Use Data Mining Findings as a Tool to Support CDI Education

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Clinical validation involves the clinical review of a case to determine whether or not the patient truly possesses the conditions documented in the health record. Productivity and coding quality often suffer when the health record lacks accurate documentation to support the claim, and current best practice is to query the practitioner when a diagnosis does not appear to be clinically supported in the health record. The February 2013 Practice Brief "Guidelines for Achieving a Compliant Query Practice" provides a sample query for cases not supported by clinical indicators.

Coding and clinical documentation improvement (CDI) professionals collaborate on a daily basis to achieve maximum accuracy in submitting an accurate MS-DRG, along with capturing the proper secondary diagnoses to support the accurate severity of illness (SOI) and risk of mortality (ROM) for the patient. Questions may arise, however, when the finance and quality departments analyze coded data in relationship to the testing and charges on the claim. Health information management (HIM) and CDI professionals should perform a data mining analysis of billed/coded data to determine practice patterns and consider using the findings as a tool for educating all those involved in documentation, including physicians, CDI professionals, coders, and other coded data users, on the importance of CDI efforts. This article discusses common principal and secondary diagnoses to target for this analysis.

Principal Diagnoses Analysis Reveals Three Common Conundrums

Clinically validating the principal diagnosis can be a challenge, especially when the symptoms are similar. Coders often query physicians regarding the correct sequencing only to be told either diagnosis can be used as the principal diagnosis. The Official Coding Guidelines Section II. B. Principal Diagnosis, Two or more interrelated conditions, offers a good guideline to follow in these situations—but it remains a conundrum that coders must resolve.

Three pairs of common diagnoses that are often part of this conundrum include:

- Sepsis vs. Urinary Tract Infections (UTI)
- Acute Chronic Obstructive Pulmonary Disease (COPD) vs. Acute Respiratory Failure
- Acute Congestive Heart Failure (CHF) vs. Acute Myocardial Infarction (MI)

The below sections include reference tables for comparing the treatment options and diagnostic testing differences between two possible principal diagnoses. While these tables provide a solid area for data queries to begin, they do not include all possible areas where data review may be necessary.

Sepsis vs. UTI

The steps in performing a data mining analysis for these two diagnoses should begin with:

- Determine the length of stay. Sepsis patients usually have a longer length of stay than UTI patients (exclude Sepsis patients that expire within 48 hours)
- Research the common antibiotic therapy for these same patients
- Pull a sample of medical records to review the documented clinical indicators and determine if the indications matched the final diagnosis of Sepsis or UTI

See Table 1 below for a comparison of common forms of medication treatments for Sepsis and UTI.

Table 1: Sepsis vs. UTI

This table compares common forms of medication treatments for Sepsis vs. UTI patients.

	Sepsis	**UTI**
Treatments	Tobramycin	Ceftin
	Vancomycin	Levaquin
	Zosyn	Septra

Acute COPD vs. Acute Respiratory Failure

Treatment options vary based on the degree of the respiratory disease, but individuals may be able to use some of these types of treatment options to begin a data search. Table 2 below provides a comparison of the different forms of treatment used for the two diagnoses.

Table 2: Acute COPD vs. Acute Respiratory Failure

This table compares the different types of treatment options rendered to acute COPD or acute respiratory failure patients. While COPD is typically treated by medication, respiratory failure is much more severe and may require additional procedures for treatment.

	Acute COPD	**Acute Respiratory Failure**
Treatments	Advair	Endotracheal Intubation
	Atrovent	Mechanical Ventilation
	Ventolin	Tracheostomy

Acute CHF vs. Acute MI

Diagnostic testing is another option to research when querying your data systems. Acute CHF and Acute MI are both cardiac diseases that warrant extensive testing and laboratory workup. Refer to Table 3 below for some common testing examples.

Table 3: Acute CHF vs. Acute MI

This table compares common diagnostic testing for acute CHF and acute MI patients.

Acute CHF	**Acute MI**
Laboratory = BNP (B-type Natriuretic Peptide Blood test)	Laboratory = Troponin levels
Radiology = Repeat Chest X-rays	Diagnostic Testing = Repeat EKGs
Diagnostic = Echocardiogram	Procedure = Cardiac Catheterization

Secondary and Additional Diagnoses Should Undergo Clinical Validation

In addition to having an impact on reimbursement, reportable secondary diagnoses are an important part of many quality reporting agency's initiatives. Secondary diagnoses that are reportable can support medical necessity for many tests and procedures performed.

Coding and CDI staff should be clinically validating any diagnoses documented by physicians within the health record as well as looking for missed diagnoses in which clinical indicators and treatments are present but a diagnosis is not documented. For example, a coder may see that the physician has documented "acute tubular necrosis (ATN)." This is assigned to code 584.5, Acute kidney failure with lesion of tubular necrosis, which is a major complication or comorbidity (MCC) and will impact reimbursement.

Upon review of the health record clinical information, the coder finds that there is not any mention of the common clinical indicators that would validate a diagnosis of ATN such as a normochromic, normocytic anemia, epithelial cell damage and necrosis, tubular dilatation, epithelial and granular casts in urinalysis, evidence of nephrotoxins or a drug toxicity, an ischemic event or acute vasomotor nephropathy, DIC, severe oliguria/anuria, or metabolic acidosis. The BUN and creatinine, although slightly elevated, are not substantially elevated. Only normal hydration is provided. At this point the coder or CDI professional should refer the case to a physician advisor/liaison so that the documenting physician can be queried as to the validity of the documented diagnosis of ATN.

Common Testing to Introduce Diagnoses

The use of diagnostic test results such as laboratory, radiology, and cardiovascular monitoring to introduce an otherwise undocumented or under-documented diagnosis is imperative when reviewing clinical documentation.

When test results are paired with a patient's signs and symptoms, the resulting diagnosis can then be clinically validated and support the codes submitted on the bill. This is the ultimate goal when coding to the greatest specificity—being able to formulate a valid non-leading query and successfully defending billing to Recovery Audit Contractors (RACs) and other external auditors.

Diagnosis	**Signs/Symptoms**	**Laboratory Tests**	**Chest X-ray**	**Echocardiogram**
Malnutrition	Weight loss; decreased food	Decreased serum pre-albumin,		

	intake, body fat, muscle mass	albumin, protein		
CHF	SOB, edema, tachycardia, cough	Increased BNP	Cardiomegaly, pulmonary edema, pleural effusion, pulmonary and/or vascular congestion	Determine vascular function; systolic & diastolic performance; ejection fraction
Acute Respiratory Failure	Confusion, dyspnea, tachycardia, crackles in lung bases on auscultation	Increased PCO2, decreased PO2, pH <7.35 (depending on pre-existing lung function)	Infiltrates that disappear quickly once treatment is administered	

Medications Play a Role in Clinical Validation

Medications administered during the inpatient admission help to support the physician's documentation of a secondary diagnosis as evidence of therapeutic treatment. Working jointly with an interdisciplinary team of clinical staff, the coder can assist with appropriate identification of secondary diagnoses through knowledge of pharmacology and review of physician orders, the medication administration record, and other pertinent health record documentation.

The entire interdisciplinary team, including coding staff, should be educated on audit contractor target areas. Data mining can be a great tool for identifying areas of potential risk by looking for common "matches" between targeted diagnosis codes and expected drug charges. Exceptions identified through data mining can be further reviewed in an internal audit.

Recovery auditors have focused on clinical validation of major complication or comorbidity/complication or comorbidity (MCC/CC) conditions which will impact DRG assignment. The table below includes examples of some MCC/CCs that could benefit from data mining and their common medications.

Medications for Common MCC/CCs

Recovery auditors have focused on clinical validation of MCC/CC conditions which will impact DRG assignment. Below are some examples of MCC/CCs that stand to benefit from data mining.

Condition	**MCC**	**CC**	**Possible Medications**	**Purpose**
Acute pyelonephritis, Acute cystitis, UTI		590.10; 595.0; 599.0	Ciprofloxacin, Macrobid ProQuin, Bactrim	Antibiotic
Severe protein calorie malnutrition	261 – 262		Vitamins, dietary supplements	Dietary supplement

Congestive heart failure	428.21; 428.23; 428.31; 483.33; 428.41; 428.43	428.1; 428.20; 428.22; 428.32; 428.40; 428.42	Lasix (furosemide)	Diuretic
COPD with acute exacerbation		491.21; 491.22	Albuterol, Atrovent Corticosteroids	Bronchodilators, inflammation reducers
Acute respiratory failure	518.81; 518.84		Oxygen, Nitric Oxide (neonates)	Inhalation therapy
Type I Diabetes Mellitus	250.11; 250.13; 250.21; 250.23; 250.31; 259.33		NovoLog, Humalog, Apidra, Humulin, Novolin, Lantus, Levemir, Insulin NPH	Insulin
Pneumonia	480.0 – 487.0		Organism-specific antibiotic	Antibiotic, antiviral

Determining Financial Impact and Risk

Determining financial impact and analyzing risk associated with documentation challenges and denials are a vital part of any documentation improvement program. This analysis can be performed as a result of internal review and assessment, and can also take into account impact from external auditors such as government and commercial payers. It is imperative to develop analytics in this tracking and trending of data that is built into a weekly, monthly, quarterly, and/or yearly analysis of financial impact.

Establishing goals within the CDI program is important to ensure the program is moving in the right direction from a process standpoint. Developing and monitoring financial metrics will ensure appropriate analysis of financial risk. This includes awareness of return on investment of implementing the program and allocation of resources to the endeavor. Within an institution, the chief financial officer or other revenue cycle leader will, in most cases, be intimately involved in establishing these metrics. This leader will be ultimately accountable for ensuring these metrics are being met at the department level.

As the healthcare industry moves to a quality-based system of performance, having a mechanism for measuring documentation improvement impact and success goes well beyond measuring the revenue impact of CDI. Measuring the results of documentation improvement programs is an ongoing assessment of documentation and data analysis.

Common metrics to monitor for inpatients include:

- CC/MCC capture rates
- Query rate (overall and by DRG or other key indicator)
- SOI and ROM indices
- Physician data/specialty rates, including response rates
- Internal vs. external denials (include reason for denial)
- Present on admission indicator—No/Undetermined

Common metrics to monitor for outpatients include:

- Order issues related to lack of documentation, such as medical necessity denials
- Query rate (overall and by service line or other key indicator)
- Physician data/specialty rates, including response rates
- Track and trend rework accounts
- Internal vs. external denials (include reason for denial)
- Present on admission indicator—No/Undetermined

References

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