HIM's Role in Monitoring Patient Safety

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Two years ago, the Institute of Medicine (IOM) published "To Err Is Human," describing the enormous burden of medical errors in the United States.1 It was estimated that deaths due to medical errors exceeded deaths from motor vehicle accidents, breast cancer, or AIDS and that the costs of medical errors could be as high as $29 billion annually. As a result of this report, media attention focused on patient safety problems and various public agencies sought to better identify and prevent medical errors.

The Agency for Healthcare Research and Quality (AHRQ) is the lead federal agency confronting the patient safety problem. Its director has likened the problem to an epidemic we are only beginning to understand.2 To better understand this epidemic, its causes, and the burden that it places on people, we need more information. Until better reporting systems are implemented, existing data can serve as a case-finding tool for targeted quality improvement efforts. AHRQ sought to develop measures of patient safety based on hospital administrative data that are routinely collected by HIM professionals.

A Matter of Quality

In the early 1990s, in response to requests from state-level data organizations and hospital associations, AHRQ developed a set of quality indicators (QIs) based on variables found in hospital administrative data. These states were participating in the Healthcare Cost and Utilization Project (HCUP), an ongoing federal-state-private collaboration to build uniform databases from state-level hospital discharge data systems. The 33 original HCUP QIs included several measures of avoidable adverse outcomes, including in-hospital mortality and complications.3

In response to a congressional directive to begin publishing the annual National Quality Report in 2003, input from current users, and scientific advances in quality measurement, AHRQ funded the Evidence-based Practice Center (EPC) at the University of California (UC) and Stanford University to refine and augment the original QIs. The UC-Stanford team was asked to identify and test new indicators based on data elements that are currently available in most inpatient administrative data systems. This constraint was intended to make the indicators more useful and to allow for national estimates that will go into the National Quality Report.

The work of the UC-Stanford EPC resulted in the AHRQ Quality Indicators, which are being distributed as three separate modules:

- Prevention Quality Indicators, based on hospital admissions that might have been avoided through high-quality outpatient care
- Inpatient Quality Indicators, consisting of inpatient mortality, utilization of procedures for which there are questions of overuse, underuse, or misuse, and volume of procedures for which higher volume is consistently associated with lower mortality
- Patient Safety Indicators (PSIs), which focus on potentially preventable instances of harm to patients, such as surgical complications and other iatrogenic (that is, induced inadvertently by a physician or treatment) events

The first two modules are already available at www.ahrq.gov/ data/hcup/qinext.htm; this article focuses on the PSIs.

A Five-Step Process

The UC-Stanford team is developing and testing the AHRQ PSIs through a five-step process. First, the UC-Stanford team reviewed the health services research literature **to develop a list of candidate indicators of iatrogenic complications and to collect information about their performance.**

Second, due to the lack of such literature, the project also included **careful evaluation of face validity by clinical panels**. The methodology for this evaluation was adapted from the RAND/UCLA Appropriateness Method, which relies on structured interactions among an educationally and demographically diverse set of clinicians.[4]

Thirdly, coding experts were consulted to ensure that the definition of **each indicator reflects the intended clinical situation**. As the fourth step, the project team is now conducting **empirical analyses of promising indicators using the HCUP data set**. These analyses will provide basic information about the statistical properties of each indicator. In addition, previous research on risk adjustment and probabilistic methods will be applied to improve indicator performance.

As the fifth step, the **HCUP QI software and documentation will be updated** once the PSIs have been selected. The results of the project will be shared with a task force directed by AHRQ to develop the National Quality Report, and the software will be released in late 2002.

Coding Complications

All the HCUP QIs, and especially the proposed PSIs, depend on ICD-9-CM diagnosis and procedure codes to identify cases at risk of an adverse event, identify the event itself, or specify inclusion and exclusion criteria. The validity of these indicators, therefore, rests on the accuracy of the ICD-9-CM codes on which they are based. While the PSIs can currently be used as screens for potential quality problems, improved coding of complications will increase their utilty. HIM professionals play a crucial role in ensuring the accuracy and completeness of these data.

Prior studies suggest that coding of complications is often problematic. For example, in a study using Iezzoni's Complications Screening Program based on administrative data, 31 percent of patients flagged because of an ICD-9-CM coded complication did not have objective clinical evidence of that complication, and 19 percent did not even have a physician note documenting its occurrence.[5]

Other studies focusing on specific groups of surgical patients have reported that only 34 percent, 40 percent, 37-44 percent, 44 percent, 0-47 percent, and 66 percent of known complications were reported using the applicable ICD-9-CM codes, and up to 68 percent of coded complications could not be confirmed through independent review of the medical record.[6,7,8,9,10,11]

Why is ICD-9-CM coding of complications so problematic? First, certain complications cannot be adequately coded using ICD-9-CM. For example, worsening of a preexisting radiculopathy or myelopathy is an important complication of spinal surgery, but cannot be coded except using a vague 997 code such as 997.09, Complications…surgical procedures, nervous system NEC. Second, ICD-9-CM codes are often ambiguous because they are based on inherently ambiguous medical diagnoses, such as "paralytic ileus" and "posthemorrhagic anemia."

ICD-9-CM coding guidelines and *Coding Clinic* advice have historically emphasized the importance of physician documentation: "never code a diagnosis as a complication unless it is stated as such and documented in the medical record by the attending physician."[12] However, physician documentation is highly variable. For example, one physician may ignore a complication that another physician clearly documents. Physicians may intentionally or unintentionally "cover up" iatrogenic complications by not attributing them to prior surgery or medical care, or by arguing that they are "an integral part of the disease process."[13, 14] Even when physician documentation exists, coders are only supposed to code additional conditions that affect patient care in terms of requiring clinical evaluation, therapeutic treatment, diagnostic procedures, extended length of hospital stay, or increased nursing care or monitoring.[15]

Coders are advised not to code other conditions just for the "sake of coding," but rather are encouraged to contact the physician if there is a complication and ask if the condition had any effect on the hospital stay or if it was treated during the hospital stay.[16] But how often does such communication actually occur? The evidence suggests that HIM professionals make reasonable, but often unreliable, judgments.

Finally, coders are encouraged to use paired codes to simultaneously document a complication and the specific nature of that complication.[17] Unfortunately, we have found that up to 40 percent of 997 codes were not accompanied by any specific code referable to the same body system. Paired coding is expressly prohibited in some situations where it would be very desirable for classifying medical errors, such as 998.1x ("hemorrhage or hematoma or seroma complicating a procedure")[18] and 998.2 ("accidental puncture or laceration during a procedure").[19]

All these problems make it difficult, using administrative data, to distinguish a hospital that truly has more preventable complications from a hospital that simply codes more accurately or has a lower threshold for labeling complications. In fact, a recent study suggests that much of the observed variation in complication rates across hospitals is attributable to variation in coding practice.[20] Current evidence suggests that the AHRQ PSIs will be useful as screens for potential quality problems, but improved coding of complications will further increase their utility.

HIM's Role

HIM professionals can make a major contribution to the national effort to monitor and prevent medical errors through their application and ongoing refinement of ICD-9-CM and, eventually, ICD-10-CM. Several desirable steps would include:

- Introducing more specific and clearly defined complication codes. With a few exceptions (i.e., 997.02, 997.61-997.62), the 997-999 complications codes are too vague to be useful in quality assessment. For example, the 998.3 code for "disruption of operation wound" fails to distinguish superficial from deep separations, and the 998.5 code for "postoperative infection" fails to distinguish sepsis from stitch abscesses. New fifth-digit codes could capture some of these important distinctions.
- Encouraging physicians to document iatrogenic complications more clearly, and physicians and coders to communicate more regularly to resolve ambiguities (such as whether a patient who received multiple transfusions, but never had a documented diagnosis of anemia, should be assigned that diagnosis).
- Requiring paired coding of complications, unless it is specifically prohibited by excludes notes or other coding rules.
- Achieving better consensus among physicians and HIM professionals regarding the meaning of "affect patient care" and "integral to the disease process." Address the following questions:
  - What is required to "affect patient care?"
  - Must a complication have clearly extended the stay of a specific patient, or is it sufficient for it often to extend the stay of similar patients?
  - Does a symptom-targeted history or physical examination, as part of a routine progress note, constitute "clinical evaluation?"
  - Does a nursing decision to administer a medication that was written "prn" constitute "therapeutic treatment" (e.g., laxative for constipation)? What degree of anemia is "integral" to major surgery?
- To address variability in physician documentation, some hospitals have established internal guidelines to help coders identify complications of uncertain significance, such as urinary retention (e.g., "urinary retention may be coded if so documented by physician or if . . .no spontaneous voiding occurs four hours postpartum and more than 500 cc of urine was obtained when catheter was inserted").[21] These guidelines may foster communication between physicians and HIM professionals, but they should not be used to suppress coding of complications that are recognized and treated by physicians, or to "diagnose" complications from nursing or laboratory notes.
- As administrative data are used to identify potential quality of care problems, HIM professionals should collaborate with local quality improvement leaders to investigate cases that arouse concern. Such participation will help coders recognize medical errors when they are documented in the medical record, and will help quality improvement leaders identify patient safetyproblems more efficiently.

Data to the Rescue

The administrative data that HIM professionals generate in coding medical records have long been used for reimbursement. More recently, these data have been used for research and quality assessment, and they hold promise for identifying potential patient safety problems. However, to fulfill this promise, the quality of the information must continue to improve—iatrogenic complications must be defined more accurately and coded more precisely. HIM professionals will be at the forefront in helping to improve the usefulness of administrative data, thereby addressing the national challenge of reducing medical errors.[22]

Notes

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22. The authors of this article are responsible for its contents including any clinical or treatment recommendations. No statement in this article should be construed as an official position of the Agency for Healthcare Quality and Research or the U.S. Department of Health and Human Services.

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