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Towards computer-assisted coding: A case study of ‘charge by documentation’ software at an endoscopy clinic

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Abstract

Objectives: An imminent transition to the ICD-10 diagnostic code set has increased interest in automating portions of the reimbursement process for clinical procedures. In this paper, we compare two distinct sets of billing codes generated at an endoscopy clinic using a traditional manual methods and computer-assisted coding using a ‘charge by documentation’ approach.

Methods: This is a retrospective, cross sectional research design analyzing data collected from all patients treated at one outpatient endoscopy clinic from July 2010 through June 2011. The collected data were the medical record number, data of service, diagnosis, procedure, CPT codes, ICD-9-CM codes, and CPT modifiers. The paired data were categorized as either an exact match or discrepant.

Results: 98% of the 2923 procedures were either colonoscopies or upper GI endoscopies, which have predictable workflow deviations that reliably map to changes in procedural and diagnostic codes. The codes from the two methods were an exact match for 31% of the cases. The automated approach generated 1–8 additional codes for 62% of the cases, and the manual approach generated codes without accompanying supporting documentation in the progress note for 24% of the cases.

Conclusions: We conclude that the automated approach was superior to the manual approach. We recommend the ‘charge by documentation’ approach for settings where the workflow is relatively predictable, including pre-identified frequently occurring branches to the workflow that affect the selection of procedural and diagnostic codes.

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Introduction

There is great interest in having computerized support for efficient documentation by a physician that will meet requirements for timely, justified reimbursement for clinically relevant procedures. This interest is due in large part to an imminent expansion of the diagnostic code set

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(ICD-10) in October 2015 for numerically assigned diagnostic codes to a clinical procedure. In this case study, we describe a retrospective comparison of the specificity, quantity, and accuracy of diagnostic ICD-9 codes assigned to an outpatient endoscopy procedure using computerized “charge by documentation” support as compared to a more traditional manual approach. We hypothesized that the automated approach would be superior to the manual approach for an outpatient endoscopy clinic, where the workflow is highly predictable for most patients.

In order to receive reimbursement for services provided to patients, providers need to document that clinical procedures were performed and that the procedures were justified based upon relevant medical diagnoses. In the United States, the Medicare payment system is founded upon providers justifying their assignments of a set of procedural (Current Procedural Terminology – CPT) codes by having appropriate related diagnostic codes and accompanying text documentation in the physician's progress note

There are several standardized systems for diagnosis coding, with the International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM) historically being the most common. In October 2015 in the United States, the ICD-9-CM coding system will transition to the Tenth Revision, which is segmented for the first time into codes for Clinical Modification (ICD-10-CM) and the Procedural Classification System for use solely in inpatient hospital settings (ICD-10-PCS) [1]. The use of ICD-10 is required for all patients covered by the Health Insurance Portability and Accountability Act (HIPAA), as well as for all patients who qualify for Medicare or Medicaid reimbursement. The ICD-10 update adds increased specificity in that it represents a three to seven fold increase in possible codes [2], and expands to include alphanumeric characters and an additional tenth digit. A bidirectional general equivalent mapping (GEM) system for comparing ICD-9-CM and ICD-10-CM/PCS codes has been made publicly available by the National Center for Health Statistics (NCHS) [3]. The authors of the GEM system found that, with a backward mapping approach comparing ICD-10-CM to ICD-9-CM, 93% of the codes had only approximate matches; therefore the ICD-10 transition is more of an overhaul than a minor update. For some diseases, ICD-10 code sets are only modestly increased from ICD-9, but some areas are greatly expanded, including ten-fold increases in diabetic codes and the specificity of the anatomic location for injuries to the musculoskeletal system. The change to ICD-10 does not affect procedural (CPT) coding for outpatient procedures. The World Health Organisation (WHO) continuously revises ICD-10 and the production of ICD-11 is planned for 2017. ICD-11 [4] implementation is likely to first occur in other countries, including Europe, and then the United States, similar to the implementation of ICD-10.

In many healthcare organizations, diagnostic and procedural codes are not generated by physicians or others who interact directly with the patient. Notably, ‘scribes’, who are typically medical students [5] or permanent employees, are increasingly used to document progress notes in real-time under the supervision of an attending physician. These scribes do not usually generate any codes [6]. Typically, coding specialists have an associate's or bachelor's degree in health information technology and are certified as a coding specialist by The American Health Information Management Association. Certification is based upon completing relevant coursework in an accredited program and successfully passing either the two-year Registered Health Information Technology (RHIT) or four-year Registered Health Information Associate (RHIA) examination [7]. Professional coders can also be certified by the American Association of Professional Coders. Medical coders assign a numeric descriptor to medical diagnoses, clinical procedures, and other elements such as medical complications. Medical coders in a hospital setting are typically employed in the Hospital Information Management (HIM) department to support billing requirements and gather data for statistical use, including for the purposes of reporting quality measures.

Since the introduction of the ICD-10 code set, a few accuracy studies have been conducted with the use of professional coders. Overall, these studies indicate that there is no substantial change in coding accuracy with the use of the respective countries' versions of ICD-10, which are all significantly smaller than the US version, as compared to ICD-9. One study found that the accuracy of coding marginally improved for 30/36 co-morbidities that were studied following the transition [8], and their results for sensitivity and Kappa values were similar to those obtained in a Canadian study using a similar methodology [9]. One study found a modest improvement in the accuracy of diagnostic codes two years following ICD-10 implementation in Australia as compared to the year it was implemented. In 2000–2001, agreement of the principal diagnosis code was 87% as compared to 85% in 1998–1999; agreement of the principal procedure code was 83% in 2000–2001 and 85% in 1998–1999. [10] In one study of professional coders working with a sample of complex patient records to generate ICD-9 codes, computer-assisted coding (CAC) support was associated with a similar level of accuracy to unassisted coding and a 22% reduction in time spent per record [11].

In order to achieve full reimbursement for services, not only do procedure codes need to be justified by relevant diagnostic codes, but it is also required that specific phrases be included in the progress note created by providers, which can be a physician, nurse practitioner, physician's assistant, intern, or resident physician. Without having the appropriate justification included in the progress note, reimbursement will be denied by the third party payer. Medical coders are not allowed to alter documentation created by a provider, but they can request that the specific provider who generated the note can revise their progress note documentation. For example, the provider could clarify using a particular phrase that a particular procedure did occur or that it was justified based upon diagnostic data. Typically, this request is conducted via a secure electronic mail system between a coder and a provider prior to the medical coder assigning the CPT and ICD-9 or ICD-10 codes and forwarding the information to generate a claim for reimbursement. Delays in correctly responding to a request result in delayed reimbursement to the organization, and a failure to respond to the request leads to a loss of revenue. Therefore, attempts to completely automate or semi-automate the coding process are more attractive when they reduce the likelihood of a provider needing to revise or augment progress note documentation after-the-fact. Computerized support that employs automated detection of potential gaps in progress note documentation is easier to

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