



Teaching residents coding and documentation: Effectiveness of a problem-oriented approach

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Objective: We sought to assess the effectiveness of a problem-oriented approach to teaching residents accurate coding and documentation of ambulatory gynecology visits.

Study design: This was a pilot before-and-after study. Nine resident volunteers underwent 4 individual instructional sessions on coding and documentation with a trained faculty member over 6 weeks. Outcomes were assessed by comparing the appropriateness of procedure and diagnostic codes billed in participant continuity clinic prior to and in the 6 to 9 months following the intervention.

Results: Following the intervention, participants demonstrated an increase in the accuracy of coding the correct category of the evaluation and management service, an increase in the appropriate use of modifiers, and a decline in undercoding errors.

Conclusion: Problem-oriented interactive learning appears to be an effective method of teaching residents proper coding and documentation.

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Accurate and consistent coding and documentation of outpatient office visits is the foundation of operating a compliant and productive office practice. Unfortunately, many US residents in obstetrics and gynecology, as well as those in other subspecialties, graduate with a limited understanding of proper coding and documentation.^{1,2}

To address this ubiquitous problem, the Accreditation Council for Graduate Medical Education includes

system-based education as 1 of 6 general competencies required for resident development.³ System-based education expects that residents demonstrate “an awareness of and responsiveness to the larger context and system of health care.” As such, residents should be knowledgeable about coding, reimbursement, and the management of a medical practice. Identification of these general competencies was the first step in the Accreditation Council for Graduate Medical Education’s long-term effort to emphasize outcome assessment in resident education and the accreditation process.

Despite the obvious need for an effective education paradigm, there are no published guidelines on teaching or assessing the competency of coding and

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documentation in an ambulatory gynecology setting. Thus, the objectives of this study were: (1) to develop a problem-oriented approach to teaching proper coding and documentation of ambulatory gynecology visits; and (2) to assess the feasibility and effectiveness of such an approach by evaluating changes in documentation competencies and billing patterns.

Material and methods

This was an institutional review board approved pilot before-and-after study conducted at the University of North Carolina (UNC) Department of Obstetrics and Gynecology between January 2003 and February 2004. Nine obstetrics and gynecology residents, postgraduate years (PGY) 2 to 4, were asked and consented to participate in this study. Each resident attended 4 individual instructional sessions with 1 of 4 trained faculty members over a 6-week period.

Each session was an individual 1-hour learner-based module that was based on a standard curriculum, drawing examples of successes and errors from that individual resident's dictations in the prior 3 months. The curriculum was designed to address the most common coding and documentation errors identified in a sample of resident dictations audited prior to the educational intervention. Prior to meeting with the residents, each participating faculty member underwent the hospital's mandatory coding and documentation course and an additional 1-hour training course, which reviewed the study's curriculum.

Session 1 provided an overview of Medicare standards for coding and documentation. This focused on the usage of Current Procedural Terminology (CPT) Evaluation and Management (E/M) codes and their linkage to the International Classification of Diseases (9th revision) diagnostic codes. The medical history, physical exam requirements, and complexity of medical decision making for each level of service provided were reviewed. The appropriate use of modifiers-24, -25, and -51, which are used to assure proper reimbursement of a payable service provided, was highlighted in this session. For example, modifier-24 is used when providing an unrelated E/M service in the postoperative period of a major surgical procedure. Modifier-25 is used when the same physician performs a significant and separately identifiable E/M service on the same day as a minor procedure or a preventive health maintenance examination. Modifier-51 is used when multiple but separate procedures are performed on the same visit.

Session 2 focused on the differences between the 1995 and 1997 Medicare guidelines for the documentation of the physical examination. During this encounter, the faculty member reviewed the 1995 requirements of a multiorgan approach as well as the 1997 allowance for a

focused genitourinary examination. This session also provided an overview of 2 methods of choosing the level of service: billing according to evaluation and complexity versus billing for time-based counseling.

Session 3 reviewed the recommended components of an annual health maintenance examination, based on the American College of Obstetricians and Gynecologists guidelines on preventive care.⁴ The emphasis was on women ages 18 to 39 years, the most prevalent age group in the resident continuity clinic. A discussion of the North Carolina preventable causes of morbidity and mortality served as a reminder for residents to look beyond the breast examination and Papanicolaou smear when providing preventive care. Individual resident dictations were then reviewed on the appropriateness of their coding and documentation for an annual health maintenance visit.

Finally, session 4 was used as an opportunity to review 5 audited resident dictations for errors defined in the first 3 sessions. Residents were asked to provide feedback on their dictations and coding and received case-specific guidance from the instructor. At the end of the session, a posttest was administered, followed by immediate feedback on the answers.

Coding and documentation competencies were the primary outcome evaluated. Four general categories of competencies were developed based on the UNC Teaching Physicians Oversight Committee guidelines for computing a compliance error rate: class 1 (overcoding) errors, class 2 (undercoding) errors, appropriate use of modifier-25, and correct coding of a preventive medicine visit.

Class 1 errors are overcoding errors that cannot be billed as reported by the physician. The most common class 1 errors are category errors in which the wrong category of visit is chosen and overcoding by 1 or more levels of service. These errors are considered the most egregious because they bill for a higher fee than the documentation supports. For example, billing CPT code 99385 (preventive medicine, new patient 18-39 years old) when the appropriate code is CPT 99395 (preventive medicine, established patient 18-39 years old) would be considered a class 1 error.

Class 2 errors are undercoding errors that may be billed as coded but are also serious because they generally undercode, causing lost revenues. For example, billing CPT code 99213 (expanded problem-focused visit, established patient) when the documentation supports the level CPT 99214 (detailed problem-focused visit, established patient) is a class 2 error.

Coding competencies were assessed according to standard Medicare guidelines. A UNC billing compliance auditor randomly selected 10 outpatient gynecology visits provided by study participants: 5 dictations in the 3 months prior to the intervention and 5 dictations between 6 and 9 months following the completion of the intervention. To assure adequate diversity in the selected

Table Frequency of coding errors among randomly sampled encounters by UNC obstetrics and gynecology residents ($n = 9$) 3 months prior and 6 to 8 months after an educational intervention

Coding Error	Preintervention		Postintervention		<i>P</i> value [†]
	No. errors*	%	No. errors*	%	
Class 1 errors (unbillable errors)					
Overcoded due to wrong category billed	14/45	31.1	6/45	13.3	.05
Overcoded by 2 or more levels of service	0/45	0	0/45	0	—
Overcoded by 1 level of service	2/45	4.4	4/45	8.9	.16
Class 2 errors (billable errors)					
Consult opportunity missed	0/1	0	0/3	0	—
Undercoded by 1 level of service	6/45	13.3	2/45	4.4	.16
Undercoded by 2 or more levels of service	0/45	0	0/45	0	—
Procedure not billed	2/4	50.0	3/8	37.5	.93
Modifier-25 omitted	4/5	80.0	6/12	50.0	.39

* Total number of errors among all residents per opportunity to make error.

† Wilcoxon signed rank test.

dictations, 2 of the 5 dictations in each time period were selected from preventive medicine visits. The remaining 3 were problem-oriented visits. Within these 2 categories, dictations were randomly selected from the appropriate time period. Each dictation was audited to identify errors in the coding competencies of interest. Also, a billing and coding database was queried for all outpatient gynecology visits provided by study residents in the same period. Diversity in levels of service coded as well as appropriate coding of annual health maintenance visits were examined using this database. Descriptive and bivariate statistics, including the Wilcoxon signed-rank test, were performed using STATA 8.0 (STATA Corp, College Station, TX).

Results

Eleven residents volunteered to participate in this study; 2 residents were excluded because they completed the educational sessions within 1 month of graduation. Among the remaining 9 residents, 5 were PGY2 and 4 were PGY3. The average postintervention examination score was 94% correct.

After the educational intervention, residents showed a decline in overcoding errors, primarily because of an improvement in assigning the correct category of service rendered (Table). Nearly a third of audited dictations prior to the intervention were coded in the wrong category of service; this declined to 13% following the intervention ($P = .05$). There was also a trend toward a decrease in coding errors that result in underbilling, including meaningful improvements in billing for procedures provided and increases in the appropriate use of modifier-25. For example, 2 of 4 procedures (50%) performed in the preintervention period were not billed; this declined, although not statistically significant, to a failure to bill for 3 of 8 procedures (38%) in the post-intervention period.

Based on the preintervention audit of resident dictations, the most common error when coding an annual health maintenance exam was linking the International Classification of Diseases (9th revision) code V72.3 (annual visit with Papanicolaou smear) to a problem-oriented CPT E/M code (99201-99205 or 99212-99214) rather than to a preventive medicine code (99385-99387, 99395-99397). This coding error was billed in 54% of the preventive medicine visits prior to the intervention and declined to 37% of preventive medicine visits in the 6 to 9 months after the intervention ($P = .32$).

To assure adequate diversity in the types of visits reviewed, 40% of audited dictations were preventive medicine visits; the remainder was problem-oriented visits. Among the problem-oriented visits, the most common diagnoses were pelvic pain (30%), abnormal uterine bleeding (22%), uterine fibroids (13%), contraception (9%), and first-trimester abortion (9%). There was no relationship between the primary diagnosis and frequency of coding error.

The diversity of E/M levels of service coded appeared to improve following the intervention. For example, among all outpatient problem-oriented gynecology visits provided by participating residents in the study periods, the use of upper-level E/M codes (99204, 99214, 99244) increased from 11.7% to 20.6% of visits ($P = .05$). High-level E/M codes (99205, 99215, 99245) also increased, from 0% to 4% ($P = .03$), whereas use of low-level E/M codes (99201, 99202, 99211, 99212, 99241, 99242) declined from 27.9% to 15.3% ($P = .21$). Reflecting this change in the diversity of E/M levels of service billed, the average charge billed per encounter rose from \$109.48 to \$120.29.

Comment

Despite the importance of mastering accurate coding and documentation, there are currently no accepted standards

for teaching these skills in residency programs. In fact, many residents in obstetrics and gynecology, as well as those in other subspecialties, graduate with a limited understanding of proper coding and documentation. In 1 survey of obstetrics and gynecology residents attending a regional research conference, only 29% of residents felt confident in coding problem-oriented visits and 43% felt confident in coding preventive care visits.²

Understanding how to correctly use modifiers was equally lacking in this group of residents: only 29% felt confident using modifier-25, 14% understood the use of modifier-24, and no residents were familiar with modifier-51. This trend is not limited to residents in obstetrics and gynecology. In a large survey of emergency medicine residents, the majority of residents rated their confidence in their ability to accurately code as "minimal" (26%) or "not at all" (42%).¹

To our knowledge, this is the first study that attempts to address this deficit in resident education in obstetrics and gynecology. We found that after individual instruction, university-based residents demonstrated meaningful improvement in the knowledge and application of coding principles. Residents tended to show declines in the instances of noncompliant billing, both in assignment of E/M category and level of service provided. There was a trend toward a decline in undercoding errors as well as an improvement in billing for procedures performed. The appropriate use of modifiers to accurately bill for services provided seemed to increase, as did the appropriate coding of annual Papanicolaou smears during preventive medicine visits.

Residents in this pilot study also showed improvement in increasing the diversity of the E/M levels of service coded, which may be another marker for improved facility in coding for different levels of service. As a result, the average charges billed per patient seen also increased. Assuming correct application and documentation of the corresponding code for each visit, this suggests that trained residents demonstrate improved ability to use their coding and documentation skills to reflect the complexity of services rendered. Although this rise in average charge per patient seen was approximately \$10.81, this modest amount could translate into substantial increases in billing for the same number of services provided. For example, in a residency program with 24 residents, providing 10 outpatient gynecology visits per week for 47 weeks of the year, this increased diversity in coding could result in the capture of lost revenues conservatively estimated at \$120,000 per year. Indeed, this value underestimates the net benefit of coding education because it does not account for other improvements in coding knowledge, such as increased use of modifiers to appropriately avoid denials of claims.

It is important to note that this training program involved a small number of participating residents, and

the number of audited dictations in this study was few. Thus, we had limited ability to detect statistically significant improvements. Also, the follow-up was relatively short and the 5 dictations may have been uncharacteristic of the resident or patient population as a whole. In such a small study, results cannot necessarily be generalized to other resident or patient populations. The participating residents were volunteers and may have represented a particularly motivated sample of physicians committed to improving their coding knowledge. The long-term effectiveness of this training program should be evaluated in future studies.

Although there was substantial time investment in face-to-face teaching sessions with faculty instructors on 4 separate occasions, preliminary results of our previous work teaching a 1-hour problem-oriented module suggest that this approach may be effective in improving knowledge of coding and documentation.² Thus, this study, in addition to our previous work, is valuable in that it demonstrates the feasibility of improving resident coding skills. It also illustrates the potential valuable financial gains that improved coding could have for the department and for the individual physician.

Today in a climate of escalating costs, falling reimbursement, and legal scrutiny, skills for proper coding and documentation are vital to the financial endurance of health care providers and institutions. Indeed, coding skills are becoming as essential to the success of the graduating resident as any other skill acquired in residency. With cooperation and communication among teaching programs, successful training in coding skills should be rapidly developed and implemented in obstetrics and gynecology training programs.

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