Improving Orthopedic Resident Knowledge of Documentation, Coding, and Medicare Fraud

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BACKGROUND: Most residency programs still lack formal education and training on the basic clinical documentation and coding principles. Today's physicians are continuously being held to increasing standards for correct coding and documentation, yet little has changed in the residency training curricula to keep pace with these increasing standards. Although there are many barriers to implementing these topics formally, the main concern has been the lack of time and resources. Thus, simple models may have the best chance for success at widespread implementation.

PURPOSE: The first goal of the study was to assess a group of orthopedic residents' fund of knowledge regarding basic clinical documentation guidelines, coding principles, and their ability to appropriately identify cases of Medicare fraud. The second goal was to analyze a single, high-yield educational session's effect on overall resident knowledge acquisition and awareness of these concepts.

SUBJECT SELECTION AND STUDY PROTOCOL: Orthopedic residents belonging to 1 of 2 separate residency programs voluntarily and anonymously participated. All were asked to complete a *baseline* assessment examination, followed by attending a 45-minute lecture given by the same orthopedic faculty member who remained blinded to the test questions. Each resident then completed a *postsession* examination. Each resident was also asked to self-rate his or her documentation and coding level of comfort on a Likert scale (1-5). Statistical significance was set at $p < 0.05$.

MAIN FINDINGS: A total of 32 orthopedic residents were participated. Increasing postgraduate year-level of training correlated with higher Likert-scale ratings for self-perceived comfort levels with documentation and coding. However, the baseline examination scores were no different between senior and junior residents ($p > 0.20$). The high-yield teaching session significantly improved the average total examination scores at both sites ($p < 0.01$), with overall improvement being similar between the 2 groups ($p > 0.10$).

PRINCIPAL CONCLUSIONS: The current healthcare environment necessitates better physician awareness regarding clinical documentation guidelines and coding principles. Very few adjustments to incorporate these teachings have been made to most residency training curricula, and the lack of time and resources remains the concern of many surgical programs. We have demonstrated that orthopedic resident knowledge in these important areas drastically improves after a single, high-yield 45-minute teaching session. (J Surg Ed 74:794-798. © 2017 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: resident documentation, resident coding, core competencies, Medicare fraud, orthopedic residency, residency curriculum

COMPETENCIES: Patient Care, Professionalism, Practice-Based Learning and Improvement

INTRODUCTION

Incorrect or incomplete documentation and coding for physician services has detrimental effects on the entire health care system. Upcoding by physicians is known to cost the Centers for Medicare and Medicaid Services up to billions each year in resource use and improper payments.[1] On the contrary, downcoding services risks compromising the financial viability of many private practices and academic training centers.[2] Moreover, both the former and the latter are, by definition, *fraudulent* coding acts which ultimately are subject to legal ramifications.[3]

Physicians are looked to as pivotal leaders in the fight against rising health care costs. Although this concept is intuitive, the notion that physicians receive little (if any) training in the basics of proper documentation, billing, and coding while in medical school, residency, and fellowship

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  1931-7204/$30.00 http://dx.doi.org/10.1016/j.jsurg.2017.02.003

remains a topic receiving relatively little attention until the last decade.[4-7] In 2006, a survey of graduating orthopedic residents revealed that >90% felt that formal training in documentation and coding was necessary during residency, and only 13% stated that they felt confident in their ability to start coding by their first day as a new attending.[8] A 2014 pilot study comparing resident and attending current procedural terminology (CPT) coding for foot and ankle surgeries found that resident and attending CPT codes were the same for only 42% of surgeries, and the residents had been using incorrect CPT codes for logging cases.[9] A 2015 survey of 182 practicing orthopedic surgeons demonstrated that the average overall self-rated level of business knowledge at the conclusion of residency was only 2.4 on a 10-point scale (1 = "knew nothing at all", 10 = "complete understanding"). In addition, after factoring in different subcategories which were all weighted based on level of clinical importance, the 2 areas with the greatest functional deficits were "business operations" and "billing/coding."[10]

Beyond orthopedics, residents and physicians in all specialties report the same generalized findings[11-19]: first, there is an educational deficit in teaching residents and fellows the proper documentation and coding basics. Second, these educational and training deficits have persisted despite the evolving health care environment which now requires increasing levels of physician interaction with multiple health care entities, including insurance companies and hospitals. Finally, the vast majority of new attending's report that they feel unprepared and inadequately trained in these areas, and physicians are becoming increasingly vulnerable with heightened levels of scrutiny toward a physician's documentation, coding, and billing practices in the transparent age of the electronic health record (EHR).

Addressing the deficit poses a significant challenge in the setting of significant barriers to implementation.[4,13,14] Surgical residency programs in particular are under a significant amount of pressure to meet increasing requirements in surgical skills assessed and required case volume numbers while maintaining duty-hour restrictions. Thus, these barriers have tempered the increasing demand expressed by all levels in the residency program educational hierarchy, and widespread incorporation of these topics into the training curriculum is most likely to be achieved in an educational format that is concise, effective, and uses very little resources.

The purpose of this study was 2-fold: first, we wished to assess a group of orthopedic residents' fund of knowledge regarding basic clinical documentation guidelines, coding principles, and self-perceived level of comfort in these areas. Second, we analyzed a single, high-yield educational session's effect on orthopedic resident knowledge acquisition and awareness of these concepts.

MATERIALS AND METHODS

Institutional review board approval was obtained before executing this study. Orthopedic residents voluntarily and anonymously participated in a 24-point *baseline* assessment examination comprised of questions testing basic documentation and coding principles. Questions ranged from the fundamental components of assigning a code for evaluation and management services to various general concepts testing surgical coding, procedural "bundling," and knowledge of Medicare fraud. At the end of the examination, the resident was prompted to self-rate his or her ability to correctly document and code on a scale from 1 ("novice") to 5 ("expert").

Next, a 45-minute educational lecture was provided by an orthopedic faculty member. The faculty member was blinded to the test questions given to the residents and the residents were not given answers to any of the questions during the educational session. At the conclusion of the lecture, a postsession assessment examination was administered, consisting of different questions and clinical scenarios based off of the same underlying tested principles.

In total, there were 2 separate sessions provided to 2 different groups of orthopedics residents from nonaffiliated programs. Group 1 ($n = 13$) and Group 2 ($n = 19$) had their respective documentation and coding teaching sessions given about 1 week apart. The same protocol was used for both sites and the same instructor was in charge of each session. Descriptive statistics were applied to evaluate the difference in total scores on the examination before and after intervention via a paired *t*-test. The 2 sites were compared to investigate the reproducibility of total score improvements. Student *t*-test and spearman's correlation coefficient were used to calculate for potential associations between increasing postgraduate year (PGY) training level and affiliated *baseline* test scores, as well as increasing PGY-level of training and self-rated confidence in documentation and coding scores (1 = "novice" to 5 = "expert"). Statistical significance was set at $p < 0.05$ for all tests performed. Data were analyzed using SPSS Statistical Software (IBM Corporation 2012, Somers, NY).

RESULTS

In total, 32 orthopedic residents completed the teaching sessions. A full breakdown of residents by PGY-level composition mix and examination scores at both sites is provided in Table 1. None of the residents had any prior formal education in documentation and coding. There was a statistically significant improvement in all resident individual total scores on the 24-point examination when comparing the *baseline* and *postsession* scores ($p = 0.020$) (Table 1). When separated out by PGY-levels, the results also demonstrated statistical significance ($p < 0.010$, for all years PGY-1 through PGY-5). In addition, when comparing between the 2 separate sites and orthopedic resident groups, there was no statistically significant difference noted in score improvement magnitudes ($p = 0.631$) (Table 1).

TABLE 1. Intersite Comparison for Documentation and Coding Teaching Session

	Group 1*	Group 2*	Intersite p Values
Total residents (N = 32)	13	19	
PGY-1	1	4	
PGY-2	4	4	
PGY-3	1	3	
PGY-4	3	3	
PGY-5	4	5	
Total score, baseline examination†	12.9 ± 2.5 (53.8%)	12.4 ± 2.3 (51.7%)	0.547
Total score, postexamination†	20.5 ± 3.0 (85.4%)	19.0 ± 2.5 (79.2%)	0.065
Total point score improvements†	7.5 ± 3.8	6.6 ± 3.0	0.631
p Value (baseline vs post-exam scores)	0.020	0.020	

*Groups 1 and 2 represent the 2 different orthopedic residency programs with resident participation and examination scores.
†Scores presented as mean ± standard deviation (percentage correct) for all residents in the group.

Higher self-rating scores for level of confidence in documentation and coding correlated positively with increasing PGY-level of training (p = 0.001). However, increasing PGY-level of training did not correlate with increasing score totals on the *baseline* assessment examination (p = 0.990) (Table 2). When analyzing correct response rates for the various tested concepts on the assessment examinations, significant improvements were made with respect to all concepts tested (Fig.). Table 3 lists all topics discussed in the sessions.

DISCUSSION

Our study adds to the existing body of literature demonstrating resident training deficiencies in teaching documentation and coding principles. Furthermore, to our knowledge this is the only study reporting to not only achieve significant improvement in resident knowledge acquisition of these concepts in less than an hour, but also doing so without the use of a coding specialist for the education. One other previous study reported similar improvement after a 90-minute session directed by a coding specialist.[4]

Baseline total scores by resident PGY-level of training showed significant variation and no statistically significant correlation was noted with respect to more senior residents scoring higher on the examination. An interesting finding from this study highlights that although senior residents were more likely to give themselves a higher score on the self-rated confidence scale for coding knowledge, this higher score did not correlate with a higher point total on the *baseline* examination. These findings have been demonstrated previously when comparing junior and senior resident level operative report documentation practices,[17] and when comparing knowledge of appropriate clinical examination documentation principles for evaluation and management services.[13] Furthermore, several surveys of practicing orthopedic attendings have suggested that the vast majority of trainees feel inadequately prepared to document and code for the services they provide.[10]

Although our study to some degree demonstrates that the basic documentation and coding principles can be learned and applied quickly, we are limited in that we are unable to ascertain the long-term retention for this knowledge among residents. Furthermore, we are unable to make any conclusions for real-world clinical applications at this time. A realistic approach to combat these limitations would be to

TABLE 2. Association of PGY-Level of Training With Self-Rated Confidence in Documentation and Coding Scores and PGY-Level of Training With Baseline Assessment Scores

	Likert Score	Baseline Score
PGY-level		
PGY-1 (*n* = 5)	1.0 ± 0.0	12.0 ± 2.7
PGY-2 (*n* = 8)	1.0 ± 0.0	13.9 ± 1.9
PGY-3 (*n* = 4)	2.0 ± 1.2	10.8 ± 1.5
PGY-4 (*n* = 6)	1.7 ± 0.5	12.2 ± 2.7
PGY-5 (*n* = 9)	2.0 ± 0.9	13.0 ± 2.4
PGY-level vs Likert score (p value)*	0.535 **(0.001)**	–
PGY-level vs baseline test score (p value)†	–	0.002 (0.990)

*Spearman's correlation coefficient and Student *t*test with p values (in parentheses) are calculated to determine the relationship between PGY-level and self-rated scores for confidence in documentation and coding (1 ="novice" and 5 = "expert").
†Spearman's correlation coefficient and Student *t*test with p values (in parentheses) are calculated to determine the relationship between PGY-level and baseline assessment scores.
Bold values indicate statistical significance at the alpha = 0.05 level.

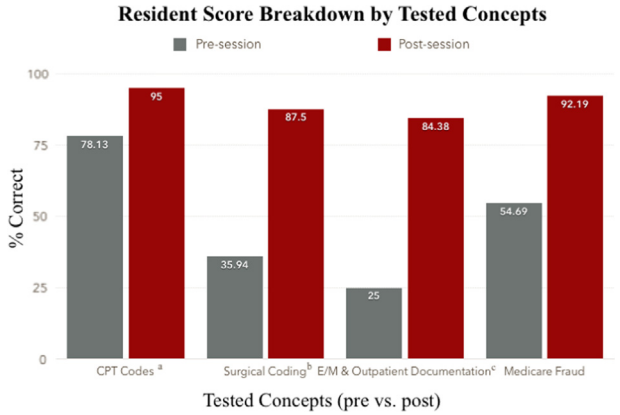

FIGURE. Baseline ("presession") vs postsession resident score breakdown by concept tested. a, current procedural terminology; b, surgical coding encompassed concepts such as "bundling," "add-on" codes, "modifiers," and "global periods"; c, evaluation and management (E/M) and outpatient documentation encompassed "new vs established" patient visits, office level "coding" (i.e., "level 2, 3, 4" etc.), and physical examination principles.

advocate for annual repetition of the lecture in addition to supplementing this proposed program with active questioning and feedback from attendings while the resident rotates through the various subspecialties. Finally, this educational session was tested on orthopedic residents only, and thus limits any conclusions to be made for other medical and surgical training programs; albeit the design was geared to facilitate incorporation into a surgical training curriculum.

The most reasonable implementation strategy for increasing resident knowledge in documentation and coding principles is one that is quick, effective, and uses minimal resources. Residency programs across specialties may be discouraged at the time, cost, and effort needed to implement a cumbersome addition to the curriculum. This is especially true for surgical residency training programs.

TABLE 3. Orthopedic resident documentation and coding educational session topics

Topic
General
Terminology/basics
Coding: CPT, evaluation/management (E/M)
Organizational/policy update process
Relative value units (RVUs)
Medicare fraud
Surgical
Add-on codes and modifiers
Multiple CPT code listings, code bundling
Dictation/operative report
Clinic based
Patient "type" (new vs established vs postop)
History/medical decision making/time-based
Physical examination documentation requirements
Global periods/aftercare
Follow-up: ER, inpatient consults, fracture care
Office-based procedures

ER, emergency room.

Funding cuts to graduate medical education in addition to reduced resident work hours and increasing requirements to demonstrate achievement of the core competencies poses a handful of important threats to any further proposals for curriculum changes.[13,15] Given these competing obligations, the impetus for the current study was to evaluate the effectiveness of a high-yield, 45-minute lecture to any existing didactic schedule. Although this may very well represent a "bare minimum" approach to a much broader goal, it is a step in the right direction toward a more comprehensive training program for all residents.

In keeping pace with today's health care environment, the proposed curriculum addition represents significant knowledge acquisition for orthopedic residents in line with potential future cost-containing strategies to increase the efficiency, value, and care provided by tomorrow's physicians. In February 2015, Centers for Medicare and Medicaid Services released the Medicare fee-for-service 2013 improper payments report, stating the improper payment rate from July 2011 to June 2012 was 10.1%, translating to $34 billion in incorrect Medicare payments.[1] Furthermore, with 17% of the national gross domestic product[20] currently being utilized by healthcare services and expenses, and the projected increase to 30% by 2030, a modest reduction in improper billing and coding practices of physicians can serve as an important step in the right direction for cost containment strategies.

Future directions of the study include specialty-specific high-yield lectures that can be incorporated in a similar fashion as we have shown here. In addition, analyzing the real-world clinical application and resident assessment and standardized feedback from attendings (or coding personnel) will be important moving forward. Indeed, with the recent nationwide conversion from ICD-9 to ICD-10 warranting more specific documentation and coding practices to enhance the integrity of the electronic health record to optimize patient care and long-term outcomes, this may be the most advantageous window of opportunity to focus more time and attention on improving resident knowledge in accurate documentation, coding, and billing practices.

CONCLUSION

The educational session presented in this study can serve as a focused and efficient addition to any existing residency or fellowship curriculum of study. We demonstrated that this was reproducible at 2 separate sites with similar groups of participating orthopedic residents encompassing all levels of training.

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