Evaluation of Inpatient Clinical Documentation Readiness for ICD-10-CM

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Abstract

This research study examined the gaps in documentation that occur when coding in ICD-10-CM. More than 4,000 diagnoses from all chapters were coded from 656 electronic documents obtained from a large integrated healthcare facility at the time the study was conducted (2012). After the documents were coded, areas for documentation improvement were identified for chapters that resulted in deficiencies in documentation, and a quick reference guide was developed.

The overall absent documentation percentage was 15.4 percent. The 10 chapters with the highest percentage of absent documentation were chapter 7 (Diseases of Eye and Adnexa), with 67.65 percent ($p < .001$); chapter 8 (Diseases of Ear and Mastoid Process), with 63.64 percent ($p < .001$); chapter 13 (Diseases of the Musculoskeletal System and Connective Tissue), with 46.05 percent ($p < .001$); chapter 14 (Diseases of the Genitourinary System), with 40.29 percent ($p < .001$); chapter 10 (Diseases of Respiratory System), with 35.52 percent ($p < .001$); chapter 1 (Infectious and Parasitic Diseases), with 32.88 percent ($p < .001$); chapter 12 (Diseases of the Skin and Subcutaneous Tissue), with 32.35 percent ($p < .001$); chapter 2 (Neoplasms), with 25.45 percent ($p < .001$); chapter 4 (Endocrine, Nutritional and Metabolic Diseases), with 14.58 percent ($p < .001$); and chapter 17 (Congenital Malformations, Deformations, and Chromosomal Abnormalities), with 12.50 percent.

We addressed the deficient areas in the quick reference guide developed for clinicians and technology vendors. Having complete and accurate documentation would benefit both the clinician and the patient in providing the highest quality of care.

Keywords: ICD-10-CM (International Classification of Diseases, Tenth Revision, Clinical Modification), clinical documentation improvement, reimbursement

Background

Having accurate and up-to date documentation is vital as the US healthcare system approaches the transition from the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) to the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM). ICD-10-CM has many more codes available to choose from, along with a higher degree of specificity. For coding to be accurate, the documentation needs to be in place in the medical record. Dimick (2011) identified a list of 10 areas that had documentation issues according to feedback from facilities that were in the process of transitioning to ICD-10-CM and the International Classification of Diseases, Tenth Revision, Procedure Coding System (ICD-10-PCS).[1] Those areas included diabetes mellitus, injuries, drug underdosing, cerebral infarctions, acute myocardial infarction, neoplasms, musculoskeletal conditions, pregnancy, and respiratory/ventilators, and all of ICD-10-PCS. Furthermore, Moczygemba and Fenton (2012) evaluated the clinical documentation needs in specific areas (heart disease, pneumonia, and diabetes) and highlighted the importance of having accurate clinical documentation and identifying gaps along with the importance of coder training and education.[2] Documentation needs must be reevaluated in every healthcare setting in preparation for the transition to the ICD-10-CM coding system in 2014.

Adoption of ICD-10-CM also would facilitate international comparisons of quality of care and the sharing of best practices globally. Overall, ICD-10-CM is more effective at capturing public health diseases than ICD-9-CM. It is more specific and more fully captures nationally reportable public health diseases.[3] ICD-10-CM's increased specificity offers payers and

providers the potential for considerable cost savings through more accurate trend forecasting and cost analysis. Greater detail can improve payers' abilities to forecast healthcare needs and trends and analyze costs.[4]

It is important that US healthcare providers learn from the challenges that have arisen in the implementation of the International Classification of Diseases, Tenth Revision (ICD-10) in other countries. The major challenges in the transition to ICD-10-CA (the Canadian version) were the fact that the entire coding system transformed from paper to electronic, the need for coder education, and the lack of professional coders.[5] A study of ICD-10 implementation in Australia (ICD-10-AM) identified similar attributes needed for a smooth implementation: education, and early preparation and planning by clinicians and workgroups.[6] Both of these studies found that coders took approximately four to six months to regain their pre–ICD-10 coding productivity.

The purpose of this study is to identify the barriers related to documentation specificity, identify absent documentation across all 21 ICD-10-CM chapters, and develop a documentation improvement tool kit for providers and technology experts. The findings of the research could alert physicians and other documentation specialists as to what, if any, practices need to be changed in order to obtain accurate coding. Furthermore, the results could be used in the development of better inpatient computer-assisted coding (CAC) products. The industry needs automated solutions to allow the coding process to become more productive, efficient, accurate, and consistent. CAC in outpatient care has been well researched and studied, and several successful software products are being used, while the application of CAC to inpatient care is still minimal because it requires a more complex set of tools.

Methodology

A descriptive research study using quantitative methods was conducted; the study focused on coding electronic documents across each major diagnostic category for ICD-10-CM. Each of the records was categorized into each of the ICD-10-CM chapters. Coding was performed using the 2011 version of the ICD-10-CM draft manual that was available at the time of the study. A thorough investigation of the de-identified database which included data from an integrated healthcare system identified a total of 656 electronic inpatient documents with a total of 4,791 diagnoses. To study the entire available population, the researcher decided to code the entire data set (4,791 diagnoses) (See Table 1). The electronic document consisted of multiple sections (Chief Complaint, History of Present Illness, Past Medical History/Family History/Social History, Review of Symptoms, Physical Exam, Labs and Studies, and Assessment and Plan).

Table 1
Distribution of the Documents into the ICD-10-CM Chapters

ICD-10-CM Chapter	Number of Records According to Diagnosis Codes
Chapter 1: Infectious and Parasitic Diseases	73
Chapter 2: Neoplasms	55
Chapter 3: Diseases of the Blood and Blood Forming Organs and Certain Disorders Involving the Immune Mechanism	245
Chapter 4: Endocrine, Nutritional and Metabolic Diseases	926
Chapter 5: Mental and Behavioral Disorders	282
Chapter 6: Diseases of the Nervous System and Sense Organs	246
Chapter 7: Diseases of Eye and Adnexa	34
Chapter 8: Diseases of Ear and Mastoid Process	11
Chapter 9: Diseases of Circulatory System	957
Chapter 10: Diseases of Respiratory System	335

Chapter 11: Diseases of the Digestive System	300
Chapter 12: Diseases of the Skin and Subcutaneous Tissue	34
Chapter 13: Diseases of the Musculoskeletal System and Connective Tissue	215
Chapter 14: Diseases of the Genitourinary System	278
Chapter 15: Pregnancy, Childbirth, Puerperium	0
Chapter 16: Newborn (Perinatal) Guidelines	0
Chapter 17: Congenital Malformations, Deformations, and Chromosomal Abnormalities	8
Chapter 18: Symptoms, Signs, and Abnormal Clinical and Laboratory Findings, Not Elsewhere Classified	597
Chapter 19: Injury, Poisoning, and Certain Other Consequences of External Causes	41
Chapter 20: External Causes of Morbidity	9
Chapter 21: Factors Influencing Health Status and Contact with Health Services	145

These documents consisted of a combination of structured (Clinical Document Architecture [CDA] level 2) and unstructured information. For the structured sections, metadata, section headings, and subsection headings were all structured in the Extensible Markup Language (XML) format. However, clinical facts within the sections were not structured; therefore, it is possible that a medical transcriptionist could remove part of the structure because transcriptionists often follow an "as dictated" method of transcription and might remove section or subsection headings. The coding methodology involved reviewing all diagnoses listed in the last section (Assessment and Plan). The first listed diagnosis was identified as the principal diagnosis, and all remaining diagnoses were identified as secondary diagnoses. After identifying the diagnoses, the researcher went back to review all sections of the record to determine if the supporting documentation was present and/or if any documentation was absent. The term *absent* relates to documentation that was not present in the electronic documents that were used for coding. (For example, *Ear infection* is stated as a diagnosis; however, the laterality is not present in the electronic document.) An AHIMA-approved ICD-10-CM trainer and a researcher at the University of Pittsburgh were able to validate 5 percent of the total records (44 records including 737 diagnoses). We obtained feedback from physicians, coders, and technology experts in order to obtain valuable insights and suggestions in developing the quick reference guide. After developing the recommendations, we invited a physician, a coding professional, a health information management professional, and an informational technology professional responsible for developing an inpatient CAC system to review the documentation improvement tool kit and make further suggestions and recommendations for improving documentation.

Sample

After evaluating the inpatient document database and performing a thorough cleanup of the database (omission of duplicate records and erroneous records), we identified 656 patient records, each including 1 to 29 different diagnoses. A total of 4,791 diagnoses were coded for the study, and all possible diagnoses were coded to gain knowledge of the extent of the ICD-10-CM documentation requirements. The records were approximately one year old. Electronic documents reflecting only a patient's diagnosis conditions were selected because the research involved evaluation of only ICD-10-CM (diagnosis coding).

Results

Each of the diagnoses was categorized into the ICD-10-CM chapters, as depicted in Table 1. The distribution of the records into the ICD-10-CM chapters was uneven, with some chapters having more than 500 records (chapters 4, 9, and 18), some having fewer than 50 records (chapters 7, 8, 12, 17, 19, and 20), and two chapters containing no records (chapters 15 and 16).

Overall, 736 diagnoses were identified with absent documentation, generating an overall absent documentation percentage of 15.4 percent (see Table 2).

Table 2
Absent Documentation per ICD-10-CM Chapter

ICD-10-CM Chapter	# of Records According to Diagnosis Codes	# of Diagnoses with Absent Documentation	Percentage of Diagnoses with Absent Documentation	Sample of Common Types Of Discrepancies Observed
Chapter 1: Infectious and Parasitic Diseases	73	24	32.88	Sepsis: lacking infectious agent Viral hepatitis: lacking if condition is chronic and/or presence/ absence of hepatic coma
Chapter 2: Neoplasms	55	14	25.45	Esophagus: lacking exact location (upper/middle/lower third) Colon: lacking ascending/hepatic/ transverse/splenic/ descending/sigmoid
Chapter 3: Diseases of the Blood and Blood Forming Organs and Certain Disorders Involving the Immune Mechanism	245	5	2.04	Overall, the conditions were well documented
Chapter 4: Endocrine, Nutritional and Metabolic Diseases	926	135	14.58	Diabetes: lacking type and presence/absence of insulin use and associated body mass index (BMI)
Chapter 5: Mental and Behavioral Disorders	282	22	7.80	Bipolar disorder: lacking remission/partial remission/full remission along with extent of condition (mild/moderate/severe) Depression: lacking mild/moderate/severe and/or single vs. recurrent event
Chapter 6: Diseases of the Nervous System and Sense Organs	246	26	10.57	Paraplegia or quadriplegia: lacking if condition is incomplete vs. complete and for quadriplegia lacking C1–C4 and C5–C7 complete vs. incomplete Alzheimer's disease: lacking if early vs. late onset
Chapter 7: Diseases of Eye and Adnexa	34	23	67.65	Glaucoma: lacking if condition is open angle (low tension/ pigmentary/capsular) and laterality (right/left or bilateral) and if secondary to another condition Cataract: lacking if condition is age

				related (cortical/anterior/ posterior) along with laterality
Chapter 8: Diseases of Ear and Mastoid Process	11	7	63.64	Vertigo: lacking specific ear (right/left/bilateral) Presbycusis: lacking laterality (right/left/bilateral)
Chapter 9: Diseases of Circulatory System	957	88	9.20	Heart failure: lacking systolic/diastolic/combined systolic and diastolic along with acute/chronic Hypotension: lacking if condition is idiopathic/hypotension due to drugs/hypotension of hemodialysis
Chapter 10: Diseases of Respiratory System	335	119	35.52	Pneumonia: lacking causative infectious agent; also lacking note of influenza if present, bronchopneumonia, or lobar and hypostatic pneumonia Tonsillitis: lacking organism and if condition is acute
Chapter 11: Diseases of the Digestive System	300	25	8.33	Diverticulosis: lacking specific region of intestine and if abscess or bleeding was present Crohn's disease: lacking region of the intestine (large/small/both) along with any complications (rectal bleeding/intestinal obstruction/fistula/abscess)
Chapter 12: Diseases of the Skin and Subcutaneous Tissue	34	11	32.35	Pressure ulcer: lacking location (elbow/back/ sacral/hip/etc.) and specific stage (1–4) Atopic dermatitis: lacking type (neurodermatitis/ flexural eczema/infantile eczema/intrinsic eczema)
Chapter 13: Diseases of the Musculoskeletal System and Connective Tissue	215	99	46.05	Osteoporosis/osteoarthritis/ osteomyelitis/arthritis and rheumatoid arthritis: lacking the site/laterality/acute vs. chronic/primary vs. secondary
Chapter 14: Diseases of the Genitourinary System	278	112	40.29	End-stage renal disease/chronic kidney disease: lacking the stage (1–5) and dialysis status if applicable
Chapter 15: Pregnancy, Childbirth, Puerperium	0	0	0.00	Not applicable
Chapter 16: Newborn (Perinatal) Guidelines	0	0	0.00	Not applicable

Chapter 17: Congenital Malformations, Deformations, and Chromosomal Abnormalities	8	1	12.50	Overall, the conditions were well documented
Chapter 18: Symptoms, Signs, and Abnormal Clinical and Laboratory Findings, Not Elsewhere Classified	597	18	3.02	Overall, the conditions were well documented
Chapter 19: Injury, Poisoning, and Certain Other Consequences of External Causes	41	4	9.76	Overall, the conditions were well documented
Chapter 20: External Causes of Morbidity	9	0	0.00	Overall, the conditions were well documented
Chapter 21: Factors Influencing Health Status and Contact with Health Services	145	3	2.07	Overall, the conditions were well documented

According to the results of HCPro's 2009 coding productivity benchmarking survey, it was estimated that the average time spent coding an inpatient record was 20 minutes.[7] Therefore, the coding of 656 records at 20 minutes per record was anticipated to take the researcher (D.R.D.) approximately 219 hours. In reality, however, the coding of the entire set of records took approximately double that time.

The 10 chapters with the highest percentage of absent documentation were chapter 7 (Diseases of Eye and Adnexa), with 67.65 percent; chapter 8 (Diseases of Ear and Mastoid Process), with 63.64 percent; chapter 13 (Diseases of the Musculoskeletal System and Connective Tissue), with 46.05 percent; chapter 14 (Diseases of the Genitourinary System), with 40.29 percent; chapter 10 (Diseases of Respiratory System), with 35.52 percent; chapter 1 (Infectious and Parasitic Diseases), with 32.88 percent; chapter 12 (Diseases of the Skin and Subcutaneous Tissue), with 32.35 percent; chapter 2 (Neoplasms), with 25.45 percent; chapter 4 (Endocrine, Nutritional and Metabolic Diseases), with 14.58 percent; and chapter 17 (Congenital Malformations, Deformations, and Chromosomal Abnormalities) with 12.50 percent. We further analyzed the data by comparing the 10 individual chapters with the highest absent documentation percentages to all other chapters to evaluate if the differences observed between chapters were significant at $p < .001$. For example, when chapter 7 (Diseases of Eye and Adnexa), the chapter with the highest percentage of absent documentation, was compared with the rest of the chapters, we found the differences between them to be significant only for chapters 3, 21, 18, 5, 11, 9, 19, 6, 4, 2, and 10. The chapter with the next highest percentage of absent documentation was chapter 8 (Diseases of Ear and Mastoid Process). When we compared this chapter to the rest of the chapters, we found the differences to be significant for chapters 3, 21, 18, 5, 11, 9, 19, 6, and 4. (See Table 3.)

Table 3
Significance of Absent Documentation for the Ten Chapters with Highest Absent Documentation Precentages, Post Hoc Analysis ($p<.001$)

ICD-10-CM Chapter	**Percentage of Diagnoses with Absent Documentation**	**Chapters with $p < .001$**
Chapter 7: Diseases of Eye and Adnexa	67.65	3, 21, 18, 5, 11, 9, 19, 6, 4, 2, 10
Chapter 8: Diseases of Ear and Mastoid Process	63.64	3, 21, 18, 5, 11, 9, 19, 6, 4
Chapter 13: Diseases of the Musculoskeletal System and Connective Tissue	46.05	3, 21, 18, 5, 11, 9, 19, 6, 4

Chapter 14: Diseases of the Genitourinary System	40.29	3, 21, 18, 5, 11, 9, 19, 6, 4
Chapter 10: Diseases of Respiratory System	35.52	3, 21, 18, 5, 11, 9, 6, 4
Chapter 1: Infectious and Parasitic Diseases	32.88	3, 21, 18, 5, 11, 9, 6, 4
Chapter 12: Diseases of the Skin and Subcutaneous Tissue	32.35	3, 21, 18, 5, 11, 9, 6
Chapter 2: Neoplasms	25.45	3, 21, 18, 5, 11, 9
Chapter 4: Endocrine, Nutritional and Metabolic Diseases	14.58	3, 21, 18, 11, 9
Chapter 17: Congenital Malformations, Deformations, and Chromosomal Abnormalities	12.50	No *p*-values less than .001 for this or any remaining chapters

We developed a quick reference guide identifying the deficient areas in documentation to help the clinician in documentation improvement. As shown in Table 4, areas of deficiency from across all ICD-10-CM chapters were examined. The table highlights the areas of deficiency and offers recommendations for improvement. The recommendations are based on the descriptions found in the specific coding areas.

Table 4
Recommendations for Document Improvement

ICD-10-CM Chapter	Diagnosis/Condition	Recommendation
1	Sepsis	Identify the type of organism and/or infection; make sure to document the name of the organism.
1	Sepsis	Documentation should be able to distinguish between severe sepsis, sepsis due to postprocedural infection, septic shock, and septic shock complicating pregnancy or birth.
2	Malignant neoplasm of the esophagus	Identify the exact location of the esophagus (upper third, middle third, or lower third).
2	Malignant neoplasm of the colon	Identify the exact part within the colon for a more accurate and specific code (ascending, hepatic, transverse, splenic, descending, or sigmoid).
2	Malignant neoplasm of the bladder	Identify the part of the bladder (trigone, dome, lateral wall, anterior wall, posterior wall, bladder neck).
4	Diabetes	Identify the type of diabetes along with any insulin use, for which an additional code is needed along with the code for diabetes.
4	Obesity	Identify the associated body mass index (BMI), for which an additional code is needed along with the code for obesity. Z codes are available to identify BMI of 19 through 70 or greater for adults, and separate BMI codes for pediatrics are available as well.
5	Bipolar disorder	Identify if the condition is a current episode or is in remission (remission, partial remission, or full remission) along with the extent of the condition (mild, moderate, or severe).
5	Depression	Identify the condition as mild, moderate, or severe and document as a single vs. recurrent event because there are specific codes detailing each of these variations.

5	Anxiety	Identify the nature of the anxiety (phobic vs. panic in nature) and if associated depression is present.
5	Pain	Identify the nature of the pain as either acute or chronic and if the condition is due to trauma, post-thoracotomy, or postprocedural pain.
5	Pain	Identify the location/body system involved if possible because pain associated with different body systems has codes from different chapters.
6	Cerebral palsy	Identify the specificity and complexity of the disorder and, if applicable, choose from a more specific diagnosis (spastic quadriplegic, spastic diplegic, spastic hemiplegic, athetoid, and ataxic).
6	Paraplegia or quadriplegia	Identify the paraplegia as complete vs. incomplete, and when documenting a diagnosis of quadriplegia, document C1–C4 complete vs. incomplete and C5–C7 complete vs. incomplete.
6	Alzheimer's disease	Identify if the condition is early onset vs. late onset.
7	Glaucoma	Identify if the condition is open-angle (low tension, pigmentary, or capsular).
7	Glaucoma	Identify laterality of the glaucoma (right eye/left eye or bilateral).
7	Glaucoma	Identify if the glaucoma is secondary to another condition (eye trauma, eye disorder) or due to drugs.
7	Cataract	Identify if the condition is age related (cortical, anterior, posterior) along with laterality and whether it is complicated and/or traumatic; secondary or drug-induced cataracts have their own codes as well.
7	Cataract	If applicable, document infantile and juvenile cataracts (cortical, anterior, and posterior along with laterality).
7	Conjunctivitis	Identify if the conditions is mucopurulent (acute or chronic), follicular, or blepharoconjunctivitis along with laterality.
7	Strabismus	If applicable, identify if it is 3rd, 4th, 6th or total nerve palsy, which all fall under paralytic strabismus.
7	Strabismus	The clinician should consider the following subsections if applicable: esotropia, exotropia, vertical strabismus, and intermittent heterotropia, along with the laterality.
8	Benign positional vertigo/vertigo	Identify the specific ear that was involved (right, left, or bilateral).
8	Presbycusis	Make sure to document laterality of ear (right, left, or bilateral).
8	Mastoiditis	Identify if the condition is acute vs. chronic and if any complications are present. Also, note the laterality of the ear.
9	Congestive heart failure	Review and identify the following options if applicable: systolic, diastolic, or combined systolic and diastolic, along with acute and/or chronic.
9	Hypotension	Identify if the condition is idiopathic, orthostatic, hypotension due to drugs, or hypotension of hemodialysis.
9	Respiratory failure–related condition	Identify if the condition is acute (with hypoxia or hypercapnia), chronic (with hypoxia or hypercapnia), and/or both acute and chronic (with hypoxia or hypercapnia).

10	Pneumonia	Make sure to state the causative infectious agent; identify if it is pneumonia as a result of various bacterial agents. Also document influenza if present, bronchopneumonia, and lobar and hypostatic pneumonia.
10	Allergic rhinitis	Identify if it is related to vasomotor rhinitis, due to pollen, or due to food or any other allergen such as animal hair and dander.
10	Tonsillitis	Identify the organism if possible and document if it is acute or not.
11	Diverticulosis	Identify and document the specific part of the intestine and if any abscess or bleeding was present because these would lead to a more specific code (small intestine, large intestine, both small and large intestine, with/without abscess or bleeding).
11	Crohn's disease	Identify the specific part of the intestine (large intestine, small intestine, or both small and large intestine) along with any complications present (rectal bleeding, intestinal obstruction, fistula, abscess, or any other complication).
11	Pancreatitis	Specifying the condition as acute, idiopathic, biliary acute, or drug induced would lead to a more specific code.
12	Pressure ulcer	Identify the specific location of the ulcer (elbow [right/left], back [upper/lower], sacral, hip [right/left], buttock [right/left], ankle [right/left], heel [right/left], head) along with the specific stage (stage 1–4).
12	Atopic dermatitis	Identify the type of dermatitis (neurodermatitis, flexural eczema, infantile eczema, or intrinsic eczema).
13	Osteoporosis, osteoarthritis, osteomyelitis, arthritis, and rheumatoid arthritis	Identify and describe the condition by the site (which body system is involved), laterality, acute vs. chronic, and primary vs. secondary condition.
13	Gout	Because there are multiple codes to choose from (idiopathic gout, lead-induced gout, drug-induced gout, gout due to renal impairment, and other secondary gout conditions) and the site and laterality are needed, accurate coding of this condition requires much more detail and information from both the patient and the clinician.
14	Chronic kidney disease and end-stage renal disease	Identify the stage of the chronic kidney disease (stage 1–5). When documenting a case of endstage renal disease, an additional code is needed for the dialysis status.
14	Urinary tract infection	Identify the causative infectious agent (bacterial, viral); also, if the site of the infection is known, a more specific code can be selected.
17	Spina bifida	Identify the specific region involved (cervical, thoracic, lumbar, sacral) and whether it is with or without hydrocephalus. Also, use an additional code for paraplegia if present.
17	Hematuria	Identify the type of hematuria as either gross or benign essential microscopic hematuria.
18	Dysphagia	Identify the condition with the following phases: oral, oropharyngeal, pharyngeal, pharyngoesophageal, or other.

Discussion

As the complexity and specificity of the documentation requirements for healthcare entities increase, it is crucial to plan for implementation of technology to capture accurate and timely documentation. This technology will greatly aid clinicians and coders in the move toward the electronic health information management arena and the ICD-10-CM/PCS coding system. Having accurate documentation will, in turn, improve the quality of the data in electronic health records and ultimately improve the quality of care that is rendered to the patients.[8] Schiff and Bates (2010) highlight some of the many ways in which accurate clinical documentation could help in preventing diagnostic errors.[9] The survey highlights the incorporation of checklist prompts to alert the physician to questions to evaluate prior to making a diagnosis. Having accurate documentation would enable better use of decision support software as well as CAC software. In our evaluation of the ICD-10-CM chapters for documentation specifics, we find that educating the clinician, who is the first point of contact, is vital to maintaining accurate documentation. Furthermore, frequent refresher sessions for clinicians and coders, possibly looking at ICD-10-CM chapter by chapter or at specific areas (if the facility is a specialty facility), would help in understanding the depth and specificity that is required in ICD-10-CM coding.

After reviewing the recommendations, the health information technology professionals commented that the tool kit we developed (consisting of the table of deficiencies we found and how to overcome them) was quite helpful for them in designing their interface because our recommendations directly corresponded to the initial point of contact between the physician and the patient. Being able to capture the needed data at the first point of contact saves organizational resources downstream.

Limitations of this study included the fact that the study was conducted on electronic documents and not on a complete electronic medical record. The current study could be further expanded to evaluate the documentation requirements for ICD-10-PCS, which is used for coding of procedures.

Conclusion

To successfully implement ICD-10-CM, clinicians need to be aware of the detailed documentation requirements. Provider organizations that are able to capture the data required in ICD-10-CM can be confident in obtaining the appropriate reimbursement in a timely manner.

This study located some documentation deficiency areas in all ICD-10-CM chapters (except the pregnancy and newborn chapters) and suggested recommendations to overcome the deficiencies and produce accurate documentation.

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