have proven to be safe and effective, there is controversy as to which surgical method is the most appropriate [26]. In the pediatric population, where the disease is most prevalent, it has been shown that laparoscopic appendectomy (LA) is associated with significantly higher surgical costs and charges than open appendectomy (OA) without improvement in outcomes [22]. Conversely, in patients older than 65 years with comorbidities, LA is associated with decreased LOS and overall costs [27, 28]. In an attempt to clarify the discordant data regarding the two approaches, the *Cochrane Collaboration* published a new type of review called an *overview of Systematic Reviews* (SRs). A total of nine SRs between 1998 and 2012 were scrutinized, and the authors concluded that LA is associated with higher in hospital costs, including surgery costs and longer operative times (7.6–18.3 min) as compared to OA [29].

With regard to the valuation of the appendectomy, the RUC agreed that OA (CPT code 44950) should be valued higher than LA (CPT code 44970). This decision was based on an incremental difference between the postoperative work, which includes one additional office visit (99213 = 0.65) and one additional hospital visit (99231 = 0.64) for the open procedure [15]. It should be noted that the increased operative times for LA were absent from the comparative valuation discussion.

Furthermore, it should be mentioned that there is currently no code for a LA for complicated appendicitis. The absence of a CPT code that captures this scenario

illustrates the fact that portions of the CPT code remain antiquated. During the early 1990s, the laparoscopic approach for gangrenous and perforated appendicitis was associated with an increased risk for postoperative complications and considered a relative contraindication [30]. Thus, during the first iteration, the CPT code for the laparoscopic approach to a complicated appendicitis was justifiably left out. Today however, multiple studies including randomized control trials have concluded that the laparoscopic approach to a complicated appendicitis is comparable to the open approach with respect to safety, efficacy, and postoperative complications, emphasizing the need for a corresponding CPT code [31, 32].

Changing Payment Models and the Future of Reimbursement for Laparoscopy

While the benefits of laparoscopy are often apparent, assessing monetary value for laparoscopic procedures is complex and dynamic. In contrast to conventional surgery over the past few decades, laparoscopy has rapidly evolved with respect to technology, technique, and usage. In some instances, the lap chole, for example, laparoscopy has changed practice patterns, thus influencing valuation. In others, the CPT code lags behind current evidence, as illustrated by the absence of a code for LA for complicated appendicitis. Regardless of the example however, reimbursement is still based on a traditional model of *resource intensity*, the RVU. That is, the RVU for a given laparoscopic procedure amounts to determining how much time, intensity, and work was invested in the said procedure.

Nonetheless, with recent and likely ongoing restructuring of payment models, it is reasonable to question the basis of our current valuation system in favor of one that is based on *outcomes*. With the implementation of the Affordable Health Care Act, the Center for Medicare and Medicaid Services has implemented broader bundling of hospital and physician payments around episodes of inpatient surgery [33, 34].

Unsurprisingly, the cost of inpatient surgery is substantially higher at hospitals with high complication rates [35]. Therefore, a system of payment based on the *outcomes* value of laparoscopy could arguably drive health care spending down by providing incentives toward improving quality and efficiency.

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Chapter 16
Coding for GI Tract and Hepatopancreaticobiliary Procedures

Christopher K. Senkowski and Samuel Corey

Introduction

In dealing with the procedures contained within the abdomen, procedures that most general surgeons encounter on a daily basis, a thorough understanding of the coding process and its evolution is critical. The gastrointestinal tract, pancreas, liver, and biliary system will be the focus of this chapter. Historically, this is the foundation of the code set and valuation for general surgery, with many of the codes from this section of Current Procedural Terminology (CPT) serving as anchor codes for other areas of surgery.

Stomach

Coding for gastric procedures is fairly straightforward. It should be first noted that coding for endoscopy and bariatrics are discussed in separate chapters of this text. The first codes that bear examining include those for anti-reflux procedures. These codes are located in the esophagus, rather than the stomach subsection, and their development history are further discussed in the chapter on thoracic and esophageal procedures. There are codes for thoracic, abdominal, and thoracoabdominal open approaches as well as abdominal laparoscopic approaches. The most popular approach, the laparoscopic esophagogastric fundoplication (Nissen or Toupet), is reported with 43280,

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valued at 18.10 relative value units for work (wRVU). It is considered a strong reference code because it has been in place as an RUC-valued code since 1998. As the ability to fix larger more difficult paraesophageal hernias laparoscopically was validated in the literature, a family of codes was brought forward by the American College of Surgeons (ACS) and Society for American Gastrointestinal and Endoscopic Surgery (SAGES) in 2009, and these codes were validated at levels that properly reflected the increased amount of work entailed in these more difficult repairs. Codes 43281, *laparoscopic paraesophageal hernia repair without mesh*, (wRVU 26.60), and 43282, *with mesh* (wRVU 30.10), are reported when repairing a paraesophageal hiatal hernia, including those with gastric volvulus component [1].

In all situations when an esophageal lengthening procedure is required, whether with straightforward hiatal hernia or paraesophageal hernia, the code 43283 is added. This is a CPT add-on code for a procedure that cannot stand alone, but rather needs always to be "added on" to another main procedure. Recent audit activities by CMS and private payers have focused on the use of codes 43281 and 43282, due to a significant increase in reporting these codes, especially with bariatric gastric procedures. Because the vignettes and code descriptors for these procedures specify true paraesophageal hernias (Type II, III, and IV) as the underlying pathology to which the procedure is coded, surgeons who use this procedure for closure of the hiatus of a Type I hiatal hernia may be subject to repayment and penalties in an audit [2].

Surgical procedures on the stomach itself are based on the resection and not the disease process, with a few exceptions. A gastric wedge resection or excision is coded differently if benign, i.e., ulcer or malignant (most commonly for GIST). The code 43610 is used when coding excision of a benign lesion and 43611 for a malignant lesion. The increase in wRVU value is 20 % for the malignant code. Once the operation progresses to some type of resection, this distinction is lost. Distal and total gastrectomy, along with each type of reconstruction, has its own code. Billroth I or 2 and Roux-en-Y reconstruction are represented, as well as those situations in which a pouch is created. Of note, the code for vagotomy (either truncal or selective) is an add-on code 43635 or, if performed with pyloroplasty, 43640 There had been codes for proximal gastrectomy, but they have since been deleted as the total gastrectomy was favored. Now with more proximal gastrectomies occurring, especially with laparoscopic approach, new codes will need to be developed, or code 43999, *unlisted procedure*, *stomach* must be used. The ACS and SAGES have been contemplating the pursuit of laparoscopic gastrectomy codes over the past few years, and they will be brought forth as the literature support is solidified. Of course, the laparoscopic bariatric codes are in place and have been for some time. These are discussed in a separate chapter.

Duodenum and Intestine

Similar to other sections in the CPT book, there are categories for Incision, Excision, Laparoscopy, Enterostomy, and Repair. Most of the codes in these areas have been in place for some time. Even the laparoscopy codes have been in the database for over 10 years with minimal change. However, there are certain areas where modern

surgical techniques have advanced where the coding has not kept pace. First, there are very few distinctions between the duodenum and the rest of the small intestine. For example, in the case of duodenal resection in either the third or fourth portion or even in the case of a pancreas preserving duodenectomy, the coding does not exist. At present, the enterectomy code 44120 would be reported, although these procedures certainly do not entail the same work as a more straightforward small bowel resection. Secondly, a transduodenal villous adenoma resection would fall into code for any excision of small bowel lesion and would not have any extra work or value built into it. One would report 44110, *excision of one or more lesions of small intestine*, with a modifier 22 for extra difficulty. Duodenal cancers resected with a pancreaticoduodenectomy would be reported with 48150, just as for pancreatic cancer.

Enterolysis, code 44005, is utilized when the operation consists only of freeing of adhesions. This code may not be utilized as an addition to any other abdominal operation. The dissection of adhesions is considered inherent in any abdominal operative code and thus not separately reported. The same is true for the abdominal wall closure. The desire to add this code on to a difficult reoperative gastrectomy or colectomy is strong but will be denied by payers. Similarly, suture of mesentery code 44850 is reported for traumatic lacerations and not in the routine closure of a mesenteric window after bowel resection.

The coding for colon and rectal procedures is in a separate chapter but the coding for appendiceal operations is of note. There are codes for open and laparoscopic appendectomy. There is a code for open ruptured appendix but not laparoscopic approach because at the time the code was created, ruptured appendix was considered a reason to convert to an open operation. These codes have not been re-reviewed, and they present an opportunity at some point to readjust to proper value.

RUC database	Open appendectomy for nonruptured appendix	Open appendectomy for ruptured appendix	Laparoscopic appendectomy non ruptured
Intra service time	60 min	75 min	73 min
Number of hospital days	2	5	1
Number of office visits	2	3	2
wRVU	10.60	14.50	9.45

https://commerce.ama-assn.org/store/catalog/productDetail.jsp?product_id=prod280002&navAction=push [3].

Liver

The family of liver codes is simple and straightforward. Some would argue these codes have not kept up with the spectrum of operations currently performed, especially at high-volume tertiary centers where complicated segmental resections and

multiple biliary anastomoses should bring added reimbursement for the value of added work. The codes include incision, excision, repair, and laparoscopy. There are currently only five excisional codes and none describe laparoscopic techniques. They are 47100, *wedge biopsy*; 47120, *partial hepatic lobectomy*; 47126, *right hepatic lobectomy*; 47125, *left hepatic lobectomy*; and 47122, *trisegmentectomy*. This means that any segmental resection, including the easier left lateral segmentectomy and the much more difficult caudate lobe resection, are reimbursed with the same code. Many of these are now being performed with the laparoscopic approach. The current value for partial lobectomy 47120 is 39.01 wRVU, which is a fair assessment of the work entailed for the typical or average partial lobectomy. Proper granularity would suggest that there should be codes for each segmental resection, but, given the current process, the left lateral segmentectomy would almost certainly be valued lower and the more difficult caudate lobe resection may not receive a higher value than the current 39.01 wRVU.

It might be that a code for higher-risk patients would add value to those at high-volume centers performing those procedures, but the overall value as a result of the process would be shifted from the majority of centers performing more typical partial resections and thus devalue a much larger segment of general surgeons. There may be a set of codes created in the near future for laparoscopic liver resection.

Finally, worth mentioning in the liver family are a set of codes for ablation, both open and laparoscopic. They are further separated as ablations with radiofrequency techniques and cryosurgical techniques. By convention, the newer microwave techniques are recommended to be billed using radiofrequency codes as the work is similar.

Gallbladder and Biliary Procedures

Few codes have sustained as much scrutiny as the codes for open and laparoscopic cholecystectomy. They are almost continually on the radar for reevaluation by CMS. The ACS has been stalwart in its defense of this undervalued code. Laparoscopic cholecystectomy, currently valued at 10.47 wRVU, was most recently decreased in 2013 by CMS in the final rule despite RUC validation of its previous value of 11.76 wRVU, which had been in place for years. Utilizing the current Medicare conversion factor, the surgeon payment for 47562, *laparoscopic cholecystectomy*, is $680. The payment is undervalued in the opinion of most surgeons. Nevertheless, many non-surgeons would suggest that surgeons are overpaid for this operation.

For 47600, *cholecystectomy* (*open*), the ACS was successful in achieving an increase in reimbursement and valuation in 2007. At that time, it successfully argued that the typical patient receiving an open cholecystectomy had changed and represented a sicker cohort and a more difficult operation. The wRVU value went up from 13.56 to 17.35 and currently sits at 17.48. When performing intraoperative cholangiogram or common bile duct exploration, it should be noted that these are

not add-on codes but rather distinct codes for each operation, whether open or laparoscopic. For example, a laparoscopic cholecystectomy with common bile duct exploration is coded with 47564. However, intraoperative biliary endoscopy, 47550, is an add-on code when used in either the open or laparoscopic situation.

In 2015, interventional radiology CPT advisors recommended a revamped code set for biliary drainage procedures, including percutaneous drain placement, balloon dilation of strictures, and stent placement (47531–47544).

When looking at the biliary codes for excision and reconstruction, there are similar issues to those discussed for liver resection codes. In terms of excising bile duct tumors, there exists only delineation between extrahepatic, 47711 (wRVU 25.90), and intrahepatic, 47712 (wRVU 33.72), bile duct excision. Excision of choledochal cyst has a separate code, 47715 (wRVU 21.55). Surgeons performing multiple anastomoses to secondary biliary radicles will be under-reimbursed in this system. Similarly, for reconstruction, there are codes for anastomosis, either extrahepatic or intrahepatic, with further distinction if a Roux-en-Y reconstruction is utilized. Critics of this nomenclature from major transplant and HPB centers decry the lack of codes for the more complicated reconstructions they routinely perform. The convention to remember is that the value of each code is based on the typical patient in the aggregate, and this is often the most straightforward patient.

To illustrate further, let's assume codes are created and valued for the 10 % of cases that are performed in high-volume centers, take longer, and are more technically difficult and intense. Let's also allocate to them a higher value. All operations not falling in this category (the majority, including many still performed at these high-volume centers) would continue to be reported with the "regular" code for lack of a better term. Budget neutrality would now come into play. The current process from CMS would dictate that this group of codes, however reported – 100 % as typical or with new codes 90 % typical and 10 % complex – would in aggregate receive the same amount of reimbursement. Under this system, as the value for the complex code obtains more value, it would be deducted from the 90 % when a "regular" case is performed, thus devaluing procedures for many more surgeons. In addition, the risk of facing devaluation of all codes in the CPT-RUC process of creating new codes and resurveying them is a deterrent to advisors who desire to create a more granular code set for these operations.

Pancreas

The pancreatic code section is divided in Incision, Excision, Repair, and Transplantation. Navigating this section is fairly simple as the options for pancreatic surgery have remained mostly consistent. As previously discussed, however, there are currently no laparoscopic pancreatic codes despite solid data, especially for distal resections, that this approach is safe and effective. The code 48150, *pancreaticoduodenectomy* (*Whipple procedure*) (52.84 wRVU) applies to procedures for

pancreatic, periampullary, or duodenal malignancies. It also applies to the same resection for benign disease such as chronic pancreatitis. There is a separate code for ampullectomy, 48148 (20.39 wRVU), and for pylorus-preserving pancreaticoduodenectomy, 48153 (52.79 wRVU). Curiously there are codes for Whipple procedure and pylorus-preserving Whipple procedure where a pancreaticojejunostomy is not performed. Presumably these codes are utilized in those cases where the pancreas is anastomosed to the stomach rather than jejunum. The wRVU values for these codes are reduced.

Operations for pancreatitis have a series of codes for debridement and drainage as well as codes for dealing with pancreatic pseudocysts. There are no codes for laparoscopic management of pancreatic pseudocysts. There is a code for endoscopic transmural aspiration and placement of stent, 43240. When performing endoscopic transmural necrosectomy, the unlisted endoscopic code 43999 would currently be recommended. Open pancreatic debridement codes are utilized for procedures that simply place drains, 48000 (31.95 wRVU), or resect/debride pancreatic or peripancreatic necrosis, 48105 (49.26 wRVU). Current techniques where percutaneous drains are placed and upsized and eventually allow surgeons to follow the drain tract to then resect, debride, or place better drains can also utilize these codes. The so-called "step-up" necrosectomy approach, while through a smaller incision, is still an open approach to debridement and is properly described by these codes. The new nomenclature of walled off pancreatic necrosis (WOPN) debridement would be coded using the same set of codes for the open debridement. Procedures to deal with WOPN should not use pseudocyst drainage codes as they would be inappropriate and would undervalue the service being provided.

Total pancreatectomy and total pancreatectomy with autologous islet cell transplant have separate codes, and there are codes for solid organ transplantation as well. Distal pancreatic resection is coded the same whether the spleen is preserved or not. This would seem a disadvantage to those preserving the spleen, as it is a more tedious and challenging operation. At present, both are coded with 48140 (26.32 wRVU). Once again, there are currently no laparoscopic alternatives, and proper coding would mandate the unlisted code, 48999. In advocating for payment using an unlisted code (which has no inherent value and a wRVU of 0), practices must develop a letter of explanation that describes the procedure and relates it to the reimbursement of a similar procedure (usually the open equivalent). The fee is declared and with proper coordination will get reimbursed, particularly in areas where the literature support for safety and efficacy is robust, as is the case for laparoscopic distal pancreatectomy.

Trauma codes in the pancreas family include the duodenal exclusion code 48547 (30.38 wRVU) and the pancreatorrhaphy code 48545 (22.23 wRVU). Finally, there is an add-on code for pancreatography performed intraoperatively, 48400 (1.95 wRVU).

Abdomen and Peritoneum

Often a surgeon might explore an abdomen but not need resect or remove anything. This may be a negative trauma exploration, second-look operation, or operations for simple biopsy or abscess drainage. In CPT, these procedures are covered with the 49000 series codes.

In summary, there have been advances in the surgical approaches to the sections addressed in this chapter where the coding and valuation have not kept pace. It may be that as the data becomes undeniable that we will see some changes in the reimbursement structure that is fair and adequate for the complexities in care that have been achieved in these areas.

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Chapter 17
Coding for Colon and Rectal Surgery

Guy R. Orangio

Abbreviations

AMA	American Medical Association
CPR	Customary prevailing and reasonable
CPT	Current procedure terminology
E&M	Evaluation and management
GSP	Global surgical package
HALC	Hand-assisted laparoscopic colectomy
IWPUT	Intensity of work per unit of time
LOS	Length of stay (hospital stay)
MPFS	Medicare Physician Fee Schedule
NCCI	National Correct Coding Initiative
PACU	Postanesthesia care unit
QHCP	Qualified healthcare professional
RAC	Robotic-assisted colectomy
RBRVS	Resource-based relative value scale
RUC	AMA Specialty Society Relative Value System Update Committee
RVU	Relative value unit
TEMS	Transanal endoscopic microsurgery
wRVU	Work relative value unit

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Introduction

Colon and rectal surgery is performed commonly. The rules regarding coding and reimbursement for these procedures seem complicated to many surgeons and their coders. To understand the system, we need to know something about the history of reimbursement of these procedures.

In 1992, upon implementation of the resource-based relative value scale (RBRVS), the first American Medical Association Specialty Society Relative Value System Update Committee (RUC) meeting was held. The RBRVS evolved over a 10-year period of efforts by the medical profession and the government. This occurred because the previous method of physician reimbursement (customary, prevailing, and reasonable (CPR) system) failed to control the costs under Medicare Part B. Since the implementation of the RBRVS, there have been multiple legislative and regulatory changes that have been adopted in order to control the continued rise in healthcare costs in America [1].

The Current Procedural Terminology® (CPT) is a set of five-digit codes and two-digit modifiers that describe services performed by physicians and other qualified healthcare professionals (QHCP). CPT categorizes and organizes both evaluation and management (E&M) codes, diagnostic services, and procedural codes into anatomic categories and families, thus allowing a "common" language of communication between physicians, Medicare, third-party payers, and other government agencies. A Category I code is a code that is consistent with contemporary medical practice and is performed by many practitioners in clinical practice in multiple locations. CPT codes are nomenclature for communication; however, a CPT code does not guarantee reimbursement by either Medicare or the third-party payers [2].

All major surgical procedures have a global surgical package (GSP) which is a "bundled payment" including the immediate preoperative services, the intraoperative procedure, and the uncomplicated postoperative care for a set number of days (0, 10, or 90). The preoperative services include a visit on the day before or the day of surgery, hospital admission workup, and obtaining consent for the procedure. The intraoperative service is the surgical procedure, including prep, dress and wait time, the operation, and the immediate postoperative services (including dictating the operative note, writing orders, speaking to family and other physicians, and evaluating patient in postanesthesia care unit (PACU)). Postoperative service includes follow-up on the day of procedure and postoperative hospital and office visits. It also includes dressing changes, local incisional wound care, and removal of staples, intravenous lines, nasogastric tubes, and Foley catheters. The GSP as explained is divided into different service periods and each service period is based on the physician time needed to perform the service.

How the CPT/RBRVS System Applies to Colon Surgery

An example is CPT code 44140 *Colectomy*, *partial*; *with anastomosis*: the most common diagnosis was for malignant neoplasm of the colon, and in 2014 Medicare Data, it was utilized 18,422 times (decreased from a 2004 high of 48,464 times). The preservice time is a total of 60: 30-min preservice evaluation, 15-min preservice positioning, and

15-min scrub, dress, and wait. The intraservice time is 150 min; this is the time to perform the procedure from skin to skin. The post-service time is divided into immediate post-service time of 30 min and hospital visits (total time of 178 min); this includes 5 (99231 s), 1 (99232) and, 1 (99238 *hospital discharge day management*). The total length of stay (LOS) is 6 days. The post-service also includes office visits (total time of 62 min); this includes 2 (99213 s) and 1 (99212). The total time for the entire bundle is 480 min. This results in a total Medicare reimbursement of $1396.21, although this amount will vary depending on geographic practice cost index (GPCI) [3, 4].

The initial consultation or evaluation is a separate service and not included in the GSP. If this E&M is performed on the day prior or the day of the surgery, Modifier 57 (*Decision for Surgery*) should be applied in order to obtain reimbursement for this separate evaluation.

Postoperative complications that require treatment beyond the expertise of the surgeon will be fully reimbursed to the physician who is providing those services.

If a patient requires a return to the operating room by the same surgeon, then these services are paid separately from the GSP amount, and Modifier 78 (*Unplanned return to the operating room/procedure room by the same surgeon or other QHCP following initial procedure for a related procedure during the postoperative period*) is utilized to differentiate this procedure. The payment for this procedure is only for the intraoperative service not for any additional pre- or postoperative services. This differs from Modifier 79 (*Unrelated procedure or service by the same physician or QHCP during the postoperative period*) which is used when the operating surgeon performs a surgical procedure on a patient within the GSP that is not related to the original procedure. This is a separate payment and is allowed. In the situation that a staged or related procedure is performed within the GSP, then utilize Modifier 58 (*Staged or Related Procedure or Service by the Same Physician or Other QHCP During the Postoperative Period*). For example, a partial colectomy (44140) could be followed in its global period by 44158 *Colectomy*, *total*, *abdominal*, *with proctectomy*; *with ileoanal anastomosis*, *creation of ileal reservoir* (*S or J*), *includes loop ileostomy*, *and rectal mucosectomy*, *when performed*.

There are a few 10-day global anorectal codes,for example: 46020 Placement of seton, which has a pre service evaluation time of 20 minutes, but this does not include the perservice time of positioning or scurb, dress and wait times because this time was not evaluated in the 2000 RUC surveys. The 46020 Placement of seton has an intraservice time of 35 minutes and a post-service time of 71 minutes which includes an immediate post-service time of 20 minutes (PACU time) and a post-servoce discharge time of 1/2 of a 99238 code and 2 office visits (99212) E & M codes for a total time of the code of 126 minutes. These codes are held to the same GSP rules as the 90-day GSP codes (Table 17.1).

Colectomy Coding Principles: Partial Colectomy

The colectomy codes are categorized in a family with a base code as the "foundation" of the codes (this is true in the majority of CPT codes), with a rank order of work RVU value starting at the lowest wRVU in the family and increasing to the

Table 17.1 Anorectal procedure codes with 10-day global period

CPT code	Descriptor
46020	Placement of seton
46030	Removal of seton
46050	I&D, superficial perianal abscess
46080	Sphincterotomy
46083	Incision of thrombosed external hemorrhoid
46221	Rubber band ligation of hemorrhoids
46220	Excision of single tag, papillae
46230	Excision of multiple tags, papillae
46320	Excision of thrombosed external hemorrhoid
46500	Injection of sclerosing solution, hemorrhoids
46706	Fibrin glue closure of anal fistula
46900	Destruction anal lesions, chemical, simple
46924	Destruction anal lesions, any method, extensive

next code. For example, CPT code 44104 *Colectomy*, *partial*; *with anastomosis* is the base code for the "open" or "laparotomy" colectomy codes. As with all codes, it is based on a "clinical vignette." This vignette is the "typical patient," which is based on the most common clinical diagnosis that the majority of surgeons would perform this procedure on. The clinical vignette for CPT code 44140 is *a 67-year-old male presents with a history of rectal bleeding and a biopsy-proven sigmoid carcinoma at 35 cm from the anal verge. No evidence of metastatic disease is present. At operation*, *left colon resection is performed and bowel continuity is reestablished*.

This code is utilized mainly for sigmoid colectomy with colorectal anastomosis for benign and malignant disease of the left colon. However this code can be used for any partial colectomy, including the descending colon, splenic flexure, or transverse colon because it describes a partial colon resection with an anastomosis with the remaining ends of the colon and/or the colon to the rectum. The work RVU (wRVU) for 44140 is 22.59, with a work intensity (IWPUT)[1] of 0.07933. As the IWPUT increases and/or the intraservice time increases, the work RVU will also increase in the family of codes (the IWPUT and RVU system will be discussed in other chapters in this textbook). For example, CPT code 44143 (*Colectomy*, *partial*; *with resection*, *with end colostomy and closure of distal segment* (*Hartmann type procedure*)) has a wRVU of 27.79 with an IWPUT of 0.0847, and the CPT code

[1] IWPUT intensity of work per unit of time: relative value of work (RVW) = time × intensity.

44144 (*Colectomy*, *partial*; *with resection*, *with colostomy or ileostomy and creation of mucus fistula*) has a wRVU of 29.91 and an IWPUT of 0.0805.

As the colorectal anastomosis is constructed at the mid-rectum or lower, usually for rectal cancer, then the two most common CPT codes for these procedures are 44145 (*Colectomy*, *partial*; *with coloproctostomy* (*low pelvic anastomosis*)) with a wRVU of 28.58 and an IWPUT of 0.0828 and 44146 (*Colectomy*, *partial*; *with coloproctostomy* (*low pelvic anastomosis*) *with colostomy*) with a wRVU of 35.30 and an IWPUT of 0.0879. The vignettes differ: for 44145 it is *a 70-year-old male with hypertension*, *and cardiac history*, *presents with a mid-rectal adenocarcinoma. An endorectal ultrasound reveals a T2 lesion with no evidence of metastatic disease. At operation*, *a low anterior resection with colorectal anastomosis is performed*. For 44146 it is *a 73-year-old obese female with hypertension*, *and type II diabetes has been diagnosed with a low rectal adenocarcinoma. An endorectal ultrasound reveals a T3 lesion. She received preoperative adjuvant radiation and chemotherapy. Six weeks post chemoradiation therapy*, *she undergoes a low anterior resection*, *with construction of a diverting ostomy*.

There have been coding questions on 44146 because the CPT descriptor states *with colostomy*, yet in the intraservice description in the AMA RUC Data Bank, *either* a proximal colostomy or an ileostomy is constructed [4]. Therefore, utilizing a separate code for construction of the ostomy in 44146 such as the CPT code 44310, *Ileostomy or jejunostomy*, *non-tube*, is incorrect because the work of construction of the ostomy is already valued in the code, whether a colostomy or ileostomy is utilized for diversion.

The family of open/laparotomy partial colectomy codes (44140–44147) may require mobilization of the splenic flexure; this is additional work so utilizing the "add-on" code + 44139 *Mobilization* (*takedown*) *of splenic flexure performed in conjunction with partial colectomy* (*list separately in addition to the primary procedure*) with a wRVU of 2.23.

In the case of CPT code 44160 *Colectomy*, *partial*; *with removal of terminal ileum*, *with ileocolostomy*, there is a wRVU of 20.89 and an IWPUT of 0.0580. This code is actually ranked with the family of small bowel resection codes, such as CPT code 44120 *Enterectomy*, *resection of small intestine*; *single resection and anastomosis*, which has a wRVU of 20.82 and an IWPUT of 0.0379. So in order to keep "rank order" within a family of codes, 44160 has a slightly higher wRVU of 20.89 than the 44120 wRVU of 20.82. CPT code 44160 can be utilized for ileocecectomy for both benign and malignant diseases of the terminal ileum, cecum, and appendix.

Colectomy Coding Principles: Total Abdominal Colectomy

The total abdominal colectomy CPT codes are 44150–44158, and they describe procedures with and/or without removal of the rectum or anastomosis with the rectum or pelvic "neorectum" construction. CPT code 44150 *Colectomy*, *total*,

abdominal, *without proctectomy*; *with ileostomy or ileoproctostomy* has a wRVU of 30.18 and an IWPUT of 0.0845. CPT code 44151 *with continent ileostomy* (rarely performed today, <100 performed in Medicare data in 2014) has a wRVU of 34.92 and an IWPUT of 0.0768.

CPT 44155 *Colectomy*, *total*, *with abdominal proctectomy*; *with ileostomy*, wRVU of 34.42 and an IWPUT of 0.0747, is part of the family that includes a proctectomy as part of the procedure. The most common reconstruction of the rectum is CPT code 44158 *Colectomy*, *total*, *abdominal*, *with proctectomy*; *with ileoanal anastomosis*, *creation of ileal reservoir* (*S or J*), *includes loop ileostomy*, *and rectal mucosectomy*, *when performed*, with a wRVU of 36.70 and an IWPUT of 0.0823. These codes are mainly indicated for inflammatory bowel disease of the colon and rectum. Note that the utilization of the add-on code 44139 *takedown of the splenic flexure* cannot be utilized with these total abdominal colectomy codes, because the splenic flexure mobilization is inherent to these procedures (Table 17.2).

Laparoscopic Colectomy Codes

The construction and development of the laparoscopic colectomy codes began in 2000 and a few were released in the 2002 CPT® Edition. Over the next 3 years, all open/laparotomy colectomy codes had a corresponding laparoscopic procedural code, usually with the parallel descriptor but not necessarily the same vignette [2] (Table 17.3).

Across the board the laparoscopic colectomy codes have a higher wRVU value and a higher IWPUT, because there is more physician intraservice time at a higher intensity of work, which correlates with the higher RVU values. They are all 90-day global codes and are held to the same GSP guidelines (Table 17.4).

Table 17.2 Open/laparotomy colectomy codes

Code	Intraservice time (minutes)[a]	IWPUT[b]	Work RVU	Reimbursement $[c]
44140	150	0.0793	22.59	1396.21
44143	150	0.0847	27.79	1733.35
44145	180	0.0828	28.58	1725.83
44146	240	0.0879	35.30	2204.13
44150	180	0.0845	30.18	1946.53
44155	240	0.0747	34.42	2167.59
44158	260	0.0823	36.70	2,27.75
44626	150	0.0898	27.90	1669.94
44160	120	0.0580	20.89	1293.03
+44139	30		2.23	124.76

The more commonly billed codes
[a]Time of procedure skin to skin
[b]Intensity of work per unit of time
[c]Approximate reimbursement will vary by region

Table 17.3 Open and laparoscopic colectomy CPT code descriptors

Open/lap code	Descriptors O/L
44140/44204	Colectomy, partial; with anastomosis
44143/44206	Colectomy, partial, with end colostomy and closure of distal segment (Hartmann type procedure)
44145/44207	Colectomy, partial, with anastomosis, with coloproctostomy (low pelvic anastomosis)
44146/44208	Colectomy, partial, with anastomosis with coloproctostomy (low pelvic anastomosis) with colostomy
44150/44210	Colectomy, total, abdominal, without proctectomy, with ileostomy or ileoproctostomy
44155/44212	Colectomy, total, abdominal, with proctectomy, with ileostomy
44158/44211	Colectomy, total, abdominal, with proctectomy, with ileoanal anastomosis, creation of ileal reservoir (S or J), with loop ileostomy, includes rectal mucosectomy, when performed
44626[a]/44227	Closure of enterostomy, large or small intestine, with resection and anastomosis
44160/44205	Colectomy, partial, with removal of terminal ileum with ileocolostomy
+44139/+44213	Mobilization (takedown) of splenic flexure performed in conjunction with partial colectomy (list separately in addition to primary procedure)

Difference in laparoscopic descriptor: laparoscopy, surgical, colectomy, etc.
[a]Difference for the 44626 is specific for closure of Hartmann; the 44277 is more similar to the 44625 Closure of enterostomy, large or small intestine; with resection and anastomosis other than colorectal

Table 17.4 Laparoscopic colectomy codes

Code	Intraservice time (minutes)	IWPUT	Work RVU	Reimbursement $
44204	180	0.0965	26.42	1599.72
44206	180	0.0794	29.79	1825.43
44207	195	0.1037	31.92	1894.58
44208	205	0.1043	33.99	2068.34
44210	240	0.0724	30.09	1853.74
44212	270	0.0809	34.58	2131.40
44211	300	0.0808	37.08	2271.85
44227	150	0.1097	28.62	1736.58
44205	165	0.0891	22.95	1391.91
+44213	45		3.50	195.62

The more commonly billed codes

The laparoscopic partial colectomy codes 44204 and 44206–44208 can list the "add-on" CPT code + 44213 *Laparoscopy*, *surgical*, *mobilization* (*takedown*) *of splenic flexure performed in conjunction with partial colectomy* (*list separately in addition to the primary procedure*) with a wRVU of 3.50 when performed. The laparoscopic total abdominal colectomy codes with or without removal of the rectum or with construction of the neorectum CPT codes 44210–44212 cannot list the +44213 code.

Since the evolution of the "pure" laparoscopic colectomy codes, there have been additional minimally invasive approaches to colectomy that are widely utilized: the hand-assisted laparoscopic colectomy (HALC) and the robotic-assisted colectomy (RAC) which do not have a separate family of CPT codes. The utilization of the family of laparoscopic colectomy codes can be utilized for other minimally invasive platforms for reimbursement billing.

The National Correct Coding Initiative (NCCI), which was developed by the Centers for Medicare and Medicaid Services (CMS) in 1996, has stated that when a laparoscopic procedure is converted to an open case, then the open code for the primary procedure is coded for reimbursement and the laparoscopic CPT code cannot also be listed or billed [5].

CPT Coding for Ultralow Coloanal Anastomosis and Abdominoperineal Resections

These procedures, either open or laparoscopic, are probably the most difficult pelvic procedures performed for either benign or malignant disease. In patients with inflammatory bowel disease, there are usually a very indurated thickened mesentery and an associated anal disease. Patients with mid-rectal to low rectal cancer usually have had neoadjuvant therapy, radiation with or without chemotherapy, which causes loss of the normal tissue planes and fibrosis of the rectal mesentery, making the technical dissection very difficult, especially when attempting to salvage the sympathetic and parasympathetic nerves to the genitourinary system. Most experienced surgeons do try to have an experienced first assistant or a senior surgical resident if in an academic teaching hospital. The open/laparotomy codes with their long descriptors are listed in Table 17.5, and the laparoscopic CPT codes with their long descriptors are listed in Table 17.6. There are key words in the descriptors, for example, in 44147 the *combined abdominal and transanal* and also in codes 45110, 45112, 45119, 45395, and 45397 *combined abdominoperineal approach*, which means that the abdominal and transanal/perineal portions of the procedures are already inherent to the procedure.

The coding question that has been asked by coders and physicians is "my associate scrubs and performs the perineal portion. Can we bill the procedures separately?" The answer is *no*, because the term "combined" approach eliminates that possibility. The correct coding for billing is utilizing the assistant surgeon modifier codes, Modifier 80, *Assistant Surgeon*, and Modifier 81, *Minimum Assistant Surgeon*. This indicates that the assistant services are required for a relatively short time (e.g., firing the transanal stapler for colorectal anastomosis) or Modifier 82, *Assistant Surgeon* (*when qualified resident surgeon not available*), which indicates the presence of a surgeon assistant along with unavailability of a qualified resident surgeon. Modifier 82 cannot be utilized when a resident is assisting the primary

Table 17.5 Open/laparotomy CPT codes for low/ultra low rectal anastomosis or abdominoperineal procedures

CPT code	Descriptor
44145	Colectomy, partial; with coloproctostomy (low pelvic anastomosis)
44146	Colectomy, partial; with coloproctostomy (low pelvic anastomosis); with colostomy
44147	Colectomy, partial; *abdominal and transanal approach* 45112 proctectomy, *combined abdominoperineal*, pull-through procedure (e.g., coloanal anastomosis)
45119	Proctectomy, *combined abdominoperineal*, pull-through procedure (e.g., coloanal anastomosis), with creation of colonic reservoir (e.g., J-pouch),with diverting enterostomy when performed
45110	Proctectomy; complete, *combined abdominoperineal approach*, with colostomy

Table 17.6 Laparoscopic CPT codes for low/ultra low rectal anastomosis or abdominoperineal procedures

CPT code	Descriptor
44207	Laparoscopy, surgical, colectomy, partial, with anastomosis, with coloproctostomy (low pelvic anastomosis)
44208	Laparoscopy, surgical, colectomy, partial, with anastomosis with coloproctostomy (low pelvic anastomosis) with colostomy
45395	Laparoscopy, surgical; proctectomy, complete, *combined abdominoperineal*, with colostomy
45397	Laparoscopy, surgical; proctectomy, *combined abdominoperineal pull-through procedure* (e.g., coloanal anastomosis), with creation of colonic reservoir (e.g., J-pouch) with diverting enterostomy, when performed

surgeon with the abdominal procedure and an associate is performing a perineal procedure, such as the proctectomy during a combined abdominoperineal procedure.

As one can see, the open/laparotomy CPT code 44147, *Colectomy*, *partial*; *abdominal and transanal approach*, does not have comparable laparoscopic CPT code; the reason 44147 does not is because this code utilizes a technique of everting the remaining rectal portion and then pulling the proximal colon through the rectum and performing a hand-sewn colorectal anastomosis; then the anastomosed segment is retracted back into the pelvis (Weir procedure) [6]. This code is rarely used because the technique is very difficult and injury to the sphincters is a major concern. As discussed before, these are difficult low rectal procedures, and surgeons with expertise in low rectal surgery are utilizing these codes. As was discussed previously, the laparoscopic codes have a higher wRVU and IWPUT than the comparable open/laparotomy codes.

These codes can also utilize the add-on codes for mobilization of the splenic flexure if performed in the open or laparoscopic setting (+44139/+44213) (Tables 17.7 and 17.8).

Table 17.7 Open/laparotomy CPT codes for low/ultra low rectal anastomosis or abdominoperineal procedures

Code	Intraservice time (minutes)	IWPUT	Work RVU	Reimbursement $$
44145	180	0.0828	28.58	1725.83
44146	240	0.0879	35.30	2204.13
44147	220	0.0819	33.69	2023.92
45110	180	0.0799	30.76	1922.17
45112	200	0.0881	33.18	1954.77
45119	210	0.0853	33.48	2025.71

Table 17.8 Laparoscopic CPT codes for low/ultra low rectal anastomosis or abdominoperineal procedures

Code	Intraservice time (minutes)	IWPUT	Work RVU	Reimbursement $
44207	195	0.1037	31.92	1894.58
44208	205	0.1043	33.99	2068.34
45395	210	0.0903	33.00	2057.60
45397	240	0.0936	36.50	2240.68

Coding Principles: Rectal Procedures

Excision of Benign and Malignant Neoplasms of the Rectum

There are three CPT codes for transanal excision of either benign or malignant lesions of the low rectum, 45160 *Excision of rectal tumor by proctotomy*, *transsacral*, *or transcoccygeal approach* with a wRVU of 16.33, which is rarely used today because of the incidence of high rectal (supralevator) fistula. The more commonly utilized CPT codes are 45171 *Excision of rectal tumor*, *transanal approach*; *not including muscularis propria* (i.e., *partial thickness*) with a wRVU of 8.13 and 45172 *Excision of rectal tumor*, *transanal approach*; *including muscularis propria* (i.e., *full thickness*) with a wRVU of 12.13. There is a CPT Category III code 0184 T *Excision of rectal tumor*, *transanal endoscopic microsurgical approach* (i.e., *TEMS*), *including muscularis propria* (i.e., *full thickness*) that is an alternative approach for more proximal rectal or rectosigmoid tumors. The Category III codes are considered tracking codes and are not recognized by CMS for reimbursement. However these codes can receive reimbursement from third-party payers that will be carrier priced (negotiated payment).

Incision and Drainage of Complex Rectal/Pelvic Abscess

These types of complex pelvic or rectal abscesses are not common, but when performed accurate coding is the key to adequate reimbursement. There are three CPT codes that can be utilized for these complex problems: CPT codes 45000 *Transrectal drainage of pelvic abscess* with wRVU of 6.30; 45005 *Incision and drainage of*

submucosal abscess, *rectum*, with wRVU of 2.02; and 45020 *Incision and drainage of deep supralevator*, *pelvirectal*, *or retrorectal abscess* with wRVU 8.56.

Repair of Rectal Prolapse (Full Thickness)

The surgical approaches to rectal prolapse have not changed over decades. CPT codes are transabdominal procedures including open/laparotomy and laparoscopic procedures with or without sigmoid resection and/or rectopexy. For over a decade, the laparoscopic ventral rectopexy has become an accepted procedure for repair of full-thickness rectal prolapse; however, there is no current "specific" CPT code that is utilized for this surgical approach [8]. The proper coding would be utilizing CPT code 45499 *Unlisted laparoscopy procedure*, *rectum*, which would require carrier pricing.

Repair of Urogenital Rectal Fistula

Rectovesical and rectourethral fistulas are complex problems requiring surgical experience and meticulous surgical technique in order to repair these difficult problems. The etiology of these fistulas is related to obstetrical injury, radiation, infection, or malignancy. For urinary rectal fistulas involving the bladder or urethra, there are four CPT codes. For rectovesical fistula repair, use CPT codes 45800 *Closure of rectovesical fistula* with a wRVU of 20.31 or 45805 *Closure of rectovesical fistula with colostomy* with a wRVU of 23.32. For rectourethral fistula repair, use CPT codes 45820 *Closure of rectourethral fistula* with a wRVU of 20.37 and 45825 *Closure of rectourethral fistula with colostomy* with a wRVU of 24.17.

Rectovaginal fistulas are repaired by transanal, transvaginal, transperineal, and transabdominal surgical approaches. The majority of these codes are under the female genital system [2]. The etiology of these fistulas is cryptoglandular, obstetrical injury, inflammatory bowel disease, radiation therapy, or malignancy. Table 17.9 gives the most common codes with a long descriptor for repair of low rectovaginal fistula. Table 17.10 has the work RVU, the intensity, and the Medicare reimbursement for each procedure.

Coding Principles: Anal Procedures

The coding for diseases of the anus is very standardized. The most common procedures are for hemorrhoid disease, anal abscess, fistula, and fissure. For hemorrhoids, CPT code 46221 describes treatment of only internal hemorrhoids, by rubber band ligation; and CPT codes 46945 and 46946 describe ligation of internal hemorrhoids by other devices. CPT code 46500 describes injection of sclerosant into internal

Table 17.9 CPT code descriptors for repair of rectovaginal fistula

CPT code	Descriptor
46288	Closure of anal fistula with rectal advancement flap
57300	Closure of rectovaginal fistula; vaginal or transanal approach
57305	Closure of rectovaginal fistula; abdominal approach
57307	Closure of rectovaginal fistula; abdominal approach, with concomitant colostomy
57308	Closure of rectovaginal fistula; transperineal approach, with perineal body reconstruction, with or without levator plication

Table 17.10 CPT codes for repair of urogenital rectal fistula

Code	Intraservice time (minutes)	IWPUT	Work RVU	Reimbursement $
46288	65	0.0421	7.81	569.31
57300	52	0.0347	8.71	575.04
57305	120	0.0353	15.35	956.60
57307	120	0.0793	17.17	1112.10
57308	90	0.0427	10.59	674.28
57310	58	0.0266	7.65	473.29
57311	101	0.0224	8.91	541.72
57320	73	0.0371	8.88	547.81

hemorrhoids. Ultrasound-guided ligation of hemorrhoidal vascular bundles is coded with a Category III code: 0249 T. Excision procedures are coded based on the extent of the procedure (external only, CPT codes 46220, 46230, 46320, and 46250; internal and external, CPT codes 46255–46261) and whether a single or multiple columns are excised. In addition, CPT codes 46257 and 46261 also include a fissurectomy.

Incision and drainage of perirectal abscess is described by four codes, based on the anatomic depth of the abscess: CPT code 46050 *Incision and drainage*, *perianal abscess*, *superficial*, with a wRVU of 1.24; CPT code 46045 *Incision and drainage of intramural*, *intramuscular*, *or submucosal abscess*, *transanal*, *under anesthesia*, with a wRVU of 5.87; CPT code 46040 *Incision and drainage of ischiorectal and/or perirectal abscess* with a wRVU of 5.37; and CPT code 46060 *Incision and drainage of ischiorectal or intramural abscess*, *with fistulectomy or fistulotomy*, with a wRVU of 6.37.

Anal fistulotomy is divided into three codes, depending on the anatomic depth of the fistula: CPT code 46270, *Surgical treatment of anal fistula*, *subcutaneous*, with a wRVU of 4.92; CPT code 46275, *intersphincteric* with a wRVU of 5.42; and CPT code 46280, *Transsphincteric*, *suprasphincteric*, *extrasphincteric or multiple*, *including placement of seton*, *when performed* with a wRVU of 6.39. If a seton is placed and a second-stage procedure is performed after partial healing of a high fistula, code 46285 *s stage* is used, with a wRVU of 5.42. There are also separate codes for placement of a seton without fistulotomy (46,020, with a wRVU of 3.00) and removal of a seton (46030, with a wRVU of 1.26).

In 2010, CPT code 46707 *Repair of anorectal fistula with plug* (e.g., *porcine small intestine submucosa* [*SIS*]) with a wRVU of 6.39 was converted from a Category III (a tracking code) to a Category I code. Despite the reclassification, most of the third-party payers would not reimburse for this procedure. The third-party payers have stated in their denials for payment that it is experimental or that the literature does not support its utilization with a 13–54 % success rate [8, 9]. This does illustrate that just because a procedure has a Category I CPT code, this does not guarantee reimbursement. A reasonable approach for the surgeon in these situations of non-reimbursement is to speak to the medical director of the payer and discuss the advantages of utilizing the plug versus attempting other methods of repair because of the outcomes and additional cost.

Another repair of anal fistula is the ligation of the intersphincteric fistula tract (LIFT), which is a sphincter-preserving technique for transsphincteric anal fistula, which preserves fecal continence. The literature on this procedure has been variable but also may be promising [10]. This procedure does not yet have either a Category I or III code, so it requires 46999 *Unlisted procedure*, for proper coding.

High-Resolution Anoscopy

In 2014, two codes were added to the family of anoscopy codes: CPT codes 46601 *Anoscopy*; *diagnostic*, *with high-resolution magnification* (*HRA*) (e.g., *colposcope*, *operating microscope*) *and chemical agent enhancement*, *including collection of specimen*(*s*) *by brushing or washing*, *when performed*, and 46607 *Anoscopy*, *with high-resolution magnification* (*HRA*) (e.g., *colposcope*, *operating microscope*) *and chemical agent enhancement*, *with biopsy*, *single or multiple*. These codes were constructed with the colposcopy codes as the model and are utilized for patients with high risk of developing anal canal and anal margin cancer.

There are additional miscellaneous anal procedure codes: 46080 *Sphincterotomy*, *anal* (*separate procedure*) with a wRVU of 2.52; 46505 *Chemodenervation of internal anal sphincter* with a wRVU of 3.18; 46947 *Hemorrhoidopexy* (e.g., *for prolapsing internal hemorrhoids*) *by stapling* with a wRVU of 5.57; and 45990 *Anorectal exam*, *surgical*, *requiring anesthesia* (*general*, *spinal*, *or epidural*), *diagnostic* with a wRVU of 1.80. Note that this last procedure is listed in the rectum subsection of CPT and that it cannot be combined with many therapeutic anorectal procedures, as its value is bundled into these other procedures.

Summary

This chapter has reviewed basic principles of coding for procedures on the colon, rectum, and anus. Explanation of the global service period (GSP) was done at the beginning in order to allow better understanding of the coding requirements of the

10 and 90 global periods. The discussion included utilization of modifiers such as Modifier 57 that can be utilized for E&M coding just prior to the global and others that will assist in proper coding for return to the OR if required. There was discussion on family of codes in order to broaden an understanding of code development as it relates to the long descriptor and how it relates to the proper coding within a family of codes. The chapter discussed the relationship of the work RVU and IWPUT in building a family of codes starting with the "base code," and then in an ascending order, there is an increase in work and intensity and how that relates to the relativity of the family of codes. Several tables and figures were used to clarify the discussions on proper coding. Both open and laparoscopic colectomy codes and the proper utilization of the add-on codes for splenic flexure takedown were reviewed. The section on rectal procedures was directed on more complex procedures and how to utilize the optimal coding. Finally, the chapter gave an example of procedures that are being utilized that do not have CPT codes and pathways to develop a dialogue with third-party payers for reimbursement.

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Chapter 18
Hernia and Abdominal Wall Coding

Mark Savarise

CPT codes exist to describe most common hernia repairs and some uncommon ones. In some more complex cases, multiple CPT codes are necessary to describe the procedure and to adequately document the complexity of the work that is done.

This chapter will first look at inguinal hernia repairs and then abdominal wall hernia repairs. It will describe correct open and laparoscopic procedure coding and the rationale for the codes and relative values (wRVUs) in each section. Finally, it will examine more complex or unusual abdominal wall cases.

Inguinal Hernia

Traditional (non-laparoscopic or endoscopic) inguinal hernia repairs, also called *hernioplasties*, *herniorrhaphies*, or *herniotomies*, are found in CPT codes 49491–49557. The codes are specific by age of the patient, with separate codes for patients aging 6 months to 5 years (49500–49501), infants under 6 months but older than 50 weeks postconception age (49495–49496), and preterm infants performed up to 50 weeks postconception age (49491–49492). All patients over 5 years are considered adults for the purpose of CPT coding of hernia repairs [1].

Codes are also separated based on whether a hernia is reducible or is incarcerated or strangulated. For adults, the codes are also separated based on whether the hernia is recurrent or initial. There is also a separate code for repair of a sliding inguinal hernia; however, there are no special codes for sliding hernias that are recurrent or incarcerated. Femoral hernias, likewise, have separate codes for those that are recurrent and those that are incarcerated or strangulated. There is an incremental increase

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Table 18.1 Valuation of repair of initial, recurrent, incarcerated/strangulated, and sliding hernia

CPT code	Descriptor	wRVU (2015 value)
49505	Repair initial inguinal hernia, reducible	*7.96*
49507	Repair initial inguinal hernia, incarcerated or strangulated	*9.09*
49520	Repair recurrent inguinal hernia, reducible	*9.99*
49521	Repair recurrent inguinal hernia, incarcerated or strangulated	*11.48*
49525	Repair inguinal hernia, sliding	*8.93*

in the wRVUs of the hernia repairs for recurrence or incarceration. See Table 18.1 for an example.

Laparoscopic inguinal hernia repair is found in CPT under a separate laparoscopy subsection of the abdominal wall. There are only two codes: for repair of initial (49650) and recurrent (49651) inguinal hernias. There are no special codes for laparoscopic repair of incarcerated or strangulated inguinal hernias. Laparoscopic hernia repair was developed as a technique long after open hernia repair. When new CPT codes were created for these procedures, very few were performed for incarcerated inguinal hernias. Because the cases were rare, no attempt at valuation of laparoscopic incarcerated inguinal hernia repair was made. Also, no distinction is made for whether a laparoscopic inguinal hernia repair is done transperitoneally (TAPP) or totally extraperitoneally (TEPP) for the purpose of coding.

Inguinal hernia repairs are all unilateral procedures; coding for bilateral hernia repairs is done by reporting the correct code with modifier −50. For different payers, the rules on bilateral reporting differ: some report the code once with the modifier; others report the code twice with the modifier on the second line. Refer to the advice on bilateral procedures found in the *Bulletin of the American College of Surgeons*, September 2013 edition [2].

The type of hernia repair (e.g., Bassini, McVay, Lichtenstein) does not affect the coding. Inguinal hernia repairs all include the placement of mesh in their valuation; therefore, mesh placement is not separately reported or reimbursed for these procedures. This is true for laparoscopic approaches as well since the mesh is inherent in the value of the code.

Although the surgeon does not receive any specific reimbursement for mesh placement, the placement of mesh and type of mesh used can dramatically affect the overall cost for the operation. Typical facility costs for prosthetic mesh range from under $50 for plain polypropylene mesh sheets to over $200 for some of the proprietary-contoured multilayer mesh hernia systems and over $2000 for engineered biologic mesh (the 2015 Medicare physician reimbursement for repair of an initial reducible inguinal hernia is $536.68) [3]. Depending on an individual facility's policies, these costs may be passed on to the patient or borne by the facility, itself. When implants are charged by a facility to a patient, the typical amount is two to four times the facility's cost; this can be a magnitude higher than the surgeon's fee for some items. Alternately, if the facility absorbs the cost of the implant, this can exceed the entire payment to the facility for the procedure.

Ventral Hernia

The term refers to any repair of the anterior abdominal wall and includes repair of umbilical, epigastric, Spigelian, and incisional hernias. There are differences in the coding options for each of the ventral hernia types. For example, umbilical hernia repair has separate codes for patients under 5 years of age and for those 5 years old to adulthood. There are separate umbilical hernia repair codes for reducible and incarcerated/strangulated umbilical hernias in both age groups. In 2014, CPT code 49585 (repair of umbilical hernia in adult, reducible) was reported in the Medicare population 21,981 times; CPT code 49587 (repair of umbilical hernia in adult, incarcerated or strangulated) was reported 9224 times in Medicare patients [3]. This illustrates a practical problem with the consistency of language used in CPT; that is, it is not possible to extract from the Medicare database what percentage of these patients had a strangulated umbilical hernia, which would be a surgical emergency, and what portion had the relatively common non-emergent condition of an umbilical hernia with chronically incarcerated omentum.

Epigastric hernia repairs have separate codes for hernias that are reducible and those that are incarcerated or strangulated; however, there are not specific codes for incarcerated or strangulated Spigelian (49590) or lumbar (49540) hernias. There are no specific CPT codes at all for obturator hernias.

Incisional hernias deserve special attention, as these codes were valued without including prosthetic mesh in the repair. This is because at the time of their valuation, the larger percentage of incisional hernias was repaired primarily. Recall that in the CPT process, the vignette for a code reflects the most common clinical scenario. There is a separate add-on code, 49568, for the implantation of mesh or other prostheses for open incisional or ventral hernia repair. This is a *restricted* add-on code, meaning that it can only be billed with certain base codes. This code can be used with CPT codes 49560–49566, for repair of ventral or incisional hernia, but cannot be combined with other codes, for instance, with 49580–49587, repair of umbilical hernia, even though these codes were valued for primary suture repair.

Ventral incisional hernia repairs, like inguinal repairs, also are reported as initial or recurrent and as reducible or incarcerated/strangulated. Although there are four codes for the different types and degrees of difficulty of ventral incisional hernias, there is no differentiation in CPT at this time for the size of the hernia. A one-centimeter incarcerated incisional hernia is repaired with the same CPT code as a 25-cm incarcerated incisional hernia, and both receive the same 15.38 wRVU value regardless of the difference in operative time and effort. In this respect, ventral hernia repair coding differs from many other areas of CPT, such as wound repair or subcutaneous lesion excision. There are frequent questions about this topic on coding hotlines and websites, and perhaps the taxonomy may change in the future. Also, multiple ventral hernias repaired at the same operation through the same incision cannot be coded separately. Multiple holes in a “swiss-cheese” abdominal wall count (for reimbursement) as a single incisional hernia repair.

Laparoscopic ventral hernia repair coding does not follow the exact parallel taxonomy of open repair. First, all laparoscopic procedures are valued to include placement of mesh or other prosthesis. In the laparoscopy section, there are two codes for the repair of umbilical, epigastric, or Spigelian hernias: one reducible (49652) and one incarcerated or strangulated (49653). Recall that there is only one open Spigelian hernia repair code, and placement of mesh cannot be added to the coding. Identical to the open code taxonomy is the coding for laparoscopic repair of incisional hernias. There are four codes: initial reducible (49654), initial incarcerated (49655), recurrent reducible (49656), and recurrent incarcerated (49657).

The reason that the laparoscopic hernia repair codes are more uniform than the open codes has to do with the timing of creation of these codes. As discussed previously, open incisional hernia repair codes were created in the era of primary repair, and additional codes were periodically added to the code set, including a separate code for placement of mesh or other prosthetic material. Laparoscopic codes were created en bloc, after the technology had existed for several years without Category 1 CPT codes and the techniques had matured. A comparison of values of open and laparoscopic codes, along with the components of their valuation, is provided in Table 18.2.

Parastomal Hernia

There is a separate code for a procedure to revise a colostomy with repair of a parastomal hernia (44346), which is valued at 19.63 wRVUs based on a median intraservice time of 120 min. There is no specific code for parastomal hernia repair that does not involve revision of the colostomy; this procedure would be reported as a ventral hernia repair or with an unlisted code.

Table 18.2 Valuation of open and laparoscopic incisional hernia repair

CPT	Hernia code descriptor	wRVU (2015 values)	Intraservice time	Hospital visits	Office visits
49560	Open initial, reducible	*11.92*	90	0.5	2
49561	Open initial, incarcerated	*15.38*	100	3	2
49565	Open recurrent, reducible	*12.37*	100	3	2
49566	Open recurrent, incarcerated	*15.53*	120	4	2
49568	Mesh implantation	*4.88*	180	n/a	n/a
49654	Lap initial, reducible	*13.76*	120	0.5	2
49655	Lap initial, incarcerated	*16.84*	150	0.5	3
49656	Lap recurrent, reducible	*15.08*	120	3	2
49657	Lap recurrent, incarcerated	*22.11*	180	4	3

Note that open codes do not include the placement of mesh (49568), the value of which can be added to 49560–49566, when performed.

Complex Abdominal Wall Repair

As mentioned previously in this chapter, there is no distinction in coding and reimbursement for ventral hernia repair that accounts for the size of the hernia. Complexity is only defined by the recurrent nature or the presence of incarcerated abdominal contents. However, there are special techniques for managing complex abdominal wall problems, and they do merit special coding.

In the case of abdominal wall reconstruction using the component separation technique, the surgeon divides the external oblique muscle lateral to the rectus sheath, then frees it from the underlying muscle layers, and advances it toward the midline. This is a myocutaneous advancement flap of the trunk musculature, which is described by CPT code 15734 (*muscle*, *myocutaneous or fasciocutaneous flap*, *trunk*). It is typically done on both sides but cannot be reported as bilateral with 50 modifier per Medicare rules so it is reported with distinct procedure 59 modifier and then 51. This results in payment of 100 % of the RVUs for the first side and an additional 50 % of the RVUs for the second [4]. These codes would be reported in addition to the incisional hernia repair (CPT codes 49560–49566), as well as the placement of a mesh or other prosthetics (CPT code 49568) [5]. Table 18.3 shows how this would be reported and the RVU valuation of the procedure.

Management of infected prosthetic mesh also involves specific coding. Typically, there is a significant operation to remove the infected prosthetic and debride the surrounding tissue. This is reported with CPT codes 11005 (*debridement of the skin*, *subcutaneous tissue*, *muscle*, *and fascia for necrotizing soft tissue infection*, *abdominal wall*, *with or without fascial closure*) and 11008 (*removal of prosthetic material or mesh*, *abdominal wall for infection* [e.g., *for chronic or recurrent mesh infection or necrotizing soft tissue infection*]). Note that the first code includes fascial closure; therefore, it cannot be combined with any of the ventral hernia repair codes. However, implantation of mesh or other prosthesis (CPT code 49568) can be reported with this code. It is appropriate whether a prosthetic mesh or biologic mesh is placed. Note also that CPT codes 11008 and 49568 are both add-on codes and are not subject to multiple procedure reductions or modifiers [5]. Table 18.4 shows how this would be reported and the RVU valuation of the procedure.

In the technique of damage control laparotomy, the abdominal wall is left open at the conclusion of an operation and managed at a later date. Although the myriad

Table 18.3 Coding for abdominal wall reconstruction with component separation

CPT code	Modifier	Code description	Modifier effect	wRVU
15734		Myocutaneous flap, trunk	100 %	19.86
15734	−59,51	Modifier for bilateral procedure	50 %	9.93
49560	−51	Repair initial incisional hernia, reducible	50 %	5.96
49568		Implantation of mesh		4.88
Total				40.63

Table 18.4 Coding for management of infected abdominal wall mesh

CPT code	Code description	wRVU
11005	Debridement of the skin, subcutaneous muscle and fascia, abdominal wall	14.24
11008	Removal of prosthetic material, abdominal wall	5.00
49568	Implantation of mesh	4.88
Total		24.12

of index operations for damage control is beyond the scope of this chapter, the management of the abdominal wall takes place in one of three ways, which can be described with CPT coding: The abdomen may be sutured closed at a subsequent procedure, or it may be bridged with a prosthetic, or it may be allowed to granulate with placement of a skin graft.

In the technique of allowing granulation and skin grafting, a vacuum-assisted closure device is usually applied to the open wound. This is reported with CPT code 97606 (*negative pressure wound therapy*, *including topical application*, *wound assessment*, *and instruction for ongoing care*, *total wound surface area greater than 50 square centimeters*). Subsequent preparation of the abdominal wall for a skin graft would be reported with CPT codes 15002–15005. Placement of a skin autograft would then be reported with CPT codes 15100–15111.

In the instance in which the abdomen can be re-closed primarily at a second operation, the surgeon can report CPT code 49900 (*suture*, *secondary*, *of abdominal wall for evisceration or dehiscence*).

In the event that enough time has passed and the opposing fascial edges are separated by a wide gap, a prosthetic would be placed. This is essentially a ventral hernia repair, as it includes all of the required elements of the procedure (isolation of the fascial edges, reduction of the peritoneal contents, fascial repair with attachment of a prosthetic, and closure of the skin and soft tissue). Therefore, it would be reported with CPT codes 49560 (*repair of initial incisional or ventral hernia*, *reducible*) and 49568 (*implantation of mesh or other prosthesis*) [6].

There also exist, at this time, many variations on abdominal wall repair that do not yet have their own specific CPT codes. These include variations of existing procedures where a portion is done endoscopically and the remainder is done through an open incision or via laparoscopy, procedures that are done partially or totally robotically, and open procedures that are more complex variations of the standard ventral hernia repair. These procedures are either reported by the surgeon using the existing open and laparoscopic codes (if the existing codes adequately describe the procedure performed) or using the unlisted codes, 49659 (*unlisted laparoscopy procedure*, *hernioplasty*, *herniorrhaphy*, *herniotomy*) or 49999 (*unlisted procedure*, *abdomen*, *peritoneum*, *and omentum*).

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Chapter 19
Bariatric Coding

Don J. Selzer

Background

Although bariatric surgery has demonstrated a significant surge in popularity and gained notoriety in the media in the last decade, its roots date back to the 1950s. Despite the rise of the American Society for Bariatric Surgery (recently changed to the American Society for Metabolic and Bariatric Surgery), bariatric surgery remained a closet industry during the majority of the twentieth century. The process of demonstrating its worth to mainstream medicine while fighting the stigma of obesity has been a challenge even recently. As a result, the billing and coding for these procedures is at times impacted negatively by its marginalized status.

Over the last 65 years, the commonly performed bariatric surgical procedures have gone through phases or patterns of focus. At times, the emphasis was on more aggressive procedures with manipulation of both the stomach and small intestine, while at other times, the focus has remained on minimalist approach with procedures limited to the stomach. The initial operation popularized by Scott was the jejunoileal bypass (JIB) [1, 2]. As the potential side effects of this procedure were uncovered, gastric procedures were identified as the mainstay of the discipline including the Roux-en-Y gastric bypass (RYGB) and the vertical banded gastroplasty (VBG). Both procedures were championed by Edward Mason, a surgeon from Iowa [3, 4]. Rebounding from the initial failure of the malabsorptive JIB, an Italian surgeon, Nicola Scopinaro, popularized the biliopancreatic diversion (BPD) [5].

In 1991, the National Institutes of Health (NIH) convened a collaborative conference involving not only bariatric surgeons, but medical bariatricians, endocrinologists,

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nutritionists, epidemiologists, and specialists in public health [6]. At this conference, basic guidelines were developed to answer the important question of who should be considered a candidate for bariatric procedures. In general, these guidelines have remained in effect over the last two decades. Recently, updated guidelines were released, but they have not altered what has become a foundation for decision-making among not only the clinical halls of the healthcare but the administrative halls as well [7]. When one considers the process of billing and coding for bariatric surgery, one must discuss the process of fulfilling the administrative approval and authorization to receive payment for bariatric surgery. Therefore, this must be addressed when one discusses the coding of bariatric surgery.

Although the impending epidemic of obesity troubling our society has fueled innovation in the area of bariatric surgical procedures, the current commonly performed procedures include the following: adjustable gastric band (AGB), sleeve gastrectomy (SG), Roux-en-Y gastric bypass (RYGB), and the BPD and its evolutionary colleague, the duodenal switch (DS). Surgical procedures that are currently undergoing evaluation with accrual of data and long-term follow-up include the gastric plication (GP), the mini-gastric bypass (MGB), and the stomach intestinal pylorus-preserving surgery (SIPS). In addition, endoscopic procedures remain a hotbed of focus as procedures including the endoluminal sleeves, intragastric balloon, and primary obesity surgery endoluminal (POSE) attempt to gain a foothold in this area. Finally, the role of vagal nerve blockade (VBLOC) in the treatment of obesity is new and has obtained FDA clearance, but continues to accrue clinical data. It will be important to recognize these new procedures during the discussion of coding and billing in bariatric surgery, but this chapter will focus on the common procedures with a goal of providing background information in the regulatory process to help avoid missteps that negatively impact surgeon reimbursement or, worse, patient finances.

Preop Preparations

A discussion about the coding and billing of bariatric surgery must consider the process that patients and surgical programs conduct to demonstrate medical necessity and ultimately obtain authorization and payment for the procedure. In general, many insurers, including the Centers for Medicare and Medicaid Services, identify the NIH guidelines as the source for their development. All insurers require a psychological evaluation that focuses on identifying nascent eating disorders, overburdened or underdeveloped coping skills, and a basic lack of mental skill set to understand and accept the risks and lifestyle changes that are necessary to thrive following these procedures [8].

Many insurance policies require a period or program of “medically supervised weight loss.” The NIH guidelines suggest that individuals considering bariatric surgery must demonstrate an attempt to lose weight with nonsurgical means. The overwhelming majority of patients considering bariatric surgery have tried multiple methods of weight loss including pharmacotherapy, intensive exercise programs,

popular diets steeped in scientific evidence, or even fad diets without any clear evidence. However, many of these have not received the direct care of a physician during this process. Therefore, medically supervised weight loss (MSWL) is a common method to demonstrate a legitimate attempt to lose weight and avoid the need for bariatric surgery.

Following the accrual of this supporting data, the surgeon's practice submits the information to the insurance payor to demonstrate medical necessity of the procedure. In some circumstances, despite programmatic best efforts, a patient is denied coverage for a procedure. Several explanations are commonly provided in this circumstance. Many are technical in nature. For example, missing documentation of adequate supervised weight loss or similar can lead to such a denial. It is not uncommon in these circumstances that a frank discussion of the surgeon with the medical director or a designated "peer" can lead to a common ground that includes approval of the surgical procedure.

Special challenges remain in this arena including exclusions, Affordable Care Act (ACA) exchange policies, and self-pay. Some healthcare insurance policies exclude coverage of bariatric surgical procedures including both initial procedures and revisional operations. Others limit coverage of revisional surgeries to those addressing side effects or anatomical complications of a prior procedure. Currently, the basic requirements for the primary federal ACA exchange policy do not include the coverage of weight loss surgical or medical care.

Procedure Coding

Coding for abdominal surgical procedures has changed over the last 15 years as the majority of commonly performed procedures were initially performed with a laparotomy incision. However, following the lead of the cholecystectomy, the majority of abdominal surgeries are now also described with a laparoscopic approach. To this end, the fourth edition of the Current Procedural Technology (CPT) code system has codes for both the traditional open approach and the laparoscopic approach. Many of the laparoscopic procedures have demonstrated a longer overall operative time with some reduction in the amount of hospital stay. This is generally reflected in a higher reimbursement for the laparoscopic procedure compared to the equivalent open code. Bariatric surgical code families are no different. In general, this is supported by the greater amount of effort used to perform a laparoscopic procedure through the thick abdominal walls of morbidly obese patients. A greater amount of mesenteric adipose and a liver demonstrating steatosis compound the challenges and ultimately create a more difficult operation. However, the challenges encountered by the surgeon pay off dividends in the quicker recovery experienced by patients that are able to undergo the minimally invasive approach. Still, there remain scenarios even today that the open approach is required. So, maintaining an up-to-date code set that includes options for open procedures is an important component in appropriately reimbursing surgeons performing these procedures.

A discussion of the coding for bariatric surgery should begin with the procedures that are currently considered the mainstream options for patients throughout the United States: adjustable gastric band (AGB), sleeve gastrectomy (SG), Roux-en-Y gastric bypass (RYGB), and biliopancreatic diversion (BPD) or duodenal switch (DS). The discussion should also include special scenarios encountered intraoperatively and perioperatively. Finally, the discussion must also include revisional surgery and innovative procedures that are on the horizon.

Initial Operations

Adjustable Gastric Band

The AGB was initially developed in Europe and was originally performed prior to mainstream laparoscopy [9]. However, its introduction in the United States was almost exclusively as a laparoscopic procedure [10]. In 2001, the first AGB received FDA approval in the United States, the LapBand® from Inamed®. The device technology has been traded between corporations moving to Allergan Plc and Apollo Endosurgery, Inc., most recently. In 2007, a second AGB received FDA approval and entered the US market as the Realize® Band. From 2004 to 2010, there was a sharp rise in the number of AGBs performed in the United States. Although the number of AGBs inserted today has declined significantly, it remains a relevant procedure and a legitimate option for bariatric surgical candidates. Since the development and publication of an AGB CPT code in 2006, the coding for the laparoscopic insertion is straightforward with the use of 43770 (Table 19.1). The open approach for AGB insertion is coded with 43843. This code was first published in 1995.

Vertical Sleeve Gastrectomy

The sleeve gastrectomy (SG) is modeled after a procedure entitled the Magenstrasse and Mill procedure performed in Germany during the early 1970s [11, 12]. It was a variation on the VBG concept with a lengthened upper gastric pouch component (when compared to the standard VBG) without the use of a restrictive band. This procedure was only performed for a short time and never truly gained popularity in the United States.

Table 19.1 Adjustable gastric band codes

CPT code	Approach	Procedure components
43770	Laparoscopy	AGB insertion
43843	Open	AGB insertion

CPT codes used to address insertion of the adjustable gastric band (AGB)

The procedure was resurrected by Dr. Doug Hess when he modified Dr. Tom Demeester's DS procedure from the biliary gastritis indication and combined it with Scopinaro's BPD. Challenges in performing a DS with a laparoscopic approach caused Gagner et al. to perform the procedure over two episodes [13]. Gastrointestinal leak from the duodenoileostomy was identified in patients with a higher initial BMI. Therefore, the initial procedure consisted of a SG alone. Most patients were noted to lose approximately 100–125 lbs over a 1 year period of time following this procedure. They were then taken back to the operating room to undergo the definitive DS avoiding the morbidity associated with a single-stage procedure. Many patients successfully lost enough weight from the initial operation that they elected to avoid the second component [13]. As a result, the use of SG as a stand-alone procedure was considered an option.

As the resurgence of this variation on the VBG was primarily a result of attempts to preserve the benefits of the minimally invasive approach, a specific open code for sleeve gastrectomy was not developed at the time of the laparoscopic code. The laparoscopic sleeve gastrectomy is coded with CPT code 43775 published in 2010. However, if one were to perform it with an open approach, there are two potential options (Table 19.2). The first, and likely most appropriate, would be the use of the same code as the open insertion of AGB, CPT code 43843. This procedure code described as *Gastric restrictive procedure*, *without gastric bypass*, *for morbid obesity*; *other than vertical banded gastroplasty* fits the appropriate role for an open sleeve gastrectomy too. However, one could also select the open duodenal switch CPT code 43845 appended with a CPT modifier of -52 to demonstrate the reduced services associated with a sleeve alone compared to the duodenal switch procedure. As with other modifiers, the -52 modifier necessitates additional documentation and generally eliminates the electronic submission format. Moreover, it can delay payment.

Roux-en-Y Gastric Bypass

Developed by Edward Mason from Iowa during the late 1950s and early 1960s, the RYGB revived the procedure initially performed by Cesar Roux for the treatment of gastric outlet obstruction [14]. Although Dr. Roux initially aimed to address the

Table 19.2 Vertical sleeve gastrectomy codes

CPT code	Approach	Procedure components
43775	Laparoscopic	Perform sleeve gastrectomy
43848	Open	Perform restrictive procedure, other than VBG
43845-52	Open	Perform restrictive procedure, other than VBG[a]

CPT codes used to address performance of a sleeve gastrectomy
[a]Less preferred approach to coding for the procedure

Table 19.3 Roux-en-Y gastric bypass codes

CPT code	Approach	Procedure components
43644	Laparoscopy	Standard limb length RYGB
43645	Laparoscopy	Long limb length (aka distal) RYGB
43846	Open	Standard limb length RYGB
43847	Open	Long limb length (aka distal) RYGB

CPT codes used for open and laparoscopic Roux-en-Y gastric bypass (RYGB) in both the standard Roux limb length and the distal bypass procedure with a limb length >150 cm

consequences of peptic ulcer disease, Dr. Mason's clear goal was weight loss. Some of the specifics regarding pouch formation, Roux limb length, and orientation of the Roux limb have changed over time, but the basic components of RYGB remain the same: a small gastric pouch; bypass of the majority of stomach, duodenum, and proximal jejunum; and reestablishment of intestinal continuity with a Roux limb. Similar to the VBG, the RYGB was a commonly performed operation at the time the CPT code set was developed during the early 1990s. As a result, the code for a RYGB performed with an open approach, along with the VBG, was one of the original CPT codes for bariatric surgery published originally in 1995. In addition to the standard Roux limb length, the less commonly performed distal gastric bypass, with a Roux limb greater than 150 cm, also received a CPT code at the time.

Simultaneous to the development of the CPT code for the open procedures, surgical groups were hard at work developing a method of adopting the technologies of minimally invasive surgery to bariatric surgery. Clearly, the benefit witnessed for those undergoing laparoscopic cholecystectomy would be amplified in this patient population who commonly suffered wound infections and hernias at the large laparotomy incisions used for the open technique. However, the laparoscopic gastric bypass did not become a commonly performed operation until about 5 years later. Moreover, the laparoscopic bypass procedures did not receive a CPT code until a decade after the open procedures, in 2005. A result of these efforts provides a relatively straightforward method of coding both the open and laparoscopic gastric bypass procedures (Table 19.3).

Biliopancreatic Diversion/Duodenal Switch

Developed during the late 1970s by an Italian surgeon, Nicola Scopinaro, the BPD combined the concepts of the early RYGB and the abandoned JIB [5]. This malabsorptive procedure proved successful in providing significant weight loss. Although it clearly avoided many of the severe issues associated with the JIB, it failed to obtain the same support as the RYGB due to the nutritional and gastrointestinal side effects of malabsorption and the risk of the marginal ulcer formation. Still, the weight loss benefits were clear. As a result, Hess et al. modified the procedure by converting the hemigastrectomy to a vertical sleeve gastrectomy and maintaining the pylorus and performing a duodenoenterostomy similar to Demeester's DS [15]. Demeester's procedure was largely supplanted by the advent of medical

management for biliary gastritis and never truly took hold. As a result, Hess' procedure adopted the moniker of duodenal switch which has remained until today [16, 17]. The similarities between BPD and DS are clear. As a result, many include both procedures together when they are discussed among the bariatric surgical armamentarium. Here in the United States, the DS has largely won over those surgeons supportive of the malabsorptive approach.

The complexity of the DS does relegate it to a procedure more commonly performed with an open approach. However, Gagner et al. developed a laparoscopic technique [18]. It is a mainstream bariatric procedure, but it generally accounts for less than 10% of weight loss surgeries performed annually in the United States. Currently, there remains one specific CPT code for the DS, and it reflects the procedure performed with an open approach, 43845. Those performing a true Scopinaro BPD may utilize the CPT code used for a distal gastrectomy with a Roux-en-Y reconstruction, 43633.

Although there is some interest in obtaining a single code solution for the laparoscopic DS, surgeons currently use multiple methods of coding for the laparoscopic procedure including using the open code (Table 19.4). One of the more commonly used techniques utilizes the specific laparoscopic sleeve gastrectomy along with a laparoscopic small intestine anastomosis code or the unlisted laparoscopic small intestine code alone. With the current approach of the multiple procedure rule, the combined laparoscopic codes provide a reimbursement similar to the single open code. Others utilize the CPT code for the long limb length (aka distal) RYGB, which provides a single code option. Still, there is no preferred coding approach.

Special Considerations During Initial Surgery

Hiatal Hernia

All of the current, mainstream bariatric surgical procedures involve manipulation of the proximal stomach. It has been identified that the presence of a hiatal hernia predisposes patients to significant issues with gastroesophageal reflux and, at times, dysphagia. As a result, bariatric surgeons have gone out of their way to identify the presence of this anatomical malformation and repair it during the initial procedure.

Table 19.4 Biliopancreatic diversion and duodenal switch CPT codes

CPT code	Approach	Procedure components
43775, 44202	Laparoscopy	Perform DS
43775, 43289	Laparoscopy	[a]Perform DS
43659, 44202	Laparoscopy	Perform BPD
43633	Open	Perform BPD
43845	Open	Perform DS

CPT codes used to address insertion, reposition, or removal of the band or its two components

[a]Alternative coding option for this procedure

Some surgeons favor preoperative identification with either an esophagogastroduodenoscopy (EGD) or an esophagram [19].

Hiatal hernias have several configurations from a sliding type I to a more complex type III with an intrathoracic stomach. The coding approach to the later scenario is clearer. There are two CPT codes that address the repair of the type III paraesophageal hernia (PEH). For repairs performed without mesh, one uses 43281. For repairs performed with mesh, one uses 43282. In this circumstance, a type III PEH is defined by the presence of a hernia sack that is resected. Moreover, this is an operation that requires complete dissection of the hiatus with extensive dissection of the mediastinum to establish an adequate amount of intra-abdominal esophagus as the gastroesophageal junction has commonly migrated greater than 4 cm above the diaphragm. In this circumstance, the PEH codes are used along with the primary bariatric surgical procedure code.

The first scenario, the sliding type I hiatal hernia, has proven more controversial with regard to coding. Some surgeons have elected to use the PEH repair codes with these smaller hernias where a repair is commonly performed with limited dissection and a single suture placed in the anterior crura. This practice has led some payors, including CMS, to consider eliminating the ability to use the PEH codes simultaneous to bariatric surgical procedures. In general, small type I hiatal hernia repairs that are performed with a single suture and limited dissection are considered part of the surgical procedure and do not warrant additional coding.

For those rare circumstances that the patient has a moderate-sized type I hiatal hernia that necessitates a repair that does not fulfill the PEH criteria and is inadequately represented by the limited aspect of the single suture repair, one can consider the use of several options listed in Table 19.5. All options utilize either an

Table 19.5 Codes for simultaneous hiatal hernia repair

CPT code	Approach	Procedure components
Bundled	Either	Repair small sliding hiatal hernia
43281	Laparoscopy	Paraesophageal hernia repair without mesh
43282	Laparoscopy	Paraesophageal hernia repair with mesh
39599[a]	Laparoscopy	Repair moderate sliding hiatal hernia
43280-52		
43289		
49659		
-22[a]		
43332	Open	Paraesophageal hernia repair without mesh
43333	Open	Paraesophageal hernia repair with mesh
39599[a]	Open	Repair moderate sliding hiatal hernia
43327-52		
43499		
-22[a]		

CPT codes used to address hiatal hernia repair simultaneous to an initial bariatric surgical procedure

[a]Denotes preferred option(s) for coding when more than one is possible

unlisted code or a modifier that will require additional documentation. First, one can use the code for a laparoscopic Nissen fundoplication of 43280 along with a reduced work modifier, -52. This is justified as the repair of moderate hiatal hernia that involves circumferential dissection is described in the work of the Nissen CPT code. The reduced work modifier recognizes the lack of a fundoplication in this approach. Second, the unlisted esophageal code, 43289, can be used to reflect the additional work done to repair a moderate hiatal hernia. Third, in a similar manner, the unlisted laparoscopic hernia repair code 49659 can be used. Fourth, the exceptional or extra work modifier of -22 can be used to justify the extra work used. Fifth, the unlisted diaphragm code, 39599, may also represent this work. In all of the above circumstances, the surgeon must document effectively to appropriately demonstrate the added work and justify the additional reimbursement. If one is performing a hiatal hernia repair during an open approach bariatric procedure, the same issues hold true regarding the PEH repair versus a limited repair of a small type I hiatal hernia.

Cholecystectomy

Although there is some controversy that remains regarding the role of cholecystectomy during initial bariatric surgical procedures, the coding methodology surrounding this issue is relatively clear. Ultimately, the code for either laparoscopic or open cholecystectomy should be used to document the simultaneous performance of bariatric surgery and removal of the gallbladder. Naturally, the codes that reflect the use of intraoperative cholangiogram are appropriate if this adjunct is utilized. These codes are documented in Table 19.6.

Incisional Hernia

Many patients who present for bariatric surgery have undergone prior surgical procedures. Among the many postoperative events and perioperative conditions that can increase the development of incisional hernias, morbid obesity is high on the list

Table 19.6 Cholecystectomy codes

CPT code	Approach	Procedure components
47562	Laparoscopy	Cholecystectomy
47563	Laparoscopy	Cholecystectomy with cholangiogram
47600	Open	Cholecystectomy
47601	Open	Cholecystectomy with cholangiogram

CPT codes used for simultaneous performance of a cholecystectomy with a bariatric surgery. One of these codes is used in conjunction with the primary bariatric procedure

with regard to its impact. The timing of a ventral hernia repair in morbidly obese patients can be challenging. A common practice for many bariatric surgeons practicing in the era of laparoscopic surgery is to plan a two-stage approach with an attempt to perform the bariatric surgical procedure during the first stage and return for the definitive hernia repair during the second stage. However, there are many circumstances that require the hernia be repaired either temporarily or definitively during the initial bariatric procedure.

In general, closure of an incisional hernia performed during an open operation is considered a bundled component of the bariatric procedure. As a result, it is not likely beneficial or feasible to expect reimbursement if one adds a hernia repair code to the procedure. Instead, one can consider the use of modifiers to justify an exceptional amount of work that may have been necessary to close the midline. Examples of work that would justify the exceptional work modifiers include the development of extensive flaps, the use of mesh, or the need for relaxing incisions or component release.

However, laparoscopic closure of an incisional hernia performed during a laparoscopic operation may have two options. If the hernia is small and a laparoscopic port may be inserted at the site of the hernia, it would be appropriate to consider this bundled in the primary procedure. On the other hand, similar to an open procedure, the use of a -22 modifier may be appropriate when additional documentation is provided and clearly supports a significant amount of additional work needed to repair the hernia. For example, if a larger skin incision is created and the closure of the hernia requires mesh and/or relaxing incisions, it would be appropriate to consider this option. An alternative includes the use of the laparoscopic ventral hernia repair codes (Table 19.7). It should be documented that the hernia is remote from the location of the operation and the port site locations. The code for this additional procedure would be held to the multi-procedure code rule. In this second scenario, the -59 modifier would be added to the laparoscopic ventral hernia code to suggest the need to address a procedure that was performed simultaneously but is considered a separate entity to the placement of ports and performance of the primary bariatric surgery.

Table 19.7 Laparoscopic ventral hernia repair codes

CPT code	Procedure components
49652	Laparoscopic repair of reducible ventral, umbilical, Spigelian, or epigastric hernia
49653	Laparoscopic repair of incarcerated ventral, umbilical, Spigelian, or epigastric hernia
49654	Laparoscopic repair of reducible, initial incisional hernia
49655	Laparoscopic repair of incarcerated, initial incisional hernia
49656	Laparoscopic repair of reducible, recurrent incisional hernia
49657	Laparoscopic repair of incarcerated, recurrent incisional hernia

CPT codes to consider for simultaneous performance of an extensive laparoscopic ventral hernia repair requiring significant work in addition to the primary bariatric surgery

Prior Non-bariatric Gastric Surgery

Many patients preparing for bariatric surgery have undergone prior gastric surgery. One common previous operation is a Nissen fundoplication or hiatal hernia repair. In general, it is necessary to undo the fundoplication prior to completing the bariatric operation. In addition to greater risk for postoperative morbidity, patients with a prior fundoplication undergo longer and more complex operative procedures [20, 21].

The need for mobilization of the stomach with separation of adhesions to the liver, anterior abdominal wall, or diaphragm should be well documented in the operative documentation. The documentation should include the amount of time added to the procedure due to the need for enterolysis and the takedown of the fundoplication. There is no code for the takedown of a fundoplication. Moreover, limited laparoscopic enterolysis is bundled into the laparoscopic procedure. On the other hand, significant additional work can be represented with a -22 modifier appended to the primary procedure. Again, the role for codes used primarily to perform a Nissen fundoplication or repair of paraesophageal hernia should not be used in this scenario.

Intraoperative Endoscopy

The role of endoscopy in the management of bariatric surgical patients continues to expand. Innovative primary bariatric procedures that primarily rely on endoscopy are starting to gain popularity. Moreover, the role of intraoperative endoscopy is felt by many to be a key aspect in the prevention of morbidity following primary bariatric procedures including the gastric bypass [19]. When intraoperative endoscopy is performed to provide additional diagnostic information including the presence of hiatal hernia, esophagitis, ulcer, or other mucosal pathologies, it should be coded with the appropriate endoscopic procedure code (e.g., CPT code 43235 esophagogastroduodenoscopy, flexible, transoral; diagnostic, including collection of specimen(s) by brushing or washing, when performed (separate procedure)). However, when intraoperative endoscopy is used to identify anatomical landmarks, confirm hemostasis, or assess the integrity of a new anastomosis, it is considered a routine part of the surgical procedure and should not be coded separately. Instead, it is considered a bundled portion of the primary bariatric procedure.

Perioperative Care

Band Adjustments

The most important aspect of the adjustable gastric band is the ability to alter the internal balloon diameter to the patient's individual characteristics reflected by the presence or lack of satiety or restriction, poor or successful weight loss, or

Table 19.8 Codes used for management of adjustable gastric band

Code	System	Procedure components
99211-99215	CPT	Clinical evaluation and management (E&M)
-25		For E&M performed on the same day as adjustment
77002		Fluoroscopic guidance for needle access of band reservoir
74220		Esophagram analysis
74226		Upper gastrointestinal series analysis
74246		Ultrasound guidance for needle access of band reservoir
-26		For radiologist image analysis while surgeon performs adjustment
Z46.51	ICD-10	Code used for band adjustment
S2083	HCPCS	Practice and hospital-based code used for band adjustment

Codes from various coding systems used to manage patients with an adjustable gastric band

obstructive symptoms including gastroesophageal reflux disease. Adjustments are commonly performed in the provider's office. However, some programs selectively utilize fluoroscopic guidance for band adjustment, while others rely upon fluoroscopy for each adjustment. Moreover, the expansion of ultrasound in the management of the breast, endocrine, or vascular pathology has led to the presence of these machines in more surgeons' offices. As a result, ultrasound may be used to guide access of the subcutaneous port.

There remain no CPT codes that encompass the entire work for the adjustment of gastric bands (Table 19.8). As is the case for office visits during the 90-day postoperative global period, gastric band adjustments are bundled into the postoperative care of the original procedure. Following the completion of the global period, the coding process for band management is highly variable and commonly impacted by geographic region.

The decision to perform an adjustment is best captured with evaluation and management (E&M) code sets and should be coded separately. However, once a decision to perform an adjustment is set, a combination of ICD-10 and CPT codes is commonly used. Isolated adjustment without the adjunct of radiologic efforts is best reflected with an ICD-10 code, Z46.51, or the code from the Healthcare Common Procedure Coding System (HCPCS), S2083. However, there remains inconsistency in coverage determination for either of these codes. Some insurers preferentially cover the unlisted esophageal CPT code, 43999. In addition, if the adjustment is performed simultaneous to submission of an E&M visit, the -25 modifier should be used. Documentation must demonstrate a change in the patient's overall condition necessitating the same-day adjustment procedure.

The addition of radiologic imaging does add complexity to the process. For example, the addition of fluoroscopic guidance for needle placement requires CPT code, 77002. If a radiologist is included in the process, the surgeon performing the adjustment with needle insertion would use the TC modifier, while the radiologist would use a -26 modifier to represent the professional component or "read" of the fluoroscopic imaging. The addition of oral contrast with fluoroscopic imaging of the proximal gastrointestinal tract is represented by the codes for esophagram (CPT 74220) and upper gastrointestinal series (CPT 74246). Ultrasound guidance used for the insertion of the needle is best represented by CPT code 76942.

Revisional Surgery

Similar to arthroplasty, hernia repair, or coronary artery bypass, bariatric surgical procedures require revisional procedures. The indications for revision can vary from the consequences of the new surgically created anatomy including ulcer disease to recurrent obesity. Once the indication for a revisional procedure is identified, the patient's insurance policy will need to be evaluated. Although some policies provide coverage for reoperative procedures for any of these indications, many policies have restrictions. Some exclude initial bariatric surgical procedures and the treatment of any morbidity resulting from bariatric surgery, even gastrointestinal bleed. Other policies are less restrictive regarding the treatment of morbidity resulting from bariatric surgery, but revisional procedures for recurrent obesity are either not covered or limited to one in a lifetime. Moreover, a recent trend requires that revisional procedures for obesity are only justified with an anatomical failure of the original procedure including disruption of a staple line, enlargement of the functional gastric component, or development of a gastrogastric fistula.

Policies that do cover revisional procedures for recurrent obesity commonly contain similar components or requirements to covered initial bariatric surgical procedures. Specifically, most will require a new psychological evaluation, a demonstration of medical necessity, and a period of supervised weight loss. In addition, it is now common that patients who have been lost to follow-up may be excluded from coverage or may require an additional period of time demonstrating a significant effort to lose weight given the history of the prior bariatric surgical procedure. For example, a documented history of 5 years of morbid obesity may be required to demonstrate medical necessity. An extended period of supervised weight loss beyond a customary three or six months may be expected.

Ultimately, once the indication for the procedure is determined, the next step will be a plan of treatment. This commonly proves problematic in that all-inclusive CPT codes for revisional surgical procedures performed with a laparoscopic approach are limited to the adjustable gastric band. However, there are methods by which the surgeon may effectively identify and receive credit/reimbursement for the work that was done.

Vertical Banded Gastroplasty Revision

Once the most popular bariatric surgical procedure during the 1980s, the vertical banded gastroplasty (VBG) is no longer a mainstream procedure. Moreover, patients who have undergone a prior VBG frequently suffer from medically recalcitrant gastroesophageal reflux with proximal obstructive symptoms or recidivism of morbid obesity [22]. Those with GERD and obstruction may experience significant weight loss prior to presentation. In this circumstance, reversal is likely an acceptable operation. However, the method of creating the VBG with either mesh or a silastic ring has significant impact on the ease of reversal. Therefore, conversion to a gastric bypass may be a better approach. For those who have experienced weight regain, the etiology of weight gain may include disruption of the staple line from the original VBG or enlargement of the gastric pouch located between the lower esophageal sphincter and the outlet created by the band. Although a revision of the VBG with maintenance of VBG anatomy has historically been performed, it is more likely to be converted to a gastric bypass at this time. Others have also reported the conversion of a VBG to a sleeve gastrectomy or adding the malabsorptive component of the duodenal switch to the gastric anatomy of the VBG without manipulating the stomach.

First, the effective reversal of the VBG with a gastrogastrostomy can be performed with either an open approach or a laparoscopic approach. There is a not CPT code used to represent the work of revision of a VBG with maintenance of VBG anatomy. Clearly, the challenge of surgery in the morbidly obese with maintenance of VBG anatomy is a challenging operation best represented by the same code used for the initial VBG as well, CPT code 43842. However, the reversal of a VBG is not well represented in the CPT code taxonomy. As a result, the best option for this scenario is the unlisted gastric procedure code, CPT code 43999. As with all unlisted codes, the description of the procedure work provided in a dictated operative report must be submitted with the charge. In addition, it is of benefit to provide a CPT code with comparable work to help the individual submitting the bill to the payor.

Second, the VBG may be converted to a gastric bypass. Once again, this may be performed with either an open or laparoscopic approach. The open approach conversion from a VBG to a gastric bypass is well represented in the CPT codebook with CPT code 43848. Therefore, the codes used to document an initial gastric bypass operation performed with an open approach (CPT codes 43846 and 43847) are not appropriate to be used in this circumstance.

Unfortunately, the work of a laparoscopic conversion of a VBG to a gastric bypass is not effectively addressed with a single code. The codes used for a laparoscopic gastric bypass, CPT code 43644 or 43645, clearly represent most, if not all, of the work necessary to complete the conversion of a VBG to a gastric bypass. However, in some circumstances, the enterolysis necessary to mobilize the stomach from the liver can be quite lengthy and fraught with challenges. When significant additional time (e.g., in excess of 60 min) has been added to the procedure as a result of this additional work, one can consider the use of a -22 modifier to signify

the increased work needed to complete this procedure. As always, documentation to support this additional work with the specific amount of time added to the procedure will be necessary to justify additional payment. During the process of conversion, some surgeons, including the author, resect a portion of the gastric remnant containing the components of the VBG (e.g., band and old staple line). This additional work may be represented with the addition of CPT code 43659. In general, the challenges of supporting a modifier and an unlisted code in one charge submission may prove so problematic that the use of either the -22 modifier or CPT code 43659 is better than the combination. Realistically, the actual payment is likely to be similar for either option and is likely to be payor dependent (Table 19.9).

Third, conversion of a VBG to a sleeve gastrectomy for recurrent obesity remains a rarely reported procedure within the literature (Table 19.10) [23]. However, if completed, the coding process for this procedure can be addressed with use of the primary open or laparoscopic sleeve gastrectomy code (open = CPT 43843, laparoscopic = 43775) along with a -22 modifier when significant time and difficulty are necessary to complete the procedure and are well documented in the operative report. The other acceptable approach to code this procedure would utilize the corresponding open or laparoscopic unlisted stomach code (open = CPT 43999, laparoscopic = 43659). As with all unlisted codes, the operative note will be submitted with the charge to justify the work done.

Finally, in patients with recurrent obesity, a final option is conversion to a duodenal switch. If an open approach is used, two coding options may be used to code for this procedure. The code used for a primary duodenal switch, CPT 43845, may be used to represent the work completed by the surgeon. However, as with other

Table 19.9 CPT codes used for revision of vertical banded gastroplasty (VBG) or conversion to Roux-en-Y gastric bypass (RYGB)

CPT code	Approach	Procedure components
43842	Open	Repeat formation of a VBG
43848[a]	Open	Conversion of a VBG to a RYGB
43999	Open	VBG reversal with a gastrogastrostomy
		Resection of stomach involving VBG – band and staple line
43644[b]	Laparoscopy	Conversion to a standard limb length RYGB
43645[b]	Laparoscopy	Conversion to a long limb length (aka distal) RYGB
43659	Laparoscopy	VBG reversal with a gastrogastrostomy
		Resection of stomach involving VBG – band and staple line
-22[b]	Modifier	Increased procedural services used for extensive enterolysis

CPT codes to consider for maintenance of a VBG or conversion of a VBG to a RYGB with either the open or laparoscopic approach

[a]Represents the preferred coding methods for open conversion

[b]Represents the preferred coding methods for laparoscopic conversion

Table 19.10 CPT codes used for conversion of vertical banded gastroplasty (VBG) to a sleeve gastrectomy (SG)

CPT code	Approach	Procedure components
43843[a]	Open	Conversion of VBG to SG
43999		
43659	Laparoscopy	Conversion of VBG to SG
43775[a]		
-22	Modifier	Increased procedural services

CPT codes to consider for conversion of a VBG to a sleeve gastrectomy
[a]Represents the preferred coding method for open and laparoscopic technique, respectively

revisional procedures, the addition of the -22 modifier may be warranted at times. One may also use the revision open code CPT 43848, but the aforementioned option will more accurately reflect the challenges of the duodenal switch over the conversion to a gastric bypass. The laparoscopic approach remains a more challenging coding question for this conversion as there remains no CPT code for the primary laparoscopic duodenal switch procedure. An acceptable option would use the approach provided for the conversion to a sleeve gastrectomy as provided above in conjunction with coding for each of the duodenoileostomy and ileoileostomy. Coding for the duodenoileostomy would be coded appropriately with the CPT code for small intestinal resection with anastomosis, CPT 44202, along with the reduced work modifier -52. The ileoileostomy is coded in a similar fashion using the reduced work modifier, but the CPT code used for an additional small intestinal resection with anastomosis, CPT 44203, is now used. Some surgeons prefer to avoid the complicated process of apportioning the previously operated stomach to either a small pouch or a sleeve. In this circumstance, the open approach is best addressed with the corresponding duodenal switch CPT code, 43845, and the reduced work modifier -52. This will appropriately reduce reimbursement for the avoidance of performing the gastric component of the duodenal switch. The laparoscopic approach utilizes the aforementioned method documenting the duodenoileostomy and the ileoileostomy separately with the use of the gastric coding process (Table 19.11).

Jejunoileal Bypass Revision

Abandoned more than 40 years ago, the jejunoileal bypass (JIB) represents the first commonly performed operation aimed at weight loss. Long before the term "bariatric surgery" was coined, JIB was being used to address what was slowly becoming an obvious health problem. Unfortunately, the consequences of this altered anatomy were often so severe that a reversal procedure was considered. Although this issue is slowly becoming of historical interest only, there remains a limited population of individuals who underwent this procedure as adolescents. These patients have avoided the known side effects of this procedure including liver failure, kidney

Table 19.11 CPT codes used for conversion of vertical banded gastroplasty (VBG) to duodenal switch (DS)

CPT code	Approach	Procedure components
44120, 44121	Open	Conversion of VBG to DS without sleeve
43843, 44120, 44121[a]	Open	Conversion of VBG to DS with sleeve
43845	Open	Conversion of VBG to DS
43659, 44202, 44203	Laparoscopy	Conversion of VBG to DS with sleeve
43775, 44202, 44203[a]	Laparoscopy	Conversion of VBG to DS with sleeve
44202, 44203	Laparoscopy	Conversion of VBG to DS without sleeve
-22	Modifier	Increased procedural services for enterolysis and partial gastrectomy
-52	Modifier	Reduced procedural services for lack of bowel resection with anastomosis

CPT codes to consider for conversion of a VBG to a duodenal switch
[a]Represents the preferred coding option for open and laparoscopy, respectively

stones and frequent loose stools leading to renal failure, and severe protein malnutrition. Moreover, these patients commonly suffer from recurrent morbid obesity. Therefore, consideration for revision of these patients to a currently mainstream weight loss procedure is reasonable.

Although data briefly supported the conversion to a VBG, this option is generally not considered a palatable option at this time [24]. However, it is possible to convert to current commonly performed procedures including SG, RYGB, or DS. Many advise a two-stage process with the first operation consisting of the reversal procedure. The second-phase mainstream bariatric procedure is performed a minimum of 3 months later to allow individuals who have become accustomed to loose stools to acclimate to normal bowel function and overcome some of the sensations of bloating commonly encountered during this process.

In the two-stage approach, the reversal procedure is performed first and consists of division of the bypass anastomosis with the return of normal intestinal anatomy. JIB was performed in many configurations. The likely adhesions involving the bypassed segment of the intestine and the variability of anatomy generally eliminate laparoscopy as an option. In those patients with only small intestinal anastomoses, the reversal process is addressed with the small intestinal enterectomy code, CPT 44120. The procedure consists of the resection of the jejunoileostomy bypass anastomosis and a creation of a jejunojejunostomy. Therefore, no modifier is required. For those with a jejunocolostomy, this provides for a slightly more complicated coding process. The division of the bypass anastomosis with closure of the colon opening can be addressed with CPT 44604 used to represent the work to repair a hole in the large intestine. The return of the small intestine anatomy to normal could once again use the enterectomy code (44120) as a portion of the small intestine is resected in the process of taking down the bypass and recreating continuity. The

work of the second procedure may be reflected with the appropriate initial bariatric procedure. In a single procedure conversion of JIB to another bariatric procedure, coding may be approached with a combination of the aforementioned two stages with the impact of the multi-procedure coding rule.

Adjustable Gastric Band Revision

Although complications following the band have relatively low rates of occurrence, three issues commonly require surgical intervention including slippage, erosion, and mechanical issues of the band and the port. Slippage presents with a greater amount of the stomach above the band than originally present at the time of insertion. Slippage generally requires a repositioning of the band. However, if slippage has led to significant ischemia of the stomach or if slippage is recurrent, removal of the band may be necessary. Repositioning the band is best addressed with CPT 43771. This code specifically reflects revision or repositioning of the band. When one considers removal with a plan to replace at a later date, CPT 43772 is the best option.

Erosion, like recurrent slippage, is best treated with removal of the band. Removal may be performed with an open, laparoscopic, or even endoscopic approach. In addition, the reservoir or port should be removed as the opportunity to replace the band at a later date is not possible. An open approach for removal of the band is likely to require the use of the unlisted stomach code, 43999. Although a hole may be present, the tissue surrounding the stomach generally sealed the opening such that a free leak into the peritoneal cavity is not present. A repair of the hole may be possible, but it is commonly done by creation of a gastrotomy with suture closure from within the stomach. This may also be addressed appropriately with CPT 43501 used for suture repair of bleeding gastric ulcer. Unlike with other revisional surgeries where laparoscopy fails to address procedures, here it is the open code set that fails to provide coverage. Once again, the laparoscopic removal of the band alone can be coded with CPT 43772. However, if complete removal of the band and the reservoir is performed, CPT 43774 is used. Finally, some presentations of erosion occur when the band has eroded such that more than 50 % of the band device is intraluminal. It is possible in this circumstance to endoscopically remove the band component, while the reservoir is removed through an abdominal skin incision. The endoscopic removal commonly requires the cutting of the band with a stone lithotripter. This may be coded with the upper endoscopic removal of a foreign body, CPT 43247. In addition, the open removal of the reservoir is addressed with CPT code 43887.

Finally, other common issues involving a revision or removal of the band device are due to malfunction of the band itself. Especially problematic for band insertions performed early in the learning curve, flipping of the reservoir renders the device unusable. Repositioning of the reservoir is done through a skin incision and limited to the subcutaneous space. This is coded with CPT code 43886. It is possible that damage can occur to the band, tubing, or reservoir during the insertion process. Moreover, an errant needle passage during an adjustment may damage the tubing

Table 19.12 Adjustable gastric band codes

CPT code	Approach	Procedure components
43770	Laparoscopy	AGB insertion
43771	Laparoscopy	Revision/reposition of band component
43772	Laparoscopy	Removal of band component
43773	Laparoscopy	Removal and replacement of band component
43774	Laparoscopy	Removal of both band and port components
43843	Open	AGB insertion
43886	Open	Revision of port component
43887	Open	Removal of port component
43888	Open	Removal and replacement of port component
43999	Open	Unlisted stomach procedure

CPT codes used to address insertion, reposition, or removal of the band or its two components

and cause a leak. Efforts to identify a leak may include fluoroscopic guided adjustment of the band with dilute contrast. Leaking of the contrast from the reservoir or tubing may be visible on the fluoroscopic images of an esophagram or upper GI series (coding for band adjustment with fluoroscopic guidance is provided above). Once a leak is identified, removal and replacement of the device is needed. Removal of the band and tubing alone is coded with CPT code 43773. As described above, the removal of the band and the reservoir is coded with CPT code 43774. Removal and replacement of just the port component is coded with 43888 (Table 19.12).

In addition, failure of the AGB due to slippage or simply poor weight loss may lead to a simultaneous conversion to another bariatric surgical procedure. Once again, coverage for this revision may be inconsistent unless an obvious anatomical issue has been identified. The removal of the band and the reservoir is coded with CPT code 43774. Then, the primary procedure code of sleeve gastrectomy (43775) or gastric bypass (43644) is used to reflect the actual procedure performed.

Sleeve Gastrectomy Revision

Although SG is the latest operation adopted by mainstream bariatric surgical practice, enough time has elapsed since its description that there are now patients who require revisional surgery [13]. Indications for revisional procedures may once again rely upon anatomical or physiologic issues including sleeve enlargement, leak, stricture, or recalcitrant gastroesophageal reflux. Still others will seek revision or conversion to another operation for recurrent or inadequate weight loss.

Indications that do not involve a discussion of recurrent or persistent morbid obesity may once again allow the patient to avoid the commonly required supervised weight loss program and psychological evaluation required for initial bariatric surgeries. Weight gain that may be attributed to enlargement of the sleeve may allow for a similar approach for receiving approval for revision. In the end, the indications

ultimately provide two common pathways for revision: repeat sleeve resection or conversion to a RYGB or DS.

A repeat SG has been described by Gagner and Rogula [25]. The clinical outcomes have been compelling, but the risk of morbidity is, as anticipated, much higher than the original surgery. In the end, if a laparoscopic repeat SG is completed, the options for surgical codes include the primary SG code 43775 or the unlisted gastric code 43659. If this procedure were to require an open approach, then the code 43843 is the best option for both the initial SG and a repeat SG. Challenges including simultaneous hiatal hernia repair or extensive lysis of adhesions can be identified, with appropriate documentation, by using the -22 modifier. This may only be used with standard codes 43775 or 43843. The -22 modifier may not be used with an unlisted code.

On the other hand, a conversion to a RYGB may help with medically recalcitrant GERD, stricture, or failure of weight loss. In general, the amount of adhesions that must be divided to perform this procedure is limited. As a result, one is likely able to use the principal corresponding laparoscopic or open RYGB codes 43644 (laparoscopy) or 43846 (open). Extensive lysis of adhesions or other exceptional circumstances may be justified by the -22 modifier. For an open revision of an SG to a RYGB, the revisional open code 43848 provides a reasonable alternative.

Failure of weight loss may also lead to conversion of the SG to a DS. There is no laparoscopic code for duodenal switch. Therefore, the conversion would involve the formation of the duodenoileostomy and the ileoileostomy. These may be reflected accurately with 44202 for each anastomosis. It would be appropriate to use the -52 modifier for reduced services in that no actual resection is being performed with this procedure. The open procedure may be best reflected by using the open duodenal switch code 43845 with the -52 modifier. Or, one can also use the codes for open enteroenterostomy of 44120 and 44121 for the duodenoileostomy and ileoileostomy, respectively.

Finally, a leak at the angle of His may require a completion gastrectomy with esophagojejunostomy and formation of Roux-en-Y anatomy. This may be reflected for an open approach with use of the total gastrectomy code with Roux-en-Y reconstruction (CPT code 43621). Less likely, a laparoscopic procedure may be utilized and this is best reflected with the unlisted laparoscopic stomach code (CPT code 43659).

Gastric Bypass Revision

Patients that have undergone a prior RYGB may require additional surgical intervention for weight regain or an anatomical or physiologic issue. Evaluation for recurrent morbid obesity following a RYGB may demonstrate an enlarged gastric pouch, a staple line disruption or development of a gastrogastric fistula, or an inadequate Roux limb length. As described above, obtaining authorization for gastric bypass revisional surgery aimed at addressing recurrent morbid obesity is heavily

dependent on a patient's policy. Addressing weight regain may include surgical resizing of the gastric pouch with resection, endoluminal folding, or extraluminal restriction with the addition of an adjustable gastric band. The surgical approach for reducing the size of the gastric pouch generally involves excision of the distal pouch and repeat gastrojejunostomy. This work performed with a laparoscopic approach may be reflected with the unlisted stomach code (43659) or use of the primary gastric bypass procedure (43644) with the -52 reduced service modifier. The open procedure is best represented with the CPT code 43848 for revisional gastric restrictive procedure. These approaches are also appropriate for revisional surgery involving resection of a gastrogastric fistula which functionally can eliminate the benefit of the bypass.

Endoscopy has also been used for recurrent morbid obesity. The two procedures previously described are the StomaphyX® and the Restorative Obesity Surgery, Endoluminal (ROSE). Both procedures created endoluminal folds working to reduce capacity of the gastric pouch and provide greater restriction through a reduced aperture of the gastrojejunostomy. The StomaphyX® device has been removed from the market, while the device for the ROSE procedure, g-Prox® from USGI Medical, Inc., remains available on a very limited basis. Most importantly, data supporting these procedures is limited. As a result, the unlisted gastric code 43999 is used to reflect this work.

The addition of an adjustable gastric band to a bypass has been reported with limited long-term data. When performed laparoscopically, the standard laparoscopic insertion of adjustable gastric band is used (CPT code 43770). The open approach utilizes CPT code 43842.

Although gastric pouch size and the development of a gastrogastric fistula are common reasons for weight regain, it is also possible that the amount of bypass is inadequate. Moreover, the addition of malabsorption is easily provided with shortening the common channel. Altering Roux limb length will require a revision of the enteroenterostomy. Takedown and reformation of the enteroenterostomy anastomosis are well represented with CPT code 44120 for open procedures and 44202 for laparoscopic procedures.

Finally, a recent trend consists of conversion of a gastric bypass to a duodenal switch [26]. The components of the procedure require a gastrogastrostomy and resection of the greater curve of the stomach for formation of the sleeve. The intestine component may include complete return of normal intestine anatomy with reversal of the Roux-en-Y in the proximal intestine and subsequent recreation of the malabsorptive component. A laparoscopic approach for the gastric component is reflected with the use of the unlisted stomach code 43659 alone or in conjunction with use of a laparoscopic sleeve gastrectomy of 43775. Complete reversal of the proximal Roux-en-Y is well reflected with the laparoscopic small intestinal resection with anastomosis procedure code (CPT code 44202). Formation of the duodenoileostomy and ileoileostomy is well reflected with 44202 with a multiple procedure modifier of -51 or the unlisted small intestine CPT code 44238. If an open approach is used, the appropriate code set includes the unlisted stomach procedure 43999 for the gastrogastrostomy, the enterectomy CPT code 44120 for reversal of the Roux-en-Y limb, and the open duodenal switch code 43845.

The most common anatomical or physiologic indications for revisional surgery of gastric bypass include internal hernia or medically recalcitrant ulcer disease or GERD. An internal hernia results from the passage of small intestine through the mesenteric defects created by formation of the Roux limb: Petersen's defect and enteroenterostomy defect. The hernia can be commonly addressed with laparoscopy. This is best reflected by the use of the unlisted laparoscopic hernia repair CPT code 49659. If an open approach is used, the more specific reduction of internal volvulus is used (CPT code 44050). Medically recalcitrant GERD, ulcer disease, and stricture remain additional indications for surgery. In addition to repair of a hiatal hernia, the treatment of both GERD and ulcer with stricture is likely to require a reduction in pouch size or a revision of the gastrojejunostomy described above. Although coverage remains limited, delivery of thermal energy to the lower esophageal sphincter with endoscopic means with Stretta procedure is also used for the treatment of GERD and can be coded with CPT code 43257.

Duodenal Switch Revision

DS remains the only version of the BPD that has gained popularity within the United States. Patients who have undergone the DS generally benefit from the most aggressive bariatric procedure resulting in the greatest amount of weight loss. In fact, at times, the malabsorptive component of the procedure is so potent that a revision is needed to alter the length of the intestinal segments to provide greater absorptive capacity. This is generally done with a lengthening of the common channel. Although a complex proposition of where the bowel is divided and reconnected to provide predictable outcomes, the work for the procedure is reflected in either the laparoscopic or open enterectomy codes (44202 or 44120, respectively) with the -52 reduced service modifier to reflect the lack of a resection of intestinal segment. In fact, reversal of the malabsorptive component may be completed. In this circumstance, yet again, the enterectomy codes would be an appropriate representation of the procedure performed. In this circumstance, it is highly likely that a resection of intestine will be performed with each anastomotic reversal (duodenoileostomy and ileoileostomy). Therefore, the reduced service modifier is likely not necessary. These approaches can commonly address the malnutrition seen by some patients.

On the other hand, other patients experience recurrent morbid obesity despite this aggressive procedure. It is unlikely that these patients will tolerate a shortening of either the alimentary limb or common channel lengths. Vitamin and mineral deficiencies in addition to protein malnutrition are significant concerns with this approach. Therefore, a SG revision using a smaller bougie may provide the opportunity for greater restriction. This procedure is best reflected with the unlisted stomach code for either the laparoscopy (43659) or open (43999) approach.

Innovative Procedures and Future Directions

As the epidemic of obesity spreads, there exists a growing interest to improve upon the success of bariatric surgical procedures through primarily less invasive techniques. To date, gastric plication, mini-gastric bypass, stomach intestinal pylorus-preserving surgery (SIPS), Endobarrier™, and intragastric balloons have yet to demonstrate adequate short- or long-term data to justify a specific CPT code. As a result, these procedures, if approved, would be addressed with the unlisted stomach and/or small intestine code (laparoscopic 43659 and 44238, open 43999 and 44799, respectively). The one recent addition to the CPT code taxonomy for bariatric surgery is the vagal blocking VBLOC™ procedure from EnteroMedics, Inc. It has received a CPT category III designation of 0312T.

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Chapter 20
Trauma, Critical Care, and Emergency General Surgery Coding

Michael Sutherland and Kyle Kalkwarf

Introduction

Twenty-five years ago, a survey of general surgeons showed that 40 % preferred to not treat trauma patients and 30 % said they would not take trauma call if it were not mandatory [1]. Reasons provided included increased time commitment, legal risk, and less reimbursement for trauma patients. These reasons were not without merit as demonstrated by more than 90 % of survey respondents believing that trauma care required a greater time commitment, and half of the survey's respondents expressed that trauma call had a negative impact on their practice. This was not surprising considering the majority of participants reported they were compensated on less than a quarter of trauma patients they treated [1]. This disparity in compensation was further demonstrated by a subsequent article that showed a radiologist billed more than trauma surgeons for films that were read the morning after they had been acted on by the in-house trauma surgeon [2].

Despite these beliefs that trauma patients were a financial liability, more recent analyses have demonstrated that trauma can serve as an effective revenue source [3], especially when insured patients [4] and the "halo effect" of all care provided to patients [2] are taken into account. Additional studies have shown that the most severely injured patients provided the largest positive margin, especially when they are treated at centers capable of caring for their injuries [4, 5].

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In addition to improved insurance coverage and accounting for total care provided to patients, improved coding for both nonoperative and operative care has also improved reimbursement for surgeons caring for trauma and critically injured patients. Surgeons have traditionally been poor at fully documenting the care they provide for patients because of inefficient use of Current Procedural Terminology (CPT) codes and modifiers as well as underusing other tools for achieving maximum reimbursement [6]. This under-coding has increased with the expansion of nonoperative and critical care management of trauma patients, where coding involves knowing how to effectively use evaluation and management (E/M) codes. Therefore, in addition to knowing how to code for major surgical procedure codes, proper documentation for all phases of care by all members of the treatment team is essential to ensure fair reimbursement for the trauma surgeons and financial success for hospitals taking care of trauma patients.

Evaluation and Management

Critical care and Emergency General Surery (EGS) coding is a major component of trauma reimbursement and it involves the appropriate Evaluation and Managment (E/M) services. The key aspects of E/M coding in this population of patients is in understanding of four key phases of care: the initial evaluation of the patient, subsequent care during the hospitalization, discharge coordination, and critical care management. These phases of care can be linked to operative procedures, global periods, readmissions, and other complicating factors which are key to understanding the proper coding of these encounters.

Coding for trauma begins when a patient presents to the emergency room and nurses record the findings of a multisystem physical evaluation as the physician completes the history and the primary and secondary surveys. This information is then incorporated into the surgeon's documentation as a comprehensive history and a comprehensive physical exam. The reported history and exam should meet the 1997 CMS guidelines that require two bullets from each of the nine organ systems to constitute a comprehensive physician exam. The history should be comprehensive and include a complete review of systems and past family and social history. Once the comprehensive history and physical exam have been documented, the E/M requirements are the same for the two highest levels of coding, and the complexity of decision-making determines if the encounter qualified for the highest or second highest level [7]. Decision-making consists of the number of diagnoses or treatment options, the quantity and complexity of data to be reviewed, and the risk of complications including morbidity or mortality. Based on this, trauma patients with multiple injuries or those requiring emergency surgery qualify for the highest level of risk and thus the highest level of E/M code as long as the documented history and physical examination meet the previously mentioned requirements [6]. When patients are too sick to provide their medical history, review of systems, or other past history, the surgeon must document that and may claim credit for a comprehensive history [7]. When a comprehensive history, a comprehensive examination, and high complexity decision-making are

documented, the surgeon may use the highest level E/M code for the services performed. Under these circumstances the initial care is documented with the set of codes, 99221–99223 for patients being admitted to the hospital. In the aforementioned example, 99223 is the appropriate code used for patients admitted to the hospital under an inpatient status. In circumstances where the patient is placed in observation status, the appropriate code from the set 99218–99220 would be used. In the previous example, if the patient is placed in observation status, the code 99220 would be used.

The initial hospital visit may be in the form of a history and physical examination for admission or it could be in response to a consultation from another provider who is the admitting provider. When caring for Medicare patients, the admitting provider should append the modifier "AI" to the code for the initial visit indicating the service provided represents the admission event. Other insurance companies may have similar requirements, and familiarity with the specific rules of local insurance companies is advised to minimize the risk for rejected claims.

Subsequent hospitalization days may be billed for the services provided by the admitting physician or another member of the group who is responsible for the patient for that day. These charges may be submitted when the patient has not undergone a procedure by the physician or another physician in his or her specialty within the same billing group that has initiated a global period. If the patient is in a 10- or 90-day global period and the postoperative care is typical for that surgical procedure, the care provided would be included in the global payment and would not be separately reportable. The key components of coding the subsequent care of the patient include the level of interval history, detail of the examination, and complexity of medical decision-making. The subsequent care is coded with CPT codes 99231–99233 for patients admitted to an inpatient status and CPT codes 99224-99226 for those admitted to obervation status [7].

Discharge work is reported and coded based on the admission status of the patient and the duration of the work performed. Patients admitted to an inpatient status are treated differently than those in an observation status and differently than observation patients who are discharged on the same day as admission. The CPT code used for reporting this work for inpatients and observation patients is dependent on the amount of time spent by the provider in the direct coordination of the patient's discharge and completing the paperwork, discharge summary, and orders necessary to safely transition the patient to the next phase of care. For inpatients, when less than 30 min of time is required to accomplish these tasks, CPT code 99238 is used to report the work, while 99239 is used for patients requiring greater than 30 min. The work of discharge for observation patients would be reported with the code 99217 regardless of the amount of time spent coordinating the discharge. Patients who are being discharged by a physician within the specialty and group which initiated a global period for the patient are not able to report this work as it is captured within the global payment when the patient is discharged within the 10 or 90 days of the global period.

Observation patients who are admitted and discharged on the same day present a unique circumstance that has a series of three codes to describe this work. These codes are based on the complexity of work in the initial evaluation, and the requirements are the same for the inpatient and observation initial care codes. These codes

Initial and subsequent care

	Inpatient initial evaluation	Observation initial evaluation	Observation with discharge the same day	Inpatient subsequent care	Observation subsequent care
Low complexity	99221	99218	99234	99231	99224
Intermediate complexity	99222	99219	99235	99232	99225
High complexity	99223	99220	99236	99233	99226

Discharge codes

	Inpatient <30 min	Inpatient >30 min	Outpatient
Discharge code	99238	99239	99217

have additional value for the work of discharge included in the code, as it would not be possible to report more than one E/M code on a single date of service. CPT codes 99234–99236 are used to report this work. Special care should be taken to ensure that patients discharged on the same calendar day have their initial evaluation code changed to reflect the same-day discharge by utilization of this single new code.

Operative Care

In general, the coding for surgical procedures for trauma and emergency general surgery is the same as the coding for elective general surgery cases. There are several specific circumstances which arise in the care of the trauma and emergency general surgery (EGS) patient that require further explanation and will be covered in this section. In order to accurately report all of the work performed in a given operation, a good understanding of the principles of global periods and correct coding guidelines is required. Correct coding guidelines dictate which codes may be billed together and which are considered components of a more comprehensive code. A reliable up-to-date print resource or computer program with current correct coding rules and global periods is essential to optimizing surgical coding. Trauma and EGS patients will frequently have multiple procedures being performed during a single operation, and the relationship between these codes can become complex. At a minimum referring to the description and the introductory language in the CPT manual will provide guidance on the components of a procedure included in the code. For example, it would be incorrect and inappropriate to report the work of an exploratory laparotomy (CPT code 49000) when a small bowel resection with anastomosis was also performed (CPT code 44120). This is because the exploratory laparotomy is considered to be a component of the more extensive small bowel resection. The following are descriptions of special situations in trauma and EGS which require further elaboration.

Damage Control Laparotomy

Trauma care has evolved over the past 35 years with the advent and expansion of nonoperative management, which combined with damage control surgery has resulted in improved outcomes [8]. Damage control surgery typically involves a multistage approach where the goal of initial surgery is to stop life-threatening bleeding and contamination. Subsequent definitive repairs are then performed after the lethal triad of hypothermia, acidosis, and coagulopathy is corrected and the patient is stable enough to undergo more prolonged procedures [9].

Because of the complexity and range of injuries treated with damage control surgery, no CPT code adequately describes all of the potential combinations and permutations of the procedures that may be required [10]. Therefore, it is more efficacious to use multiple separate CPT codes to describe the work, as opposed to consolidating multiple procedures into a single damage control surgery CPT code. All CPT codes that appropriately describe the specific repairs, excisions, anastomoses, or drainage procedures that were performed should be selected with the primary or most valuable surgical procedure is listed first [10]. For a laparotomy in which nothing is repaired, removed, or reconstructed, a negative exploratory laparotomy, may be reported using CPT code 49000 [10]. It is helpful to document in the operative report when the procedure is completed with the intent of returning to the operating room in the future for repeat evaluation. This annotates the intent to return to the operating room would reduce misunderstanding of the intent to return for a second procedure when coding the subsequent procedure.

Modifiers become a key component to the correct coding of surgical procedures in the trauma and EGS. Elective procedures infrequently result in a return to the operating room or the use of codes describing the sequencing of multiple procedures. With trauma and EGS surgery, multiple procedures and trips to the operating room are much more common, and the correct use of modifiers is essential to correctly describe the work performed. This is important for correct coding and to avoid misrepresentation of the work that was performed. The three modifiers related to repeat operations within a global period are modifiers 58, 78, and 79. Each has a distinct purpose and use and care should be taken to ensure that they are used as described. These modifiers are appended to the CPT code reporting the second or subsequent procedure. Modifier 58 is used to describe work related to the same condition that completes or continues work done at the first procedure. This is in contrast to modifier 78 that is used to describe an *unplanned* return to the operating room to address a complication of the original surgery. Modifier 79 is different from the previous two modifiers in that it describes an operation for an *unrelated* condition performed by the same surgeon or member of the same billing group within the global period of another procedure.

Separate from the multiple procedure modifiers is the need to describe work that is less than what is described by the CPT code. Modifier 52, reduced services, should be used to describe work performed during the initial operation if all components of the operation are not performed. For example, if at the initial operation a

small bowel resection is performed and the bowel is left in discontinuity with the intent of reanastomosis at a later time, the procedure would be reported with CPT code 44120-52 to indicate that the anastomosis was not performed. At the subsequent operation, CPT code 44130-58 would be reported to describe the reanastamosis of the stapled ends of the small bowel.

For re-exploration that involves reopening, completely exploring, and irrigating the abdomen, where no other major procedures (e.g., bowel anastomosis or resections) are performed, report CPT code 49002 (reopening of recent laparotomy). This code is useful to describe a procedure that may be used in instances of trauma, sepsis, or ischemic bowel surgery to examine the progress of healing, check on the integrity of an anastomosis, detect missed injuries or further ischemia, and irrigate the abdomen [10]. However, if a more extensive abdominal procedure is required in the same operative session as the re-exploration of the laparotomy, then coding for re-exploration of the laparotomy (49002) should not be used, as it is considered inherent to the more extensive procedure and is not separately reportable [10]. The more extensive procedure performed or the reopening laparotomy should be reported with the modifier 58 appended to the CPT code to describe the intentional planned return to the operating room for this second procedure.

Abdominal Closure

After the completion of an abdominal operation in critically ill patients the decision of definitive versus temporary closure with subsequent takeback must be made based on the need for future reevaluation. When the surgeon decides to delay definitive clousre, it has become commmon to perform temporary abdominal closure with a negative pressure device. The application of this device may be reported using CPT codes 97605 and 97606 depending on the surface area treated. CPT code 97605 is used when the wound is less than 50 sq cm, and CPT code 97606 is used when the wound area is greater than 50 sq cm. These codes can be reported with the initial operation, subsequent operation, or definitive post-fascial closure if the skin is left open and managed with a negative pressure wound management system.

At the time of re-exploration, midline incisions and abdominal wounds often require debridement to healthy tissue before the final closure. CPT codes 11042–11047 can be used for these procedures and they are based on the extent of debridment as described int eh accompanying chart [10].

Depth	Skin and subcutaneous tissue	Skin, subcutaneous tissue and muscle	Skin, subcutaneous tissue, muscle and bone
First 20 sq cm or less	11042	11043	11044
Each additional 20 sq cm or part thereof	11045	11046	11047

When an open abdomen is closed primarily, CPT code 49900 is appropriate. If, however, there is a fascial defect that has developed which can be closed primarily to prevent a fascial hernia, report CPT code 49560 (repair initial incisional or ventral hernia; reducible). This includes any isolation and dissection of fascia or a hernia sac, reduction of intraperitoneal contents, fascial repair, and soft tissue closure. Additionally, if the fascia cannot be easily or safely approximated and mesh is needed to assist with closure, the implantation of mesh or other prosthesis is described with the use of an add-on CPT code 49568 (implantation of mesh or other prosthesis for open incisional or ventral hernia repair or mesh for closure of debridement for necrotizing soft tissue infection) [10].

Component separation to achieve closure of large fascial defects or ventral hernias is a commonly used technique to assist in definitive closure. The muscle flap code 15734 (muscle, myocutaneous, or fasciocutaneous flap; trunk) is the appropriate code to report; it is reported twice to represent the mobilization of the myofascial flap on both sides and is paid at 150 % of a unilateral component separation (modifier 59 and 51). Alternatively CPT code 15734 may be used with modifier 50 to discribe the bilateral procedure with the same affect on how it is paid [10].

Critical Care

A critical illness or injury acutely impairs one or more vital organ systems to the point where there is a high probability of imminent or life-threatening deterioration in the patient's condition. As a result, critical care medicine involves high complexity decision-making to assess, manipulate, and support vital organ failure or to prevent further life-threatening deterioration. Vital organ system failure includes central nervous system failure, circulatory failure, and shock, renal, hepatic, metabolic, respiratory failure. It is important that both the severity of the injury or illness and the care being provided meet these requirements in order to report critical care services [6].

In addition to meeting the severity of illness requirement, the ability to report critical care services is also based on the availability of the surgeon and time spent caring for the patient. Time includes coordinating care with other physicians, obtaining a history from others when the patient cannot give a full and comprehensive history, or discussing the course of treatment with family members when the patient is unable to participate. The time does not have to be continuous, but be at least 30 min in total time. The time attributed to critical care may not include time spent performing separately reportable procedures. The total time spent meeting these criteria should be documented in the medical record for that day of service [6, 7]. For any given period of time spent providing critical care services, the physician must devote his or her full attention to the patient and, therefore, cannot provide services to any other patient during the same period. In the time period claimed for provision of critical care, the physician must be at the bedside or on the floor or unit with the patient, able to immediately respond to the patient [7].

Even if the documentation guidelines for the history, physical exam, or decision-making are unmet, the work and time spent may be reported and are reimbursable as "counseling and coordination of care." CPT defines these activities as follows: This includes time spent with parties who have assumed responsibility for the care of the patient or decision-making whether or not they are family members (e.g., foster parents, person acting in loco parentis, legal guardian). The extent of counseling and/or coordination of care must be documented in the medical record and must comprise more than half of the time spent taking care of the patient.

In addition to the differences in requirement for billing critical care, the documentation for billing is different than standard E/M billing as well. Since the primary determinant of the billable code is time, the total amount of time spent with the patient must be reported in the note. This documentation should include that the total time does not include time spent in the performance of procedures. When practical it is good practice to write down the actual times counted toward the critical care management of the patient (e.g., 08:15-09:22). Only one physician may bill for critical care services during any single period of time. More than one physician may report critical care services in a day for the same patient as long as they are not in the same specialty and billing group. The documentation should sufficiently explain how the patient meets the definition of a critically ill or injured patient and the care that was provided meets the definition of critical care. There are no specific bullet point requirements for the documentation to meet the requirements for critical care.

Critical care services may not be billed separately in a global period unless the critical care is a significant and separately identifiable service that is over and above the typical postoperative care performed for the procedure. If the service is separate and distinct, the modifier -25 may be appended to the critical care code to indicate that the critical care services are related to a different diagnosis and not part of the typical global period care for the procedure that initiated the global period. Minor procedures such as endotracheal intubation, arterial line placement, chest tube placement, and Swan-Ganz catheter placement are not bundled into the critical care and should be reported separately. The time spent performing the procedure should be subtracted from the total time reported for critical care.

Correct coding for trauma, critical care, and emergency general surgery is a key component to a successful practice. Specific attention to correct and optimal coding of E/M services along with paying attention to modifier use will ensure that a claim will accurately represent all of the work that was performed and mitigate the risk for denials, recoupments, or under-coding errors.

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Chapter 21
Surgical Oncology Coding

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Introduction

Just as there are increasing complexities to procedures performed for oncologic purposes, there also are increasing complexities to the coding. And as surgeons, beyond the medical record, we are in charge of the source document—the operative note. It is imperative to document thoroughly and completely and refrain from generalities in the operative note. It also is important to use certain terms in the ever more granular world of coding and documentation to ensure accuracy. Terms such as "through a separate site" or "bilateral" are necessary to define that more than one procedure was performed in that setting. Ensuring that not only the actions are described in the operative note but also the thought process behind straying from the typical scenario or planned operation should be included in the body of the document. These notations can justify why a part was or wasn't performed for purposes of billing for that procedure.

The Notion of the "Typical" Patient

In the area of surgical oncology, as one thinks about reimbursement for cancer operations, one needs to remember that not all cancer surgery is performed by fellowship-trained specialists in academic centers, and in fact most cancer surgery (be it breast,

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colorectal, or otherwise) is performed by general surgeons. As much as the uber specialist would like to get "extra" reimbursement for his or her advanced training and skill set, that is not the system within which we work. As described in the CPT/RUC chapters, each CPT code descriptor is valued with a typical patient vignette as the anchor such that a code for colon resection would not always be used for cancer resections but any colon resection. In the application of this system, surgeons are "relatively overpaid" when they perform an easy colon resection that does not take very long and "relatively underpaid" when the case is more complex. Surgeons and practices that take on the more complicated cases are currently disadvantaged in the current system. The use of the CPT modifier 22 for increased procedural work is not uniformly or easily reimbursed but is currently the only mechanism for capturing this work. Codes have been developed for the added work related to many oncologic procedures which will be described in this chapter.

Gastrointestinal Oncology

Across the spectrum of oncologic disease of the GI tract, there are some important differences that distinguish the oncologic from the nononcologic patient. For the esophageal code set, there is no differentiation between benign and malignant disease, but in the stomach excision section, there are separate codes for 43610 excision of benign gastric lesion and 43611 for excision of gastric malignant lesion. The reimbursement difference is approximately 25 % higher for the malignant code based on the increased work required. At the point one performs a partial or total gastrectomy, these distinctions are lost.

Lesions excised from the duodenum or localized resections of the duodenum while certainly more intense and difficult than in the jejunum are not given their own codes, and this is a shortcoming of the current classification. At the time the intestinal small bowel codes were developed, it was not as common to perform a resection of the third or fourth portion of the duodenum or a transduodenal resection of a villous adenoma. The granularity has yet to be developed or offered as the numbers of these cases being performed are so small and they fall into the category where surgeons performing these procedures will be relatively underpaid. So the code for excision of lesion via enterotomy 44110 and the code for enterectomy 44120 are used for duodenum, jejunum, and ileum. The above discussion similarly applies to laparoscopic approaches to the small bowel.

Lymphadenectomy

There are several procedures where lymphadenectomy is an integral portion of the procedure and may be included in the primary procedure itself. Examples include the open and laparoscopic colectomy codes (CPT 44140–44160, 44204–44212).

However, if an additional lymphadenectomy is performed for oncologic purposes, an additional lymphadenectomy code for removal of that lymph node basin is documented. For example, an open total gastrectomy with regional lymphadenectomy would also include abdominal lymphadenectomy (CPT 38747) in addition to the primary code for the procedure. If additional lymph nodes are removed with a Whipple procedure, CPT code 38747 also can be added to the primary procedure code. There are codes for pelvic and retroperitoneal lymphadenectomy as well (38770, 38780).

Colorectal Resections

Resections of the colon and rectum are stratified into both laparoscopic and open approaches as well as the location of the anastomosis, when applicable. Resection of the right colon with an ileo-colo anastomosis is separated from other colon resections with colo-colo anastomoses. Additionally, if an anastomosis is low in the pelvis, the low pelvic anastomosis codes are applicable (44207, 44208, 44145, 44146). The lymph node harvest is considered included in the colon and rectum resection codes, and additional lymph node resection codes are not applicable. Modifier -22 can be applied to these procedures if the resections are more difficult due to previous procedures, large tumors adherent to adjacent structures, or other causes resulting in increased procedural time. Please refer to the colorectal chapter of this book for a broader description.

Skin Malignancies

The appropriate coding for the excision of skin malignancies is often misunderstood. When a malignancy arising from the epidermis or dermis is excised, excision codes 11600–11646 are appropriate no matter the depth of the excision. The breadth of the excision, however, is defined in the code. The breadth of the excision includes the lesion and its margins. For example, a 1 cm lesion on the trunk with a 2 cm margin would have a total excision of 5×5 cm (CPT code 11606). If the depth or complexity of the excision is not accounted for by the code, then modifier -22 can be applied to bill at a higher level as is described above.

Soft Tissue Tumors

Tumors arising from the soft tissue, on the other hand, are coded based on size of the tumor as well as location in relation to the fascia. These are applied equally to benign and malignant tumors. The breadth and the depth are defined in the codes.

Documentation of the size of the lesion with the included margins as well as the tumor's location above or below the level of the fascia must be included to appropriately capture the coding. There are over 30 codes in these areas of the CPT book all in the musculoskeletal section by site. Each site has subcutaneous, subfascial, and radical resection distinctions based on the extent and primary location of the tumor. The radical resection distinction implies a more extensive resection and is more likely but not required to be a malignant tumor pathology.

Soft tissue sarcomas of the retroperitoneal cavity are difficult to code appropriately. The primary code for removal or destruction of an intra-abdominal tumor, cyst or endometrioma, peritoneal, mesenteric, or retroperitoneal tumor is based on the size of the largest tumor involved (49203-5). These codes do not discriminate between benign and malignant tumors. For those more complex malignant tumors, it is important to code for additional organs that may be resected en bloc with the primary tumor; however, reduced procedural modifiers may apply in these situations. If the vena cava is resected, there are no discrete codes to account for this portion of the procedure, but again modifier -22 would be applied with appropriate documentation. Reconstruction of the vena cava is accounted for with code 34502.

Skin and Soft Tissue Reconstruction

When the excisions are reconstructed, simple closures are included in both the skin and soft tissue malignancy codes. However, if more complex closures or local advancement flaps are required to reconstruct the defect, then appropriate codes may be applied. For example, a skin malignancy at the ankle excised with margins to a total of 6×6 cm, code 11606 would apply. Additionally, CPT code 14021 would be applied to account for the local advancement flap used to close the defect. Location and the total area of the defect stratify the local advancement flap codes. Alternatively, a skin graft placed over the defect would be coded in addition to the excision code. If local advancement flaps or grafts are not required to reconstruct the defect, intermediate and complex layered closure codes may be appropriate. These codes are based on the location of the defect as well as the length of the defect.

Hepatobiliary

Resections of the liver are based on whether a wedge (47100) was resected or a partial or complete lobectomy (47120–47150) was performed. There are no codes accounting for a segmentectomy or large nonanatomical wedge resection. Again, a modifier -22 can be added to a larger nonanatomical resection. If any of these resections are performed laparoscopically, then the unlisted laparoscopic liver code (47379) would be used and submitted with the open codes as a reference. There are both open (47380–83) and laparoscopic (47370–1) codes for ablation of liver tumors.

The codes discriminate between radiofrequency ablation (RFA) and cryosurgery. One can use the RFA codes when ablating the tumors with microwave or other ablative technologies and payors are reimbursing despite the inaccurate descriptor.

Pancreatic

Pancreatic resections are based on the anatomical borders of resection in relation to the superior mesenteric vein. Pancreaticoduodenectomies are further defined by whether a pancreaticojejunostomy is performed (48150) or not (48152). Distal pancreatic resections are coded in a similar fashion but are not defined by whether the spleen is preserved. If additional lymph nodes are dissected during the procedure, then an abdominal lymphadenectomy may be coded in addition to primary procedure. Unlike several other procedures (i.e., cholecystectomy, colectomy), there are no laparoscopic codes specific to pancreatic resection. Similarly, to liver resection coding, the unlisted pancreas procedure code (48999) should be submitted with reference to the open code for reimbursement. Typically, once a process is established for the laparoscopic approach, reimbursement from payors can be successfully achieved but often the operative note and possibly a letter will need to be submitted with the charges.

Endocrine Tumors

Adrenal tumors can vary in size and complexity of resection. A code for laparoscopic adrenal resection, whether exploration or partial or complete resection is performed, is coded with 60650. Open resection of adrenal glands is stratified by whether an adjacent retroperitoneal tumor is resected en bloc (60545) or not (60540). Thyroidectomy procedures are defined by the amount of thyroid tissue removed and typically first stratified between whether a complete or subtotal thyroidectomy is performed. There are additional codes for thyroidectomy performed in conjunction with either limited (60252) or radical (60254) lymph node dissections.

Special Modifiers

Assistants in the Operating Room

There are often procedures that are more complex and require the assistance of another qualified individual. In teaching institutions, that qualified individual may or may not be a resident. If the assistance of another trained surgeon is required in a teaching institution, it is important to include modifier -82 as well as supporting

documentation in the body of the operative report. A phrase stating that there was no qualified resident available to assist with the procedure due to the complexity of the procedure is typically appropriate. A note of caution, if you are working with a PGY4, PGY5, or PGY6 (i.e., fellow) level resident and still feel they are not qualified, then proper documentation of why a second attending physician is required will be critical. Alternatively, if a procedure is performed at a nonteaching institute, then modifier -80 would be applied to the assistant's billing. Some procedures may not qualify for an assistant code to be billed unless precise and thorough documentation is included that justifies the use of an assistant (i.e., routine laparoscopic cholecystectomy would not justify an assistant code). If an assistant is present for only a portion of the procedure when his or her assistance is required but not present for the entire procedure, then modifier -81 should be applied. The American College of Surgeons maintains a document entitled "Assistants at Surgery" that advises payors as to which specific CPT codes would require an assistant (Never, Some of the time, or Most of the time).

Co-surgeons

Some procedures are performed with two separate surgeons performing distinct portions of the procedure. In those circumstances, a co-surgeon modifier would be added to the procedure codes. Both surgeons should list all of the appropriate procedure codes and add modifier -62. It is implied that one surgeon may be assisting the other surgeon with his or her portion of the procedure, so the assistant modifiers may be excluded. One surgeon accomplishing the intra-abdominal gastric mobilization and another performing the thoracic or cervical portions of an esophagectomy is a perfect example of using the co-surgeon modifier. Each surgeon would code the appropriate esophagectomy code(s) (43107, 43108, 43112, 43113, 43116–8, 43121–24) and append modifier -62. The Medicare payment in this situation is 125 % of the normal payment divided 62.5 % to each physician. Payment is usually seamless when the two surgeons are in different Medicare specialty designation (i.e., thoracic and general). If two physicians are of the same designation, then a descriptive letter may be necessary.

Complexity of Procedures

There are some procedures where the difficulty of the procedure may not be fully captured in the primary procedure code. Modifier -22 can be added to account for that added complexity. For example, on some reoperative cases, extensive adhesiolysis can add hours to an operation. Modifier -22 with the supporting documentation stating how much additional time above the typical time for that procedure can aid in billing for that complexity. The CPT code for adhesiolysis (CPT 58740) or

laparoscopic adhesiolysis (CPT 44180) cannot be used in these instances. Additionally, simple removal of adhesions is included in the primary procedure code. Another way that modifier -22 can be employed for surgical oncologists can be for skin malignancies with extension into the underlying tissues. Codes for malignant skin lesion excisions must be used for melanomas, squamous cell carcinomas, basal cell carcinomas, etc. Those taking care of complex skin cancers know that some of these grow to extraordinary size and depth, and those codes may not cover the complexity with removing these malignancies. It is incorrect to use the radical excision of soft tissue tumor codes for these excisions. Again, modifier -22 with supporting documentation can be used to justify billing at a higher level.

Bilateral and Multiple Procedures, Reduced Services

On occasion, particular procedures will be performed on bilateral locations or different sites. This situation may hold true if a bilateral axillary dissection is performed for melanoma, a bilateral mastectomy is performed, or more than one liver lesion or skin malignancy is removed in the same setting. Modifiers have been constructed to account for these situations when bilateral or multiple procedures are performed in one setting. Modifier -50 should be added to any procedure where the same procedure is performed on bilateral locations (e.g., complete axillary lymphadenectomy, bilateral, CPT code 38745-50). Additionally, modifier -51 can be included to note that multiple separate procedures were performed. This modifier isn't typically required for billing purposes, as most carriers will assign the modifier. Alternatively, a modifier to note that reduced services were performed and the billing should reflect that can be noted with modifier -52. This modifier cannot be used when a CPT code describes the lesser procedure or if the procedure was terminated. It can be used when less than the typical time for a procedure was used when a procedure is time based or if an inherent bilateral procedure was performed on one side. An example may be when one surgeon calls in another surgeon to do a portion of the procedure. The second surgeon would add -52 to their procedure code indicating that they only performed a portion of the procedure (i.e., did not open or close the patient). Modifier -53, however, should be applied when a procedure is terminated for extenuating circumstances or those that threaten the well-being of the patient. When there is intent to complete a procedure but the patient becomes unstable, modifier -53 could be applied.

Staged or Related Procedures

Often times, oncologic patients require multiple procedures within the 90-day global period of the primary procedure. A sentinel lymph node may be found positive on final pathology, and a completion lymphadenectomy is performed within the

global period. A Port-A-Cath may be placed after a colon resection. A re-excision of a malignant skin or soft tissue tumor may be required due to positive margins on final pathology. In those and similar instances, modifier -58 should be added to the subsequent procedures if performed during the global period. For clarification and unplanned returns to the operating room during the global period (i.e., for unexpected complications such as an anastomotic leak or postoperative infection), modifier -78 should be applied. Additionally, if another procedure is performed by the same surgeon in the global period but it is unplanned and unrelated to the primary procedure, modifier -79 would apply.

Cancer Quality

Alternative payment models as the majority payment structures are a goal of CMS to incorporate over the next few years. These models may include structures based on quality cancer care. Additionally, quality metrics in surgical oncologic care are currently being measured through various programs, including the American College of Surgeons Commission on Cancer. Appropriate nodal harvests for colon (12 lymph nodes) and gastric cancer (15 lymph nodes) are being monitored. These quality metrics, as well as some potential others, may be incorporated into these alternative payment models and affect future payments of procedures. If quality metrics are not met, the procedure could be considered incomplete and result in nonpayment.

Future Directions

There is an increasing complexity to oncologic procedures that are not necessarily accounted for with our current coding structure. For example, colon resections are not stratified based on the presence or absence of malignancy. Resections for colon malignancies can be more complex than those for benign conditions. Currently, only adding a modifier -22 may be applied to account for this complexity. Payors are not universally reimbursing at higher rates to account for these complexities even with appropriate documentation. There also are not plans currently to develop corresponding laparoscopic codes for open liver and pancreas resections. Payors are currently reimbursing at rates similar to or at the open codes. The current process of developing and valuing a new code could result in less payment for one or both of the codes for these resections. So it is recommended to continue billing as one currently is.

Conclusion

Coding for oncologic procedures should be inclusive of the complexity of the procedure as appropriate. Documentation of these procedures should be thorough and define specific qualifiers in order to allow for such appropriate coding.

Suggested Reading

1. http://www.surgonc.org/resources/coding-resources.
2. American Medical Association. Principles of CPT coding. 7th ed. Chicago: American Medical Association; 2012.

Chapter 22
Intricacies of Transplant Physician/Surgeon Coding, Billing, and Reimbursement

Hannah Alphs Jackson, Leigh Anne Mixon, and Michael M. Abecassis

Introduction

While the principles of coding, billing, and reimbursement for transplant physicians and surgeons bear significant overlap with those of all other surgical disciplines, there are sufficient differences to warrant additional comment. More specifically, congressionally mandated regulatory oversight requirements based on the National Transplant Organ Act (NOTA, 1984) that governs transplant practice in the United States have inherently resulted in unique reimbursement methodologies for transplant hospitals that have in turn created a number of mechanisms by which physicians and surgeons can bill and be reimbursed that fall outside standard E&M and CPT coding, billing, and reimbursement constructs. These relate primarily to Medicare patients, but commercial payers, for over two decades, have also instituted different care delivery and reimbursement models consisting of bundled services and payments for transplantation that differ significantly from standard models used in other healthcare disciplines.

This book is replete with details contained in other chapters that address general coding, billing, and reimbursement standards across surgical disciplines. Therefore, in an attempt to avoid redundancy, we will first cover these standard methodologies as they relate to transplant surgery only superficially in this chapter, focusing instead on delving deeper into the unique intricacies of transplantation that constitute the major differences.

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Standard CPT and E&M Codes and Transplant-Specific Differences

The Physician Payment Reform Act (part of OBRA 1989) established a schedule payment of all physician services that became effective on January 1, 1992. This act set limits on the amount that physicians would be able to charge Medicare beneficiaries and instituted the sustained growth rate as the pivot for increases in Medicare expenditures. The Medicare fee schedule, published annually, sets the RVUs for each CPT code. RVUs are in turn multiplied by the conversion factor (also set annually) to define the dollar payment for each procedure/code. This process is described in more detail elsewhere in this book. Table 22.1 shows the proposed fee schedule for transplant codes for FFY 2016 (conversion factor $36.1069), as well as the changes between FFY 2015 and 2016 for each code.

The use of modifiers for these codes is identical to that for other surgical codes, including the use of surgical assistants, and therefore will not be discussed here.

Similarly, E&M codes are used inasmuch the same way as for other disciplines, except that the modifier 57 (assessment as to whether patient has new contraindications to surgery), especially given that when patients get offered an organ, they have typically been on a waiting list for a long time not having been seen by the surgeon. In addition, there are certain v-codes for supplementary classification of factors influencing health status and contact with health services that are unique to transplant recipients (e.g., v42.0, kidney transplant status; v42.2, liver transplant status; etc.) and living donors (e.g., v59.4, kidney donor; 59.6, liver donor).

Table 22.1 FFY 2016 proposed fee schedule for transplant CPTs

CPT	Descriptor	2014 RVUs	2015 RVUs	2016 proposed RVUs	% change in proposed RVUs 2015–2016	2016 proposed unadjusted payment amount
50320	Remove kidney living donor	40.52	43.40	41.9	–3	$1,512.99
47140	Partial removal donor liver	101.45	92.80	103.59	12	$3,740.59
47141	Partial removal donor liver	111.53	123.54	123.81	1	$4,470.73
47142	Partial removal donor liver	133.66	136.21	136.49	1	$4,928.60
50360	Transplantation of kidney	68.65	69.91	70.03	1	$2,528.76
47135	Transplantation of liver	139.27	141.47	155.61	11	$5,619.01
48554	Transplantation of allograft pancreas	72.89	73.95	74.04	1	$2,673.55
33945	Transplantation of heart	141.55	141.57	141.77	1	$5,119.26
32851	Lung transplant, single	95.43	94.53	95.98	2	$3,465.80
32853	Lung transplant, double	133.15	132.06	133.75	2	$4,829.66

However, no transplant recipient global codes include the management of immunosuppression. Therefore, given that immunosuppression is a required aspect of posttransplant care of all transplant recipients in the global period and beyond, the v07.2 – prophylactic immunotherapy – can be used to reflect the extra work involved in managing and monitoring immunosuppression and therefore to justify a higher E&M level for both inpatient and outpatient care visits.

Finally, the use of "backbench CPT codes" is unique to transplantation, and these are used to bill for work not included in transplant surgery codes for donor and recipient procedures. When organs are removed from either deceased or living donors, they often need some type of "surgical preparation" before implantation into the recipient is possible. These surgical procedures are typically done "on ice," on a back table or "bench," and therefore are known as "backbench" codes. Because some of these are not necessarily "tagged" to a particular recipient, they are not typically coded or billed using the usual modifiers. There are two types of backbench codes:

1. Standard backbench codes – These represent work on all organs, assuming normal anatomy and consist of removing excess tissue and preparing vessels and other structures for implantation. These codes have not been valued by the RUC and remain "carrier-priced" even though they fall under Medicare Part B. This means that while surgeons can bill the payer (insurance carrier) for these codes, reimbursement is extremely variable, as they have no assigned RVUs in the Medicare Fee Schedule (MFS). Therefore, much like the organ removal codes for deceased donors (Part A), the surgeon can price these according to their perception of work and market pricing, but there is no guarantee that the payer will reimburse the surgeon.
2. Backbench reconstruction codes – These represent work typically done to correct anatomical anomalies, such as double vessels that need to be anastomosed together prior to implantation. These codes have assigned RVUs and are billed separately along with the recipient procedure without a modifier. Some of these codes have been valued by the American Medical Association (AMA) Relative Value Scale (RVS) Update Committee (RUC) and therefore have been assigned Relative Value Units (RVUs). Table 22.2 shows the proposed fee schedule for reconstruction codes for abdominal organ codes for FFY 2016 (conversion factor $36.1069), as well as the changes between FFY 2015 and 2016 for each code. A similar list, not shown here, exists for cardiothoracic organs.

Regulatory Oversight as Mandated by NOTA and Medicare Conditions of Participation (CoPs)

Differential coding and reimbursement principles in transplantation are rooted in the fact that transplant programs, including the role of physicians and surgeons who provide clinical services to transplant patients, are highly regulated by NOTA (see above) and subject to oversight by the Centers for Medicare and Medicaid Services (CMS). This originates from the fact that in the early 1970s, end-stage renal disease (ESRD) became an entitlement such that this condition entitled eligible patients to

Table 22.2 FFY 2016 proposed fee schedule for abdominal organ backbench CPTs

CPT	Descriptor	2014 RVUs	2015 RVUs	2016 proposed RVUs	% change in payment 2015–2016	2016 proposed undadjusted payment
50327	Prep renal/venous	6.15	6.26	6.31	1	$227.85
50328	Prep renal/arterial	5.39	5.46	5.52	−1	$199.32
50329	Prep renal/ureteral	4.98	5.26	5.18	−2	$187.05
47146	Prep liver/venous	9.38	9.59	9.56	0	$345.21
47147	Prep liver/arterial	10.94	11.03	11.13	1	$401.90
48552	Prep pancreas/ venous	6.71	6.87	6.82	0	$246.27

become Medicare beneficiaries, much like eligible adults who reach the age of 65 are automatically entitled to Medicare benefits. Therefore, the agency that preceded CMS, the Health Care Finance Administration (HCFA), within the Department of Health and Human Services (DHHS), set forth a series of ESRD regulations, including all services related to kidney transplantation. Because the vast majority of kidney transplant recipients were de facto Medicare beneficiaries, HCFA took a leading role in defining all aspects of care for kidney transplant recipients, including the ability of transplant programs to provide transplant services for Medicare beneficiaries. As other organ transplants became available, HCFA issued incremental regulations governing these, utilizing the basic framework designed for kidney transplantation. This led to a number of problems and inconsistencies across organs as certain criteria for renal organs did not apply to nonrenal organs and vice versa. To address this and other issues, in 2007, CMS issued a new set of transplant-specific Medicare Conditions of Participation (CoPs) that spelled out a number of regulations that included rules about general and organ-specific practices [1]. Briefly, according to the CoPs, all transplant programs, organ by organ, including all existing Medicare certified programs, needed to reapply to CMS for eligibility, and only if compliant with a number of new process and outcome measures, programs would be recertified de novo by Medicare [2, 3]. Subsequently, all programs must recertify every 3 years if they are to remain compliant. Moreover, any changes in the program such that it is no longer compliant (e.g., organ-specific clinical outcomes published on a public website every 6 months that fall under the required thresholds) may result in decertification during the 3-year period, until the program is back in compliance.

Organ Acquisition Cost (OAC) Centers (OACCs)

To meet Medicare CoPs, there are a number of requirements assumed by the hospital transplant program that can only be provided by physicians and surgeons but cannot be coded, billed, or reimbursed under the standard Medicare Part B fee

schedule. Failure to comply with these would render a program noncompliant with the CoPs and would threaten not only the certification of the hospital's transplant program but overall Medicare accreditation beyond transplantation. Hospitals are obligated to provide these services, which are coded and billed under Medicare Part A and reimbursed by the hospital to the physicians and surgeons using the last bastion of cost-based reimbursement in the US healthcare. The hospital bills Medicare for these services through OACCs that are reported in the hospital's annual Medicare cost report, and all costs accrued and reimbursed through this mechanism are reimbursed by Medicare on a "pass-through" basis. However, these reimbursements are auditable by the Office of the Inspector General according to the tenets of "allowable services" provided at "reasonable cost" [4, 5]. These services include but are not limited to medical directorship and other oversight functions related to nonmedical personnel, evaluation of all potential donors (living and deceased) and recipients, serial assessments of the eligibility of potential recipients both before and after placement on the waiting list, maintaining up-to-date protocols compliant with national transplant policies as specified in the COPs and by the Organ Procurement and Transplant Network (OPTN) and the United Network for Organ Sharing (UNOS), monitoring transplant outcomes and providing root-cause analyses and corrective action plans when outcomes are "flagged," and finally surgical fees for organ procurement from deceased donors.

OAC is actually a misnomer, as its name implies that these costs only reflect the cost of "acquiring" an organ. While it is true that costs incurred in the acquisition of an organ from an organ bank are included in the OACC, these represent a mere fraction of the OAC. OACs of certified transplant centers are paid by Medicare on an auditable reasonable cost basis. These payments are separate from DRG payment to the transplant center for organ transplants, and from the Medicare physician fee schedule payment to physicians and surgeons for services directly related to care provided to an organ transplant recipient. OAC payments represent one of the last areas of Medicare cost-based reimbursements for hospitals. OACCs were created by HCFA as an incentive for hospitals to maximize organ acquisition costs in an attempt to encourage transplantation by removing financial disincentives. In addition to the costs of acquisition of live and deceased donor organs, OACCs comprise other allowable costs including the salaries of personnel involved in the evaluation of any potential donors or recipients (procurement coordinators, administrative and supportive staff, social workers, financial coordinators, and medical directors (physicians/surgeons)). Also, any operating room and other ancillary services for living donors, including anesthesia and postoperative services, can be billed to the OACC. Finally, OACCs include all hospital services (inpatient and outpatient) for recipients prior to the admission for the transplant.

Relevant to this chapter, all physician/surgeon services rendered in the process of potential and recipient evaluation can be reimbursed by the hospital using a number of methodologies, including fee-for-service, hourly rates, etc., as long as Stark and anti-kickback laws are not violated. In the absence of designated transplant-specific ICD-9 or ICD-10 diagnostic codes, such as donor evaluation or recipient evaluation (includes nonmedical considerations such review of as psychosocial and financial

assessments), coding and billing for these services fall outside the scope of standard E&M codes. Moreover, hospitals get reimbursed from Medicare for OAC on a pass-through based on the Medicare cost report, and therefore, reimbursement for these services becomes budget-neutral for hospitals under Medicare Part A. It should be noted that the only exception to this rule is the professional fees for living donor organ excisions, which have RVUs assigned. In sharp contrast, organ excision for deceased donors is considered Part A and no RVUs are assigned. The harvesting surgeon sets the price based on market pricing for these procedures and is reimbursed either by the organ bank or alternatively by the hospital receiving the organ. While the regulations specify that renal organs should be included in the organ bank's cost for the kidney, no such regulations exist for nonrenal organs, and therefore the determination as to whether the surgeon's fee should be included or paid separately is determined by the surgeon and the organ bank on an organ bank by organ bank basis. In both circumstances, the charge is then passed on to the appropriate OAC and paid by Medicare on a pass-through basis for recipients who are Medicare beneficiaries. While commercial payers also pay for this through a global case rate, all billing of these fees are done through the appropriate organ acquisition cost centers (Part A). Hospitals only get reimbursed by Medicare for the proportion of Medicare beneficiaries who receive transplants, but they recover the OAC from commercial payers through the global case rate.

Non-medicare Patients and Bundled Services and Payments

While the Medicare payment schedule, with the exception of OACCs described earlier in this chapter, follows the same rules for transplant services as it does for other surgical disciplines (i.e., DRGs, CPTs, and E&Ms), commercial payers have carved out transplant services from most if not all standard medical/surgical contracts between commercial payers and hospital, instead utilizing case-rate methodologies (bundled payments for bundled services) for over two decades for transplant services. The complexities of the episodes of care, inclusions and exclusions, how bundled payments are calculated, and how negotiated contracts apply to physician/surgeon services are too complex to address in this chapter. Instead, suffice it to say that all the above are variable and that, for the most part, bundled services provided prior to surgery, and for 30, 60, or 90 "post-acute" days are included as long as the care provided is for the transplant procedure, or for any related complications. Some of these contracts also bundle physician and hospital services and may even include drugs and post-acute care related to the transplant. It should also be noted that within the organ acquisition charges described in great detail earlier in this chapter, there are also bundled services that are aggregated into an average bundled payment per transplant, but these relate only to pre-transplant care, specific to the assessment and evaluation of potential donors and recipients. Again, the details are not important here, other than to point out that bundling is a common theme in transplantation [4–6]. Under case-rate methodologies, when these include physician services,

physician reimbursement is completely unrelated to any coding and billing, so that within global contracted periods, reoperations for complications and readmissions for transplant-related complications are not reimbursed, other than through stop-loss mechanisms if the appropriate thresholds are met.

The bundling models used for transplantation are often cited when bundled services are considered for other disciplines. More recently, with passage of the Patient Protection and Affordable Care Act (ACA; Public Law 111-148), there is increasing interest in bundled payment reimbursement models. Among several provisions and programs within the ACA was establishment of the Center for Medicare & Medicaid Innovation (CMMI) to support the development of innovative care delivery models. Several demonstration initiatives around bundled payment have emerged, including the Bundled Payment for Care Improvement (BPCI) initiative and the Oncology Care Model (OCM). As further evidence of the federal commitment to this payment construct, in July of 2015, CMS announced the launch of the Comprehensive Care for Joint Replacement, a mandatory orthopedic bundled payment program. Of note, state Medicaid programs and the commercial payer industry, including self-insured employers, have also engaged in payment reform strategies that include a variety of bundled payment constructs. Surgical procedures, much as in the case with transplant surgery, often provide the fulcrum for the model design [7, 8], and as such, these episode-based models offer the opportunity for surgeons to define the episode parameters, to manage the elements within the overall episode, and to become key contributors to the design of new care delivery and payment models. Transplant surgery programs, with their unique reimbursement framework, have spent decades focused on value-based care delivery strategies including maintaining discipline around care redesign for pre-, peri-, and postoperative periods, developing a culture of provider accountability, applying standardized clinical algorithms leading to more predictable resource utilization and cost, and engaging both traditional and nontraditional partners across the care continuum, including post-acute providers. These tools have become and will continue to be the blueprint for the next generation and the evolving paradox of bundled payments [9–11].

Summary

This chapter has highlighted some of the intricacies related to surgical coding, billing, and reimbursement for transplant services and provided references for more detailed accounts of these. In brief, E&M and CPT codes used for Medicare billing for transplant services mimic those used for other disciplines with a few notable exceptions (backbench and immunosuppression codes). In contrast and as a result of congressionally mandated regulatory oversight requirements based on the National Transplant Organ Act (NOTA, 1984) that governs transplant practice in the United States, there are inherently unique reimbursement methodologies for transplant hospitals that have in turn created a number of mechanisms by which physicians and surgeons can bill and be reimbursed that fall outside standard E&M and

CPT coding, billing, and reimbursement constructs. These include services billed under Medicare Part A and include deceased donor surgical procedures as well as other services billed by surgeons to the hospital's organ-specific OACCs. While these relate primarily to Medicare patients, the same principles are used for all transplant patients, but commercial payers utilize methodologies for bundled payments that include OACs as well as all physician and surgeon work. This latter point underscores how the evolving healthcare reform landscape and the new marketplace resemble care delivery and reimbursement models instituted long ago by commercial payers for "carved out" transplantation services.

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Chapter 23
Coding for Vascular and Endovascular Surgery

Matthew Sideman and Robert Zwolak

Introduction

The changes in the field of vascular surgery have been tremendous in the past 25 years. Operations can be open, percutaneous, or hybrid. The operating suites have merged with the interventional radiology rooms to become hybrid operating rooms with state-of-the-art technology. Outpatient procedures have dramatically changed the options that surgeons and their patients have for treating many disorders. The following chapter provides some guidance and elaborates on the ever complex word of vascular coding.

Open Bypass Graft Surgery

Reporting open arterial revascularization surgery is based on the inflow artery, outflow artery, and conduit. For example, a synthetic femoral to popliteal artery bypass graft placed for a diseased superficial femoral artery, with inflow from the common femoral and outflow to the popliteal, would be called a femoral/popliteal bypass with other than vein and would be reported with CPT code 35656. Likewise, a bypass constructed with autogenous saphenous vein placed in the same position would be reported as 35556, *Bypass graft*, *with vein*; *femoral/popliteal*; or as 35583 if the bypass is performed in situ.

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In the current CPT nomenclature system, there is no difference between the above-knee and the below-knee popliteal artery for bypass reporting purposes. Additionally, the term "femoral" in CPT bypass descriptors denotes either the common, superficial, or deep femoral artery. Conduit options include "vein," "in situ saphenous vein," and "other than vein." Vein harvest and preparation is not separately reportable when saphenous vein from the same or opposite leg is reversed or left in an orthograde configuration. No extra coding is available for rendering valves incompetent. "Other than vein" reporting is appropriate when prosthetic material (e.g., Dacron or expanded polytetrafluoroethylene) or homograft or cryopreserved vein is utilized.

For lower extremity bypass graft construction, if the ipsilateral saphenous vein is inadequate, vein harvest from other extremities is performed. If the great saphenous vein is harvested from the opposite lower extremity, this is not separately reportable. When veins are harvested for lower extremity bypass from other locations, there are several "add-on" CPT codes to report the additional work. If a single piece of arm vein is harvested from the upper extremity, CPT code 35500 is reported as well as the primary "with vein" lower extremity bypass code. If the bypass requires harvest and splicing of two segments from two separate locations, CPT code 35682 is added to the base "with vein" code. If the bypass requires that a vein be spliced using three pieces from two or more separate locations, CPT code 35683 is added to the base "with vein" code. Only one of the above three codes can be reported in any given clinical situation. If deep femoral vein is harvested from one thigh, CPT code 35572 is used to describe such an extensive dissection.

Based on the introductory wording in the subsection entitled "Arteries and Veins" within the "Cardiovascular System" segment of the CPT manual, all manipulation for the purpose of "establishing both inflow and outflow by whatever procedures necessary" is bundled. This phrase is interpreted as meaning that endarterectomy or patch angioplasty at the inflow and outflow vessel anastomosis is not separately reportable.

Completion angiography is also included in the value of bypass codes. However, diagnostic angiography performed at the time of surgery is separately reportable if no prior catheter-based angiographic study is available. The addition of the -59 modifier to the imaging codes is advised for reimbursement in this situation.

Redo surgery with scar tissue surrounding the prior dissection imparts additional physician time and increases the intensity of the operation. CPT code 35700 is an add-on code that denotes "reoperation, femoral/popliteal or femoral (popliteal)-anterior tibial, posterior tibial, peroneal artery or other distal vessels, more than 1 month after original operation." CPT code 35700 may be reported in addition to the arm vein harvest or spliced vein.

Two adjuncts are available to help increase the long-term patency of the reconstruction. CPT code 35685, *placement of vein patch or cuff at distal anastomosis of bypass graft, synthetic conduit*, is an add-on used exclusively for prosthetic revascularizations. Alternatively, CPT code 35686, *creation of distal arteriovenous fistula during lower extremity bypass surgery*, is an option regardless of conduit material. These two add-on codes are submitted in addition to the base bypass CPT code.

When a patient has had a prior inflow reconstruction, a bypass that is anastomosed to the hood of the prosthetic graft at the femoral artery level proximally and

extends distally to the popliteal artery qualifies as a "femoral/popliteal" bypass for coding purposes. Likewise, some patients may have had a prior infrainguinal revascularization and then develop outflow arterial occlusive disease at the popliteal or tibial segment. Autogenous bypasses that augment the outflow from the popliteal graft level to a tibial artery are considered "popliteal-tibial" (CPT code 35571), and those that originate at the tibial graft level to a more distal outflow source would be "tibial-tibial" (CPT code 35570).

Open Aneurysm Repair

CPT codes 35001-35152 are used to report aneurysm repair using open surgical techniques. The codes are organized anatomically, and for most anatomic regions there is a pair of codes, one to represent elective repair and the other to report repair of a ruptured aneurysm. The work of these codes includes preparation of the adjacent arteries such that they will be suitable for anastomosis. This includes a localized endarterectomy if required. The type of graft used, for instance, autogenous vein vs. synthetic, is not distinguished in the codes. Thus, repair of a subclavian artery aneurysm would be reported with code 35001 whether it was performed using a segment of great saphenous vein or a segment of PTFE. Unlike endovascular aneurysm repair, most open repairs are reported with a single code.

Endovascular Repair of Abdominal Aortic Aneurysm

Endovascular aortic aneurysm repair (EVAR) is commonly reported with more than one CPT code. There are groups of codes to report insertion, positioning, and deployment of the main endograft body and associated docking limbs. Another group of codes is used for the radiologic supervision and interpretation (S&I) of this work. Catheter placement is separately reportable, as is open arterial exposure and closure, when performed.

The main endoprosthesis placement codes are 34800–34804, and the radiologic S&I code is 75952. Catheter placement codes are 36200 and 36245–36247, depending on whether nonselective or selective catheterization is required. The open arterial exposure and closure codes reported during EVAR include femoral (34812), brachial (34834), and iliac (34820). Code 34833 should be reported if the surgeon needs to suture a prosthetic graft conduit onto an iliac artery for sheath and device insertion. Code 34820 is not reported with 34833 because the latter includes the work of the former. If an artery used for device introduction requires a significant repair due to trauma caused by the large catheters and sheaths, an arterial repair code (e.g., 35226) should be reported.

Balloon angioplasty and stent deployment within the target treatment zone (e.g., the landing zone) of the primary endoprosthesis, associated with docking limbs and endograft extensions, are not separately reportable. However, when balloon

angioplasty and stent deployment are required outside the intended landing zone of the main endograft, docking limbs, or endograft extensions, they are reportable.

Other procedures performed at the time of endovascular abdominal aortic aneurysm repair that should be additionally reported include angioplasty outside the main landing zone of the device (e.g., renal artery), arterial embolization for occlusion (typically hypogastric artery), and intravascular ultrasound.

It is important to emphasize that all fluoroscopic guidance associated with insertion, position, and delivery of the endovascular components, including completion angiography, is bundled into the radiologic S&I code, 75952.

Reporting extensions can be somewhat confusing. Some of the FDA-approved devices have a modular design such that the repair must include placement of a docking limb. There are two-piece modular devices that include one docking limb. The specific code for their use is 34802. Likewise, three-piece modular devices with two docking limbs should be reported with code 34803.

If additional endovascular components, such as extensions are required, the first vessel treated with an extension is reported with code 34825, while each additional vessel that requires an extension is reported with 34826. The radiologic supervision and interpretation associated with extension placement is 75953. The S&I code 75953 is the same for the first and all subsequent extensions, such that multiple vessels treated would require the use of a -59 modifier.

At times, EVAR will be accomplished with an aorto-uniiliac or aorto-unifemoral endograft. This procedure has a distinct CPT code (34805), but the S&I code (75952) is the same as for the other EVARs. A femoral/femoral bypass graft is commonly required at the time of an aorto-uniiliac EVAR, and the add-on code 34813 should be reported to represent this work.

Arterial catheter placements are separately reportable. Most patients undergoing EVAR will have two nonselective catheters (CPT code 36200 twice, or 36200-50 depending on carrier policy), one in each femoral artery extending into the aorta. However, selective catheterization of a vascular family may be necessary (e.g., renal artery). Any separately reportable services are then added, such as stenting or percutaneous transluminal angioplasty outside of the infrarenal endograft landing zone (e.g., renal artery), embolization of arteries that do not contain an endograft (e.g., internal iliac, accessory renal, or inferior mesenteric artery), or deployment of an aneurysm pressure sensor (CPT code 34806).

Endovascular Repair of Descending Thoracic Aorta

The acronym for endovascular repair of the descending thoracic aorta is TEVAR, and reporting conventions for TEVAR are similar to those of EVAR. Codes 33880–33891 are used to report placement of the endovascular graft. The codes include all device introduction, manipulation, positioning, and deployment. Balloon angioplasty and stent deployment within the target treatment zone for the endoprosthesis, either before or after endograft deployment, are bundled into the main codes and not separately reportable. Open arterial exposure and associated closure of the

arteriotomy sites use the same codes as those described above for EVAR. Catheter placement is separately reportable, using the same conventions as EVAR. The primary TEVAR codes (33880 and 33881) differ slightly from the EVAR codes in that they include placement of all distal extensions in the distal thoracic aorta.

Proximal extensions during TEVAR are reported separately, but there is an important idiosyncrasy. The main TEVAR code, 33881, is used when the proximal landing zone is distal to the left subclavian artery origin. In this situation, an initial proximal extension would be reported with 33883, and if an additional proximal extension were required, it would be reported with 33884. However, if placement of these extensions were to result in the leading edge of endoprosthesis now covering the left subclavian artery, the operation would no longer be reported with 33881, 33883, or 33884. This would now attain the configuration of a TEVAR covering the left subclavian, and all work to this point would be reported with the main body code 33880 alone.

One cannot report distal thoracic aorta stent-graft extensions at the time of primary repair. They are bundled into 33880 and 33881. Distal extensions for TEVAR can be reported when they are performed at an operative session distinct from the main TEVAR operation. A typical case would be a patient whose aneurysm expands distally or who develops a distal endoleak some months or years after TEVAR. Code 33886 is used to report delayed distal extension(s). 33886 is reported once, regardless of the number of distal extension prostheses implanted in the descending thoracic aorta to the celiac artery origin.

Radiologic S&I during TEVAR are separately reportable. CPT code 75956 represents all S&I work associated with 33880, TEVAR covering the subclavian origin, while 75957 is the S&I to be used with 33881. Code 75958 is the S&I for proximal extension codes 33883 and 33884, while S&I 75959 is used to report S&I for distal thoracic endovascular extension(s), recalling that distal extensions are not reportable during the primary TEVAR.

Other interventional procedures performed with TEVAR may be additionally reported. Examples include innominate, carotid, subclavian, visceral, or iliac artery balloon angioplasty or stenting, arterial embolization, and intravascular ultrasound. Stenting and balloon angioplasty outside of the TEVAR landing zone are separately reportable. Open subclavian to carotid artery transposition performed in conjunction with TEVAR is reported by CPT code 33889. Carotid-carotid artery retropharyngeal crossover bypass with other than vein carried out in conjunction with TEVAR is reported with 33891.

Endovascular Revascularization (Open or Percutaneous, Transcatheter)

Codes 37220–37235 are used to describe lower extremity endovascular arterial revascularization services performed for occlusive disease. These lower extremity codes are built on progressive hierarchies with more intensive services inclusive of lesser intensive services. The code inclusive of all of the services provided for that

vessel should be reported (i.e., use the code inclusive of the most intensive service provided). Only one code from this family (37220–37235) should be reported for each lower extremity vessel treated.

These lower extremity endovascular revascularization codes all include the work of accessing and selectively catheterizing the vessel, traversing the lesion, radiological supervision and interpretation directly related to the intervention(s) performed, embolic protection if used, closure of the arteriotomy by any method, and imaging performed to document completion of the intervention, in addition to the intervention(s) performed. These codes describe endovascular procedures performed percutaneously or through an open surgical exposure. These codes include balloon angioplasty (e.g., low-profile, cutting balloon, cryoplasty), atherectomy (e.g., directional, rotational, laser), and stenting (e.g., balloon expandable, self-expanding, bare metal, covered, drug eluting).

Each code in this family (37220–37235) includes balloon angioplasty, when performed.

These codes describe revascularization therapies (i.e., transluminal angioplasty, atherectomy, and stent placement) provided in three arterial vascular territories: iliac, femoral/popliteal, and tibial/peroneal.

Iliac Vascular Territory The iliac territory is divided into three vessels: common iliac, internal iliac, and external iliac. A single primary code is used for the initial iliac artery treated in each leg (37220 or 37221). If other iliac vessels are also treated in that leg, these interventions are reported with the appropriate add-on code(s) (37222–37223). Up to two add-on codes can be used in a unilateral iliac vascular territory since there are three vessels which could be treated. Add-on codes are used for different vessels, not distinct lesions within the same vessel.

Femoral/Popliteal Territory The entire femoral/popliteal territory in one lower extremity is considered a single vessel for CPT reporting of the endovascular lower extremity revascularization codes 37224–37227. A single intervention code is used no matter what combination of angioplasty, stent, and/or atherectomy is applied to all segments, including the common, deep, and superficial femoral arteries as well as the popliteal artery (37224, 37225, 37226, or 37227). There are no add-on codes for additional vessels treated within the femoral/popliteal territory. Because only one service is reported when two lesions are treated in this territory, the most complex service is reported (e.g., use 37227 if a stent is placed for one lesion and an atherectomy is performed on a second lesion).

Tibial/Peroneal Territory The tibial/peroneal territory is divided into three vessels: anterior tibial, posterior tibial, and peroneal arteries. A single primary code is used for the initial tibial/peroneal artery treated in each leg (37228, 37229, 37230, or 37231). If other tibial/peroneal vessels are also treated in the same leg, these interventions are reported with the appropriate add-on code(s) (37232–37235). Up to two add-on codes could be used to describe services provided in a single leg since there are three tibial/peroneal vessels which could be treated. Add-on codes are used for different vessels, not distinct lesions within the same vessel. The common tibio-peroneal trunk

is considered part of the tibial/peroneal territory, but is not considered a separate, fourth segment of vessel in the tibio-peroneal family for CPT reporting of endovascular lower extremity interventions. For instance, if lesions in the common tibioperoneal trunk are treated in conjunction with lesions in the posterior tibial artery, a single code would be reported for treatment of this segment.

Multiple Territories When treating multiple territories in the same leg, one primary lower extremity revascularization code is used for each territory treated. When second or third vessel(s) are treated in the iliac and/or tibial/peroneal territories, add-on code(s) are used to report the additional service(s). When more than one stent is placed in the same vessel, the code should be reported only once. When multiple vessels in multiple territories in a single leg are treated at the same setting, the primary code for the treatment in the initial vessel in each vascular territory is reported. Add-on codes are reported when second and third iliac or tibial/peroneal arteries are treated in addition to the initial vessel in that vascular territory.

If a lesion extends across the margins of one vessel vascular territory into another, but can be opened with a single therapy, this intervention should be reported with a single code despite treating more than one vessel and/or vascular territory. For instance, if a stenosis extends from the common iliac artery into the proximal external iliac artery, and a single stent is placed to open the entire lesion, this therapy should be coded as a single stent placement in the iliac artery (37221). In this example, a code for an additional vessel treatment would not be used (do not report both 37221 and 37223).

For bifurcation lesions distal to the common iliac origins which require therapy of two distinct branches of the iliac or tibial/peroneal vascular territories, a primary code and an add-on code would be used to describe the intervention. In the femoral/popliteal territory, all branches are included in the primary code, so treatment of a bifurcation lesion would be reported as a single code. When the same territory(ies) of both legs are treated in the same session, modifiers may be required to describe the interventions. Use modifier 59 to denote that different legs are being treated, even if the mode of therapy is different.

Mechanical thrombectomy and/or thrombolysis in the lower extremity vessels are sometimes necessary to aid in restoring flow to areas of occlusive disease and are reported separately.

Selective Catheterization During Lower Extremity Intervention

The lower extremity endovascular interventional revascularization codes describing services performed for occlusive disease (37220–37235) include the work of nonselective and selective catheterization (36200, 36140, 36245–36248). Therefore, in most circumstances no separate catheterization codes should be reported when performing iliac, femoropopliteal, or tibial intervention. However, as an exception,

catheterization for a diagnostic lower extremity angiogram may be reported separately if an arterial puncture site is necessary for the diagnostic procedure distinct from that for the therapeutic procedure.

Diagnostic Angiography During Lower Extremity Intervention

Radiological supervision and interpretation codes should NOT be used with interventional procedures for:

1. Contrast injections, angiography, roadmapping, and/or fluoroscopic guidance for the intervention.
2. Vessel measurement.
3. Post-angioplasty/stent/atherectomy angiography, as this work is captured in the radiological supervision and interpretation code(s). In those therapeutic codes that include radiological supervision and interpretation, this work is captured in the therapeutic code.

Diagnostic angiography performed at the time of an interventional procedure is separately reportable only if:

1. No prior catheter-based angiographic study is available and a full diagnostic study is performed, and the decision to intervene is based on the diagnostic study.
2. A prior study is available, but as documented in the medical record:
   (a) The patient's condition with respect to the clinical indication has changed since the prior study.
   (b) There is inadequate visualization of the anatomy and/or pathology.
   (c) There is a clinical change during the procedure that requires new evaluation outside the target area of intervention.

Diagnostic angiography performed at a separate session from an interventional procedure is separately reported. If diagnostic angiography is necessary and is performed at the same session as the interventional procedure, and meets the above criteria, modifier -59 must be appended to the diagnostic radiological supervision and interpretation code(s) to denote that diagnostic work has been done following these guidelines.

Codes for Repair of Blood Vessels

Codes 35201–35286 are used to report blood vessel repair. The codes are organized by anatomic location (e.g., neck, upper extremity, lower extremity) and they are distinguished based on whether the repair is performed without using graft material (e.g., 35206, *Repair blood vessel*, *direct*; *upper extremity*), or by use of a vein graft

(e.g., 35236, *Repair blood vessel with vein graft*; *upper extremity*), or by use of a graft other than vein (e.g., 35266, *Repair blood vessel with graft other than vein*; *upper extremity*). The typical clinical application of the *Repair Blood Vessel* code family is in the trauma setting. A question sometimes arises whether a repair code should be used for an extensive injury requiring a long conduit or whether a corresponding bypass graft code should be used. In general, a very long repair will, in fact, turn into a bypass operation, and when that happens it is appropriate to use a bypass code.

Vein Procedures

CPT code reporting for treatment of superficial veins includes families of codes for traditional open stripping and removal, laser and radiofrequency ablation, and sclerotherapy. There is also a small family of codes used to report reconstructive procedures for deep veins. Finally, a group of codes is used to report vein harvest during arterial bypass surgery when the vein harvest site is distant and distinct from the arterial bypass location. This last group was described above in the arterial bypass section.

Ligation, division, and stripping of the great saphenous vein are reported with code 37722, and the much less commonly performed stripping of the small saphenous vein is reported with 37718. These are traditional 90-day global codes. Open subfascial ligation of one or more incompetent perforator veins is reported with code 37761, while the now rare traditional Linton radical subfascial ligation of perforators, including a skin graft, is reported with code 37760. Code 37785 is used to report excision of a cluster of varicose veins.

More contemporary superficial vein interventions include endovenous laser ablation of an incompetent vein, reported with code 36478 for the initial vein treated. Second and all subsequent veins on the same limb treated with laser ablation through a separate access site during the same operative session would be reported with add-on code 36479. When superficial veins are ablated with radiofrequency devices, the first vein treated would be reported with code 36475, while the second and all subsequent veins treated through a separate access site on the same limb would be reported with add-on code 36476. Codes 36475 and 36478 are 0-day global codes.

Stab phlebectomy of isolated varicosities is reported based on the total number of stab incisions performed on a single limb during the operative session. Procedures involving 10–20 stab incisions would be reported with code 37765. Operations requiring greater than 20 stabs on a single extremity would be reported with 37766. Based on concerns on the part of the CPT Editorial Panel that a stab phlebectomy code for less than 10 incisions would be misused, there is no specific Category I code for this purpose. The unlisted vascular code 37799 should be reported for less than 10 stabs. The stab phlebectomy codes have a 90-day global period. For bilateral stab phlebectomy performed during one operative session, the -50 modifier would be used when the same range of stabs were done on each side (e.g., 37765-50), while the -59 modifier would be used if different ranges of stabs were performed on the two limbs (e.g., 37766 and 37765-59).

Sclerotherapy of a single vein is reported with code 36470, while sclerotherapy of multiple veins on the same limb would use code 36471. If ultrasound guidance is used to locate and direct the injections, code 76942 can be reported once per limb.

Two additional issues are important to remember with vein treatments. First, a substantial number of Medicare Correct Coding Initiative (CCI) edits exist that prohibit simultaneous coverage. Surgeons who perform vein operations should be cognizant of the CCI edits. Second, a large portion of the vein excision operations are valued in two settings: in a facility and in the office. While physician work RVUs are the same regardless of site of service, the practice expense RVUs differ substantially. The vein surgeon should be careful to use the correct site-of-service designator.

Debridement

Debridement services may be reported for injuries, infections, wounds, and chronic ulcers. Accurate reporting of surgical debridement requires measurement of the area of wound debrided. Debridement primary codes 97597, 11042, 11043, and 11044 have a 0-day global period. The first 20 cm^2 of area debrided are reported with a primary code, and any area beyond that is reported with add-on codes in increments of each additional 20 cm^2, or part thereof. Debridement is reported based on depth of tissue removed, with the first level involving only skin, the second including subcutaneous tissue, the third to muscle and/or fascia, and the deepest reporting level involving bone. When performing debridement of a single wound, the depth is reported using the deepest level of tissue removed. In multiple wounds, the surface area of those wounds that are at the same depth are summed, but sums from different depths are not combined.

Add-on codes 11045, 11046, 11047, and 97598 are used to report debridement of each additional 20 cm^2at the three different depths: subcutaneous tissue, muscle/fascia, and bone. These three add-on codes can be reported multiple times, as appropriate. The add-on code descriptors all include the phrase "or part thereof," which means that one does not need to debride an entire additional 20 cm^2 to report the code. For example, if 30 cm^2 of skin is debrided, report the primary code (97597) plus the add-on code (97598).

Thus, the entire family of debridement codes, arranged in terms of depth of treatment is the following:

97597	*Debridement* (*e.g.*, *high pressure waterjet with/without suction*, *sharp selective debridement with scissors*, *scalpel*, *and forceps*), *open wound*, (*e.g.*, *fibrin*, *devitalized epidermis and/or dermis*, *exudate*, *debris*, *biofilm*), *including topical application*(*s*), *wound assessment*, *use of a whirlpool*, *when performed and instruction*(*s*) *for ongoing care*, *per session*, *total wound*(*s*) *surface area*; *first 20* cm^2 *or less*
+97598	*each additional 20* cm^2, *or part thereof* (*List separately in addition to code for primary procedure*)
11042	*Debridement*, *subcutaneous tissue* (*includes epidermis and dermis*, *if performed*); *first 20* cm^2 *or less*

+11045 *each additional 20* cm^2, *or part thereof* (*List separately in addition to code for primary procedure*)
11043 *Debridement*, *muscle and/or fascia* (*includes epidermis*, *dermis*, *and subcutaneous tissue*, *if performed*); *first 20* cm^2 *or less*
+11046 *each additional 20* cm^2, *or part thereof* (*List separately in addition to code for primary procedure*)
11044 *Debridement*, *bone* (*includes epidermis*, *dermis*, *subcutaneous tissue*, *muscle and/or fascia*, *if performed*); *first 20* cm^2 *or less*
+11047 *each additional 20* cm^2, *or part thereof* (*List separately in addition to code for primary procedure*)

Debridement Coding Example

A young man who was rollerblading fell and suffered injuries to the palmar surface of both hands and the anterior aspect of his right leg. No bones were fractured. His left hand required extensive debridement of devitalized and contaminated epidermis in a 4 cm × 4 cm area. His right hand required debridement through the subcutaneous tissue of a 3 cm × 10 cm area. His right leg required debridement down to and including bone of a 5 cm × 10 cm area.

Procedures to Report

Left Hand
97597-59 *Debridement of skin* (*epidermis/dermis*), *first 20* cm^2
Right Hand
11042-59 *Debridement*, *subcutaneous tissue*, *first 20* cm^2
+11045(-59)[1] *Debridement*, *subcutaneous tissue*, *additional 20* cm^2, *or part thereof*
Right Leg
11044 *Debridement*, *bone*, *first 20* cm^2
+11047 *Debridement*, *bone*, *additional 20* cm^2, *or part thereof*
+11047(-59)[1] *Debridement*, *bone*, *additional 20* cm^2, *or part thereof*

[1] From a CPT coding standpoint, modifier -59 is not appended to add-on codes. If the add-on code is reported more than once, it should be reported on one line with the applicable number of units. However, some payers may require appending modifier -59 to the second and subsequent add-on codes to indicate that these add-on codes are not simply inappropriate duplicate billing. This is one of many situations in which the provider may need to confer with the specific payer to determine the required conventions.

The procedure on the left hand involves debridement of skin (i.e., epidermis and/or dermis) ONLY. Revised codes 97597 and 97598 are used to report debridement of the first 20 cm^2 of skin and each additional 20 cm^2 of skin, respectively, when gross contamination requires removal of devitalized or contaminated tissue or when debridement is carried out separately without immediate primary closure. Since only 16 cm^2 of skin required debridement of devitalized and contaminated skin in this example, only code 97597 would be reported.

The procedure on the right hand involves debridement of a 30 cm^2 area of tissue including the subcutaneous level. Code 11042 would be reported for the first 20 cm^2 and add-on code 11045 would be reported for the remaining 10 cm^2 of 30 cm^2 total wound surface.

The procedure on the right leg includes debridement of bone. Code 11044 would be reported for the first 20 cm^2 and add-on code 11047 would be reported twice for the second 20 cm^2 and the remaining 10 cm^2 (of 50 cm^2 total) wound surface. Note that codes 11010–11012 would not be reported because there was no fracture in either the hand or leg.

The work of code 97597 is included in the work of 11042 and 11044 and the work of 11042 is included in the work of 11044. Therefore, it is important to append modifier -59 (distinct procedural service) to the two lesser primary procedures (97597 and 11042) to indicate to the payer that the debridement on the right and left hands are separate wounds at separate operative sites and (most importantly) at separate depths.

Modifiers Used Commonly in Vascular Surgery

Modifiers are two digit numbers appended to CPT codes when a claim is submitted to the insurance carrier. They help describe circumstances where payment should be altered from standard reimbursement or rendered in a situation normally denied.

Modifiers -TC (technical component) and -26 (professional component) are specific modifiers important in the accurate reporting of imaging and diagnostic services such as vascular lab studies. When the equipment to perform a service is owned by a practice and the service is performed in an office setting, the practice would submit a claim with no modifier appended to the code for the service. This is termed “global billing,” since both the technical and professional components for a given test are provided. On the other hand, if a test is performed in a facility (e.g., hospital or ambulatory surgical center), where the facility owns the equipment and a physician would submit a claim with modifier -26 appended to the code for the service. This signifies that the physician has provided the professional interpretation of the test but does not own the equipment or necessary supplies (e.g., duplex scanner or in the case of interventional procedures, the catheters, stents, balloons, contrast) and does not employ the staff required to perform the technical portion of the procedure.

Modifier -51 (multiple procedures) is appended to procedure codes that are reported on the same day during the same session. When reporting multiple codes, rank the codes by fee schedule total RVUs and apply the appropriate reduction to each code (100, 50, 50, 50, 50 %). Base the payment on the lower of (a) the actual charge or (b) the fee schedule amount reduced by the appropriate percentage. Do not append modifier -51 to codes with a ZZZ global period (add-on codes, denoted with the sign "+" in CPT) or to codes for E/M services, physical medicine and rehabilitation services, or provision of supplies (e.g., vaccines). Also do not append modifier -51 to other select codes that are exempt, as designated in Appendix E of the CPT manual (e.g., 36620). *Important note*: Many payers (including Medicare) recommend against reporting modifier -51 on claims. Their processing systems have hard-coded logic to append the modifier automatically to the appropriate codes on each claim.

Modifier -50 (bilateral procedures) If a code is billed with the bilateral modifier or is reported twice on the same day by any other means (e.g., with -RT and -LT modifiers or with a 2 in the units field), the payment is the lower of (a) the total actual charge for both sides or (b) 150 % of the fee schedule amount for a single code. If the code is reported as a bilateral procedure and is reported with other procedure codes on the same day, apply the bilateral adjustment before applying any multiple procedure rules. The Medicare Physician Fee Schedule indicates applicability of the -50 modifier for each CPT code.

Modifier -59 (distinct procedure service) The addition of this modifier to a code indicates to the carriers or fiscal intermediaries that the procedure or service represents a distinct procedure or service from others billed on the same date of service. In other words, this may represent a different session, different anatomical site or organ system, separate incision/excision, different lesion, or different injury or area of injury (in extensive injuries). CPT® indicates that when another already established modifier is appropriate, it should be used rather than modifier -59. Only if no more descriptive modifier is available, and the use of modifier -59 best explains the circumstances, should modifier -59 be used.

Modifiers -80, -81, and -82 (assistant surgeon) Some surgical procedures require a primary surgeon and an assistant surgeon. CMS has identified those surgical procedures on Medicare patients for which an assistant surgeon may be reimbursed. Payment is generally not made for the services of assistants at surgery furnished in a teaching hospital, which has a training program related to the medical specialty required for the surgical procedure and has a qualified resident available to perform the service. Medicare payment for an assistant surgeon is limited to 16 % of the fee schedule amount for the surgical procedure.

Independent of the Medicare fee schedule designation of codes approved for assistant surgeon billing, the American College of Surgeons publishes a report on the need for a physician as an assistant at surgery for all codes listed in the "Surgery"

section of CPT®. Twenty-two national surgical societies (including SVS) participate in this effort. This document is often helpful when the need to submit a report for assistant surgeon payment is necessary.

Modifier -62 (co-surgery) Under some circumstances, the individual skills of two surgeons are required to perform surgery on the same patient during the same operative session. This may be required because of the complex nature of the procedure(s) and/or the patient's condition. In these cases, the additional physician is not acting as an assistant at surgery. It is not always co-surgery when two doctors perform surgery on the same patient during the same operative session. Co-surgery has been performed if the procedure(s) performed are part of and would be billed under the same surgical code, (e.g., 22558 performed by a vascular surgeon and orthopaedic surgeon). In this case, each physician reports code 22558 with modifier -62 appended. Medicare payment for each surgeon is 62.5 % of the Medicare Fee Schedule amount. If co-surgeons are of the same specialty, operative reports must be submitted by each. When performing co-surgery, it is important to communicate with the other surgeon's office to be certain that the claims are submitted properly.

Modifier -66 (team surgery) Similar to co-surgery, team surgery also refers to a single procedure; however, it requires the skills of more than two surgeons of different specialties, working together to carry out various portions of a complicated surgical procedure. For example, a kidney transplant could involve the services of a general surgeon, a urologist, and/or a vascular surgeon to remove the diseased kidney, to revise vessels prior to implantation of the donated kidney, and to transplant the ureters. Payment for codes defined as eligible for team surgery are reimbursed on an individual consideration basis by report.

In conclusion, while the vascular surgeon deals with a finite system of the human anatomy, the number of approaches and options require a granularity that makes coding fairly complicated. The CPT codes and valuation derived provide an ability for vascular surgeons to achieve proper reimbursement for the work that they perform.

Suggested Reading

1. Ahlman, J, et al. Current procedural terminology, 2016 Professional Edition. Copyright American Medical Association, Chicago.
2. https://www.encoderpro.com/epro/common/medicare/cci_policy_narratives.pdf3.
3. https://commerce.ama-assn.org/store/catalog/productDetail.jsp?product_id=prod280002&navAction=push.

Chapter 24
General Thoracic and Esophageal Surgery Coding

Francis C. Nichols and Julie R. Painter

Introduction

The Current Procedural Terminology (CPT®) codes used by surgeons to describe procedures done in the chest include those for the lungs, pleura, mediastinum, and esophagus (including the codes used for anti-reflux operations, which are found in the esophageal subsection of the CPT code set). Significant revisions have been made to the codes for thoracic and esophageal surgery based on changes in technology and operative technique. A study of the history of thoracic and esophageal codes provides a unique insight into the valuation process. In many instances, the Centers for Medicare and Medicaid Services (CMS) rejected the physician work valuation proposed by the American Medical Association (AMA) Relative Value Scale Update Committee (RUC), assigning lower physician work relative valuation units (wRVUs).

General Thoracic Codes

In 2009, the Society of Thoracic Surgeons (STS) and American Association for Thoracic Surgery (AATS) Joint Workforce on Coding and Nomenclature recognized that CPT codes related to general thoracic surgery were in need of a major revision. Of particular interest were the lung and hiatal hernia codes. Not only had

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major advances taken place in the field of video-assisted thoracic surgery (VATS) for which inadequate coding options existed, but it was apparent that badly needed clarifications and updates to the lung biopsy and wedge resection codes performed both open and thoracoscopically were necessary. Although these procedures were commonly performed, a number of the CPT codes had not been reviewed in as many as 14 years. In addition, many of these codes did not have vignettes (i.e., description of the typical patient) or had vignettes that did not reflect current practice. One example was lung wedge resections, which now were more commonly performed using VATS or staged bilateral thoracotomies rather than median sternotomy. Another example was large paraesophageal hernia repairs where the procedure was far more complex than a laparoscopic fundoplication for gastroesophageal reflux.

Also, in 2009, the existing respiratory system surgical code set contained a myriad of lung and pleural biopsy codes which were both duplicative and nonspecific, a situation which resulted in confusion for surgeons, coders, and payers. Code overlap and lack of precise code descriptors made it difficult to achieve accurate and consistent valuation of services. For example, coding for an open pleural biopsy could have utilized any one of the three CPT codes, which varied widely with regard to both terminology and valuation. Similarly, open lung biopsy by stapled wedge resection could also have been performed with at least three separate codes. One code included biopsy of the lung, the pleura, or both. A second code described both single and multiple wedge resections performed via median sternotomy. A third code was a very generic pleural cavity exploration and biopsy code without reference to the specific chest structure (s) to be biopsied.

From 2010 to February 2011, working in close conjunction with the AMA CPT Editorial Panel, the STS and AATS voluntarily brought forward the revision of 22 lung and pleura codes (Tables 24.1 and 24.2) [1]. The CPT Panel agreed with the STS and AATS that these revisions appropriately reflected the currently performed surgical procedures and cleared up existing ambiguities. After approval by the CPT Panel, the new and revised codes underwent RUC review for valuation. The STS and AATS recommendation to the RUC represented the accumulated results of surveys from over 80 thoracic surgeons. Of note, the STS and AATS individual code analysis demonstrated that many of the new or revised codes ultimately had lower wRVUs than would have been reported using the old codes. The STS and AATS recommendations would have resulted in a net wRVU reduction of approximately 5.7% for the code set under review. Moreover, the final wRVUs decided upon after RUC deliberations resulted in a net reduction in overall Medicare work savings of 9% compared to the then-current set of codes.

CMS accepted 17 of the RUC-recommended wRVUs for the lung resection codes. However, CMS rejected the recommended wRVUs for five codes (32096, 32097, 32098, 32100, 32505) without explanation, and in turn assigned markedly lower wRVUs that were inconsistent with the entire family and out of step with the physician fee schedule overall (Table 24.3) [2]. Despite its best efforts, the STS and AATS failed to identify any logical rationale for the CMS rejection of the RUC recommendations for these five codes that were part of the code family under review. Also, for all 22 codes, the same surgeons were surveyed, and the “relative”

Table 24.1 CPT® 2012 lung and pleura new code changes

Deleted code	Deleted code descriptor	New code	New code descriptor
32095	Thoracotomy, limited, for biopsy of the lung or pleura	32096	Thoracotomy, with diagnostic biopsy(ies) of lung infiltrate(s) (e.g., wedge, incisional), unilateral
		32097	Thoracotomy, with diagnostic biopsy(ies) of lung nodule(s) or mass(es) (e.g., wedge, incisional), unilateral
		↖ 32098 ↙	Thoracotomy, with biopsy(ies) of the pleura
32402	Biopsy, pleura; open		
32500	Removal of the lung, other than total pneumonectomy; wedge resection, single or multiple	32505	Thoracotomy; with therapeutic wedge resection (e.g., mass, nodule), initial
		+32506	With therapeutic wedge resection (e.g., mass or nodule), each additional resection, ipsilateral (list separately in addition to code for primary procedure) (Report 32506 only in conjunction with 32505)
		+32507	With diagnostic wedge resection followed by anatomic lung resection (list separately in addition to code for primary procedure)
32602	Thoracoscopy, diagnostic (separate procedure); lungs and pleural space, with biopsy	32607	Thoracoscopy; with diagnostic biopsy(ies) of lung infiltrate(s) (e.g., wedge, incisional), unilateral
		32608	With diagnostic biopsy(ies) of lung nodule(s) or mass(es) (e.g., wedge, incisional), unilateral
		32609	With biopsy(ies) of pleura
32603	Thoracoscopy, diagnostic (separate procedure); pericardial sac, without biopsy	32601 ↖	Thoracoscopy, diagnostic (separate procedure); lungs, pericardial sac, mediastinal or pleural space, without biopsy
32605	Thoracoscopy, diagnostic (separate procedure); mediastinal space, without biopsy	↙	

(continued)

Table 24.1 (continued)

Deleted code	Deleted code descriptor	New code	New code descriptor
32657	Thoracoscopy, surgical; with wedge resection of lung, single or multiple	32666	With therapeutic wedge resection (e.g., mass, nodule), initial unilateral
		+32667	With therapeutic wedge resection (e.g., mass or nodule), each additional resection, ipsilateral (list separately in addition to code for primary procedure) (Report 32667 only in conjunction with 32666)
		+32668	With diagnostic wedge resection followed by anatomic lung resection (list separately in addition to code for primary procedure) (Report 32668 in conjunction with 32440, 32442, 32445, 32480, 32482, 32484, 32486, 32488, 32503, 32504, 32663, 32669, 32670, 32671)
32660	Thoracoscopy, surgical; with total pericardiectomy		
New code	*New code descriptor*		
32669	With removal of a single lung segment (segmentectomy)		
32670	With removal of two lobes (bilobectomy)		
32671	With removal of the lung (pneumonectomy)		
32672	With resection-plication for emphysematous lung (bullous or nonbullous) for lung volume reduction surgery (LVRS), unilateral includes any pleural procedure, when performed		
32673	With resection of the thymus, unilateral or bilateral		
+32674	With mediastinal and regional lymphadenectomy (list separately in addition to code for primary procedure)		

valuations arrived at used identical standardized RUC methodology. Perplexing then was how CMS could determine that the RUC recommendations for these five codes were somehow incorrect.

Most significantly, the CMS-assigned valuations produced gross rank order anomalies. For each of the five rejected code valuations, CMS stated that "upon clinical review," they determined that the time and intensity were the same or similar to other codes and therefore they rejected the RUC-recommended wRVU and instead crosswalked an assigned wRVU. Although the RUC sometimes uses this methodology to develop wRVU recommendations, the RUC is very careful to consider all components of physician work, including intraoperative time, postoperative hospital and office visits for codes with a global period, and most importantly intraoperative work per unit of time (IWPUT) which is a measure of intensity that allows for the comparison of the "relative" intraoperative intensity of different

Table 24.2 CPT® 2012 lung and pleura code descriptor changes

Existing code	Existing code descriptor change	Other codes affected by descriptor change
32100	Thoracotomy; with exploration (***Old***) Thoracotomy, with exploration	32110, 32124, 32140, 32141, 32150, 32610
32440	Removal of the lung, pneumonectomy; (***Old***) Removal of lung, pneumonectomy	32442, 32445
32480	Removal of lung, other than pneumonectomy; single lobe (lobectomy) (***Old***) Removal of lung, other than pneumonectomy; single lobe (lobectomy)	32482, 32484, 32488, 32491
32601	Thoracoscopy, diagnostic (separate procedure); lungs, pericardial sac, mediastinal or pleural space, without biopsy (***Old***) Thoracoscopy, diagnostic (separate procedure); lungs *pericardial sac*, *mediastinal* or pleural space, without biopsy	No other codes affected
32663	With lobectomy (single lobe) (***Old***) with lobectomy (single lobe)	No other codes affected
+38746	Thoracic lymphadenectomy by thoracotomy, mediastinal and regional lymphadenectomy (list separately in addition to code for primary procedure) (***Old***) Thoracic lymphadenectomy by *thoracotomy*, mediastinal and *regional lymphadenectomy* (list separately in addition to code for primary procedure)	No other codes affected

Table 24.3 Five lung CPT® codes, RUC-proposed wRVUs versus CMS final wRVUs

CPT® code	Code descriptor	RUC wRVUs	CMS wRVUs
32096	Thoracotomy, with diagnostic biopsy(ies) of lung infiltrate(s) (e.g., wedge, incisional), unilateral	17.00	13.75
32097	Thoracotomy, with diagnostic biopsy(ies) of lung nodule(s) or mass(es) (e.g., wedge, incisional), unilateral	17.00	13.75
32100	Thoracotomy, with exploration	17.00	13.75
32098	Thoracotomy, with biopsy(ies) of the pleura	12.91	14.99
32505	Thoracotomy, with therapeutic wedge resection (e.g., mass, nodule), initial	15.75	18.79

services and procedures. It is expected that higher IWPUT values will be associated with higher intensity procedures. All 22 of the lung and pleura procedures that were valued by the RUC are major surgical thoracic procedures which are complex and carry relatively high risks for morbidity. For the 17 codes where CMS accepted the RUC values, the IWPUT was approximately 0.090, a value consistent with thoracic surgical procedures. For the 5 codes where cms did not accept the RUC valuatoins, IWPUTs ranged from 0.0316 to 0.0741. As a comparison, code 99213 (level-3 established patient office visit) has an IWPUT of 0.053, and code 44950 (open appendectomy) has an IWPUT of 0.078.

The RUC, STS, and AATS all commented to CMS that their code choice for relative work did not take into consideration all components of physician work. The CMS

Table 24.4 Thoracic codes reviewed under 2012 CMS Refinement Panel process

CPT code	Short descriptor	CY 2012 interim final wRVU	AMA RUC/ HCPAC-recommended word RVU	2012 refinement median panel rating	CY 2013 final wRVU
32096	Open wedge/bx lung infiltrate	13.75	17.00	17.00	13.75
32097	Open wedge/bx lung nodule	13.75	17.00	17.00	13.75
32098	Open biopsy of the lung pleura	12.91	14.99	14.99	12.91
32100	Exploration of the chest	13.75	17.00	17.00	13.75
32505	Wedge resect of the lung, initial	15.75	18.79	18.79	15.75

"clinical review" looked for codes with the same intraoperative time, but it is clear they did not consider intraoperative intensity and differences in postoperative work. For example, CMS crosswalked the wRVU for code 44300 (placement of a feeding tube) to code 32096 (thoracotomy with biopsy (ies) of lung infiltrate(s)). CMS stated that the time and intensity of work for both codes were similar; however, that is not true. Code 32096 has more postoperative work, has more total time, and is a more intense procedure than 44300. By assigning a crosswalked wRVU to 32096, the resulting IWPUT is 0.032. This IWPUT is less than 99213 (0.053) and even less than 44300 (0.052) because it does not take into account the significant postoperative work.

CMS used the same inappropriate crosswalks and rationale to assign wRVUs for the other four codes: code 32097 (thoracotomy with biopsy(ies) of lung nodule(s)) was crosswalked to 44300, resulting in an IWPUT of 0.049; code 32100 (thoracotomy with biopsy(ies)) was also crosswalked to 44300, resulting in an IWPUT of 0.043; and code 32098 (thoracotomy with biopsy(ies) of the pleura) was crosswalked to 47100 (wedge liver biopsy), resulting in an IWPUT of 0.074. For code 32505 (thoracotomy with therapeutic wedge resection), CMS used their assigned value for 32096 and added 2.0 wRVUs for the additional 30 min of intraoperative time, but did not adjust for differences in postoperative work.

The final intensity values for the five disputed codes fall in the range of 28299 *hallux valgus or bunion repair*, 46221 *rubber band ligation of hemorrhoids*, and 31622 *flexible bronchoscopy*. STS and AATS commented throughout the final rule process on what they felt was CMS's flawed rationale for the misevaluation of these five lung codes. The final level of appeal was via a CMS-appointed Refinement Panel. The STS and AATS availed themselves of the Refinement Panel process. The Refinement Panel unanimously supported the RUC-proposed valuations for these five codes; however, CMS refused to alter its position (Table 24.4) [3].

Lung Biopsies and Wedge Resections

The previous lung wedge resection code 32500 *thoracotomy*, *wedge resection*, *single or multiple* was reviewed by the RUC at the second 5-year review in August 2000. At that time, the work vignette specified the approach as median sternotomy

with exploration and resection of bilateral colorectal metastases as indicated. This bilateral procedure had an RVU base of 24.48. Clearly by 2009, that vignette was no longer appropriate. More common now was a lateral thoracotomy incision approaching each side separately if bilateral nodules are present. Another alternative depending on the specific patient was video-assisted thoracic surgery (VATS), which also is done approaching each thoracic cavity separately. Updating of the lung resection codes, particularly wedge resection codes, was clearly needed. In creation of the new code set, it was recognized that a variety of differing circumstances can surround the diagnosis of and resection of lung-related diseases. For example, there are distinct differences between surgical procedures performed for the diagnosis of diffuse lung infiltrates compared to the removal of a lung nodule, mass, or cancer. Moreover, for the lung biopsy procedures, there was a disconnect with the work involved in the procedure for the typical technique (e.g., stapled wedge resection) used to accomplish the biopsy of a lung infiltrate which is diffusely located throughout an entire lung versus the biopsy of an isolated but specifically located lung nodule or nodules. For the patient with a diffuse lung infiltrate, the surgeon will often perform the biopsy by wedging out with a surgical stapler two or more portions of the abnormal lung tissue, not necessarily having to locate a specific isolated abnormality. For the biopsy of an isolated lung nodule, the surgeon must accurately locate the specific nodule in question and then perform a wedge resection using a surgical stapler, resulting in removal of the nodule with a clear margin. The nodule, unlike the lung infiltrate, is not a diffuse process and therefore more difficult to locate and remove in contrast to the lung infiltrate. Oftentimes the surgeon will send the resected nodule for frozen pathological examination (e.g., for a diagnosis of lung cancer) and then, based on the results, determine if a more extensive procedure (e.g., lobectomy) is necessary. Because of confusion over when to use the lung biopsy codes (32095, 32100, 32402, 32602) versus the lung wedge resection codes (32500, 32657), there was often innocent miscoding with a resultant over-coding of the wedge resection codes.

In creation of the new codes, for the first time the AMA CPT® Editorial Panel approved coding changes which clarified the techniques and circumstances that can be used to perform a diagnostic lung biopsy versus those techniques and situations that would be used to accomplish the definitive treatment of specified lung diseases (e.g., therapeutic wedge of a nodule). The new lung coding schema took into account the significant differences in the duration and intensity of work, which are dependent on three different factors: (1) the surgical approach (i.e., open thoracotomy vs. VATS), (2) the target of the procedure (e.g., diffuse infiltrate vs. solitary nodule), and (3) the intent of the procedure (i.e., diagnostic vs. therapeutic).

In contrast to lung infiltrates, a lung nodule may be removed with both a diagnostic and therapeutic intent in which case coding of therapeutic wedge resection is appropriate (Table 24.1: 32505, +32506, 32666, and +32667). An example of this is the patient with an indeterminate lung nodule, which could be either a primary lung cancer or metastatic nodule; the surgeon's intent is therapeutic, definitive, and curative resection. Even if a benign diagnosis is the final outcome, the surgical intent and physician work are similar to that of a therapeutic wedge resection. An example

of diagnostic biopsy of lung nodules includes a patient with a history of cancer and multiple lung nodules. Any one or more of the nodules can be removed without consideration of widely free margins. The surgical intent in this example is purely diagnostic.

In summary, extensive changes were made in the Respiratory System, Lungs, and Pleura subsection within the CPT® 2012 code set (CPT 2012) that persist through today (CPT 2016) [4]. A detailed review of each of the new codes is beyond the scope of this chapter. Many of the new code descriptors are self-explanatory. Users of the CPT® 2016 code set are strongly encouraged to carefully review the introductory language and parentheticals included with many of the codes. These informative notes were carefully constructed to advise the user of a variety of "report with" and "do not report with" options [5].

Furthermore, it is of immense benefit to coders and payers with regard to lung wedge resections for the surgeon to clearly specify in their operative note, terminology similar to the CPT® descriptors. Examples of best documentation practices include "thoracotomy, with diagnostic biopsy(ies) of lung infiltrate(s)," "thoracotomy, with diagnostic biopsy(ies) of lung nodule(s) or mass(es)," "thoracotomy, with therapeutic wedge resection (e.g., mass, nodule)," etc.

Tube Thoracostomy and Thoracentesis

In 2011, code 32551 *tube thoracostomy includes water seal* (*e.g.*, *for abscess*, *hemothorax*, *empyema*), *when performed* (*separate procedure*) was identified as part of the Harvard-valued codes with volume greater than 30,000 screen and, therefore, recommended by the RUC to be surveyed. Code 32551 was written to report the insertion of a chest tube primarily performed by surgeons as an urgent procedure, using an open approach. In fact, the word thoracostomy is defined as the surgical creation of an opening in the wall of the chest for the purpose of drainage. When preparing to conduct the RUC survey for 32551, the STS, the AATS, and the American College of Surgeons (ACS) noted that there had been a recent shift in the primary specialty reporting 32551 from general surgery and cardiothoracic surgery to radiology, as shown Table 24.5. Three factors may have resulted in this miscoding:

Table 24.5 Most common providing specialty change over time for CPT® 32551 tube thoracostomy

32551	1993	1998	2003	2010
Frequency	59,527	53,606	62,787	62,302
General surgery	34%	34%	28%	18%
Cardiothoracic surgery	31%	25%	25%	18%
Pulmonary	15%	17%	21%	13%
Radiology	1%	1%	8%	32%

1. While the code descriptor included the word thoracostomy, that descriptor may not clearly have been understood to mean an open procedure.
2. The parenthetical examples for diagnoses (abscess, hemothorax, empyema) may have been the primary focus for code selection, instead of the procedure's primary-term "thoracostomy."
3. An illustration accompanying the code showed a tube with a trocar being percutaneously introduced into the chest.

In February 2012, the CPT Editorial Panel revised the code descriptor for 32551 to read: *tube thoracostomy includes connection to drainage system* (*e.g.*, *water seal*), *when performed*, *open* (*separate procedure*). Separately, pulmonary medicine and radiology brought forward new codes, both with and without image guidance, to describe thoracentesis with a needle or catheter and percutaneous pleural drainage with insertion of a non-cuffed pleural catheter (32554–32557).

In April 2012, the RUC reviewed survey results from 89 general surgeons, cardiothoracic surgeons, and pulmonologists and determined that a wRVU of 3.50 was an appropriate value for 32551. In the 2012 Final Rule, CMS disagreed with the RUC-recommended valuation and instead concluded that the current wRVU of 3.29 appropriately reflected the work associated with 32551. It is important to note that in 2007, CMS reduced the value of 32551 from 3.97 to 3.29 in the absence of survey information in order to account for the large number of percutaneously placed catheters being performed by radiology and pulmonology and reported with this code and presumed to be lesser work [6]. These percutaneously placed catheters were now given their own codes, no longer part of 32551. Thus, the first RUC survey of 32551 took place in 2012 and actually confirmed the value of code 32551 being higher than 3.29 and in fact more in-line with CMS' 2006 valuation of 3.97 RVU.

Mediastinoscopy

At the September 2013 RUC meeting, the AMA RUC's Relativity Assessment Workgroup (RAW) identified code 39400, *mediastinoscopy includes biopsy*(*ies*) *when performed*, as a potentially misvalued code through a pre-time analysis for codes valued prior to April 2008 and utilized over 10,000 times. This code had been last reviewed by the RUC during the 5-year review in 2005 when the typical patient was one with symptoms consistent with lymphoma and a solitary mediastinal mass. Currently, mediastinoscopy is most commonly performed for lung cancer staging. Upon reviewing this code, the STS determined that the number of mediastinoscopies performed had steadily decreased every year since 2006. This decrease was felt attributable to the development and refinement of noninvasive lung cancer-staging modalities such as computerized tomography (CT) and 18-fluorodeoxyglucose positron emission tomography (PET). Additionally, pathologic staging of lung cancer was now possible, utilizing the less invasive technique of endoscopic bronchoscopic ultrasound (EBUS)-guided biopsy. Mediastinoscopy is now only utilized when these

other modalities are inconclusive. Mediastinoscopy might also be performed in patients deemed high risk (e.g., severe COPD) for lung cancer surgery. While the proper staging of lung cancer, which may involve the systematic biopsying of designated lymph node stations, is critical for determining appropriate treatment, mediastinoscopy can also be utilized to establish a diagnosis in patients with large mediastinal masses. These are two distinctly different patient populations. Additionally, the STS and AATS found that the site of service had shifted from hospital inpatient to hospital outpatient. Thus, in April 2014, at the request of the STS and AATS, the RUC referred this issue to the CPT Editorial Panel for code revision.

In October 2014, the CPT Editorial Panel deleted code 39400 with its 10-day global period and created two new 0-day global codes to better describe the distinct procedures and patient populations currently receiving mediastinoscopy services: 39401 *mediastinoscopy includes biopsy*(*ies*) *of mediastinal mass* (*e.g.*, *lymphoma*), *when performed*, and 39402 *mediastinoscopy with lymph node biopsy*(*ies*) (*e.g.*, *lung cancer staging*). In January 2015, the STS and AATS presented to the RUC survey results from 77 thoracic surgeons. The specialty societies and RUC concluded that the survey respondents overestimated the wRVUs for 39401. Utilizing a crosswalk methodology, a wRVU of 5.44 was proposed by the specialty societies and approved by the RUC. For 39402, which involves biopsying multiple lymph node stations and not just one mass, 77 thoracic surgeons' surveys were reviewed, and a wRVU of 7.50 was thought to be reflective of this code's work and the appropriate increased differential in time, risk, and intensity from 39401. CMS in the proposed rule for calendar year 2016 agreed with the RUC-recommended wRVU of 5.44 for 39401; however, it disagreed with the RUC-recommended wRVU of 7.50 for 39402. Instead, CMS proposed RVUs of 7.25 for 39402. The CMS rationale for decreasing the valuation of 39402 from 7.50 to 7.25 assumed that the only difference between 39401 and 39402 is the 15 minutes of intraservice time. CMS rejected the argument that 39402 had additional intensity characterized by added technical skill, physical and mental effort, judgment, and stress compared with 39401. In its valuation of 39402, CMS ignored robust physician survey and physician expert panel review. The STS, AATS, and RUC publicly commented on CMS' flawed rationale with regard to 39402's valuation of 7.25 wRVU. CMS in the final rule maintained 7.25 wRVUs. Interestingly, within the final rule, CMS acknowledged the increased intensity of 39402 in addition to the increased time compared with 39401; however, their final valuation remained based on only the time differential. The STS and AATS continue to believe that the use of intraservice time ratios is a critical element in determining total RVU but is only part of the overall methodology which must also include an accounting for procedural intensity for accurate CPT code valuation [7]. In fact, CMS is directed by statute to consider both time and intensity. Section 1848. [42 USC. 1395w–4] directs CMS as follows:

(a) Payment based on fee schedule.

(C) Computation of relative value units for components – for purposes of this section for each physicians' service.

(i) Work relative value units – the secretary shall determine a number of work relative value units for the service based on the relative resources incorporating physician time and intensity required in furnishing the service.

STS in its September 8, 2015 letter to Andy Slavitt, Acting Administrator for CMS noted its concern that across a number of specialty areas, CMS proposes work RVU recommendations for a large number of individual codes that differ from the RUC recommended valuations. In fact, the CMS-proposed wRVU is always less and never greater than the RUC recommendation. In arriving at its proposed wRVU, CMS in many cases utilizes simple mathematical adjustments to physician time ignoring physician survey data, clinical expertise, magnitude estimation, and intensity, which are key elements of the resource-based relative value scale (RBRVS) principles of code valuation.

Esophageal Surgery Codes

For 2011, the CPT Editorial Panel approved revisions to the family of hiatal hernia codes that were jointly proposed by the STS, AATS, ACS, and Society of American and Gastrointestinal and Endoscopic Surgeons (SAGES) [8]. As part of the revised code set, duplicative and obsolete codes within the diaphragm subsection were deleted, and new codes were included in the esophageal subsection. This major code revision represented the culmination of a multispecialty, multiyear effort to establish a set of codes representative of the current understanding of gastroesophageal reflux disease (GERD), hiatal hernia, paraesophageal hernia, and the current technology available for the surgical correction of these disorders. In total, the CPT Editorial Panel deleted six existing codes and created twelve new codes. Recommendations for wRVUs were presented to the RUC in 2009 and 2010 with compelling evidence demonstrating significant changes in patient profile, pharmacologic management, and surgical technology. The introduction of H-2 blockers and proton pump inhibitors (PPIs) had profoundly changed the patient population that would be treated surgically. Patients with severe GERD who had failed modern medical therapy or had significant obstruction due to incipient volvulus were the new "typical." The deleted codes described vagotomy, pyloroplasty, and esophageal dilation, and did not consistently mention fundoplication, esophageal lengthening procedures, or mesh implantation. With the advent of laparoscopic techniques, the open approaches were now being relegated to the most difficult patients, those in whom a laparoscopic approach had failed, or other complex re-operative cases. The existing physician work values for the six deleted codes had been established 20 years earlier by a panel rather than survey and did not include the specialty of thoracic surgery. The RUC accepted the specialty societies' compelling evidence and recommended wRVUs for this new family of codes. These code changes together with the RUC-recommended valuations and CMS final valuations are shown in Table 24.6.

Table 24.6 Twelve esophageal CPT® codes, RUC-proposed wRVUs versus CMS final wRVUS

CPT® code	Code descriptor	RUC wRVUs	CMS wRVUs
43281	Laparoscopy, surgical repair of paraesophageal hernia, includes fundoplasty, when performed, without implantation of mesh	26.50	26.60
43282	With implantation of mesh	30.00	30.10
+43283	Laparoscopy, surgical, esophageal lengthening procedure (e.g., Collis gastroplasty or wedge gastroplasty) (list separately in addition to code for primary procedure)	4.00	2.95
43327	Esophagogastric fundoplasty partial or complete, laparotomy	18.10	13.35
43328	Thoracotomy	27.00	19.91
43332	Repair, paraesophageal hernia (including fundoplication), via laparotomy, except neonatal; without implantation of mesh or other prostheses	26.60	19.62
43333	With implantation of mesh or other prostheses	30.00	21.46
43334	Repair, paraesophageal hernia (including fundoplication), via thoracotomy, except neonatal; without implantation of mesh or other prosthesis	30.00	22.12
43335	With implantation of mesh or other prosthesis	33.00	23.97
43336	Repair, paraesophageal hernia (including fundoplication), via thoracoabdominal incision, except neonatal; without implantation of mesh or other prosthesis	35.00	25.81
43337	With implantation of mesh or other prosthesis	37.50	27.65
+43338	Esophageal lengthening procedure (e.g., Collis gastroplasty or wedge gastroplasty) (list separately in addition to code for primary procedure)	3.00	2.21

CMS initially agreed with most of the RUC recommendations but then invoked a budget neutrality correction which arbitrarily reduced the values of these codes by 26%. The CMS rationale for applying budget neutrality was that the new codes and deleted codes describe the same patients and procedures and therefore the same physician work [9]. However, both the CMS and the RUC have recognized that the concept of budget neutrality is invalid if there have been changes in the patient population, the technology, and the specific procedures. In public comment, the specialty societies pointed out to CMS that their values were inconsistent with the physician survey results, RUC recommendations, and generally accepted RBRVS precedents, and they were creating significant rank order anomalies. When comparing the relationship between intraservice work and intraservice time for the last 143 cardiovascular and thoracic surgical procedures valued by CMS, the 6 deleted codes, the RUC recommendations for the 12 new codes, and CMS' values for these new codes, the CMS valuations were inappropriate. The IWPUTs resulting from the CMS valuations ranged from 0.035 for 43327 to 0.061 for 43335, making them among the lowest intensities in the entire fee schedule, lower than the vast majority of major surgical procedures and even lower in intensity than office visits.

As you can see from this chapter, the issues of coding and reimbursement are ever changing, and in the field of thoracic surgery, we have seen rapid fluctuations in value in the last 5 years. Paying close attention to the values and understanding some of the basic processes of valuation will be important for any surgeon in this new value-based environment.

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Chapter 25
Head and Neck Coding

Jane T. Dillon and Lawrence M. Simon

Head and neck procedures of most interest to general surgeons are described by CPT codes that span the respiratory, hematologic and lymphatic, digestive, and endocrine systems. These codes are listed in Table 25.1, and as the reader will quickly discover, the list is not all-inclusive of all codes that pertain to head and neck surgery. The purpose of this chapter is to describe proper coding of head and neck surgery procedures most commonly performed by general surgeons, highlighted by specific examples. The organization will generally follow CPT systems and numbering except for the first section, which will describe diagnostic procedures typically performed in outpatient settings or, in some cases, at the hospital bedside.

Diagnostic Procedures

For over 20 years, fine needle aspiration biopsy (FNA) has proved to be an important adjunct for the evaluation of head and neck masses. FNA performed without imaging guidance (10021) is coded once per lesion, regardless of the number of samples taken. The same is true for FNA with image guidance (10022), which is billed in conjunction with a code for radiologic supervision and interpretation. Most typically, ultrasound is used in the head and neck, reported with CPT code 76942, *ultrasonic*

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Table 25.1 CPT codes for common head and neck procedures

CPT code number	Description
	General
10021	Fine needle aspiration; without imaging guidance
10021	Fine needle aspiration; with imaging guidance
	Respiratory System, Larynx, Introduction
31502	Tracheotomy tube change prior to establishment of fistula tract
	Respiratory System, Larynx, Endoscopy
31575	Laryngoscopy, flexible fiberoptic; diagnostic
	Respiratory System, Trachea and Bronchi, Incision
31600	Tracheostomy, planned (separate procedure)
31601	Tracheostomy, planned (separate procedure); younger than 2 years
31603	Tracheostomy, emergency procedure; transtracheal
31605	Tracheostomy, emergency procedure; cricothyroid membrane
31610	Tracheostomy, fenestration procedure with skin flaps
	Respiratory System, Trachea and Bronchi, Endoscopy
31615	Tracheobronchoscopy through established tracheostomy incision
	Hemic and Lymphatic Systems, Lymph Nodes and Lymphatic Channels, Excision
38500	Biopsy or excision of lymph node(s); open, superficial
38505	Biopsy or excision of lymph node(s); by needle, superficial (e.g., cervical, inguinal, axillary)
38510	Biopsy or excision of lymph node(s); open, deep cervical node(s)
38520	Biopsy or excision of lymph node(s); open, deep cervical node(s) with excision of scalene fat pad
38542	Dissection, deep jugular node(s)
	Hemic and Lymphatic Systems, Lymph Nodes and Lymphatic Channels, Radical Lymphadenectomy (Radical Resection of Lymph Nodes)
38700	Suprahyoid lymphadenectomy
38720	Cervical lymphadenectomy (complete)
38724	Cervical lymphadenectomy (modified radical neck dissection)
	Digestive System, Tongue and Floor of Mouth, Excision
41110	Excision of lesion of tongue without closure
41112	Excision of lesion of tongue with closure; anterior two-thirds
41113	Excision of lesion of tongue with closure; posterior one-third
41114	Excision of lesion of tongue with closure; with local tongue flap
41116	Excision, lesion of floor of mouth
41120	Glossectomy; less than one-half tongue
41130	Glossectomy; hemiglossectomy
41135	Glossectomy; partial, with unilateral radical neck dissection
41140	Glossectomy; complete or total, with or without tracheostomy, without radical neck dissection
41145	Glossectomy; complete or total, with or without tracheostomy, with radical neck dissection
41150	Glossectomy; composite procedure with resection floor of mouth and mandibular resection, without radical neck dissection
41153	Glossectomy; composite procedure with resection floor of mouth, with suprahyoid neck dissection

Table 25.1 (continued)

CPT code number	Description
41155	Glossectomy; composite procedure with resection floor of mouth, mandibular resection, and radical neck dissection (Commando type)
	Digestive System, Salivary Gland and Ducts, Excision
42400	Biopsy of salivary gland; needle
42405	Biopsy of salivary gland; incisional
42410	Excision of parotid tumor or parotid gland; lateral lobe, without nerve dissection
42415	Excision of parotid tumor or parotid gland; lateral lobe, with dissection and preservation of facial nerve
42420	Excision of parotid tumor or parotid gland; total, with dissection and preservation of facial nerve
42425	Excision of parotid tumor or parotid gland; total, en bloc removal with sacrifice of facial nerve
42440	Excision of submandibular (submaxillary) gland
42450	Excision of sublingual gland
	Digestive System, Pharynx, Adenoids, and Tonsils, Excision, Destruction
42810	Excision branchial cleft cyst or vestige, confined to skin and subcutaneous tissues
42815	Excision branchial cleft cyst, vestige, or fistula, extending beneath subcutaneous tissues and/or into pharynx
42842	Radical resection of tonsil, tonsillar pillars, and/or retromolar trigone; without closure
42844	Radical resection of tonsil, tonsillar pillars, and/or retromolar trigone; closure with local flap (e.g., tongue, buccal)
42845	Radical resection of tonsil, tonsillar pillars, and/or retromolar trigone; closure with other flap
42892	Resection of lateral pharyngeal wall or pyriform sinus, direct closure by advancement of lateral and posterior pharyngeal walls
42894	Resection of pharyngeal wall requiring closure with myocutaneous or fasciocutaneous flap or free muscle, skin, or fascial flap with microvascular anastomosis
	Digestive System, Esophagus, Incision
43030	Cricopharyngeal myotomy
43130	Diverticulectomy of hypopharynx or esophagus, with or without myotomy; cervical approach
43135	Diverticulectomy of hypopharynx or esophagus, with or without myotomy; thoracic approach
	Digestive System, Esophagus, Endoscopy, Esophagoscopy
	Endocrine System, Thyroid Gland
60100	Biopsy of thyroid, percutaneous core needle
60200	Excision of cyst or adenoma of thyroid, or transection of isthmus
60210	Partial thyroid lobectomy, unilateral; with or without isthmusectomy
60212	Partial thyroid lobectomy, unilateral; with contralateral subtotal lobectomy, including isthmusectomy
60220	Total thyroid lobectomy, unilateral; with or without isthmusectomy
60225	Total thyroid lobectomy, unilateral; with contralateral subtotal lobectomy, including isthmusectomy
60240	Thyroidectomy, total or complete

(Continued)

Table 25.1 (continued)

CPT code number	Description
60252	Thyroidectomy, total or subtotal for malignancy; with limited neck dissection
60254	Thyroidectomy, total or subtotal for malignancy; with radical neck dissection
60260	Thyroidectomy, removal of all remaining thyroid tissue following previous removal of a portion of thyroid
60270	Thyroidectomy, including substernal thyroid; sternal split or transthoracic approach
60271	Thyroidectomy, including substernal thyroid; cervical approach
	Endocrine System, Parathyroid, Thymus, Adrenal Glands, Pancreas, and Carotid Body
60500	Parathyroidectomy or exploration of parathyroid(s)
60502	Parathyroidectomy or exploration of parathyroid(s); re-exploration
60505	Parathyroidectomy or exploration of parathyroid(s); with mediastinal exploration, sternal split or transthoracic approach
60512	Parathyroid autotransplantation (list separately in addition to code for primary procedure)

*guidance for needle placement (*e.g., *biopsy, aspiration, injection, localization device), imaging supervision, and interpretation*. If the biopsy is performed in a setting where the surgeon does not bill for the technical component of the procedure, then modifier -26 is appended to the imaging code. The modifier indicates that the surgeon is only billing for the professional component of the imaging exam.

For needle biopsies other than FNA, such as core biopsy, there are some organ-specific codes: biopsy of lymph node(s), by needle (superficial) (38505); biopsy of salivary gland, needle (42400); and biopsy of thyroid, percutaneous core needle (60100). If imaging guidance is performed with any of these procedures, add the appropriate CPT code for imaging supervision and interpretation (76942, 77002, 77012, or 77021). Again, modifier -26 should be used in certain settings, commonly the facility setting, where the surgeon bills only for the professional component.

Laryngoscopy, flexible fiberoptic; diagnostic (31575), has obviated the need for direct laryngoscopy under general anesthesia in many cases where adequate visualization of the hypopharynx and larynx cannot be accomplished with indirect mirror exam. Tracheobronchoscopy through established tracheostomy incision (31615) involves passing a flexible laryngoscope or bronchoscope through a tracheostomy tube or tracheal stoma. If the trachea alone is examined, append modifier -52 (reduced services). If flexible laryngoscopy and tracheobronchoscopy are done on the same patient on the same day, they can both be reported if they are peformed for different indications: for instance, evaluation of vocal cord paralysis for 31575 and tracheal granulation tissue for 31615. In this case, append modifier -59 to 31575 and link each CPT code to the corresponding diagnosis code. Note that surgical endoscopy codes include the work of diagnostic endoscopy when performed by the same physician; in such instances, diagnostic endoscopy is not separately reportable.

Respiratory System

Tracheostomy

Tracheostomy, planned (31600), is designated as a separate procedure. This code applies to situations where tracheostomy alone is performed or when it is done in conjunction with another procedure(s) where tracheostomy is not considered a part of the primary procedure(s). For example, tracheostomy is separately billable with all types of neck dissection (38700, 38720, 38724). However, it is not billable with all glossectomy procedures: complete glossectomy without radical neck dissection (41140) and with radical neck dissection (41145) include tracheostomy, if performed.

There is a distinct code for planned tracheostomy in patients younger than 2 years (31601) and for emergency tracheostomies depending on method of access to the airway: transtracheal (31603) and cricothyroid membrane (31605). Construction of a permanent tracheostomy with skin flaps is coded with 31610.

Tracheostomy tube change performed during the early healing phase, before establishment of a fistula tract, is coded with 31502. There is no distinct code for tracheostomy tube change beyond that time period; an evaluation and management code is used for this service.

Lymphatic System

Lymph Node Biopsy

Biopsy and limited excision of lymph nodes in the head and neck is described by four CPT codes under this system heading. Needle biopsy of superficial lymph nodes using a technique other than fine needle aspiration biopsy, such as core needle biopsy, is coded with 38505. Open biopsy of superficial lymph nodes is coded with 38500. For open biopsy of deep cervical nodes, there are three codes: biopsy or excision of lymph node(s) (38510); biopsy or excision of lymph node(s) with concomitant excision of the scalene fat pad (38520); and a code that is specific to removal of deep jugular nodes (38542) with identification of neurovascular structures specific to the level of node being dissected. Note that global periods vary for codes in this family: 10 days for 38500 and 38510 and 90 days for 38520 and 38542.

Neck Dissection

Extensive dissection of cervical lymph nodes is codified under the subheading "Radical Lymphadenectomy: Radical Resection of Lymph Nodes." This section lists three codes specific to regions or levels of the neck addressed. In 1991, neck

dissection terminology was standardized to define the regions of involvement of the cervical lymph node groups. The terminology is as follows:

- Region/level I: Submental and submandibular nodes.
  - Ia: Nodes in the submental triangle bound by the anterior belly of the digastric and the hyoid bone
  - Ib: Nodes in the submandibular triangle bound by the anterior and posterior bellies of the digastric and body of the mandible
- Region/level II: Upper jugular lymph nodes, including the jugulodigastric nodes.
  - IIa: Nodes in the region anterior to the spinal accessory nerve.
  - IIb: Nodes in the region posterior to the spinal accessory nerve.
- Region/level III: Mid-jugular nodes from the carotid bifurcation to the omohyoid muscle.
- Region/level IV: Nodes of the lower jugular area that extend from the omohyoid to the clavicle.
- Region/level V: All lymph nodes within the posterior triangle of the neck.
- Region/level VI: Nodes in the anterior compartment group, which includes the lymph nodes that surround the midline structures of the neck. (These nodes extend from the hyoid bone superiorly to the suprasternal notch inferiorly.)

In 2001, neck dissection classification was revised to the following:

- Radical neck dissection (RND): Removal of all cervical lymph node groups from levels I through V, together with the ipsilateral spinal accessory nerve (SAN), sternocleidomastoid muscle (SCM), and internal jugular vein (IJV). RND is reported with 38720, *cervical lymphadenectomy (complete).*
- Modified radical neck dissection (MRND): Removal of all lymph node groups routinely removed in an RND but with preservation of one or more nonlymphatic structures (SAN, SCM, and IJV). MRND is reported with 38724, *cervical lymphadenectomy (modified radical neck dissection)*. Modifications to the radical neck dissection include the following:
  - Type I: The spinal accessory nerve is preserved.
  - Type II: The spinal accessory nerve and the internal jugular vein are preserved.
  - Type III: The spinal accessory nerve, the internal jugular vein, and the sternocleidomastoid muscle are preserved.

Both the RND and MRND procedures are comprehensive dissections of neck levels I–V.

- Suprahyoid neck dissection (SHND): Removal of level I nodes and the submandibular gland. SHND is reported with 38700, *suprahyoid lymphadenectomy*. (Note that 38700 does not refer to the supraomohyoid neck dissection, which includes removal of nodes from levels I–III).
- Selective neck dissection (SND): Removal of a subset of lymph node groups (levels) routinely removed in an RND or MRND. SND typically preserves nonlymphatic structures (SAN, SCM, and IJV) but may also involve their sacrifice.

While code 38700 is properly used to code the very limited SHND involving level I only, all other SNDs are reported with 38724, *cervical lymphadenectomy (modified radical neck dissection).*

- Extended neck dissection: Removal of one or more additional lymph node groups outside of the territories described above or removal of nonlymphatic structures not encompassed by RND or MRND or both.

Examples of extended neck dissection include the excision of deep cervical musculature, digastric muscle, or involved cranial nerves and may be reported with CPT codes 38720 or 38724 with modifier -22.

Neck dissections are unilateral procedures. Midline nodes are considered ipsilateral, but dissections on the contralateral side are reported separately. Procedures on nonlymphatic structures (e.g., primary resections of cancer of the tongue, salivary glands, or thyroid) may also be performed in conjunction with neck dissection. Codes for some of these resections include specific types of neck dissections, as will be illustrated in the following sections.

Digestive System

Tongue and Floor of Mouth

The tongue and floor of mouth excision code family includes codes for excision of tongue lesions without closure (41110) and with closure. The codes specifying closure are specific to the area of the tongue. Anterior excisions with primary closure are reported with 41112. Posterior excisions with primary closure are reported with 41113. Excisions with closures that involve a local tongue flap are reported with 41114, regardless of whether the excision is from the anterior two-thirds or posterior one-third of the tongue. Floor of mouth excision with or without closure is reported with 41116.

Glossectomy, with excision of less than one-half of the tongue, is reported with CPT code 41120, whereas hemiglossectomy is reported with 41130. Any partial glossectomy, combined with unilateral radical neck dissection, is described by 41135. If partial glossectomy is performed with any other type of neck dissection, report 41120 or 41130 with the appropriate neck dissection code.

Removal of the entire tongue is reported with CPT code 41140 or 41145, depending on whether a radical neck dissection is performed. If a complete glossectomy is performed with any other type of neck dissection, report 41140 with the appropriate neck dissection code. Note that both CPT codes 41140 and 41145 include tracheostomy, if performed.

Composite glossectomy procedures, including resection of the floor of mouth and mandibular resection, are reported without radical neck dissection (41150), with suprahyoid neck dissection (41153), and with radical neck dissection (41155). If any other type of neck dissection is performed with a composite procedure, report 41150 with the appropriate neck dissection code. Note that tracheostomy (31600) is separately reportable with composite resection codes. Surgical reconstruction of the tongue following a total glossectomy procedure is separately reported.

Salivary Gland and Ducts

Needle biopsy of salivary glands with techniques other than fine needle aspiration biopsy is coded with 42400. Biopsies involving an incision are coded with 42405. As with fine needle aspiration biopsy, if image guidance is used, it is reported separately.

Parotidectomy coding is determined by the extent of parotid resection, facial nerve dissection and preservation, and concomitant performance of radical neck dissection. In these procedures, "lateral lobe" refers to tissue lateral to the facial nerve. "Deep lobe" refers to the gland tissue that is deep or medial to the facial nerve. A total parotidectomy involves removal of the gland tissue both lateral and medial to the facial nerve. Lateral (superficial) lobe removal Lateral lobe removal (ie removal of the parotid gland lateral to the facial nerve - also referred to as "superficial parotidectomy") without nerve dissection is reported with 42410. Lateral lobe removal with nerve dissection and preservation is coded with 42415. If neck dissection is performed in conjunction with a lateral (superficial) parotidectomy, it is reported separately using the appropriate neck dissection code.

Total parotidectomy, involving both the superficial and deep lobes, is reported depending on whether the facial nerve is dissected and preserved (42420), the gland is removed with sacrifice of the facial nerve (42425), or if performed in conjunction with radical neck dissection, regardless of whether the nerve is preserved or sacrificed (42426). If another type of neck dissection is performed in conjunction with total parotidectomy, report both the appropriate parotidectomy code (42420 or 42425) and the appropriate neck dissection code.

Excision of the other major salivary glands is reported with 42440 for the submandibular gland and 42450 for the sublingual gland. Neck dissection is separately reported using the appropriate code when it is performed with either submandibular or sublingual gland excision.

Pharynx, Adenoids, and Tonsils

Branchial cleft cyst, sinus, or fistula, regardless of type, is coded according to whether the excision is confined to the skin and subcutaneous tissue (42810) or extends beneath the subcutaneous tissue and/or into the pharynx (42815).

Radical resection of the tonsil, tonsillar pillars, and/or retromolar trigone codes delineate such resections on the basis of closure. If the procedure is done without closure, with the wound left open to heal secondarily, report 42842. For closure with a local flap, use 42844 (flap included). For closure with another type of flap(s), use 42845. Note that the flap is separately reported in addition to 42845. If neck dissection is performed at the same time with any of these procedures, report the appropriate neck dissection code. Tracheostomy is also separately reportable for this family of codes.

Codes for pharyngectomy follow similar logic. When performing resection of the lateral pharyngeal wall or pyriform sinus with closure by advancement of the pharyngeal walls (42890), neck dissection and tracheostomy are separately reported if they are

performed. When resection is performed with a myocutaneous or fasciocutaneous flap or free flap, the flap is separately reported in addition to neck dissection and tracheostomy.

Esophagus

Surgery for Zenker's diverticulum is classified into open and endoscopic techniques. Open techniques include cervical (43130) and thoracic (43135) approaches. The endoscopic technique is coded as 43180. All techniques include cricopharyngeal myotomy (43030), which is not separately reportable.

Endocrine System

Thyroid

Thyroid biopsy performed percutaneously with a core needle is reported with 60100. As with other areas of the body, fine needle aspiration biopsy is reported with 10021 or 10022.

There are a sizeable number of codes that can be used to describe removal of the thyroid gland, which depend primarily on extent of resection and if a concomitant neck dissection is performed. CPT code 60200 describes a very limited removal or transection of the thyroid isthmus. The next code, 60210, describes a procedure where a portion of one thyroid lobe is removed, with or without removal of the isthmus. If portions of both lobes are removed, including the isthmus, report 60212.

If one entire thyroid lobe is removed, with or without removal of the isthmus, use 60220. If one entire thyroid lobe is removed, including the isthmus, and part of the other thyroid lobe, report 60225. If the entire thyroid gland is removed, the appropriate code is 60240.

For total or subtotal thyroidectomy performed in conjunction with a central neck dissection (level VI), report 60252. If radical neck dissection is also performed, use 60254. If a lateral neck dissection other than a radical neck dissection is performed, the procedure is best reported with 60252 and the appropriate neck dissection code.

Completion thyroidectomy or removal of all remaining thyroid tissue following removal of a portion of the thyroid gland is reported with 60260. Typical use of this code involves the situation where a partial thyroidectomy subsequently reveals malignant pathology, prompting removal of the rest of the thyroid gland at a separate encounter. If a complete lobectomy on one side has been already performed, report 60260. If performed within the global period of the original procedure, append modifier -58 (staged or related procedure).

The parenthetical note following 60260 instructs users to append modifier -50 for a completion thyroidectomy when tissue is resected from both sides of the neck. This modifier would apply when a completion thyroidectomy follows a previous partial thyroid

lobectomy (60210 or 60212). In this situation, the completion procedure involves removal of remaining tissue from both lobes of the thyroid gland. This type of completion thyroidectomy is best delineated as 60260 with modifier -50 (bilateral procedure) appended. If performed within the global period of the original procedure, also append modifier -58.

Thyroidectomy that includes removal of substernal thyroid tissue is delineated by approach. The sternal split or transthoracic approach is reported with 60270 and the cervical approach with 60271.

Parathyroid

Parathyroidectomy or exploration of parathyroid(s) (60500) is reportable once, regardless of the number of parathyroid glands addressed. If removal of thyroid tissue is necessary to facilitate the procedure (eg access or expose the parathyroid glands), thyroidectomy is not separately reportable. However, if thyroidectomy is concurrently performed for a condition unrelated to the parathyroid gland exploration, such as removal of a thyroid mass, it may be reported with an independent diagnosis and modifier -59 (distinct procedural service) appended to the thyroidectomy code.

Re-exploration for persistent or recurrent parathyroid disease utilizing a cervical approach is reported as 60502. As with initial exploration, it is coded once regardless of the number of parathyroid glands addressed. Re-exploration for parathyroid disease extending to the mediastinum requiring a transthoracic approach is reported with 60505.

Parathyroid autotransplantation is a common procedure performed at the same operative session as parathyroidectomy or thyroidectomy. This service is described with add-on code 60512, which can be reported in conjunction with all of the parathyroidectomy codes and selected thyroid codes where all four parathyroid glands are potentially at risk. Parathyroid autotransplantation should not be reported with strictly unilateral thyroid codes 60200, 60210, and 60220, as the parathyroid glands on the contralateral side are not at risk. Additionally, this code should not be reported if the transplant is performed through the same incision as the primary procedure.

Coding for head and neck procedures is fairly well delineated and easily navigated by anatomic areas as described. It will be important for surgeons performing these procedures to understand and stay up to date as new codes are created and valuations fluctuate.

References

1. CPT Current Procedural Terminology. 2016.
2. RUC Database, 2016 Version 1.
3. CPT Assistant. 2010:4.

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