

The Impact of a Documentation and Coding Curriculum in an Obstetrics and Gynecology Continuity Clinic

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ABSTRACT

Background: The goal of this study was to determine how increasing levels of residency training as well as a documentation and coding curriculum affected coding accuracy in the continuity clinic setting.

Methods: All postgraduate year (PGY) 2 through PGY 4 residents (n=22) participated in a mandatory 3-module curriculum. Residents completed mock charge tickets in the obstetrics and gynecology continuity clinic for every patient encountered 1 month before and 1 month after the curriculum. An audit of 5 random charts per resident (n=110) compared chart documentation with the billing levels noted on the mock charge tickets.

Results: We found a significant reduction in the number of undercoded charts for everyone except PGY 4 residents. In

addition, all residents correctly coded more charts after the curriculum (from 30 to 46 charts, $P=0.03$).

Conclusion: The first phase of our documentation and coding curriculum study demonstrated that significant improvements in coding accuracy are achieved when implemented among PGY 2 and PGY 3 residents. Refinements in the basic foundation of knowledge may help prevent overcoding errors.

INTRODUCTION

Over the past century, the educational objectives of medical schools and residency programs have revolved around training physicians to be medically competent. Nevertheless, increasingly complex regulations governing the clinical practice of medicine have necessitated the incorporation of educational topics related to business and practice management spanning all specialties of residency training.¹ A survey of general surgery program directors² and the primer *The Business of Medicine: An Essential Guide for Obstetrician-Gynecologists*³ demonstrate this phenomenon. However, adequate education in medical documentation and coding continues to be a major area of deficiency in residency training⁴ and is particularly problematic because residents predominantly perform chart documentation at teaching institutions.

Many compelling reasons exist to formally teach documentation and coding principles during residency training. An accurate medical record is important not only for good patient care but also for research, utilization review, and quality-of-care assessment by third-party payers. Misrepresentation in the medical records not only threatens the fidelity of these records,⁵ but the federal government prosecutes it as fraud.⁶ Additionally, appropriate documentation ensures commensurate billing for services,⁷ especially as we enter an era in which graduate medical education funding remains sparse and teaching centers struggle to maintain their academic mission.⁸

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Keywords: Coding, documentation, evaluation and management, systems-based practice

The authors have no financial or proprietary interest in the subject matter of this article.

This work was performed at the University of Alabama at Birmingham, funded by an Association of Professors of Gynecology and Obstetrics (APGO) Ortho-McNeil Faculty Development Grant, and presented at the Council on Resident Education in Obstetrics and Gynecology/APGO Meeting, Dallas, TX, March 2002.

Table 1. Measurements of Coding Accuracy

Variable	Description
Undercoding errors	Chart documentation supports higher levels of service than marked on the mock charge ticket.
Overcoding errors	Chart documentation supports lower levels of service than marked on the mock charge ticket.
Other coding errors	All other forms of error: no modifiers, inappropriate use of new vs established patient, no ICD code, no procedure, no CPT code, inappropriate use of consult code.
Correct coding	All services and procedures for the patient encounter were coded correctly.

CPT, Current Procedural Terminology; ICD, International Classification of Diseases.

We developed and field-tested a documentation and coding curriculum relevant to obstetric and gynecologic practice in the Obstetrics and Gynecology Continuity Clinic at the University of Alabama at Birmingham. The primary aim was to assess how a documentation and coding curriculum would affect coding accuracy at the time of each patient encounter in the continuity clinic setting. The secondary outcome was to evaluate how the postgraduate level of training influenced accuracy. We hypothesized that a formal curriculum in documentation and coding would improve coding accuracy among all levels of residents.

METHODS

This study simulated auditing procedures performed by third-party payers and institutional compliance officers. We selected the Obstetrics and Gynecology Continuity Clinic because the setting mimics a small, private, technologically up-to-date gynecologic practice where we could assess the application of coding and documentation knowledge under real-life clinic pressure and factor in the value of prior clinic experience. We obtained institutional review board approval for this project. Postgraduate year (PGY) 2-4 residents ($n=22$) from the university's Department of Obstetrics and Gynecology participated; to model clinical practice motivation, we offered a financial incentive of \$500 to the resident from each training level (ie, PGY 2, 3, and 4) who coded the most accurately on the postcurriculum audit.

We implemented a 3-module documentation and coding curriculum from December 2000 through March 2001. PGY 2-4 residents had to attend one of the two sessions for each module.

Each resident was asked to complete mock charge tickets during his or her continuity clinic for every patient encounter during August-September 2000 and April-May 2001. The residents saw patients, did the actual chart documentation, and then filled out mock charge tickets for each visit. The actual charge

ticket was completed by the attending in the continuity clinic.

Precurriculum (August-September 2000) and postcurriculum (April-May 2001) audits on randomly selected clinic charts compared the residents' chart documentation to the Current Procedural Terminology (CPT) codes on the mock charge tickets that the residents completed during their scheduled clinics. The residents were expected to assign treatment levels on the mock charge tickets as they would in posttraining medical practice. The goal of comparing the mock charge ticket and actual chart documentation was to audit (as an external agency would) the accuracy of the coding.

An attending physician knowledgeable in current coding practices conducted all of the chart and charge ticket audits along with the curriculum education. The audits began with a review of medical records and outpatient laboratory logs to ensure that all services rendered were accurately documented in the chart. Next, the STAT E&M Coder program (Austin Physician Productivity, Austin, TX, www.statcoder.com/eandm.htm) was used for all coding chart audits. We compared the residents' chart documentations to the CPT codes on the mock charge tickets completed by the residents during their scheduled clinics.

The variables of coding accuracy used to define our primary outcome included undercoding errors, overcoding errors, other coding errors, and correctly coded charts (Table 1). The impact of the coding error was calculated in several ways. First, we calculated the difference between the billed and the documented charge's relative value units (RVUs) to determine the extent of undercoding and overcoding errors using the 2000 Medicare RVU fee schedule.⁹ Second, using the 2000 Medicare physician payment schedule conversion factor of \$36.6137 per RVU, we calculated the dollars lost because of overcoding and undercoding errors, assuming a 1:1 payback rather than the 3:1 penalty typically assessed by the Office of Inspector General (OIG) for overcoding errors.

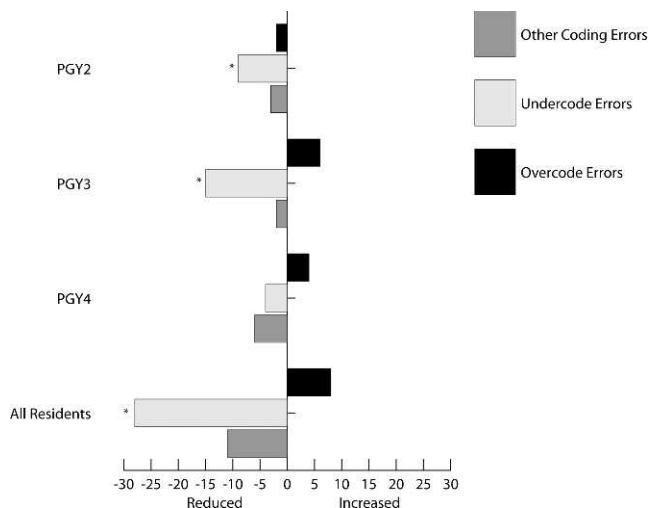


Figure. Impact on the number of inaccurately coded charts (* $P < 0.001$, compared with precurriculum data).

Assuming that 75% of all resident charts are documented and coded incorrectly at baseline, we anticipated that we would need to review 31 charts per postgraduate level before and after implementation of the curriculum to detect a 50% reduction in error with 80% power and $\alpha = 0.05$. To simulate a real-life audit and ensure meaningful conclusions, we reviewed approximately 25% of the monthly patient volume per resident: 5 charts per resident (PGY 2=35, PGY 3=35, PGY 4=40).

Data were entered into SPSS software for Windows (version 13.0, IBM, Armonk, NY) for analysis. Data analysis summarized the information by calculating RVU means \pm standard deviation and the

number of charge tickets with errors. The paired t test compared the differences between the pre- and postcurriculum mean RVUs. Fisher exact test was used to compare the number of charts containing errors pre- and postcurriculum. $P < 0.05$ was considered significant.

RESULTS

As illustrated in the figure, the number of outpatient evaluation and management services undercoded after implementation of the curriculum significantly decreased for PGY 2 residents (from 14 to 5 of 35 charts, $P = 0.003$), PGY 3 residents (from 16 to 1 of 35 charts, $P < 0.0001$), and all residents (from 48 to 20 of 110 charts, $P < 0.0001$), but not for the PGY 4 residents (from 18 to 14 of 40 charts). The extent of undercoding errors quantified using RVUs improved significantly for all residents ($n = 22$) after implementation of the curriculum (precurriculum undercode by 5.15 RVUs, postcurriculum undercode by 2.98 RVUs; $P = 0.007$). We found a general trend toward overcoding errors after instituting the curriculum (precurriculum 0.86 RVUs, postcurriculum 2.03 RVUs, $P = 0.09$). This nonspecific trend toward overcoding after the curriculum could result in financially significant penalties at the time of an audit.

Baseline coding accuracy improved with each additional year of residency training (Table 2). Prior to the institution of this curriculum, the PGY 4 residents had more correctly coded charts compared to their PGY 2 or PGY 3 colleagues (13 vs 9 vs 8, respectively). Postcurriculum, the number of correctly coded charts was significantly higher for the PGY 3

Table 2. Coding Accuracy Before and After Implementation of Curriculum

Coding Accuracy	Precurriculum Audit (%)	Postcurriculum Audit (%)	Relative Risk	95% Confidence Interval
Undercoded				
PGY 4	18 (45)	14 (35)	0.85	0.59-1.2
PGY 3	16 (46)	1 (3)	0.56	0.41-0.76
PGY 2	14 (40)	5 (14)	0.7	0.52-0.95
All Residents	48 (44)	20 (18)	0.69	0.57-0.83
Overcoded				
PGY 4	4 (10)	8 (20)	1.1	0.93-1.4
PGY 3	4 (11)	10 (29)	1.2	0.97-1.6
PGY 2	5 (14)	3 (9)	0.94	0.79-1.1
All Residents	13 (12)	21 (19)	1.1	0.97-1.2
Correctly Coded				
PGY 4	13 (33)	12 (30)	0.96	0.72-1.3
PGY 3	9 (26)	20 (57)	1.7	1.1-2.7
PGY 2	8 (23)	14 (40)	1.3	0.93-1.8
All Residents	30 (27)	46 (42)	1.3	1.0-1.5

residents (from 9 to 20 of 35 charts, $P=0.01$) and for all residents (from 30 to 46 of 110 charts, $P=0.03$).

The potential monetary impact of this curriculum when extrapolated to a clinic volume of 100 patients/week/resident equates to a postcurriculum office revenue increase of \$2,442 per resident weekly when taking into account all coding errors. Direct and immediate monetary losses from undercoding were significant, with a recovery of \$1,582 per resident per week by just correcting undercoding errors after institution of this curriculum.

DISCUSSION

The documentation of a patient encounter is complex and has diverse ramifications that include monetary, legal, research, and quality-of-care issues. The first phase of our documentation and coding curriculum study demonstrated that obstetrics and gynecology residents could be taught to use complicated guidelines under the real pressure and time constraints of an outpatient continuity clinic. The significant improvement in undercoding observed among the PGY 2 and PGY 3 residents illustrates the value of building this foundation of knowledge early in the resident's career. Such accuracy may result in cost savings to the institution when implemented early in residency training. Our study suggests that if resources (faculty, time) limit the opportunity to provide a formal curriculum to all residents, then training may be more effectively directed at the PGY 2 level of residents: This group has some outpatient clinical experience and exposure to practice issues on which to build. An inability to demonstrate improvement in the PGY 4 resident group is likely caused by their greater number of correctly documented and coded charts prior to initiation of the curriculum. These residents already possessed on-the-job coding experience and feedback in the continuity clinic that involved a full-time attending who was knowledgeable and skilled in coding.

One strength of our simple curriculum is that proficiency captures each of the Accreditation Council for Graduate Medical Education general competencies: application of clinical knowledge to patient care (Medical Knowledge), gathering and synthesis of essential and accurate health information (Patient Care), quality improvement to enhance patient care practices (Practice-Based Learning and Improvement), practicing cost-effective healthcare without sacrificing quality (Systems-Based Practice), responsibility to deliver comprehensive healthcare (Professionalism), and proper communication with other members of the healthcare team (Interpersonal and Communication Skills). In addition, implementation allows the repetitive application of these skills in the

continuity clinic so residents can gain coding experience, speed, and accuracy.

A weakness of our study is that one faculty member (SC) served as the primary attending in our continuity clinic. We attempted to offset this situation by having the residents complete mock billing sheets prior to discussing the case with the attending. A successful coding/documentation curriculum requires knowledgeable faculty who can teach these principles and give immediate feedback in the clinical setting. As we continue to modify educational objectives in ambulatory settings,¹⁰ incorporating a documentation and coding component will help impart another practical consideration to maintain that we train workforce-competent physicians.

In reflection, the trend toward increased overcoding errors warrants critical reappraisal. Such errors, when discovered at the time of an audit, are subject to a federal penalty of triple the damages, a fine of approximately \$10,000, and criminal prosecution by the OIG.¹¹ The most likely explanation for overcoding in our study population was that knowledge of basic principles brought an element of coding confidence and an overestimation of the value of the resident's time and cognitive services. We do not believe that the residents intentionally overcoded in the hope of generating more revenue because the patients in our system are not billed for services by residents. Practice and regular feedback via periodic audits will help improve documentation, minimize the number of subsequent coding errors, and maintain the long-term integrity of the medical records.

CONCLUSION

Physicians who are trained to document and code correctly not only have fewer claim inquiries and improved revenue, but even more important, they protect themselves and their institutions from fraud. A variety of curriculum formats has been developed,¹² all with subject satisfaction. Our curriculum is designed to serve as a starting point in house staff education on coding and documentation. The key to maintaining success is continued, periodic feedback from coding staff and attending physicians to reinforce proper documentation and promote cost-effective healthcare delivery. Studies looking at the long-term retention of coding and documentation knowledge are the next logical step in advancing this small body of literature.

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Epitoma

Most clinicians remember the first few days of transitioning to full-time practice and struggling to accurately drop charges for services provided. The authors of this study from an obstetrics and gynecology residency implemented a mandatory 3-module curriculum for all postgraduate year 2-4 residents in which mock charge tickets were completed for every patient encountered during a 2-month period in the continuity clinic. Random audits of 5 charts per resident were performed as the study progressed. At the outset, a significant number of charts were undercoded for services provided. However, significant improvements in coding accuracy were achieved at the completion of this study. These refinements in coding facilitate charge capture and obviously lead to refinements in the basic foundation of knowledge regarding accurate coding for visits.

—Guest Editor Ronald G. Amedee, MD

This article meets the Accreditation Council for Graduate Medical Education and the American Board of Medical Specialties Maintenance of Certification competencies for Patient Care, Medical Knowledge, and Systems-Based Practice.