

Migration to the ICD-10 coding system: A primer for spine surgeons (Part 1)

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Abstract

Background: On 1 October 2015, a new federally mandated system goes into effect requiring the replacement of the International Classification of Disease-version 9-Clinical Modification (ICD-9-CM) with ICD-10-CM. These codes are required to be used for reimbursement and to substantiate medical necessity. ICD-10 is composite with as many as 141,000 codes, an increase of 712% when compared to ICD-9.

Methods: Execution of the ICD-10 system will require significant changes in the clinical administrative and hospital-based practices. Through the transition, diminished productivity and practice revenue can be anticipated, the impacts of which the spine surgeon can minimize by appropriate education and planning.

Results: The advantages of the new system include increased clarity and more accurate definitions reflecting patient condition, information relevant to ambulatory and managed care encounters, expanded injury codes, laterality, specificity, precise data for safety and compliance reporting, data mining for research, and finally, enabling pay-for-performance programs. The disadvantages include the cost per physician, training administrative staff, revenue loss during the learning curve, confusion, the need to upgrade hardware along with software, and overall expense to the healthcare system.

Conclusions: With the deadline rapidly approaching, gaps in implementation result in delayed billing, delayed or diminished reimbursements, and absence of quality and outcomes data. It is thereby essential for spine surgeons to understand their role in transitioning to this new environment. Part I of this article discusses the background, coding changes, and costs as well as reviews the salient features of ICD-10 in spine surgery

Key Words: Diagnostic coding systems, ICD-10, implementation, practice management, spine surgery

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INTRODUCTION

“It may be hard for an egg to turn into a bird: It would be a jolly sight harder for it to learn to fly while remaining an egg. We are like eggs at present. And you cannot go on indefinitely being just an ordinary, decent egg. We must be hatched or go bad” by C. S. Lewis

Coding has always been an essential method for physicians and hospitals to document disease and procedures in order to get reimbursed for the work done rather than a means to communicate the disease condition. Administrative assistants usually perform the tasks of coding and proper documentation and submission of health insurance claims. In some cases, there is a disconnect between the physician and coder, which in turn causes coding errors resulting in improper reimbursements and unreliable data for scientific or organizational analysis. The International Classification of Disease-version 9 (ICD-9) coding system that has been used in the US since the 70s has now become archaic, thus resulting in the Department of Health and Human Services (HHS) mandating a change to an advanced and increasingly granular International Classification of Disease-version 10- Clinical Modification/Procedure Coding System (ICD-10-CM/PCS).

The ICD-9 will be replaced by the ICD-10-CM/PCS; that will be the standard for coding diagnoses substantiating medical necessity and professional reimbursement. The change mandated by HHS is set to occur on 1 October 2015, following a delay of about a year. The implementation of ICD-10 will make it the Health Insurance Portability and Accountability Act (HIPAA)/Centers for Medicare and Medicaid Services (CMS) standard from that day forward, and use of the old codes for claims and transactions will result in denials of reimbursement. Although various countries have adopted and used the ICD-10 system over the past two decades, presently there are no other countries utilizing this unique ICD-10-CM/PCS coding system. It is a highly specific coding system that can be appropriately applied to a socio-economically advanced nation where a number of diseases have unending co- orbidity. The World Health Organization (WHO) granted the US permission to develop this coding system, as it could most effectively utilize this coding system given its advanced technology.

MATERIALS AND METHODS (PRELIMINARY CONCEPTS AND LITERATURE REVIEW)

History and evolution of coding systems

The decision to code and classify disease began in the late 16th century in London following the death of 81 people as the bill of mortality. This was subsequently followed by a number of classification schemes that finally evolved

into the WHO taking responsibility for the International Classification of Disease (ICD) in 1948 and then having it evolve into the present ICD-10 with its various modifications^[17,18] [Table 1, Appendices 1 and 2]. We evaluate relevant literature on the topic and summarize the key findings that are essential and relevant for the spinal surgical community.

US national center for health statistics

The US National Center for Health Statistics (NCHS) created an extension of the ICD-9 codes to include morbidity data codes.^[12,13] The NCHS and CMS are the agencies in the US responsible for incorporating modifications to the ICD-9-CM. This was the coding system that was adopted to identify morbidity and mortality, classify disease, and utilize these codes for healthcare claims by hospitals, physicians, and associated healthcare providers and facilities. This system was used to evaluate payment for health services, utilization of services, healthcare trends, costs, research, and planning for the future of healthcare in the US.

Medicare catastrophic coverage act

The Medicare Catastrophic Coverage Act was passed by the US Congress in 1988, making ICD-9-CM codes the standard for processing Medicare claims. This resulted in commercial and third-party payers following Medicare’s lead. They adopted the ICD-9-CM for diagnosis reporting in order to maintain medical necessity. As a result,

Table 1: Timeline in the evolution of disease coding

16 th century: London bill of mortality
1662: Bill of mortality (81 causes of death)
1763: French physician Francois Bossier de Lecroix listed a classification with 10 major disease classes and 2,400 individual diseases
1837: William Farr and Jacob Marc d’Espine classification based on anatomic site
1893: Jacques Bertillon classification also called international list of causes of death introduced by the international statistical institute in Chicago
1898: ILCD adopted by Canada, United States and Mexico
1900: International classification of disease (179 causes of death)
1948: WHO assumed responsibility for ICD
1949: WHO expanded the ICD codes to include morbidity
1950’s: ICD evolved to cover morbidity, hospital databases, reimbursement, health policy, and medical research with the 6 th revision expanding the ICD to a 2 volume set
1957: ICD-7 th revision
1968: ICD-8 th revision
1977: ICD-9 further detailed 4 and 5 digit coding categories
1992: ICD-10; many countries transitioned and adapted these codes with 110 countries using the non-adapted ICD-10 codes
2001: ICD-10-CA, Canada modified and transitioned over to the new system over 5 year

ILCD: International list of causes of death, ISI: International statistical institute, ICD: International classification of disease

the ICD-9 system has become the core classification to code for commercial and government insurance reimbursement.

Health insurance portability and accountability act

Subsequently, in 2003, HIPAA of 1996^[1] designated the present ICD-9 system of codes that constitute the standard for reporting diagnoses and procedures in all electronic administrative transactions. The HHS followed this with a mandate requiring the change of ICD-9 codes to the new ICD-10 system on 1 October 2015. With this change, ICD-10-CM will be used for diagnostic codes and ICD-10-PCS for procedural coding; all HIPAA covered entities must make the change and also adopt electronic billing.^[2,8,14,16]

10 Standard transactions (HIPAA)

There are 10 standard transactions that HIPAA^[1] has identified for electronic exchange of data, payments, diagnoses, and encounters. In addition, there are other code types used to identify specific diagnoses and clinical procedures for claims and reimbursement. The lists of codes in Table 2 indicate the present mix used by physicians, hospitals, and administration to generate appropriate payments and reimbursement.

Structure of ICD-10

A current codebook is available from the CMS website. This website includes references and guidelines as well. The link is <http://www.cms.gov/ICD10>.

The migration to ICD-10 requires a significant change in documentation and coding practices. This impacts physician documentation in the office and hospital setting.

Increased granularity and specificity of ICD-10-CM/PCS codes

The ICD-10-CM/PCS codes have an increased “granularity” or specificity.^[7] In regards to clinical documentation for ICD-10-CM coding, spine surgeons will be required to provide detailed histories, examinations, surgical and procedural notes. These will have to include the duration of symptoms (e.g. acute or chronic) and directly document the laterality/location of the pathology (anatomical location) and visits (e.g. initial or subsequent). Better documentation should improve claim adjudication and reduce denials. Although most of this will be an automated process, in instances of an audit, appropriate documentation will make the query process substantially easier while enabling coders to clarify issues without having to query the provider multiple times for answers.

Seven characters for ICD-10-CM versus five for ICD-9-CM

The ICD-10-CM codes have a structure similar to that

Table 2: Types of codes that are/will be used in the spine practice setting

Current procedural terminology (CPT)	Used for professional fees Developed and owned by AMA New edition each year Identifies services rendered, not diagnoses
Relative value units (RVU)	Generated from CPT codes 3 components Physician work, Practice Malpractice Used to generate professional fees Developed by AMA and updated by relative value update committee
Diagnostic-related group (DRG)	Used for reimbursement to hospitals Started in 1982 Intent was to classify the “products” that hospitals provide DRG based on ICD diagnoses, procedures, age, gender, discharge status, and co-morbidities
National drug code	Unique 10-digit, three-segment number, to identify and report drug products Universal product identifier for drugs Non-drug products are prohibited from having an NDC number Contains list of final marketed drugs that are electronically reported
ICD-10-CM (10 th edition of International classification of disease-clinical modification)	Codes for diseases, signs, symptoms, abnormal findings, social circumstances, and external causes ~70,000 different codes
ICD-10-PCS (10 th edition of International classification of disease-procedure coding system)	Replaces ICD-9-CM volume 3 Used for procedures done in the hospital (OR, ICU, bedside) ~80,000 codes Created by 3M under contract from CMS Initially released in 1998

CPT: Current procedural terminology, AMA: American medical association, RVU: Relative value units, RUC: Relative value update committee, DRG: Diagnostic-related group, NDC: National drug code, ICD: International classification of disease

of ICD-9-CM, but have seven characters rather than five that are present in the ICD-9-CM. The first three values are for describing common traits, while the remaining four are for greater specificity. The ICD-10 has many more additions and code choices, more information for ambulatory and managed care settings, increased number of injury codes, combining diagnostic and symptom codes, and increased specificity in code assignment.

ICD-10-PCS codes directly relate to surgery

Of more interest to the spine surgeon, however, are the ICD-10-PCS codes which directly relate to surgery (e.g. the level or anatomical component,

the approach, and equipment used/inserted). The ICD-10-PCS is multi-axial in that each of the seven characters is independent and retains its meaning throughout the range of codes whenever possible.^[20-22]

Medical/surgical section

The medical/surgical section in this is fairly consistent [Table 3]. The surgical note documentation has to very specifically correspond to each of the characters entered. The complexity of the procedures, types of devices/instrumentation used in the procedure, and approach make this all the more difficult for the coder to understand, and there may be a period where they will have to work with the surgeons to clarify and standardize notes to a significant amount, so as to enable quicker processing.

Deciphering the codes

The relationship between the procedure codes entered by the surgeon [current procedural terminology (CPT)] for professional services provided in the hospital setting, ultimately ties into the ICD-10-CM/PCS codes. The resulting assignments in Ambulatory Payment classification (APC)/Diagnosis Related Groups (DRGs)/ICD-10s are used for reimbursement to the hospitals and surgeons for the work performed by them [Figure 1].

The National Center for Health Sciences created a bidirectional system known as the General Equivalence Mappings (GEMs) to enable the old and new sets to communicate.^[3] With the GEMs, it is possible to translate or map ICD-9 codes to the new ICD-10 code set, along with the ability to reverse match ICD-10 back to the ICD-9 code set, a process called reverse mapping. GEMs have a composite, intertwined, and non-reciprocal mapping structure where only 5% of the codes have a 1:1 relationship of ICD-9 with ICD-10 codes. As a result of a single ICD-9 code matching onto multiple ICD-10 codes and vice versa, the risks for inadvertent errors and the potential for abuse and fraud are present.^[4,5]

DISCUSSION

Changing over to the new system will have a significant impact on practices and hospital systems. The transition will come with loss of productivity, revenue changes, and will require education for practitioners and coders. We have discussed the advantages and potential disadvantages of ICD-10. The potential advantages of the change to the new ICD-10-CM/PCS coding set will become evident anywhere between 5 and 10 years of implementation. Table 4 describes all the potential advantages that will be the result of this change. Keeping the probable advantages in mind, there are a number of skeptics that have rightly put forth the disadvantages they foresee and are described in Table 5.

Table 3: Decoding the ICD-10-PCS

Codes comprised of 7 components-each component called a character

ICD-10-PCS does not include diagnostic codes/information
Primary source for coding is the operative note
All codes 7 characters long
Each unit represented by a 'letter' or 'numerical value'
34 possible values for each character with number 0-9 and alphabets A-H, J-N, P-Z
<i>1st character-section:</i> 16 sections divided into 3 primary groups
Medical and surgical-the largest section: 61896 codes or 86% of the codes
Medical and surgical related
Obstetrics, placement, administration, measurement/monitoring, Extracorporeal Assistance and Performance, Extracorporeal Therapies, Osteopathic, other procedures, Chiropractic
Ancillary procedures
Imaging, Nuclear Medicine, Radiation Oncology, Physical Rehabilitation and Diagnostic Audiology, Mental Health, Substance Abuse Treatment
<i>2nd character-body system:</i> (Appendix 1) includes 31 high-level body descriptors such as Respiratory, Endocrine, Central Nervous System, Peripheral Nervous system (Appendix 1). Easy to identify this character except for Orthopedic procedures. Orthopedic cases require codes from multiple body systems and in many cases spine procedures may have over lapping codes as well
The orthopedic body system includes muscles, tendons, bursae and ligaments, joints and bones
<i>3rd character-root operation:</i> (Appendix 2) describes objective of the procedure. This remains the key to coding and not easily understood by coder. 31 root terms in medical and surgical section
Root operations are placed into nine general grouping
Take out body part; take out solid, fluid, gas; cutting or separation; put in, put back, or move; Alter the diameter or route of tubular body part; involve a device; exam only; other repairs; other objectives
<i>4th character-body part:</i> Specific body part operated upon and laterality
<i>5th character-operative approach:</i> Technique used to reach the site.
3 components
Access location
Method
Type of instrumentation
<i>6th character-device:</i> Devices that remain after procedure is complete. Incidental materials used for the procedure are not included. Root terms that are specific to devices include insertion, replacement, supplement, removal, change, and revision
<i>7th character-qualifier:</i> Unique and defines procedure details. For example, biopsy is coded with root term excision followed by the 7 th character qualifier of X-diagnostic to differentiate excisions performed for diagnostic purposes

ICD: International classification of disease, PCS: Procedure coding system

Impact on spine surgery

Cost to spine practices and hospital groups

The RAND Corporation had published their report in 2004, in which they analyzed the costs and benefits of the transition to ICD-10.^[11,19] The analyses indicated benefits to society and the healthcare systems over a 10-year period, as this has been historically the time taken for transition

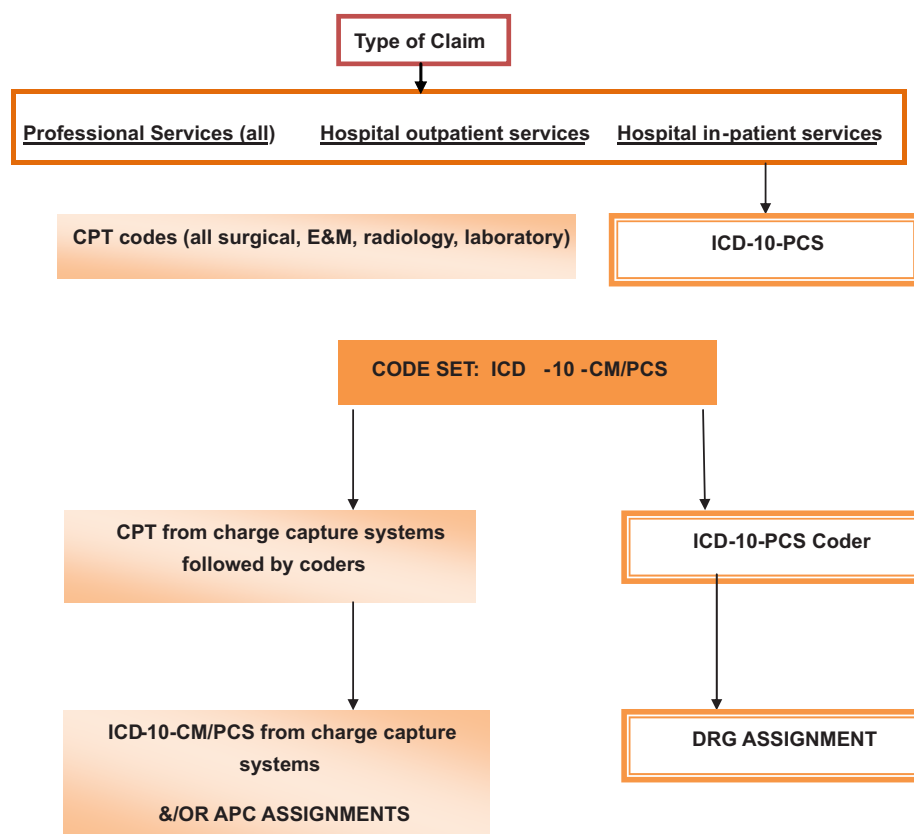


Figure 1: The claim processing sequence illustrates the process from initial placement of claims to the final assignments. Once professional and hospital services are documented, specific codes are entered that are combined with specific code sets on the ICD-10-CM/PCS system, which get assigned either an ICD-10 code for professional services in practice, an APC for the outpatient setting, or a DRG for an inpatient setting. Based on these final assignments, hospitals will get paid for services

and evaluating the benefits from prior transitions.^[10] The RAND Corporation estimated benefits ranging from \$100–\$1200 million for new procedures, which may enable surgeons to perform procedures for patient necessity, to improve function and improve the patients quality of life. Many of these procedures are presently not performed because lack of reimbursements, and the addition of these new codes will significantly benefit the patients. The diminished ambiguity, particularly with ICD-10-PCS coding, being more logically organized and documented, will mean less fraudulent claims and rejected ones resulting in benefits of anywhere between \$200 and 2500 million, although these benefits may accrue after more than 5 years of utilization. New procedures are coded accurately in ICD-10-PCS, thus avoiding confusion by clumping them with many codes from ICD-9 to define the procedure. This makes analysis of these procedures easier, making ineffective procedures redundant and those with improved outcomes more readily available to the patient population. This would essentially result in saving of approximately \$100–\$1500 million in the long run. A white paper authored by P. Zenner for Milliman and Robertson estimated a final saving of over \$2.228 billion.^[23] The estimated costs to health plans along, as projected by the American Health Insurance Plans (AHIP), the Health Trade Plan group, will be around \$2–\$3 billion.^[12] Aetna

has estimated costs of \$50–\$70 million a year through the 1st year alone for the conversion.^[15] The costs estimated to be incurred in 2008 by physician practices vary from approximately \$83,000 for a 3-doctor practice with two administrative staff, \$285,195 for a medium practice with 10 doctors and a professional coder with about six administrative staff, to about \$2.8 million for a 100-physician practice with 10 coders and about 50 administrative staff. In a recent update of the report published by Nachimson *et al.*, they have projected cost in 2014 to be 2–4 times the costs estimated in 2008, and this has been recently published on the American Medical Association website in detail (<http://www.ama-assn.org/ama>).

Productivity and training

The Canadian experience accrued from the ICD-10-CA transition between 2001 and 2005 has taught us interesting lessons.^[6,9] There was a 52% loss of productivity immediately following the implementation of this new system. It took about 3–6 months after implementation to identify any significant improvements in the productivity and about a year to reach pre-implementation levels.^[9]

Reimbursement

Inpatient DRGs for 26% of the claims, in the process of transition from ICD-9 to ICD-10, will not be

Table 4: Advantages of implementing ICD-10

- Accurate and precise information
- Clear definition of new procedures
- Increased specificity or granularity
- Diminished coding errors
- Improved reimbursement once system is up and running
- Decreased verifications as documentation and coding will be precise and should be in sync
- Easy to compare and verify documentation and corresponding codes
- In time will lead to increased productivity
- Utilization of software for coding, ultimately diminishing need for coders
- Less abuse of the system
- Decreased frequency in the ability to commit fraud because of the lacunae in the old system
- Code error rates significantly below ICD-9
- Precise data for quality, patient safety and compliance reporting
- Disease and disease outbreak information
- Detailed data mining for improved analysis of diagnoses, treatment efficacy, and prevention
- Better information for payers-payment based on performance
- Quality measurement and medical error reduction (patient safety)
- Outcomes measurement
- Clinical research
- Clinical, financial, and administrative performance measurement
- Health policy planning
- Operational and strategic planning and healthcare delivery systems
- Design provider profiling
- Refinements to current reimbursement systems, such as severity-adjusted DRG systems
- Pay-for-performance programs
- Public health and bioterrorism monitoring
- Managing care and disease processes
- Educating consumers on costs and outcomes of treatment options

ICD: International classification of disease, DRG: Diagnosis related groups

affected; 74% of the DRGs will be affected as GEMs and reverse mappings have a number of confounding options. The resulting delay in payments may go on for a year from the implementation of these new code sets, thus indirectly affecting the physicians and surgeons practicing in the hospital. Additionally, delayed reimbursement could result in risks for small practice sustainability, with the absence of revenue effecting productivity and staffing.

CONCLUSIONS

The increasing pressures on the healthcare system make it necessary to control payments and costs for inappropriate services. New benchmarks and quality measures will be available, making obsolete procedures redundant. The accountable care model requires healthcare spending to be made for the right condition and corresponding appropriate service. The ability of surgeons to understand and adapt to the changes brought about by the ICD-10- PCS/CM's,

Table 5: Disadvantages of implementing ICD-10

- Diagnostic codes for insurance and billing increase from 14,000 in ICD-9 to 69,000 in ICD-10-CM
- Inpatient procedure codes for insurance and billing increased from 3800 in ICD-9 to 72,000 in ICD-10-PCS
- One ICD-10 code may represent a number of ICD-9 codes compounding the complexity rather than increase granularity
- Every aspect documenting clinical information and procedures to insurance and billing will be altered, necessitating changes in clinical and billing operations nation wide
- Need for physicians, coders, hospitals, insurers, payees and software to assimilate this new language, rapidly translating old to new
- Significant additional cost burden to physician groups and practices, hospitals, health plans and vendors
- Potential benefits and cost savings projected, yet amounts to be clearly identified and gains delayed
- Spurns the production of excess consultants and firms to bridge the gap and provide training in the transition phase
- Inconvenience to practitioners
- Loss of productivity and time required to resolve coding issues
- Delays in reimbursement to practitioners and hospitals
- Loss of reimbursement
- Correcting coding and billing issues is time consuming for all personnel
- More expenses on the already burgeoning healthcare economy

ICD: International classification of disease, PCS: Procedure coding system

Appendix 1: Medical and surgical section

Character 2-body systems

Endocrine	Central nervous
Skin and breast	Peripheral nervous
Subcutaneous tissue and fascia	Heart and great vessels
Muscles	Upper arteries
Tendons	Lower arteries
Bursae	Upper veins
and Ligaments	Lower veins
Head and facial bones	Lymphatic and hematologic
Upper bones	Eye
Lower bones	Ear, nose and throat
Upper joints	Respiratory
Lower joints	Mouth and throat
Urinary	Gastrointestinal
Female reproductive	Hepatobiliary and pancreas
Male reproductive	
Anatomical regions, general	
Anatomical regions, upper extremities	
Anatomical regions, lower extremities	

that include the enhanced accuracy and detailing of spine procedures, details of devices inserted, clear delineation of surgical approach, laterality, and body part; will go a long way in making this transition easier. The ICD-10 implementation will enable accurate risk stratification, and increased data will provide appropriate allocation of resources to the population or disease.

Appendix 2: Medical and surgical section**Character 3-root operations**

Alteration	Excision	Release
Bypass	Extirpation	Removal
Change	Fragmentation	Repair
Control	Fusion	Replacement
Creation	Insertion	Reposition
Destruction	Inspection	Resection
Detachment	Map	Restriction
Dilation	Occlusion	Revision
Division	Reattachment	Supplement
Drainage		Transfer
		Transplantation

Coded according to exact procedure objective

Composite terms not root operations e.g., sigmoidectomy

Multiple codes in same surgery if multiple root operations on the same parts, multiple roots on different parts, intended not attempted but the need to convert to another procedure thus root operation

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