Benchmarking with National ICD-9-CM Coded Data

Save to myBoK

by Carol E. Osborn, PhD, RRA

As HIM professionals, we want to be assured that we are providing the highest quality data for reimbursement and research purposes. We can review coded data internally, but this does not give us a clear picture of the total information that is being submitted to the Health Care Financing Administration (HCFA). Recently a new tool has come out that helps HIM professionals evaluate the quality of coded data. This tool, *DRG Resource Book: Data for Benchmarking and Analysis*,[1] is published by the Center for Healthcare Industry Performance Studies in Columbus, OH. The book contains comparative information for the top 50 medical and the top 25 surgical DRGs for the Medicare population, so HIM professionals can compare their coded data to a national database. The source of this information is the HCFA Medicare Provider and Review File (MedPAR file) for the federal fiscal year 1995, which consists of data compiled from UB-92 data submitted by hospitals for inpatient Medicare discharges.

This resource reports DRG summary information, cost analysis information, state specific profiles of charges per discharge and by department, utilization and quality indicators, and clinical coding analysis-all by DRG. This article will analyze the ICD-9-CM codes reported for the 75 medical and surgical DRGs. The clinical coding analysis section presents information on ICD-9-CM principal and related secondary diagnoses for each DRG, as well as procedural codes. As an example, refer to the clinical data reported for DRG 462 in Table 1, below.

The DRG tables that appear in this article display the most common secondary diagnoses that appear, combined with the top principal diagnoses listed for a specific DRG. For example, Table 1 lists the principal and secondary diagnoses codes for DRG 462, Rehabilitation. For the principal diagnosis code of V57.89, approximately 36 percent of the patients have a secondary diagnosis of hypertension (401.9), and approximately 17 percent have a secondary diagnosis of late effect of CVA (438). The last column, percent of DRG total, indicates the total percentage of cases falling into DRG 462 that have a particular principal diagnosis, and is interpreted as follows: 65.5 percent of the cases falling into DRG 462 have a principal diagnosis code of V57.89.

In analyzing these data for benchmarking purposes we can identify areas for quality reviews in our own facilities. The information in this resource book should be used only as indicators for possible quality reviews, as it is impossible to determine the actual combinations of principal and secondary codes for any case or facility. The information is presented as summary data and should be viewed as indicators only. The results of analysis will be discussed only in terms of quality of the coded data. ICD-9-CM coding quality problems most commonly encountered were related to:

- lack of coding specificity
- sequencing errors
- incorrect combination of codes or failure to assign multiple codes when available
- nonspecific DRGs/signs and symptoms
- use of complication codes

Each of these will be discussed in the order identified.

Lack of Coding Specificity

Use of Subclassification 414.00

One of the most common errors revealed was lack of coding specificity. ICD-9-CM coding principles require that "codes must be assigned to the highest level of specificity."[2] An example of lack of specificity is the use of the following code from category 414, other forms of chronic ischemic heart disease:

414.00, coronary atherosclerosis, unspecified type of vessel, native or graft

In this category, the fifth digit indicates the nature of the coronary artery involved: native vessel or grafted vessel.

Although the physician may not directly state whether the vessel is native or grafted, the information can be obtained from review of the medical record. Reviewing the history and physical exam or reading the reports of cardiac catheterization if the condition was treated during the current hospitalization may provide the required information. The diagnostic code 414.00 appeared in combination with procedure codes for cardiac catheterization. This may be an indication that coders are not reading the entire record when coding, or that coding takes place before all reports are available. The ICD-9-CM Coding Handbook states that "If the medical record makes it clear that there has been no previous bypass surgery, code 414.01, coronary atherosclerosis of native coronary vessels can be assigned."[3,4]

Even though a change in the fifth-digit assignment may not cause a change in the DRG assignment, it is important to remember that one of the original purposes of coding and classification systems was to serve as a research database. The ability to distinguish between arteriosclerosis in native and grafted arteries is important in both cardiovascular and outcomes research.

Use of Subclassification 342.90

Another commonly used unspecified code was 342.90, unspecified hemiplegia. Use of 342.90 appears in DRGs 12, 14, and 462. The unspecified refers to side affected by hemiplegia-the patient's dominant or nondominant side. This may be, in part, due to problems with documentation. In general, physicians usually indicate side affected as either right or left rather than dominant or nondominant. If this is the case in your facility, a medical staff in-service may be appropriate.

In DRG 12, Degenerative nervous system disorders, code 342.90 appears as the principal diagnosis for approximately 15 percent of the cases, and code 342.91, hemiplegia, dominant side, appears as the principal diagnosis for approximately 5 percent of the cases. When evaluating the cases assigned to DRG 12, it is difficult to determine the reason for an inpatient admission to an acute care facility for hemiplegia. Both urinary tract infection (599.0) and dehydration (276.5) appear as secondary diagnoses but not in sufficiently high numbers to account for most of these admissions. And, since these conditions were not identified as the principal diagnosis, the medical necessity for these admissions could be in question. We could also question whether these patients were actually admitted for rehabilitation instead of the hemiplegia. If this turns out to be the case, a principal diagnosis code from category V57 should be selected; the cases would then group to DRG 462.

For DRG 14, Specific cerebrovascular disorder except TIA, code 342.90 appears as a secondary diagnosis in a range from 15.7 percent to 22.1 percent of the time depending on the principal diagnosis

In DRG 462, Rehabilitation, code 342.90 appears as a secondary code ranging from 14.3 percent to 18.1 percent of the time (see Table 1). Since these patients were admitted for rehabilitation, there should be documentation in the record indicating the side affected. In order to identify these types of documentation problems, clinical pertinence reviews should be conducted.

Sequencing Errors

Respiratory Failure and Congestive Heart Failure

Respiratory failure, code 518.81, is a diagnosis that appears in combination with chronic conditions in several DRGs. There are several guidelines that address the sequencing of respiratory failure under certain circumstances, depending on whether the underlying condition is respiratory or nonrespiratory. When the condition that occasioned the admission to the hospital is respiratory failure due to an underlying respiratory condition, the respiratory failure is sequenced first, with an additional code for the underlying respiratory condition. However, when the underlying condition is nonrespiratory in nature, the following guidelines apply:[5]

- If the patient is admitted in respiratory failure due to or associated with an acute nonrespiratory condition, the acute condition is sequenced as the principal diagnosis
- If the patient is admitted with respiratory failure due to or associated with an acute exacerbation of a chronic nonrespiratory condition, that condition is sequenced as the principal diagnosis

- When the patient is admitted in respiratory failure due to or associated with a chronic nonrespiratory condition, the respiratory failure is sequenced first

These guidelines impact several DRGs, particularly DRG 87, pulmonary edema and respiratory failure (see Table 2). For 84.5 percent of the cases assigned to this DRG, the principal diagnosis was 518.81 respiratory failure. Of these, 33.95 percent of the cases designated congestive heart failure (CHF), code 428.0, as a secondary diagnosis. Congestive heart failure appeared as a secondary diagnosis in DRG 87 more often than any other condition. Acute exacerbations of CHF may be manifested by nocturnal dyspnea, orthopnea and/or pedal edema, conditions that may lead to respiratory failure. In these situations, the CHF is an acute exacerbation of chronic nonrespiratory condition, and it should be sequenced as the principal diagnosis per guideline two.

This change does have an impact on DRG assignment and reimbursement. When CHF is designated as the principal diagnosis, the cases group to DRG 127, Heart failure and shock. The 1995 HCFA weight for DRG 87 is 1.3306; the corresponding weight for DRG 127 is 1.0239, a net change of -.0367. This may be another example of inadequate documentation. The physician may have been unclear in documenting the conditions as acute exacerbations of CHF. In view of the rules and regulations regarding compliance, it becomes essential that we educate physicians on the importance of documentation in the correct assignment of ICD-9-CM codes.

If the respiratory failure were a manifestation of chronic obstructive pulmonary disease (COPD), it would be correct to designate it as the principal diagnosis. A similar situation also exists in surgical DRG 483, Tracheostomy except for face, mouth and neck diagnoses. But since the DRG's partitioning is based on the performance of a tracheostomy, the DRG assignment is not affected.

Upon further examination of the coded data in DRG 87, other quality problems emerge. In DRG 87 there are cases where COPD, code 496, appears in combination with code 491.21, obstructive chronic bronchitis with acute exacerbation. This latter condition is considered an acute exacerbation of COPD, and only one code is required-491.21.[6,7] Also in DRG 87, the principal diagnoses of acute pulmonary edema, code 518.4, and pulmonary congestion, code 514, are manifestations of CHF, and are included in the code for CHF, 428.0.8 These coding combinations represent cases that should be regrouped to DRG 127.

Similar sequencing errors appear in DRG 475, Respiratory system diagnosis with ventilator support. Approximately 41 percent of the cases in this DRG had respiratory failure, code 518.81. Of these, approximately 42 percent had CHF designated as a secondary diagnosis, and 32 percent had COPD listed as a secondary diagnosis. In these cases it cannot be determined whether the respiratory failure is a manifestation of the CHF or COPD. If it is the former, CHF should be sequenced as the principal diagnosis, which would result in regrouping the cases to DRG 127.

Alzheimer's Disease

Another example of questionable sequencing of codes appears in DRG 429, Mental diseases and disorders. In this DRG, there are a number of cases of the various types of dementia that appear as the principal diagnosis when these conditions are associated with Alzheimer's disease (see Table 3). "Alzheimer's is a progressive atrophic process involving degeneration of nerve cells [which] leads to mental changes that range from subtle intellectual impairment to dementia with loss of cognitive functions and failure of memory. Alzheimer's disease is coded to 331.0; when there is associated dementia, 294.1 is assigned as an additional code."[9] Also, per coding guideline 2.2, "... codes in slanted brackets in the alphabetic index can never be sequenced as the principal diagnosis (331.0 [294.1])."[10] Examination of the data in Table 3 indicates that the codes for dementia were incorrectly assigned when associated with Alzheimer's disease. When Alzheimer's is sequenced as the principal diagnosis, the cases group to DRG 12, Degenerative nervous system disorders, which has a weight of .9574 as compared to a weight of .9269 for DRG 429, a difference of +.0305.

Incorrect Combination of Codes

Intermediate Coronary Syndrome

There are many cases of possible inappropriate combination of codes throughout the various DRGs. We have already discussed some examples-496 (COPD) with 491.21 (obstructive chronic bronchitis with acute exacerbation). Other examples appear in DRG 106, Coronary bypass with cardiac catheterization, DRG 107, Coronary bypass without cardiac catheterization,

and DRG 124, Circulatory disorders except acute MI with cardiac catheterization and complex diagnosis. In these DRGs, code 411.1, intermediate coronary syndrome, appears in combination with codes from category 410, acute myocardial infarction. According to ICD-9-CM guidelines, except for conditions described as post-myocardial infarction syndrome (411.0) and/or post-infarction angina, "no code from category 411 is assigned with a code from category 410."[11] Code 411.1 should not be assigned as a principal diagnosis (DRG 124), when the underlying cause, such as coronary arteriosclerosis (414.0x), has been identified. However, code 411.1 would be assigned as an additional diagnosis.[12] If these combinations of codes appear in your own facility's databases, an in-service program for the coding staff may be appropriate.

Atherosclerosis of the Extremities with Gangrene

A second example of incorrect combination of codes, or more specifically, the failure to use combination codes when available, appears in DRG 113, Amputation for circulatory system disorders except upper limb and toe. For example, the code 440.24, Atherosclerosis of native arteries of the extremities with presence of gangrene, may appear in combination with the code for gangrene, 785.4. Since gangrene is included in 440.24, the assignment of a separate code for gangrene is redundant. "Ulceration associated with arteriosclerosis of the extremities is classified to code 440.23 or to 440.24 when gangrene is present."[13]

Hypertensive Heart Disease, Hypertensive Renal Disease, and Congestive Heart Failure

The coding of renal failure, hypertension, and congestive heart failure can be problematic as they require the use of combination codes. The categories for classifying hypertensive heart disease are:

- 401-Essential hypertension
- 402-Hypertensive heart disease
- 403-Hypertensive renal disease
- 404-Hypertensive heart and renal disease

Assigning codes for renal failure when it appears with hypertension and congestive heart failure can be very complex, as there are many rules that must be followed. When chronic renal failure and hypertension appear together in the diagnostic statement, it should be assumed that there is a relationship between the two conditions even when it is not specifically stated by the physician.[14] A code from category 403, Hypertensive renal disease, is assigned with a fifth digit to indicate the presence of chronic renal failure. Thus, only one code is needed to describe the two conditions-hypertension and chronic renal failure-403.91. In DRG 120, Other circulatory system OR procedures, the following redundant combination of secondary diagnosis codes appears: 403.91, Hypertensive renal Dx with chronic renal failure, 585, Renal failure, and 401.9, Hypertension, unspecified.

The second most frequently occurring principal diagnosis in DRG 120 is congestive heart failure (428.0), accounting for 11.5 percent of the DRG total. When the diagnostic statement indicates that the CHF is due to hypertension, a code from category 402 should be assigned, with a fifth digit to indicate the presence of CHF. If the CHF is hypertensive, and chronic renal failure is also present, a code from category 404, Hypertensive heart and renal disease, should be assigned. A fifth digit is assigned to indicate the presence of CHF, renal failure, or both. These data indicate that DRG 120 would be an ideal choice for quality reviews in healthcare facilities.

As an added note, the combination code for hypertensive heart disease with CHF, category 402, is rarely seen in the *DRG Resource Book*. Codes 428.0 and 401.9 often appear in combination with each other. Records should be reviewed to determine whether the more appropriate code assignment is from category 402, Hypertensive heart disease, with the fifth digit indicating the presence of CHF. DRGs to be reviewed are: 88, 89, 96, 110, 116, 121, 124, 127, 132, 138, 140, 141, 296, 320, 331, 395, 416, and 477. Since space for reporting diagnoses is limited, using combination codes where appropriate allows for reporting of more conditions relevant to the patient stay. For example, there are several DRGs where hemodialysis is reportedly performed with no corresponding diagnosis for chronic renal failure, code 585.

Questionable/Incorrect Code Assignments

Cardiac Arrest

The code for cardiac arrest (427.5) should only be assigned under certain circumstances for hospital inpatients. The code for cardiac arrest is assigned as a secondary diagnosis only when the patient is resuscitated or resuscitation has been attempted.[15] The code for cardiac arrest is never assigned merely to indicate that a patient has died. The cardiac arrest code is assigned as a secondary diagnosis for many cases in DRG 123, Circulatory disorders with acute myocardial infarction, expired. Since only cases of patients who have expired can be grouped to this DRG, it is unnecessary to code cardiac arrest to indicate that death occurred. It would be appropriate to review this DRG because the procedure code for cardiopulmonary resuscitation, although not mandatory, does not appear more than 5 percent of the time in combination with the code for cardiac arrest.

Cellulitis

Another DRG that should be examined is 130, Peripheral vascular disorders with CC. Cellulitis, code 682.6, appears as a secondary diagnosis with a number of cases grouped to this DRG. Cellulitis may appear as a complication of chronic skin ulcers. When this situation occurs, a code from categories 707.0-707.9, chronic ulcers of the skin, is assigned. Since these codes do not include cellulitis, two codes are required to describe the condition.[16] For the cases indicated, one would expect that the cellulitis, if it exists, would be a complication of a skin ulcer of the lower extremity. With the exception of principal diagnosis code 454.2, varicose vein ulcer, inflamed, there is no indication that an ulcer exists. When the cellulitis is described as gangrenous, it should be reclassified to category 785.4, gangrene, rather than to categories 681 and 682.[17]

Other DRGs in which the code for cellulitis appears are 263, Skin graft and/or debridement for skin ulcer or cellulitis with CC, and 277, Cellulitis, age greater than 17 with CC. For DRG 263, the average length of stay was 14.0 days, and 58.3 percent were transferred to "other facilities" upon discharge. Given this information, one might consider whether the cases in which cellulitis is identified as the principal diagnosis are actually cases of decubitus or other types of chronic ulcers complicated by cellulitis. For DRG 263, 64.9 percent of the cases have either decubitus or chronic ulcers indicated as the principal diagnosis. Cellulitis appears as the principal diagnosis for approximately 25 percent of the cases in DRG 263. In these cases, cellulitis described as gangrenous is classified to gangrene, 785.4, rather than to categories 681 and 682, cellulitis, with an additional code from categories 707.0-707.9 to indicate the type of ulcer.[18]

The cases in DRG 277 are very similar to those in DRG 263. The average length of stay for this group of patients is 6.8 days, with 35.4 percent of the cases transferred to "other facilities" following discharge. The length of stay is shorter because DRG 277 is a medical DRG. Since cellulitis usually occurs as a complication of an ulcer or other type of open wound, one would expect to see codes for these conditions. For approximately 71 percent of the cases in DRG 277, the site of the cellulitis is either the foot or the leg. Are these actually manifestations of peripheral vascular disease? For approximately 4 percent of the cases the site of the cellulitis is the trunk. In this case, is the cellulitis actually a complication of a decubitus ulcer? If skin ulcer or decubitus ulcer could be documented as the principal diagnosis, the cases would regroup to a DRG 271, Skin ulcer, a DRG with a higher weight.

Pathological Fractures vs. Traumatic Fractures

Correct coding of fractures also appears to be problematic. Pathologic fractures are not an uncommon occurrence in the elderly, especially among women. Pathologic fractures may be the result of osteoporosis, metastatic tumor of the bone, osteomyelitis, Paget's disease, disuse atrophy, hyperparathyroidism, and nutritional or congenital disorders. Fractures described as spontaneous should always be considered as pathological in nature. When an injury is described as a compression fracture, the record should be reviewed to determine whether any significant trauma has occurred. A compression fracture in an older patient that resulted from a slight stumble or other minor injury should be considered a pathological fracture, especially when the patient suffers from a disease that frequently causes this condition.[19] But it is important to remember that only the physician can make the determination that the fracture is out of proportion to the degree of trauma.[20] This may be another area in which clinical pertinence reviews would assist in identifying quality documentation problems.

In examining the codes for fractures, it appears that a fracture in the Medicare population was coded as a traumatic fracture more often than a pathological fracture. The data in Table 4, below, reveals that most individuals treated for fractures are women whose average age ranges from 75-81. And 100 percent of the principal diagnoses codes for DRGs 210, Hip and femur procedures except major joint procedures, age greater than 17 with CC, and DRG 236, Fractures of the hip and pelvis, are traumatic. One would have to suspect that perhaps pathological fractures should be the more common problem, rather than

fractures due to trauma-especially when the average age for these DRGs is 80, and a high proportion of the patients are female.

Cases that are grouped to DRG 210 would not be affected by a change from traumatic to pathological fracture code since it is a surgical DRG. However, if any of the principal diagnoses coded as trauma fractures in DRG 236 are actually pathological fractures, the cases would be regrouped to DRG 239. The weight for DRG 239 is 1.0388 versus a weight of 0.7772 for DRG 236, a difference of +0.2616.

In DRG 243, principal diagnosis codes for traumatic fractures of the vertebrae appear in combination with osteoporosis (733.00). If these were actually pathological fractures, the cases would regroup to DRG 239. This change would result in a weight change of +0.314.

Nonspecific DRGs/Signs and Symptoms

Chest Pain and Angina Pectoris

In evaluating the coded data throughout the various DRGs, it appears that there is not a clear understanding of appropriate use of codes as principal diagnoses for signs and symptoms. As an example, 30 percent of the cases in DRG 125, Circulatory disorders except acute myocardial infarction with cardiac catheterization without complex diagnosis, designate code 786.50, Chest pain, as the principal diagnosis, while 26 percent of these cases designate code 414.01, Coronary atherosclerosis, as a secondary diagnosis (see Table 5, below). Coding guideline 2.1 states that when a related definitive diagnosis has been established, codes for signs, symptoms, and ill-defined conditions (from Chapter 16 of ICD-9-CM) are not to be designated as principal diagnoses.[21] This is further supported by the fact that cardiac catheterizations were performed, as indicated by the DRG title, thus atherosclerosis should have been designated as the principal diagnosis.

In 5 percent of the cases assigned to DRG 125, code 413.9, Angina pectoris, is assigned as the principal diagnosis, and 26 percent of these cases assign code 414.01, Coronary atherosclerosis, as a secondary diagnosis. Angina pectoris is a manifestation of ischemic heart disease. When the underlying cause is known, i.e., the atherosclerosis, it should be sequenced as the principal diagnosis. The performance of cardiac catheterizations lends support to the designation of atherosclerosis as the principal diagnosis. Chest pain NOS, 786.50, is the principal diagnosis for 30 percent of the cases in this DRG; angina pectoris and coronary atherosclerosis appear as secondary diagnoses. These cases should be evaluated to determine whether atherosclerosis should be sequenced as the principal diagnosis.

Similar use of code 413.9, Angina pectoris, as a principal diagnosis appears in DRG 140, Angina pectoris. Approximately 25 percent of the cases in this DRG have angina pectoris designated as the principal diagnosis in combination with the codes for atherosclerosis, 414.00 and 414.01, as secondary diagnoses. According to coding guideline 2.1, atherosclerosis should be identified as the principal diagnosis. If the same combination of codes that appear in DRG 140 were resequenced with 414.00 or 414.01 as the principal diagnosis, the cases would regroup to DRG 132, Atherosclerosis with CC, resulting in a positive weight change of +.1038 (from DRG 140, weight 6257 to DRG 132, weight 7296).

In DRG 143, Chest pain, a combined total of 97.9 percent of the cases have one of the following designated as the principal diagnosis: 786.50, Chest pain NOS; 786.59, Chest pain NEC; and, 786.51, Precordial pain (see Table 5). Coronary atherosclerosis, 414.00 and 414.01, appear as secondary diagnoses in 68 percent of these cases. Resequencing these cases with coronary atherosclerosis as the principal diagnosis would regroup the cases to DRG 133, Atherosclerosis without CC-a DRG with a higher weight.

Although the principal diagnosis code V71.7, Observation for suspected cardiovascular conditions, accounts for less than 1 percent of the cases that are grouped in DRG 143, it is important to point out that when a related diagnosis is established, or these are related signs or symptoms, the code for that condition or symptom is assigned as the principal diagnosis rather than a code from category V71. According to coding guideline 2.8, codes from category V71 are ordinarily assigned as solo codes except when a chronic condition requires care and monitoring during the stay.[22]

Syncope and Collapse

In DRG 141, Syncope and collapse with CC, and DRG 142, Syncope and collapse, the code for syncope and collapse, 780.2, appears as the principal diagnosis in 82 percent and 89 percent of the cases respectively. Syncope is often due to cardiac problems such as ventricular asystole, bradycardia, or ventricular fibrillation. If the syncope is related to any of the heart conditions that appear as the secondary diagnoses (hypertension, atrial fibrillation, congestive heart failure, and/or cardiac dysrhythmias), the cases should be re-sequenced with the related cardiac condition sequenced as the principal diagnosis.

Use of Complication Codes-Categories 996-999

Use of codes from categories 996-999, Complications of surgery and medical care, is not always clear. Coders should be aware that conditions that occur following medical or surgical care are not always classified as complications. A routinely expected occurrence that follows medical or surgical treatment is not considered a complication. For a condition to be classified as a complication:

- there must be a cause and effect relationship between the treatment and the condition
- there must be an indication that the condition is a complication, not a postoperative condition in which no complication is present
- complications due to procedures must be documented by the physician[23]

Before assigning codes from categories 996-999, the coders should carefully review all include and exclude notes. Categories 996-999 have different levels of specificity-some requiring additional codes to provide more information about the specific complication. The varying levels of specificity are summarized for each category as follows:

- Category 996 classifies conditions that result from the presence of an internal device, implant, or graft and an additional code is usually not required[24]
- Category 997, complications affecting specified body systems not elsewhere classified, "are general in nature and offer little specificity...These codes are not assigned when the alphabetic Index provides another code...When a code from category 997 is assigned, an additional code for the condition is ordinarily assigned to provide specificity[25]
- Category 998, other complications of surgery, not elsewhere classified, is used to classify a miscellaneous group of postoperative complications. For the most part, these codes do not require additional codes because the complication itself provides sufficient specificity[26]
- Category 999, complications of medical care not elsewhere classified, classifies a number of specific conditions that may follow procedures or conditions that may result from medical care[27]

As an example, in DRG 130, 3.2 percent of the cases have a principal diagnosis of 997.2, surgical complication, peripheral vascular system. Codes from category 997 "are general in nature and provide little specificity."[28] When a code from category 997 is selected, an additional code for the specific complication is ordinarily assigned to provide more specificity.[29] In this DRG, less than one percent of the cases for the principal diagnosis code, 997.2, have the peripheral vascular complication identified. It could be assumed that cellulitis is the secondary diagnosis that is considered to be the peripheral vascular complication. This could be questioned however. If this is actually a postoperative wound infection, the codes should be 998.59, Other post-operative infection, and 686.2, Cellulitis.

Codes from category 997 appear as a principal diagnosis in a number of DRGs; in many cases, without an additional code to identify the specific complication. These codes are listed in Table 6, below.

One must use caution when assigning codes to indicate complications of medical and/or surgical care. The coder should be careful to differentiate complications from routinely anticipated occurrences. Code 285.1, Acute hemorrhagic anemia is sometimes assigned following surgery-the coder should recognize that bleeding following surgery is anticipated. Also, a major amount of bleeding is expected with bone replacement surgery and should not be considered as hemorrhage unless bleeding is particularly excessive.[30,31] This bleeding may or may not be anemia; a code for anemia should be assigned only when the anemia is documented by the physician.[32] Mention of blood loss following surgery or administration of a blood transfusion during or after surgery are not necessarily indications that anemia is present. The DRGs identified in Table 7, below, should be reviewed for documentation supporting the presence of code 285.1, Acute hemorrhagic anemia.

Summary and Recommendations

As can be seen, ICD-9-CM coding is a complex process. In order to code accurately, coders must be able to remember and apply ICD-9 coding principles, and possess a good understanding of disease processes and medical terminology. Coders must be able to synthesize documented information about an entire case in order to code accurately. The documentation related to the inpatient stay should be complete before the record is coded. That is, coders should have access to the discharge summary, operative records and pathology reports, and other relevant data prior to the coding process. Quality of coded data is jeopardized when coding takes place in the absence of these documents. The coders must also know when it is appropriate to query physicians if there is doubt about code assignment.

Continuing education of both the coding staff and the medical staff cannot be overemphasized. Make physicians aware of how their documentation of the patients' illnesses affects coding, especially in view of the recent compliance initiatives. They can improve their documentation practices by:

- clearly stating manifestations of Diabetes Mellitus
- differentiating between Diabetes Mellitus Type I and Diabetes Mellitus Type II. If the latter condition requires insulin, it should be noted as Diabetes Mellitus, Type II, insulin requiring (as opposed to insulin dependent)
- showing any existing relationships between hypertensive disease, congestive heart failure, and renal failure
- fully documenting exacerbations of COPD
- identifying the vessel affected as either native or grafted, autogolous or non-autogolous, and/or vein or artery graft material used, when a diagnosis of coronary atherosclerosis is made
- indicating the side affected-dominant or non-dominant-when hemiplegia occurs following a stroke
- clearly distinguishing between traumatic and pathological fractures when diagnosing hip fractures, especially in the elderly
- clearly documenting complications of medical and surgical care

From review of the 1995 Medicare data, an in-service should be provided to coders in the following areas:

- sequencing rules for coding signs and symptoms
- coding to the highest level of specificity as reflected by physician documentation
- understanding the difference between Types I and II Diabetes Mellitus
- assigning correct codes for CHF due to hypertension and CHF and chronic renal failure due to hypertension
- knowing when to code 427.5, Cardiac arrest
- differentiating between traumatic and pathologic fractures, especially in the elderly
- knowing when to assign complication codes

In today's pressure-filled healthcare environment, we sometimes find ourselves coding "for the moment"-that is, getting the record coded and billed as quickly as possible. But it is important to keep in mind that the codes submitted will affect future payment schedules, research databases, and reporting the incidence of disease to the public, to name a few. As health information managers, it should be our priority to submit the highest-quality data possible.

Notes

1. Center for Healthcare Industry Performance Studies. DRG Resource Book: Data for Benchmarking and Analysis. Reston, VA: St. Anthony Publications, Inc., 1997.
2. American Hospital Association. Guideline 1.2. AHA Coding Clinic for ICD-9-CM 3, no. 1 (1986): 5.
3. Brown, Faye. ICD-9-CM Coding Handbook, revised ed. Chicago, IL: American Hospital Association, 1997, p.263.
4. American Hospital Association. AHA Coding Clinic for ICD-9-CM 15, no. 3 (1997): 15.
5. American Hospital Association. AHA Coding Clinic for ICD-9-CM 8, no. 2 (1991): 3.
6. American Hospital Association. AHA Coding Clinic for ICD-9-CM 13, no. 2 (1996): 10.
7. American Hospital Association. AHA Coding Clinic for ICD-9-CM 5, no. 3 (1988): 5.
8. Ibid, p. 3-4.
9. Brown, p. 110.
10. American Hospital Association. Guideline 2.2. AHA Coding Clinic for ICD-9-CM 7, no. 2 (1990): 3-4.
11. American Hospital Association. AHA Coding Clinic for ICD-9-CM 8, no. 1 (1991): 14.
12. American Hospital Association. AHA Coding Clinic for ICD-9-CM 13, no. 2 (1996): 10.
13. American Hospital Association. AHA Coding Clinic for ICD-9-CM 13, no. 4 (1996): 36.

14. American Hospital Association. Guidelines 4.3 and 4.4. AHA Coding Clinic for ICD-9-CM 7, no. 3 (1990): 3.
15. American Hospital Association. AHA Coding Clinic for ICD-9-CM 12, no. 3 (1995): 8-9.
16. American Hospital Association. AHA Coding Clinic for ICD-9-CM 8, no. 2 (1991): 6
17. Ibid.
18. Ibid.
19. Brown, p. 203.
20. American Hospital Association. AHA Coding Clinic for ICD-9-CM 10, no. 4 (1993): 25-26.
21. American Hospital Association. Guideline 2.1. AHA Coding Clinic for ICD-9-CM 7, no. 2 (1990): 3-4.
22. American Hospital Association. Guideline 2.8. AHA Coding Clinic for ICD-9-CM 7, no. 2 (1990): 5-7.
23. American Hospital Association. AHA Coding Clinic for ICD-9-CM 10, no. 5 (1993): 7.
24. Brown, p. 356.
25. Brown, p. 358.
26. Ibid.
27. Brown, p. 359.
28. Brown, p. 358.
29. Ibid.
30. American Hospital Association. AHA Coding Clinic for ICD-9-CM 9, no. 2 (1992): 15-16.
31. American Hospital Association. AHA Coding Clinic for ICD-9-CM 10, no. 4 (1993): 34.
32. American Hospital Association. AHA Coding Clinic for ICD-9-CM 9, no. 2 (1992): 15-16.

Table 1*-DRG 462, principal diagnosis code assignment with 342.90, Hemiplegia, unspecified

Principal Diagnosis	401.9 Hypertension	438 Late Effect of CVA	599.0 UTI	342.90 Hemiplegia, unspecified	Percent of DRG Total
V57.89-Rehab procedure NEC	36.43%	17.2%	18.52%	17.5%	65.5%
V57.1-Physical therapy NEC	37.62%	18.1%	16.35%	14.9%	28.7%
V57.9-Rehab procedure NOS	35.58%	26.2%	12.42%	15.9%	4.7%
V57.21-Encounter for occupational therapy	32.74%	14.7%	24.09%	18.1%	0.5%
V57.22-Encounter for vocational therapy	45.82%	11.2%	11.55%	14.3%	0.1%

*Source: *DRG Resource Book*, p. 280.

Table 2*-DRG 87, Pulmonary edema and respiratory failure

Principal Diagnosis	428.0 CHF	496 COPD	491.21 Obstructive Chronic Bronchitis with Acute Exacerbation	401.9 Hypertension NOS	Percent of DRG Total
518.81-Respiratory failure	33.95%	33.36%	32.82%	17.16%	84.54%
518.4-Acute lung edema NOS	6.84%	11.19%	2.06%	19.17%	8.05%
514-Pulmonary congestion	24.08%	12.33%	3.19%	14.37%	5.13%

518.4-Post-traumatic pulmonary insufficiency	12.62%	10.33%	5.74%	8.41%	0.86%
506.1-Fumes/vapor acute pulmonary edema	20.00%	13.33%	13.33%	13.33%	0.02%

*Source: *DRG Resource Book*, p. 44.

Table 3*-DRG 429, Mental disease and disorders

Principal Diagnosis	331.0 Alzheimer's Disease	Percent of DRG Total
290.0-Senile dementia, uncomplicated	39.83%	17.73%
294.8-Organic brain syndrome, NEC	1.10%	12.45%
290.3-Senile delirium	41.40%	11.97%
290.20-Senile delusion	26.12%	9.59%
293.83-Organic affective syndrome	2.52%	6.81%

*Source: *DRG Resource Book*, p. 272.

Table 4*-selected DRGs for pathological/traumatic fractures

DRG	Principal DX Codes	Percent Female	Average Age	Type of DRG	DRG Rank	DRG Weight
209-Major joint and limb reattachment procedures of lower extremity	715.96, 820.09, 715.36, 715.95, 820.8	67.9%	74.9	Surgical	1/25	2.3173
210-Hip and femur procedures except major joint procedures, age greater than 17 with CC	820.21, 820.09, 820.8, 820.22, 821.33	67.0%	80.6	Surgical	4/25	1.8427
236-Fractures of the hip and pelvis	808.2, 820.8, 820.21, 820.09, 808.0	79.5%	80.7	Medical	42/50	0.7772
239-Pathological fractures and musculoskeletal and connective tissue malignancy	733.13, 198.5, 733.19, 733.14, 733.15	69.6%	77.2	Medical	39/50	1.0388
243-Medical back problems	805.4, 805.2, 724.2, 722.10, 724.02	69.1%	74.2	Medical	26/50	0.7248

*Source: *DRG Resource Book*, pp. 185, 189, 201, 205.

Table 5*-Chest pain, 786.xx, in DRGs 125 and 143

DRG 125			DRG 143			
Principal Diagnosis	414.01	Percent of DRG Total	Principal Diagnosis	414.00	414.00	Percent of DRG Total
414.01	n/a	30.38%	786.50	12.4%	12.3%	86.8%
786.50	26.25%	30.06%	786.59	14.2%	9.4%	7.4%

414.00	0.09%	5.46%	786.51	11.8%	8.2%	3.7%
413.0	26.32%	4.55%	V71.7	5.0%	5.6%	0.9%
427.31	28.95%	3.13%				

*Source: *DRG Resource Book*, pp. 108, 144.

Table 6*-use of codes from category 997 as principal diagnosis

Principal Dx	DRG	Complication Identified
997.1-Surgical complication, heart (3.6% of cases in DRG)	477-Nonextensive OR procedure unrelated to principal diagnosis	428.0, CHF (?) - 13.6% 427.31, Atrial Fibrillation-19.8%
997.2-Surgical complication, peripheral vascular complication (3.2% of cases in DRG)	130-Peripheral vascular disorders with CC	686.2, cellulitis (?)-0.9%
997.4-Surgical complication, digestive system (14.8% of cases in DRG)	188-Other digestive diagnoses, age > 17, with CC	None identified
997.5-Surgical complication, urinary tract (2.7% of cases in DRG)	477-Nonextensive OR procedure unrelated to principal diagnosis	None identified
997.5-Surgical complication, urinary tract (6.5% of cases in DRG)	331-Other kidney and urinary tract diagnoses, age > 17, with CC	599.0, UTI-27.1%

*Source: *DRG Resource Book*, pp. 176, 240, 288

Table 7*-use of Code 285.1, Acute hemorrhagic anemia, in surgical DRGs

DRG	Principal Diagnosis Codes within DRG	Percent Cases with Code 285.1
107-Coronary bypass without CC	414.01 (77.0%)	19.9%
	414.02 (4.8%)	15.1%
	414.00 (4.8%)	16.1%
	410.71 (3.3%)	12.3%
	410.41 (1.9%)	11.2%
110-Major cardiovascular procedures with CC	441.1 (38.0%)	24.4%
	441.3 (7.8%)	39.7%
	414.01 (4.6%)	7.8%
	410.11 (4.4%)	3.9%
	410.41 (3.2%)	4.3%
148-Major small and large bowel procedures with CC	153.3 (9.2%)	9.3%
	562.11 (8.8%)	9.9%
	153.4 (7.6%)	12.5%
	153.6 (7.0%)	14.3%
	560.81 (5.8%)	8.7%
154-Stomach, esophageal, and duodenal procedures, age > 17, with CC	553.3 (5.6%)	4.3%
	532.50 (4.7%)	3.7%
	151.8 (4.0%)	11.9%
	532.10 (4.0%)	6.6%
	151.0 (3.8%)	13.9%

209-Major joint and reattachment procedures of lower extremity	715.96 (23.2%)	23.3%
	820.09 (12.8%)	24.5%
	716.36 (12.3%)	24.5%
	715.95 (11.2%)	31.4%
	820.8 (7.8%)	23.4%
210-Hip and femur procedures except major joint procedures, age > 17, with CC	820.21 (60.9%)	40.6%
	820.09 (9.0%)	12.4%
	820.8 (6.1%)	15.8%
	820.22 (4.1%)	48.4%
	821.23 (2.7%)	39.4%
214-Back and neck procedures with CC	724.02 (31.5%)	17.2%
	722.10 (23.4%)	8.4%
	721.3 (5.7%)	19.0%
	721.1 (4.2%)	5.4%
	738.4 (4.1%)	38.6%

***Carol E. Osborn**, PhD, RRA, is an assistant professor, Health Information Management and Systems Division, at the Ohio State University in Columbus, OH. Within AHIMA, she is the past chair for the Assembly on Education and a member of the Joint Committee on Education and the panel of accreditation site visitors.* *Source: *DRG Resource Book*, pp. 68, 72, 152, 156, 188, 192, 196.

Article citation:
Osborn, Carol E. "Benchmarking with National ICD-9-CM Coded Data." *Journal of AHIMA* 70, no.3 (1999): 59-69.