AJNR

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AJNR Am J Neuroradiol 2016, 37 (4) 596-599
doi: https://doi.org/10.3174/ajnr.A4696
http://www.ajnr.org/content/37/4/596

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ABSTRACT

SUMMARY: In recent months, organized medicine has been consumed by the anticipated transition to the 10th iteration of the International Classification of Disease system. Implementation has come and gone without the disruptive effects predicted by many. Despite the fundamental role the International Classification of Disease system plays in health care delivery and payment policy, few neuroradiologists are familiar with the history of its implementation and implications beyond coding for diseases.

ABBREVIATIONS: CM = Clinical Modification; CMS = Centers for Medicare and Medicaid Services; CPT = Current Procedural Terminology; ICD = International Classification of Disease; RUC = Specialty Society Relative Value Scale Update Committee; WHO = World Health Organization

The International Classification of Disease (ICD) system was created for the accurate tracking of diseases within a population. Across the years, it has become an integral part of the payment infrastructure of the US health care system along with the Current Procedural Terminology (CPT) coding system for medical procedures. As our knowledge of disease advances and the US health care system payment policy evolves from volume to value, so must the ICD system. Now that ICD-10 is finally implemented after 2 congressionally legislated delays, the physician community remains wary of potential upheaval related to complex changes required for billing systems. We believe a review of the history of the International Classification of Disease system will be useful to the practicing neuroradiologist.

History

Pre-ICD-10. Some scholars track the origin of ICD to 1763. The French physician and botanist Dr François Bossier de Sauvages de Lacroix developed a categorization of 10 distinct classes of diseases, which were further divided into 2400 unique diseases.[1] Sauvages de Lacroix was a contemporary and friend of the Swedish naturalist Carl Von Linné, considered the father of modern taxonomy. His classification system, built on earlier work by the English physician Thomas Sydenham, was similar to methods used by botanists at the time. Recognizing the importance of disease classification, the first International Statistical Congress held in Brussels in 1853 appointed Jacob Marc d'Espine and William Farr to develop a system of classifying causes of mortality that could be used across borders and languages.[2] This was the genesis of what became known as the "International List of Causes of Death." History will prove the sagacity of these early thought leaders. In 1893, Jacques Bertillon, a Parisian statistician, and his committee established the first "International List of Causes of Death."[3] At around that time, the "International List of Causes of Death" was presented in the United States at the International Statistical Institute, and in 1898, various countries in North America, including the United States, adopted this system.[4] Across time, this "International List of Causes of Death" was updated and published about once per decade in 1900, 1910, 1920, 1929, and 1938.[5]

The many twists and turns taken by this process during the half-century described are beyond the intended scope of this article. Suffice it to say that challenges were raised to the development of a reporting system for morbidity. In 1948, the World Health Organization (WHO) took charge of the classification system, which was expanded the following year to include coding for causes of morbidity in addition to mortality. The system was rechristened the International Classification of Disease system.[2,4] Under the auspices of the WHO, ICD development continued in a more predictable manner. The first 5 versions of the ICD system

Received November 18, 2015; accepted November 23.

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J.A.H. and L.M. developed the original draft. All other authors had an opportunity to review and provide meaningful edits towards the final manuscript.

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http://dx.doi.org/10.3174/ajnr.A4696

were each entirely contained within a single volume. That volume included an alphabetic index and a tabular list. By the sixth revision, the coding system included morbidity and mortality designations and required 2 volumes. Most important, ICD-6 expanded to include a section on psychiatric disorders. This sixth version was now called the *Manual of the International Statistical Classification of Diseases, Injuries, and Causes of Death* (http://apps.who.int/iris/bitstream/10665/70934/2/ICD_10_1967_v1_eng.pdf). Revisions have continued on an approximately decade-by-decade basis under the WHO, and the seventh and eight revisions were published in 1957 and 1968.[3]

In what could be called a parallel effort, the United States Public Health Service adapted the ICD to index hospital records and classify surgical procedures (ICDA) and published this system in 1962. The seventh edition of the ICD, therefore, expanded to include materials thought to be necessary for categorizing needs for hospitals. The Public Health Service went on to publish an eighth revision of the ICD, specifically focused on the unique needs of the United States known as ICDA-8. It had additional focus on morbidity and mortality reporting.[3]

The ICD-9 was published in 1977 by the Department of Knowledge Management and Sharing of the World Health Organization. ICD-9 was an important transition to increased granularity with 4-digit-level categories and a variety of optional 5-digit subdivisions. It was also pivotal in moving the system out of the WHO once ICD became a part of the public domain. ICD-9-Clinical Modification (CM) was the next expansion in the United States. The intention was to allow diagnostic coding of inpatient, outpatient, and physician office (nonfacility) use. It was developed by the National Center for Health Statistics. The CM expansion provided an opportunity to capture enhanced morbidity data and to update more frequently. This system is updated on October 1 of each year. ICD-9-CM was by now a 3-volume set with the first 2 volumes pertaining to diagnostic codes and the third containing procedural codes, though the latter never gained the popularity and widespread use in the United States of those developed through the Current Procedural Terminology process. The Centers for Medicare and Medicaid Services (CMS) and the National Center for Health Statistics both contribute to the oversight of the ICD-9-CM.[3] In 1983, the Inpatient Prospective Payment System was adopted to pay for hospital care in the Medicare program, which insures the elderly and those with chronic disease. ICD-9-CM volumes 1, 2, and 3 were used for assigning cases to the Diagnoses-Related Groups used to derive payment amounts.

The Tenth Edition. Neuroradiologists might be surprised to learn that work on ICD-10 began >30 years ago. Historically, updates occurred approximately once per decade. The initial effort on ICD-10 concluded in 1992. The ICD-10-CM was then introduced for its annual process of review in 1992. ICD-10 is much more granular than ICD-9, with an expansion from 17,000 codes to approximately 155,000. US-based providers might be further surprised to find out that many other countries transitioned to some form of ICD-10 many years ago. For example, Canada introduced a modified system, ICD-10-CA, in 2000. The international version of ICD-10 is used in >100 countries for cause-of-death reporting and statistics. In 2003, the Health Insurance Portability and Accountability Act of 1996 named ICD-9 as the code set for reporting diagnoses and procedures in electronic administrative transactions.[6] On January 16, 2009, the US Department of Health and Human Services published a regulation requiring the replacement of ICD-9 with ICD-10 as of October 1, 2013.

ICD-10-CM uses the same basic hierarchical structure as ICD-9-CM. The first 3 digits represent common traits, with each subsequent character providing greater specificity. ICD-10-CM is alphanumeric, with a possible 7 digits of specificity as opposed to the 5 digits of the ICD-9. An oddity is that the letter *U* is the only letter not used.[7] Other noteworthy changes include the addition of information relevant to ambulatory and managed care and greatly expanded injury codes that reflect the site of injury. Given the dramatic changes occurring within organized medicine in 2013, some authors called for a delay in the implementation of ICD-10 from the original planned date of October 1, 2013.[8] This idea gained greater traction when the American Medical Association formally adopted a policy that favored delaying implementation.[8,9] The original implementation date was extended by the Department of the Health and Human Services in the latter half of 2012 to October 1, 2014.[10] There was continued discomfort regarding implementation of ICD-10 by the 2014 date. The Protecting Access to Medicare Act of 2014 was primarily considered in the context of providing a temporary patch for the sustainable growth rate.[11,12] Embedded within that legislation was a further delay in the implementation of ICD-10 until October 1, 2015.[12] Finally October 1, 2015, was the date that ICD-10-CM went live in the United States.

Relationship to Current Procedural Terminology

Procedural reimbursement in the United States involves a complex interplay between the American Medical Association and the Centers for Medicare and Medicaid Services. In the mid-1960s, the American Medical Association, working with multiple major medical specialty societies, developed an iterative coding system for describing medical procedures and services. This system was termed the Current Procedural Terminology coding system.[13] The first edition of CPT (1966) primarily described surgical procedures. CPT when first established did not have a relationship with reimbursement. With time, CPT became critical not only to procedural reimbursement but also, assuming additional roles in administrative management, tracking new procedures and evolving aspects of pay for performance as we describe below.

The Health Insurance Portability and Accountability Act required the Department of Health and Human Services to name national standards, including specifying code sets, for electronic transactions of health care information. This resulted in an expansion of CPT beyond procedure and service reporting into the tracking of new services and procedures, as well as facilitating the reporting of measures useful for pay for performance. The revised CPT codes are accepted by Medicare for use in claims processing and have been incorporated wholesale into the coding system of Medicare, designated the Health Care Common Procedure Coding System.[13]

CPT is a work product that is owned by the American Medical Association. A concurrent activity is known as the American Medical Association Specialty Society Relative Value Scale Update

Committee. This committee is colloquially known as the RUC, and it attempts to provide a scale of relativity across the range of medical procedures in making recommendations for reimbursement values to CMS.[14,15] CMS representatives attend the RUC meetings, and CMS considers the recommendations of the RUC before ultimately deciding the reimbursement for medical services. The American Society of Neuroradiology is represented at both the Current Procedural Terminology and the Specialty Society Relative Value Scale Update Committees.

DISCUSSION

After several legislatively mandated delays, ICD-10-CM went live on October 1, 2015. Implementation is costly but, nonetheless, required.[16] Our belief is that ultimately the enhanced granularity will be useful not only for disease tracking but also for serving as necessary infrastructure for reimbursement of value over volume in the evolving US health care delivery system. The evolving payment paradigm requires sophisticated tracking tools such as ICD-10 to accurately gauge the effectiveness of the treating provider or treating institution, as well as tracking costs of these therapies. Without an increase in the granularity of disease classification, bending the US health care system cost curve by rewarding value over volume would not be possible. With that scenario in mind, coding mistakes are a real and a potentially costly possibility. While CMS has reluctantly agreed to allow a 1-year grace period for coding mistakes, there is no guarantee that commercial carriers will follow suit.

As ICD-10-CM granularity has increased, a seldom-discussed but realistic question is the ongoing relevance of CPT. With >150,000 distinct codes, including those that describe procedures, one could imagine a circumstance in which sufficient granularity would be available to raise questions about the need for CPT codes. As outlined above, Current Procedural Terminology arose to meet a specific need in the mid-1960s. The CPT system is embedded in calculations of the CMS of relativity in the reimbursement system we currently use.

Additionally, providers need to be very aware of "high-risk" codes. These are ICD-9 codes that map to multiple different ICD-10 variations. In fact, there are >3600 instances in which ICD-10-CM codes can map to multiple different ICD-9-CM codes. Conversely, and more unusual, there are >500 codes that are more specific in the ICD-9-CM than in ICD-10-CM.[17]

Organized medicine often faces unfunded mandates. This one is noteworthy because of its cost. A 2008 study[18] predicted that implementation of ICD-10 would cost typical practices between $83,292 and $2.7 million, depending on the size of the practice, though a more recent study nearly tripled those estimates.[16] In addition, cash flow disruptions have been predicted to range from $50,000 to $15 million for large practices.[18,19] Large hospital systems can spend vast sums of money implementing a new electronic medical record.[20] Moreover, while information technology has the power to deliver powerful improvement in the delivery of medical care, it could also be accused of depersonalizing that care. We make these points to contextualize the challenges of unfunded mandates such as ICD-10 in this era of remarkable expenditures.[21]

While ICD-10-CM implementation is only occurring in the United States in 2015, readers of this vignette will recall that work on it started >30 years ago and that previously, updates to the system occurred on a reasonably semi-predictable 10-year basis. Work on ICD-11 has already been ongoing for quite a few years. A beta draft was published on-line in 2012 for initial consultation and commenting and a completed product is expected by 2018.[22]

CONCLUSIONS

ICD-10-CM has been noteworthy for the controversy that has surrounded its implementation. It is a far more granular system than its predecessor, allowing better disease tracking, but this granularity also leads to physician anxiety in the context of payment policy. The transition to ICD-10-CM is inconsistently supported by payers and has been hampered by other regulatory requirements related to the Affordable Care Act to which providers are subject.

Neuroradiologists have enjoyed continuous, multiyear representation at the 2 committees that are integrally involved in determining physician reimbursement in the United States. CPT is 1 of the 2 committees. With the increasing granularity associated with ICD-10-CM, in the setting of a new payment paradigm, one might begin to wonder about how that system might impact current procedural coding. Internationally, as US doctors embrace ICD-10-CM, it is worth remembering that work has begun on ICD-11. We can only presume that transitioning to this system is a number of years off in the United States. One can only wonder what Sauvages de Lacroix would think about the seismic transitions that have occurred since he proposed classifying diseases in 1763.

Disclosures: Joshua A. Hirsch—*UNRELATED*: *Consultancy*: Medtronic/CareFusion, *Comments*: Both are related to the spine. Medtronic is ongoing. CareFusion was in the last 36 months (single course). Neither is related to the topic of the article. Raymond W. Liu—*UNRELATED: Expert Testimony*: legal work. Robert M. Barr—*UNRELATED*: *Board Membership*: Novant Health. Laxmaiah Manchikanti—*UNRELATED*: *Consultancy*: Semnur Pharmaceuticals, *Comments*: I provided limited consulting services to Semnur Pharmaceuticals, which is developing nonparticulate steroids (US $1400).

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