Coding Discrepancies Between Medical Student and Physician Documentation

Ryan Howard, MD,[*] and Rishindra M. Reddy, MD[†]

[*]Department of Surgery, Michigan Medicine, Ann Arbor, Michigan; and [†]Department of Surgery, Section of Thoracic Surgery, Michigan Medicine, Ann Arbor, Michigan

OBJECTIVE: Accurate medical documentation is a core competency in medical education and is critical to successful surgical practice. The following study aims to assess the coding accuracy of medical student documentation.

DESIGN: Retrospective chart review identified patient encounters in a surgery clinic that contained documentation by both a faculty member and a third-year medical student. Records were de-identified and assigned a level of service (LOS) and diagnostic code by trained, expert coders. Differences in LOS and diagnostic code were then compared between medical student and faculty documentation.

SETTING:: A single academic health system.

PARTICIPANTS: Third-year medical students.

RESULTS: 80 full patient evaluations and 20 postoperative visits were analyzed. Median faculty and student LOS was 4 (range 3-4) and 3 (range 0-4) respectively ($p < 0.001$). Students failed to document a sufficient number of elements in the evaluation, failed to specify studies ordered, and documented low medical decision making. Diagnostic code was concordant between students and faculty for only 31% of documentation.

CONCLUSION: Student documentation of clinical encounters is coded at a lower LOS than faculty documentation. These results likely reflect the lack of education regarding E/M coding in medical school, which is integral to real world practice.

SUMMARY: Accurate medical documentation is critical to the correct diagnostic coding and billing of a medical encounter. We found that compared to faculty documentation of the same patient evaluations, student documentation was typically coded at a lower level of service and assigned a different diagnostic code by professional medical coders. Addressing these topics in medical school may better prepare students for real-world practice. (J Surg Ed ▮:▮▮▮-▮▮▮. © 2018 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: medical student education, surgical education, coding and billing, surgery

ACGME: Systems Based Practice

INTRODUCTION

Accurate medical documentation is a core competency in medical education and is integral to real-world surgical practice.[1] Written documentation is used by professional medical coders to assign a Current Procedural Terminology (CPT) Evaluation and Management (E/M) code to all patient encounters conducted in the United States.[2] Documentation is also used to assign a diagnosis to a patient encounter using the International Classification of Diseases, 10th Revision (ICD-10).[3] These codes are determined based on elements documented in the patient history, physical examination, and medical decision making. Effective and coordinated care delivery as well as federal and private reimbursement for care provided depends directly on the codes applied to an encounter. Therefore, documentation that is incorrectly coded can result in loss of revenue and negatively affect delivery of care.[4]

Although critical to sustaining an effective medical practice, there is extremely little formal education in place to help resident trainees or medical students master this process.[5-7] Also, 85% of surgical residents believe that they are novices at coding and billing despite 92% also believing that this expertise is critical to their practice.[8] Coding compliance among surgical residents is as low as 36%.[9] A review of outpatient gynecology visits conducted by residents demonstrated that almost a third of these

Correspondence: Inquiries to Rishindra M. Reddy, MD, Department of Surgery, Section of Thoracic Surgery, 2120 Taubman Center, 1500 E Medical Center Dr, Ann Arbor, MI 48109; e-mail: reddyrm@med.umich.edu

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encounters were coded in the wrong category of service.[10] What is more, the replacement of the ICD-9 with the updated ICD-10 introduced 55,000 new diagnoses. Although a significant amount of time is spent in the medical school curriculum teaching medical students on how to obtain and document patient encounters such as a complete history and physical examination (H&P), there is no published data on the education of medical students in the coding and billing of this documentation.

Within this context, we sought to evaluate the quality of medical student documentation by comparing the codes applied to student and faculty documentation for outpatient clinical encounters. We hypothesized that documentation by students would inadequately reflect the primary diagnosis and medical complexity as compared to the faculty notes on the same patients.

MATERIALS AND METHODS

A retrospective chart review was conducted of outpatient visits to a single thoracic surgery clinic in a large academic medical center between 2014 and 2016. A clinical encounter was included in the study if it contained visit documentation (i.e., H&P or progress note) by both a faculty member and a medical student for the same visit. The faculty member was a clinically active thoracic surgeon who had been in practice for 9 years, has been educated in our institution's policy for coding and billing patient encounters, and is the Surgery Clerkship Director. Students were third-year medical students at any point of their third year. Students were asked to enter medical/surgical/family/social history into the electronic medical records (EMRs) and then to write a complete history and physical without using "smart phrases" or other EMR assists. Students wrote at most 3, and usually only 2 full histories over a 6-hour clinic. The faculty corrected the EMR entries to provide feedback to students, and used a templated form to complete the H&P, dictating or typing the History of Present Illness and the Assessment and Plan. Student notes were not considered part of the medical record, but are saved in the EMR. The student notes were saved as they were written, with faculty feedback and corrections made outside of the EMR.

These clinic notes were then de-identified and sent to a professional medical coding service (Bristol Healthcare Services, Cerritos, CA). A trained, expert coder assigned a level of service (LOS) to each note using CPT E/M codes,[2] as well as a diagnosis using ICD-10 diagnostic codes. Owing to de-identification of the clinic notes, the coder was blinded to the level of training and identity of the author of the H&P. After being assigned a LOS and ICD-10 diagnosis, the notes were returned to the study team and unblinded as to the status of the writer (student or physician) of each note for statistical analysis.

Descriptive statistics were generated for note writer, visit type, malignancy, and disease type. Differences in level of service between faculty and medical students were compared using a Mann-Whitney U test. Multivariate ordinal regression was performed to identify predictors of difference in level of service between faculty and students. This was done by calculating a difference in level of service (ΔLOS) for each clinical encounter. For example, if the faculty member's documentation was coded as a Level 4 visit and the student's documentation was coded as a Level 2 visit, $\Delta LOS = -2$. Descriptive analysis of ICD-10 diagnosis concordance was conducted to compare ICD-10 codes. Binary logistic regression was performed to identify predictors of ICD-10 code discordance between students and faculty. All statistical analyses were conducted using SPSS software. Significance was defined as $p \leq 0.05$.

This study was approved by the University of Michigan Institutional Review Board (HUM00112367).

RESULTS

Retrospective chart review was performed for 100 clinical encounters that contained documentation by both a faculty member and a medical student. All faculty notes were composed by one thoracic surgeon, and student notes were composed by 46 different students. All students were third-year medical students at a single institution.

Types of clinic visits included 80 new patient or return visit evaluations that required a complete H&P, and 20 postoperative evaluations. Specific disease types encountered are shown in Table 1. Malignancy was the primary condition in 59 of the 100 clinic visits.

Level of Service

For full history and physical visits ($n = 80$), 93% of faculty documentation was coded as level 4 and 7% was coded as level 3. Only 29% of student documentation was coded as level 4, with 64% coded as level 3, 5% coded as level 2, and

TABLE 1. Disease Types Evaluated Across the 100 Clinical Encounters

Disease Type	N = 100
Lung cancer	36
Esophageal cancer	13
Esophageal hernia	10
Achalasia	5
Reflux	3
Hyperhydrosis/flushing	3
Pectus	2
Thymoma	2
Aspira catheter management	2
Pneumothorax	2
Lung reduction	2
Esophageal stricture	2
Other malignant disease	10
Other benign disease	8