LETTER

Adding Diagnosis Codes to Prescriptions: Lessons Learned From a Quality Improvement Project

The Centers for Medicare & Medicaid Services (CMS) provides coverage for prescription medications for Medicare beneficiaries through Parts B, C, and D, and has an interest in assuring the quality of the pharmacotherapy delivered to patients. After the implementation of the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA 2003), CMS requested that each one of its Quality Improvement Organization (QIO) contractors develop projects that might improve the quality of care delivered at the pharmacy. The Arizona QIO, Health Services Advisory Group, Inc. (HSAG), chose to implement a project that sought better communication between prescribers and pharmacists, proposing the inclusion of medical diagnoses, or International Classification of Disease, 9th Revision, Clinical Modification (ICD-9-CM) codes, on all prescription orders. A study in which pharmacists were given varying levels of information about hypothetical patients—ranging from only legally required information to complete details, such as medication profile, physician progress notes, and diagnosis—found that the more patient information pharmacists have the better able they are to identify problems with medication therapy. Based on this research, it was hypothesized that providing diagnostic information to pharmacists with prescriptions would enhance patient safety by (a) increasing dispensing accuracy (i.e., decreasing look alike/sound alike errors and handwriting misinterpretation), (b) helping pharmacists to target patient education, and (c) allowing for the identification of problems with prescribed therapy.

The project complements the current Arizona regulatory requirement that patient “problems,” or diagnoses, be tracked by pharmacists. The Arizona State Board of Pharmacy requires that a “problem list” be present in each patient profile in pharmacy computer systems. Although the presence of a problem list is rigorously enforced by compliance officers, neither pharmacists nor the state board can verify its accuracy; the problem lists are created through patient self-report or the pharmacist’s professional judgment based upon the therapy prescribed. To provide an effective health care process, accurate information is necessary. Because many medications may be used for several indications, the pharmacy problem list often includes inaccurate information.

Initially, this project was planned as a prospective, descriptive quality improvement project, using data provided by 2 pharmacy chains in northwestern and southeastern Phoenix, Arizona, over 2 time periods—January to May of 2005 (baseline), and January to May of 2007 (follow-up), thus allowing for the intervention of awareness-building regarding the importance of the diagnosis code on the prescription. Because the project was conducted by a QIO, it was deemed an “intrinsic part of normal health care operations” and therefore exempt from review by an Institutional Review Board. Representatives from participating pharmacy chains each recommended 12 physicians as potential project participants. Of 24 physicians, 2 (1 podiatrist, 1 family physician) agreed to include an ICD-9-CM code on each written or electronic prescription. Physicians were asked to use their current system of prescribing (handwriting, electronic, etc.) but simply add a description of the problem they were treating in either plain English or using an ICD-9-CM code. Pharmacists were asked to use those data to fill the prescription and to capture the data in their computer systems.

In the study pharmacies, the only centralized record is the pharmacy practice management software routinely used to conduct pharmacy business. In the case of one of the participating pharmacies, this proprietary software is the central data source for patient information (e.g., demographics, prescription usage, patient treatment preferences, and disease state/diagnosis code information). At the time of the project, the quality indicator was the percentage of prescriptions written or e-prescribed by participating physicians that included diagnosis codes, with a goal of 10% improvement from the baseline rate of 0%.

The number of prescriptions with a diagnosis code was expressed as a rate, defined as the number of prescriptions with a diagnosis code divided by the total number of prescriptions written. A total of 1,330 prescriptions were written by the 2 physicians and filled at the pharmacies during the follow-up period. One physician recorded ICD-9-CM diagnoses on 300 of 310 (97%) handwritten prescriptions but on none of 546 (0%) faxed prescriptions, for an overall rate of 35% during the follow-up period. The other physician, who wrote 474 prescriptions during the follow-up period, was not compliant. Despite volunteering initially, the physician did not provide diagnoses on prescriptions as requested. Although these results were suboptimal, much was learned from this project that may assist others in similar endeavors.

Barriers to Implementation of a Diagnostic Coding Program

Four main barriers to implementing the intervention were noted: (a) difficulty in recruiting physicians, (b) difficulty in recruiting pharmacies, (c) difficulty obtaining data from the information systems, and (d) funding changes.

Significant barriers arose while recruiting physician participants for the project. Specifically, physicians were worried that entering diagnosis codes on prescriptions could lead to denial of claims for “off-label” indications. Some physicians were so convinced that public and private payers might deny coverage for medications written off-label that they proposed writing only the labeled indication on the prescription regardless of the patient’s condition. Obviously, this behavior would not only have defeated the purpose of the project, but would have led to falsely “validated” data in the analysis of accuracy, which used the physician entries as a benchmark against which to compare the pharmacy data. These prescribers were not recruited to participate because of their concerns. Additionally, some prescribers were concerned that medical liability trial attorneys would view the availability of
diagnostic information as fodder for new cases. Many prescribers who were initially chosen for the recruitment process did not return phone calls from the lead pharmacist.

Recruitment of pharmacies was also an issue. Previously the collection and maintenance of diagnosis codes in pharmacy computer systems were performed to maintain compliance with a state regulation. Compliance officers randomly selected patient profiles to look for the presence of the problem list. However, the accuracy of the problem list was impossible to determine without access to the patient’s medical record. Thus, compliance officers had no way of determining whether the problem list was accurate, and the quality of the data maintained in the pharmacy problem list was not considered a priority for pharmacy providers. Diagnostic data were not typically mined or utilized internally due to their poor validity. As a result, pharmacies were reluctant to disclose data to the QIO despite the voluntary nature of the project because the poor quality of the data would have been revealed. Pharmacies were acutely aware of the limitations of their pharmacy data management systems, and most pharmacy providers respectfully declined to participate. More recently, we have learned that the pharmacies that declined to participate but now have knowledge of this type of project, have reviewed and updated their internal corporate policies to populate problem lists with more accurate entries. As a result of this project, pharmacy administrators at one of the study sites reported extensive changes to their policies and procedures. Among the changes made, the pharmacy has contacted the software vendor to request that ICD-9-CM codes be updated and pharmacists have requested that high-volume prescribers include diagnoses on the prescriptions to improve pharmaceutical care. Now that there may be a useful purpose for these data, such as analyses conducted on behalf of Medicare Part D or QIOs, several large pharmacy-chain organizations have decided to find ways to address the issue.

Pharmacy recruitment also suffered because pharmacies are new to the QIO program. Since pharmacies and pharmacists have never been considered “health care providers” by the Social Security Act and are acknowledged as providers only in the Medicare Part D benefit created by the MMA 2003, pharmacists and pharmacies had almost no knowledge of the QIO program prior to the CMS 2005–2008 QIO project cycle. Remedial education about the confidentiality and Health Insurance Portability and Accountability Act classification of the QIOs took many hours to communicate and will be an issue requiring additional effort as QIOs are directed to work more closely with retail and mail order pharmacies.

In addition, the pharmacies involved have had a difficult time mining the data in their systems, despite electronic pharmacy computer systems. Although pharmacies have an enormous amount of patient data, the pharmacy management systems are designed to retrieve the data 1 patient at a time, for the purpose of filling prescriptions and reviewing patient medication histories. Therefore, at the pharmacy level, mining population-level data for this project would have required dozens of staff hours, at considerable expense to the pharmacy providers. The lack of funding to defray project participation costs was also a significant barrier.

Although the QIO had wanted a larger sample size and greater participation from a broad range of prescribers and pharmacies, achieving this goal was difficult because during the recruitment phase of the project, CMS halted the project because of budget constraints. Originally, the QIOs were asked to work with the pharmacies and prescribers for a period of 12 to 18 months. At 6 months into the project, the QIOs were asked to suspend the project indefinitely as CMS reevaluated project funding priorities. As additional contract modifications were issued by CMS, study participants (prescribers and pharmacies), who had been providing unpaid assistance to CMS through the QIO, started to pull back their voluntary support. As the contract modifications changed the timing and project design, community partners lacked the personnel and financial resources to adapt their participation on a volunteer basis.

Problems in Accuracy of Diagnoses Entered on Prescriptions
In spite of these limitations, HSAG retrospectively examined the participating pharmacies’ databases for accuracy of diagnosis codes, comparing the data present in the pharmacy computers with the data provided by the physicians. HSAG received 1 dataset from each of the 2 participating pharmacies. Each dataset included all pharmacy claims data for patients aged 65 years or older for prescriptions written by each of the 2 participating physicians. Each dataset was obtained from the pharmacies in August 2005 and consisted of all paid claims with fill dates from January 2005 through May 2005. The second dataset was obtained from the pharmacies in August 2007 and consisted of all paid claims with fill dates from January 2007 through May 2007.

Additional technical issues associated with the pharmacy software were discovered during data analysis. A deficit in specificity of the ICD-9-CM codes present in the proprietary pharmacy practice software led pharmacy personnel to select the code in their system that most closely matched the code submitted by the physician. In some instances, the code was imprecise or inaccurate. In others, the pharmacy was unable to translate the ICD-9-CM codes at all. For example, a specific diagnosis such as benign renovascular hypertension (ICD-9-CM code 405.11) was not available among the choices pharmacists had in their computer systems. The available code selected by the pharmacist, 402.XX (hypertensive heart disease), was not the correct code in that it did not match the information provided by the physician. In addition, the only pain code available in one of the pharmacy systems was 307.81 (tension headache, incorrectly labeled by the pharmacy software as “pain”). This led all diagnoses related to pain, irrespective of body system, to be incorrectly categorized as tension headache. The proprietary software used by most pharmacies is able to upload all of the codes from the American
Medical Association (AMA) classification system, but has not had any call for such programming. The vendor has been asked by one of the participating pharmacies to expand its ICD-9-CM catalog, and has promised to comply on future software updates.

In addition, no matter what the mechanism for getting the prescription to the pharmacy—hand-written or faxed form—the participating pharmacies had to manually enter information from the prescriptions and their corresponding diagnoses into the pharmacy database. The only way to avoid the manual entry requirement is for true e-prescribing to occur. This did not occur with the participating physicians and pharmacies during this project.

As this project was implemented, an interesting disconnect in billing policies within CMS was noted. CMS currently requires prescribers and pharmacies transmitting outpatient prescriptions for Medicare Part B to include a diagnosis code on the face of the prescription and in the National Council for Prescription Drug Programs (NCPDP) standardized claim transmission field. Medicare requires pharmacies to collect diagnostic information for all claims submitted to Part B and determines which diagnosis codes are considered appropriate for payment of Part B-eligible medications.6 Medicare Part D does not have the same requirement. Pharmacists and physicians have been careful to note ICD-9-CM codes on oral chemotherapy prescriptions, diabetic testing supplies, and other durable medical equipment formulary items paid under the rules established for Part B. Future policy updates requiring the notation of an ICD-9-CM code on all Part D prescriptions may drive further improvement on a national basis.

Readers should recognize the careful balance between the needs of the health care payer and the fears of prescribers and pharmacies, striving for a system that promotes full disclosure and full exchange of information between health disciplines in a way that does not unfairly impede access to products even when used off-label. We recommend that the lessons learned in this project be taken into account when considering or designing a larger controlled study of the potential impact of including diagnosis codes with prescriptions on medication error rates.

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