Evaluation and Management Documentation and Coding Technology Adoption

by Susan H. Fenton, PhD, MBA, RHIA; Larry D. Gamm, PhD; and J. Charles Huber Jr., PhD

Abstract

This study determines the relative effect of financial incentives, practice characteristics, and regulatory guidelines on the utilization of documentation and coding technology among physician practices employing HIM professionals. A total of 442 HIM professionals, 9.78 percent of the surveyed population, completed a Web-based survey regarding their practices and E/M documentation and coding methods used. More physician practices use the traditional documentation and coding methods than use automated methods. Less than half of the practices using automated documentation technology also utilized automated coding technology. Financial incentives and regulatory guidelines were not related to documentation or coding method used. Organization size and type were highly related to documentation or coding method used. Practices using coding technology were more likely to perform coding validation. The reasons for low levels of coding technology adoption, which requires little additional physician effort, suggest the potential presence of unique factors inhibiting the adoption of this technology.

Introduction

The adoption of information technology in healthcare is not only anticipated to improve the delivery of patient care, but also to revolutionize the way healthcare is organized. A recent report suggested a conceptual model of health information technology adoption with four main influences: 1) financial incentives, 2) technology, 3) organizational factors, and 4) legal and regulatory issues.[1] This study examines the results of a survey of CPT evaluation and management documentation and coding methods and information technology employed for coding as reported by HIM professionals employed in physician practices. Specifically, the relationship of the use of documentation and coding technology to possible financial incentives, practice or organizational factors, and regulatory issues will be discussed. The article concludes with suggestions and implications for future information technology use for evaluation and management coding.

Background

Evaluation and management (E/M) codes are the primary means to characterize, report, and bill the office care almost all patients receive from physicians. In calendar year 2005, more than half (53 percent) of the top 110 Medicare Part B procedure codes (ranked by charges) were E/M codes. The charges attributed to these codes were more than $28 billion, more than one-quarter of total Medicare Part B charges.[2]

Correct usage of these codes, however, has been and remains controversial, as evidenced by the use of two sets of documentation guidelines.

Administrative code sets are used by a wide variety of healthcare entities for many purposes, including reimbursing providers, setting budgets, measuring the quality of care, making actuarial predictions, and determining healthcare policy. Coding, the process by which an administrative numerical identifier is assigned to clinical documentation provided by a healthcare practitioner, does not appear to have changed much since the late 1970s. However, the adoption of the electronic health record (EHR) and supporting health information technology may result in new methods.

Several surveys and studies examine the adoption of health information technology in physician practices and medical groups. The findings of these studies are consistent. Larger practices are adopting EHR technologies more quickly than smaller practices.[3-6] These studies also find a similar set of barriers, including various financial and organizational considerations. Financial considerations include the cost of the technology and a return on the investment, as well as lost productivity during implementation and additional ongoing costs for system maintenance. Organizational considerations include a lack of administrative and clinician support, along with doubts about their ability to select the best EHR system, a lack of user skills with the EHR, and security and privacy concerns.[7-10] And, of course, a critically important point is whether and to what extent an EHR supports effective performance via a diverse array of clinical and administrative functionalities.

Gans and colleagues reported, based on a national survey of medical group practices, that improved accuracy for coding evaluation and management procedures was the third most important anticipated benefit, 4.28 out of a total of 5, to a medical group practice adopting EHR technology. [11] Another study cited numerous factors driving the adoption of computerized patient records (CPRs), also known as an EHR. [12] Among administrative drivers, the need to improve clinical documentation to support appropriate billing service levels was second at 75.3 percent. As noted previously, coding of clinical data and documentation is used for myriad purposes, including quality reporting and pay-for-performance reporting, not to mention reimbursement. While many studies do ask about clinical documentation technology use, no studies of EHR or CPR adoption were found that include code assignment technology in their list of EHR technologies to be adopted.

Documentation and Coding Technology

This study analyzes the extent of the use of technology for E/M documentation and coding in U.S. physician practices employing HIM professionals. Given the Institute for Health Policy model, it is hypothesized that the adoption of documentation technology will be approximately equal to the adoption of coding technology. [13]

Though the documentation and code assignment technologies are somewhat different, the technology to assign E/M codes does exist. Additionally, this technology would not impose an additional burden on the provider since the code assignment is automated once the clinical documentation has occurred. Further, there is some evidence that practices using automated

coding technology receive higher reimbursement. Blue Cross Blue Shield of Ohio, for example, recently began "blending" two levels of codes when they noticed a pattern of large practices with EHRs increasing the number of level 4 E/M codes and decreasing the number of level 3 codes they submitted.[14] In the 2006 RVU file from CMS, the difference between a level 3 new outpatient visit and a level 4 new outpatient visit is $40. For established patients, the difference is $30 per visit.[15] If only two established patient visits per day are coded 99214 instead of 99213, a physician would earn an average of an additional $14,400 per year (based on a 48-week work year); 10 patients would account for an additional $72,000 per year. Clearly, over a year's time and large numbers of patient encounters, the difference of one code level does make a significant difference in payer costs and physician reimbursement. Thus, if a practice has adopted documentation technology, there appear to be financial incentives for the adoption of coding technology.

The adoption of documentation and coding technology is also expected to be related to organizational or practice characteristics as discussed in previous studies, with larger practices and those associated with health systems adopting more technology due to the availability of greater resources. Given the exploratory nature of the survey, the full effect of the legal and regulatory factors is not addressed here. The relevance of one regulatory factor, the required compliance with two sets of documentation guidelines promulgated by Medicare was captured and will be analyzed. One study looked at differences in inter-rater agreement rates between the two sets of documentation guidelines, but did not examine the extent of use of the different sets of guidelines or their effect on the adoption of technology.[16]

Methods

Survey Creation

The Web-based survey of the physician practices employing HIM professionals was created using a combination of interviews and observations. Eighty-two HIM professionals employed in physician practices responded to the recruitment e-mail requesting a telephone interview. Ultimately, 12 telephone interviews were conducted with practices ranging in size from three physicians to more than 400 physicians representing a wide variety of documentation and coding methods used. Three on-site observations were conducted to validate the information reported.

Two focus groups were convened at the 2006 AHIMA National Convention in order to have experts test the face validity and understandability of the survey. Approximately three weeks before the National Convention a list of AHIMA members with a work setting of physician practice who had registered for the convention was received. Three separate recruitment e-mails were sent out to portions of the list. This method was used to ensure adequate space for all who volunteered for the focus groups.

Altogether, the two focus groups provided 17 identifiable suggestions for the improvement of the survey, which is found in Appendix A.

Survey Administration

More than 5,000 (5,123) AHIMA members were identified in the AHIMA member database as working in a physician practice, ambulatory care facility, or rural health center and willing to receive marketing communications. E-mail notifications of the survey availability on the Web (including a hyperlink to the survey) were distributed on October 30, November 12, and November 26, 2006. Of the 5,123 recipients of the e-mail, 365, or 7.12 percent, responded that they were ineligible for the survey due to incorrect information recorded or a change in their work status. Another 239 e-mail messages, or 4.67 percent, were returned as undeliverable. This

resulted in a total of 604 persons deleted from the population database, leaving 4,519 possible respondents. Four hundred and forty-two (442), or 9.78 percent, recipients responded to the survey. This level of response, for a one-tailed test with an alpha level of .05 and a power of 80, enables the detection of an effect size of .12.

The population surveyed was compared with the respondents who were able to be identified with corresponding data in the AHIMA member database. Ninety-four, 21.3 percent, of the 442 respondents to the survey were not able to be matched to their demographics because they did not provide either an e-mail address for receipt of the report or a zip code of the primary practice location. Frequency proportions for the 94 survey respondents with no demographics were matched with frequency proportions for all 442 of the survey respondents on the following variables:

- Physician practice type (multi or single specialty)
- Number of MDs in the practice (1 to 10, 11 to 100, 101+)
- Organization type (private MD group, managed care/military/VA, IHDS, other)
- Percentage of Medicare patients
- Type of documentation used
- Method of E/M code assignment
- Role in the practice

A two-sample test of proportions using the chi-square test of independence was run for the range of responses to each variable. None of the proportion differences were significant between the 442 respondents and the 94 respondents with no demographics. Given these similarities, there is reason to believe that these additional cases would not have significantly altered the results of the comparison between the surveyed population and the respondent sample. For most demographic characteristics, there are no significant differences between the respondents and the surveyed population of coding professionals as reflected in the AHIMA member database. Detailed comparisons between respondents and the population are presented in Appendix B. A brief summary of characteristics of the respondents is described here.

One-third of the respondents identify themselves as coding professionals, and another 30 percent are identified as managers or directors. Ninety-five percent are female and 84 percent are Caucasian. Educationally, 38 percent report holding an associate's degree, 28 percent a baccalaureate degree, nine percent a master's degree; smaller percentages report being high school graduates, HIM certificate holders, or AHIMA independent study program graduates. Nearly one-half of the respondents have held their position for one to four years, and more than one-quarter have held the positions for five to 10 years.

With respect to work settings, 55.4 percent of those responding were identified in the AHIMA member database as working in an ambulatory care setting, 35.7 percent in a physician office, and 17.2 percent in an HIM specialty setting (which includes rural healthcare centers, home health, and other alternative settings). AHIMA members maintain their own data in the database and are able to select more than one work setting. Thus, these results are different than the organization type/work setting responses from the survey.

Analysis of Survey Data

The survey data were analyzed for relationships using the Pearson chi-square statistics resulting from cross-tabulations between the dependent and independent variables. The two dependent variables in this study are 1) E/M documentation technology methods and 2) E/M coding technology methods. Independent variables in the analyses reported here include the size

of the practice, the type of organization, and which set of E/M documentation guidelines was used by the practice.

Results

More physician practices use the traditional documentation and coding methods than use automated methods. Overall, the use of documentation and coding technology remains low. Almost 51 percent (50.8 percent) of the practices report using handwriting and dictation either singly or in combination for documenting the care they deliver. (See Table 1.) As the level of documentation technology used increases from traditional handwriting and dictation to the use of hard copy and computerized templates to the use of an EHR, the rate of adoption declines. The lack of adoption of technology was even more pronounced for E/M code assignment (see Table 1) with only 19.8 percent of the practices using any type of information technology for this purpose. Fewer practices have coders assigning E/M codes manually than have clinicians assigning the codes. The lowest usage rates are associated with computerized technologies. Coders using encoder software and EHR software suggesting E/M code assignment for services were utilized with equal frequency.

The first analysis focuses on relationships between the use of documentation and coding technology and physician practice size. A simple Pearson chi-square cross-tabulation analysis of the relationship between the number of MDs in the practice and documentation method/technology was significant ($p<.00001$) with more than 50 percent of the small (1-10 physicians) practices versus less than 10 percent of the larger (101+ physicians) practices using only handwriting or dictation. Conversely, more than 30 percent of the larger practices utilized an EHR singly or in combination with other documentation methods versus less than 9 percent of the small practices. (See Table 2.)

The relationship between size and technology used is reinforced when the size of the practice is associated with the coding technology used. The Pearson chi-square test was highly significant at $p=.0004$. Table 2 illustrates that smaller practices clearly utilize the more basic manual technologies. The medium-sized practices still have the physicians assign the codes more often when compared to the other technologies. The larger practices use more health information technology in the form of encoders and EHR software suggesting E/M codes.

The Pearson chi-square cross-tabulation for the relationship between documentation method/technology and organization type was highly significant ($p<.0001$). Table 3 shows that the private physician groups used the least technology for documentation with only approximately 11 percent of the private physician groups utilizing an EHR, while greater than 60 percent of them utilized handwriting and dictation either singly or in combination. Just over 50 percent of the managed care/military/VA organizations used an EHR, with almost 16 percent limiting their documentation technology to handwriting and dictation. HMO, managed care, military, and VA were grouped together since financially they are similar in that third-party reimbursement is not their main source of income. The integrated health delivery systems were grouped together because the numbers were small. Finally, academic medical center were grouped with "other" since many respondents indicated that other was a faculty practice. Faculty practices are often part of an academic medical center.

The relationship between coding method technology and organization type was also highly significant ($p<.0001$). Specifically, Table 3 reveals that more than 56 percent of the managed care/military/VA organizations reported using coding technology involving software. This is compared to just 10 percent of the private physician groups, slightly more than 15 percent of those classified as other and almost 19 percent of the integrated health delivery systems.

The relationship between documentation method/technology and E/M documentation guidelines used was not significant at *p=.098*. As with documentation method, coding method/technology was not significantly related to E/M documentation guidelines used at *p=.182*. The details are contained in Table 4.

The documentation method was compared to the coding method (see Table 5). As expected, the Pearson chi-square for the relationship is highly significant (*p<.0001)*. However, there were some surprising combinations of documentation and coding methods. Surprisingly, 26, or almost six percent, of the organizations using a free-form EHR for documentation, either singly or in conjunction with other documentation methods, have the clinicians assign the codes. That is, even with the data entered into the computer and the coding technology requiring little to no additional clinician work or effort, 26 organizations still have their clinicians assigning the codes. Twenty (4.52 percent) of the practices using an EHR have the codes assigned by coders manually, while 16 (3.7 percent) use an EHR and have codes assigned by coders using an encoder. Of the 84 practices using an EHR for documentation only 22, approximately one-quarter, also use the software to suggest E/M code assignment. The use of E/M coding technology is much lower than clinicians assigning the codes for all types of documentation technology.

Discussion

The results from this survey are consistent with the previously cited surveys and studies showing that the adoption of EHR technology is highly correlated to the size and type of the organization. It is widely thought that this is because larger and more complex organizations are financially capable of the necessary investments, as well as having the additional necessary personnel to support the implementation of technology.[17-20]

This research aligns with EHR technology adoption theories; however, the findings concerning the assignment of E/M codes were still surprising. [21-27] Even in organizations using EHR technology to document patient care, more organizations report the clinician assigning the codes than the EHR assigning the codes. Regardless of the technology used for documentation, a higher percentage of the respondents reported the clinician assigning the codes than reported using technology to assign the E/M codes. This was unexpected given that the improved accuracy for coding E/M services was highly ranked as a desired characteristic by physician medical groups in survey results reported by Gans and colleagues in 2005.[28] Other barriers to HIT adoption such as increased work and decreased productivity are not considered in this situation since additional work on the part of clinicians is not needed for the implementation of computerized E/M code assignment. Interestingly, this is clearly one EHR application that could reduce the time burden on physicians. It is possible that clinicians are not adopting E/M coding technology because E/M coding accuracy is consistently scrutinized by the Department of Health and Human Services Office of Inspector General.[29-31]

To further investigate the idea of increased payer inspection of provider E/M coding reducing the level of technology adoption, the relationship between coding method/technology and whether or not the practices performed coding validation was analyzed. Almost 20 percent of the practices where the clinicians assigned the codes did not perform any type of validation (external or internal), while only one of the practices using an EHR to suggest the codes did not perform validation. These results imply that although the technology is a perceived benefit, it is too new for practices to trust it and will, in fact, improve the accuracy for the code assignment of E/M services.

Additionally, as mentioned previously there is anecdotal evidence that the higher E/M coding resulting from the use of technology results in push back from payers.[32] There are also reports of increased levels of codes resulting in audits.[33] Others report a need for practices to compare their

codes to national benchmarks to ensure they are coding accurately.[34, 35] This assumes that E/M code assignment is reliable; however, a review of studies reveals independent inter-rater agreement rates range from 17 percent to 69 percent.[36-43] With the reliability of E/M code assignment so variable and relatively low, it is not surprising that practices may be hesitant to a) adopt software and b) trust the software to correctly assign the codes.

In the absence of thorough investigation and possible revision of the coding systems, the government and other large payers could develop a certification program for code assignment software that would protect the clinicians from charges of fraud and abuse. The coding software vendors would not be at additional risk with such a program and any cost they pay for certification should be offset by increased sales since the risk for practices would decrease. Further, it could conceivably be funded by a portion of the funds currently used to pay auditors and lawyers to investigate fraud and abuse charges. If the use of coding technology does result in higher reimbursement (via relative value units ([RVUs]) to clinicians, the payers are always at liberty to reduce the amount they reimburse for each RVU.

The principal limitation of this study is its restriction to physician practices employing HIM professionals. These practices might be expected to have higher rates of adoption of documentation and coding technology because they presumably have trained staff to assist with the implementation unlike physician practices which do not employ these professionals. The low response rate is not thought to be a serious limitation, as the sample and population were not found to be significantly different for any important characteristics.

Conclusion

This survey found that the level of documentation and coding technology adoption was related to organization size and type. However, the adoption of advanced coding technology was found to be lower than that of advanced documentation technology. This research suggests that, even when there may be financial incentives in the form of increased reimbursement to adopt a technology, other barriers may retard implementation. These results are indicative of a need to investigate the use and quality of the coding systems utilized to quantify the conditions treated and care provided. Further, coding systems must be revised when they cannot meet the needs of clinical and technological advances.

Now the government and payers are implementing quality measurement and pay-for-performance reporting, many times based on coded data. It is vital for coded data to be as reliable and valid as possible, a state of affairs most likely to occur with the implementation of computerized code assignment.

Susan H. Fenton, PhD, MBA, RHIA, is the director of research of AHIMA's Foundation of Research and Education in Chicago, IL.

Larry D. Gamm, PhD, is professor and head of the department of health policy and management at Texas A&M's Health Science Center's School of Rural and Public Health in College Station, TX.

J. Charles Huber Jr., PhD, is an assistant professor of Biostatistics in the Department of Epidemiology and Biostatistics at Texas A&M School of Rural Public Health in College Station, TX.

Notes

1. Institute for Health Policy Research. "Health Information Technology in the United States: Information Base for Progress." Boston, MA: Massachusetts General Hospital, 2006.

2. Centers for Medicare & Medicaid Services. 2006. *Medicare Leading Part B CPT Procedure Codes Based on Allowed Charges*. CMS 2006 [cited July 25, 2006]. Available from http://www.cms.hhs.gov/MedicareFeeforSvcPartsAB/04_MedicareUtilizationforPartB.asp.

3. Audet, Anne-Marie, Michelle M. Doty, Jordon Peugh, Jamil Shamasdin, Kinga Zapert, and Stephen Schoenbaum. "Information Technologies: When Will They Make It into Physicians' Black Bags?" *Medscape General Medicine* 4 (2004). Available from http://www.medscape.com/viewarticle/493210.

4. Gans, David, John Kralewski, Terry Hammons, and Bryan Dowd. "Medical Groups' Adoption of Electronic Health Records and Information Systems." *Health Affairs* 24, no. 5 (2005): 1323 - 1343.

5. Institute for Health Policy Research. "Health Information Technology in the United States: Information Base for Progress."

6. Simon, Steven R., Rainu Kaushal, Paul D. Cleary, Chelsea Jenter, Lynn A. Volk, Eric G. Poon, E. John Orav, Helen G. Lo, Deborah H. Williams, and David W. Bates. "Correlates of Electronic Health Record Adoption in Office Practices: A Statewide Survey." *JAMIA* 14, no. 1 (2007): 110-117.

7. Audet, Anne-Marie, Michelle M. Doty, Jordon Peugh, Jamil Shamasdin, Kinga Zapert, and Stephen Schoenbaum. "Information Technologies: When Will They Make It into Physicians' Black Bags?"

8. Bates, David W. "Physicians and Ambulatory Electronic Health Records." *Health Affairs* 24, no. 5 (2005): 1180-1189.

9. Gans, David, John Kralewski, Terry Hammons, and Bryan Dowd. "Medical Groups' Adoption of Electronic Health Records and Information Systems."

10. Simon, Steven R., Rainu Kaushal, Paul D. Cleary, Chelsea Jenter, Lynn A. Volk, Eric G. Poon, E. John Orav, Helen G. Lo, Deborah H. Williams, and David W. Bates. "Correlates of Electronic Health Record Adoption in Office Practices: A Statewide Survey."

11. Gans, David, John Kralewski, Terry Hammons, and Bryan Dowd. "Medical Groups' Adoption of Electronic Health Records and Information Systems."

12. Brailer, David J. and Emi L. Terasawa. "Use and Adoption of Computer-based Patient Records." Oakland, CA: California HealthCare Foundation, 2003.

13. Institute for Health Policy Research. "Health Information Technology in the United States: Information Base for Progress."

14. Terry, Ken. 2006. "Blending: The New Downcoding." *Medical Economics*, May 5, 2006: 1–4. Available from http://www.memag.com/memag/article/articleDetail.jsp?id=322627.

15. Centers for Medicare & Medicaid Services. *PFS Relative Value File* 2006 [cited September 13, 2006]. Available from http://www.cms.hhs.gov/PhysicianFeeSched/PFSRVF/list.asp.

16. Zuber, Thomas J., Chirstopher E. Rhody, Theresa A. Muday, Edward A. Jackson, Stuart J. Rupke, Leslie Prancke, and Walter T. Rathkamp. "Variability in Code Selection Using the 1995 and 1998 HCFA Documentation Guidelines for Office Services." *The Journal of Family Practice* 49, no. 7 (2000):642-645.

17. Brailer, David J. and Emi L. Terasawa. "Use and Adoption of Computer-based Patient Records."

18. Institute for Health Policy Research. "Health Information Technology in the United States: Information Base for Progress."

19. Rogers, E.M. *Diffusion of Innovations*. 5th ed. New York NY: Free Press, 2003.

20. Simon, Steven R., Rainu Kaushal, Paul D. Cleary, Chelsea Jenter, Lynn A. Volk, Eric G. Poon, E. John Orav, Helen G. Lo, Deborah H. Williams, and David W. Bates. "Correlates of Electronic Health Record Adoption in Office Practices: A Statewide Survey."

21. Brailer, David J. and Emi L. Terasawa. "Use and Adoption of Computer-based Patient Records."

22. Fonkych, Kateryna and Robert Taylor. "The State and Pattern of Health Information Technology Adoption." Santa Monica, CA: RAND Health, 2005.

23. Gans, David, John Kralewski, Terry Hammons, and Bryan Dowd. "Medical Groups' Adoption of Electronic Health Records and Information Systems."

24. Institute for Health Policy Research. "Health Information Technology in the United States: Information Base for Progress."

25. Rogers, E.M. *Diffusion of Innovations*.

26. Simon, Steven R., Rainu Kaushal, Paul D. Cleary, Chelsea Jenter, Lynn A. Volk, Eric G. Poon, E. John Orav, Helen G. Lo, Deborah H. Williams, and David W. Bates. "Correlates of Electronic Health Record Adoption in Office Practices: A Statewide Survey."

27. Wang, Bill B., Thomas T.H. Wan, Darrell Burke, Gloria Bazzoli, and Blossom Y.J. Lin. "Factors Influencing Health Information System Adoption in American Hospitals." *Health Care Management Review* 30, no. 1(2005): 44-51.

28. Gans, David, John Kralewski, Terry Hammons, and Bryan Dowd. "Medical Groups' Adoption of Electronic Health Records and Information Systems."

29. Centers for Medicare & Medicaid Services.*Overview - Correct Coding Initiative* . Department of Health and Human Services 2006 [cited February 26, 2006]. Available from http://www.cms.hhs.gov/NationalCorrectCodInitEd/.

30. Office of the Inspector General. "Coding of Physician Services." Washington, DC: Department of Health and Human Services, 1994.

31. Bowman, Sue. *Health Information Management Compliance: A Model Program for Healthcare Organizations*. 3rd ed. Chicago, IL: AHIMA, 2004.

32. Terry, Ken. 2006. "Blending: The New Downcoding." *Medical Economics*, May 5, 2006: 1–4. Available from http://www.memag.com/memag/article/articleDetail.jsp?id=322627.

33. Terry, Ken. "The Catch-22 in EHRs." *Medical Economics*, July 21, 2006. 37.

34. Hughes, Cindy and Trevor J. Stone. "Are You Prepared to Defend Your Coding?" *Family Practice Management* 12, no. 6 (2005): 17-20.

35. Nicoletti, Betsy. "Are You Coding Accurately?" *Family Practice Management* 11, no. 6 (2004): 20-21.

36. As-Sanie, S., D. Zolnoun, M.E. Wechter, G. Lamvu, F. Tu, and J. Steege. "Teaching residents coding and documentation: Effectiveness of a problem-oriented approach." *American Journal of Obstetrics and Gynecology* 193, no. 5 (2005): 1790.

37. Chao, Jason, William G. Gillanders, Susan A. Flocke, Meredith A. Goodwin, George E. Kikano, and Kurt C. Stange. "Billing for Physician Services: A Comparison of Actual Billing with CPT Codes Assigned by Direct Observation." *Journal of Family Practice* 47, no. 1 (1998): 28.

38. King, Mitchell S., Martin S. Lipsky, and Lisa Sharp. "Current Procedural Terminology Coding: Do the Experts Agree?" *Journal of the American Board of Family Practitioners* 13, no. 2 (2000): 144-6.

39. King, Mitchell S., Martin S. Lipsky, and Lisa Sharp. "Expert Agreement in Current Procedural Terminology Evaluation and Management Coding." *Archives of Internal Medicine*, 162 no. 3 (2002): 316-320.

40. King, M. S., L. Sharp, and M. S. Lipsky. "Accuracy of CPT Evaluation and Management Coding by Family Physicians." *Journal of the American Board of Family Practice* 14, no. 3 (2001): 184-192.

41. Kuo, P.C., A.R. Douglas, D. Oleski, D.O. Jacobs, and R.A. Schroeder. "Determining Benchmarks for Evaluation and Management Coding in an Academic Division of General Surgery." *Journal of the American College of Surgeons* 199, no. 1 (2004): 124.

42. Institute for Health Policy Research. "Health Information Technology in the United States: Information Base for Progress."

43. Shoemaker, Paul and Leatrice Ford. Variations and Trends in the Coding of Evaluation and Management (E&M) Services by Hospital Emergency Departments: American Hospital Directory, Inc, 2006.

Appendix A

Evaluation and Management Coding: A Foundational Study

If you are an HIM professional working in a physician practice, you are invited to participate in Susan Fenton's doctoral research examining whether different documentation and coding methods result in significant variation in E/M code assignment for professional services only. The purpose of this survey is to categorize physician practices according to their documentation and coding practices.

Please answer these questions for your office's E/M documentation and coding methods for calendar year 2005. It is understood that 100 percent of the physicians in your practice may not follow precisely the same methods. If greater than 75 percent in the practice use the same documentation and coding methods please answer according to their methods. If less than 75 percent, please select multiple methods. Answers are required for all questions, however, you can exit the survey at any time without penalty.

1. Describe the physician practice. (Circle the answer that applies.)
    a. Multispecialty
    b. Single specialty:_____ (specify specialty)

2. Number of physicians in the practice: Please answer only with the number of physicians (Circle your answer.)
    a. Less than 10
    b. 10-25
    c. 25-50
    d. 50-100
    e. 100+

3. What type of organization is your practice?
    a. Private physician group
    b. HMO/managed care
    c. Military/VA
    d. Academic medical center
    e. Part of for-profit integrated health delivery system (IHDS)
    f. Not-for-profit IHDS
    g. Other – please specify_____

4. What percentage of your patient population in 2005 was covered by Medicare (not Medicaid)?
    a. Less than 10%
    b. 11-25%
    c. 26-50%
    d. 51-75%
    e. 76%+

5. Please indicate which E/M documentation guidelines were utilized in 2005.
    a. 1995, please give reason
    b. 1997, please give reason
    c. Both. How do you decide when to use which version?

Reason: _____

6. How did the physicians in your practice document their regular office visits in 2005? (Please circle all that apply.)

a. Handwrite in record
b. Dictate for transcription
c. Use hard-copy documentation template
d. Computerized documentation template
e. Free-form Electronic Health Record
f. Other _____ (specify)

7. How were E/M codes assigned in your practice in 2005? (Please circle all that apply.)

a. Clinician assigns from memory or using a "cheat sheet" or encounter form
b. Coder assigns manually
c. Coder assigns using an encoder
d. Codes are suggested by EHR software
e. Other, Explain:_____

8. Do you have any incentive programs for your physicians for coding? (Please circle all that apply.)

a. Partnerships
b. Pay-for-performance
c. Bonuses for achieving revenue levels
d. Other:_____

9. How was code validation performed in your practice in 2005? (Circle all that apply.)

a. Contract company
b. Coder/Manager in practice – manually
c. Coder/Manager in practice with encoder
d. Other: _____
e. Did not perform code validation

10. How many coders does your practice employ? _____

11. How many coders in your practice are credentialed or certified?

a. All
b. Some, please give number: _____
c. None

12. Do you have a formal, in-house educational process for your coders?

a. Yes
b. No

13. In 2005, was credentialing or certification an employment requirement for your coders, whether contract or employed?

a. Yes
b. No

14. Which credentials were acceptable or found in your practice? (Please circle all that apply.)
    a. RHIA and/or RHIT
    b. CCS
    c. CCS-P
    d. CCA
    e. CPC
    f. CMC (Certified Medical Coder)
    g. Other: _____

15. Have you changed your documentation and coding practices substantially, i.e., implementing an EHR or beginning a special physician documentation training program, during calendar year 2005?
    a. Yes (please explain)
    b. No

If yes, please give the reason, such as CMS audit, and give the approximate date of the change:
_____
_____

16. How would you improve your current documentation and coding method if you could?
    a. Make it template driven
    b. Implement a documentation improvement program
    c. Implement computer-assigned E/M codes with human validation
    d. Implement an EHR
    e. Begin using dictation
    f. Implement speech recognition
    g. Make the documentation and coding training mandatory for the physicians
    h. Other: _____

17. Is there anything else you would like to tell me about the evaluation and management documentation and coding practices utilized in your physician practice?

18. What was your role in the physician practice in 2005?
    a. Coding and/or coding compliance only
    b. HIM, including coding and coding compliance
    c. HIM and Business Office, including coding and coding compliance
    d. Other: _____

19. Please provide the zip code of your main practice location in 2005. This will enable an analysis to determine if characteristics such as urban/rural status, age of population, etc., have an effect on documentation and coding method.

Zip Code of Primary Practice Location: _____

If you want to receive the summarized results or be notified of where they will be published, please provide your e-mail address: _____ (optional)

Thank you for your time. Please feel free to contact Susan Fenton at susan.fenton@ahima.org with any questions.

Appendix B

Under Job Title, only coding professionals showed a significant difference (*p=.0211).* Respondents were more likely than the larger population surveyed to be coding professionals. The results in the categories of other and all other titles seem to indicate that fewer of the persons with non-HIM titles responded to the survey. Given the focus of this survey on documentation and coding practices, the larger number of respondents with a coding title and a lower number of respondents with other titles is not surprising. The persons with the other titles were not eliminated from the surveyed population since the AHIMA member data is self-reported and the reliability and validity of the data has not been established. In ethnic background there were significantly more *(p=.0131)* biracial/multiracial respondents than in the population; but for both, this group accounted for less than two percent.

The demographic highest educational degree showed a significant difference (*p=.0245*) with more persons in the population having a baccalaureate degree than respondents. It is notable that the associate's degree, high school graduate, and AHIMA ISP program percentages were higher for the respondents than those sent the survey. Given the level of significance attained only for baccalaureate degree, this is not considered to have an effect on the results. This result is consistent with the results for the job title where there were more coding professional respondents. Coding professional certifications do not require a baccalaureate degree. Professionals with baccalaureate or higher degrees often have management or duties other than coding. Years in position had two significant categories: less than one year (*p=.0053*) and one to four years (*p=.0303*). The percentage differences between the categories are almost exactly reversed. This may indicate that persons with slightly more experience were more comfortable responding to the survey.

The state category comparison between the population and those surveyed is limited to those states representing greater than five percent of the population or the respondents. Significant differences in the percentage of respondents when compared to the population were found for Minnesota and New York. This is probably due to two factors. First, Minnesota is home to the Mayo Clinic Health System in many different communities. Mayo is a premier research organization and those HIM professionals are likely to be more sensitized to the need to cooperate with research requests. Second, the request to complete the survey indicated that claims data from three states, one of them Minnesota, would be used to compare code assignment by documentation method. This might have encouraged Minnesota professionals to respond. The difference in the percentage of respondents and population from New York was nearly significant. The reasons are unknown. The only significant difference in member type was in the student category (*p=.0302*). There were more students in the population than the respondents. The demographics of gender, years in HIM profession, ambulatory care, physician practice, and HIM specialty setting did not show any significant differences between the surveyed population and the respondents. The descriptive results of the survey will not be adjusted or weighted.

Test of Proportions between Population and Sample

Variable	**Population Surveyed, not including missing**	**Respondent, not including missing**	**p-value for difference in test of proportions**
Job Title	**n=4363**	**n=340**	
Coding Professional	27.1	32.9	0.0211
Director	14.7	12.6	0.2902
Manager	13.9	17.6	0.0595
Other	10	7.4	0.1206
Consultant	6.2	5.9	0.8249
Supervisor	5.4	5.3	0.9373
All other titles	22.7	18.3	0.0608
Gender	**n=4302**	**n=339**	
Female	91.7	94.1	0.1194
Male	8.3	5.9	0.1194
Ethnic Background	**n=3980**	**n=317**	
Caucasian	83.7	84.9	0.5769
African American	7.9	6.3	0.3061
Hispanic	3.3	2.5	0.4389
Asian/Pacific Islander	3	2.8	0.8404

Variable	Population Surveyed, not including missing	Respondent, not including missing	p-value for difference in test of proportions
Native American	1.6	1.9	0.6841
Biracial/Multiracial	0.5	1.6	0.0131
Years in HIM Profession	**n=4278**	**n=333**	
Less than 1	2.7	1.2	0.097
1 to 4	12.3	11.7	0.7478
5 to 10	24	28.8	0.0493
11 to 19	28.9	28.2	0.786
20 to 29	23.6	21.6	0.4067
30 or more	7.4	8.1	0.6394
NA	1.2	0.3	0.1353
Highest Educational Degree	**n-4370**	**n=339**	
Associate's Degree	34.5	37.2	0.3144
Baccalaureate Degree	34.3	28.3	0.0245
Master's Degree	9.5	8.6	0.585
HIM Certificate Program	8.1	8.3	0.8966
High School Graduate	4.9	5.6	0.5671
AHIMA ISP Program	4.3	5.9	0.1671

Variable	**Population Surveyed, not including missing**	**Respondent, not including missing**	**p-value for difference in test of proportions**
Years in Position	**n=4325**	**n=340**	
Less than one year	16	10.3	0.0053
One to four years	40.5	46.5	0.0303
Five to 10 years	26.4	28.2	0.4692
11 to 19 years	11.9	11.2	0.7006
20 or more years	5.2	3.8	0.2585
State of Practice	**n=4505**	**n=438**	
CA	6.1	5.9	0.8672
TX	6.3	5	0.2809
FL	5.2	4.6	0.5874
IL	4.8	5	0.852
MN	4.6	7.8	**0.003**
WI	4.1	4.3	0.8406
OH	4.1	3.4	0.4774
NY	4.2	6.2	0.0508
Member Type	**n=4519**	**n=348**	
ACT	84.2	87.6	0.0918
ASSOC	8.5	7.8	0.651

Variable	Population Surveyed, not including missing	Respondent, not including missing	p-value for difference in test of proportions
GRAD	2.9	2.6	0.7471
HON	0	0	1
SEN	0.8	0.6	0.6839
STU	3.6	1.4	**0.0301**
Ambulatory Care	**n=3188**	**n=245**	
Ambulatory Surgery Center	42.8	42	0.8073
Freestanding Ambulatory Care Facility	12.1	11.8	0.8896
Other	39.8	41.6	0.5793
Other (please specify)	5.3	4.5	0.5882
Specialty Practice	0	0	1
Physician Practice	**n=2156**	**n=158**	
Group Practice	44.5	48.7	0.3055
Individual (General) Practice	6.8	7	0.9233
Managed Care/HMO/PPO Office	6.8	7.6	0.7009
Other	14.6	10.1	0.1188
Other (please specify)	2	3.2	0.3079
Specialty Practice	25.2	23.4	0.6144

Variable	**Population Surveyed, not including missing**	**Respondent, not including missing**	**p-value for difference in test of proportions**
HIM Specialty Setting	**n=849**	**n=76**	
Home Healthcare Agency	5.8	6.6	0.7761
Hospice	1.6	2.6	0.5161
Integrated System Corporate Office	25.9	28.9	0.5685
Other	37.7	35.5	0.7043
Other (please specify)	3.3	2.6	0.7413
Rehabilitation Facility	12.7	14.5	0.6532
Rural Health Clinic	10.7	6.6	0.2612
Student Health Center	1.6	1.3	0.8405
Veterinary Clinic/Hospital	0.6	1.3	0.4694

Table 1

Practice Use of Documentation and Coding Methods

Documentation Method N=441	**Percent**
Handwrite only	13.4
Dictation only	19.5
Handwrite & dictation together	17.9
Hard copy & computer template	5.9
Hard copy &computer template with other methods	24.3
Free-form EHR only	3.4
EHR with other documentation methods	15.6
Total	100.0
Code Assignment Method N=435	**Percent**
Clinician assigns codes from encounter forms	48.5
Coder manually assigns codes from books	31.7
Coder uses an encoder to assign codes	9.9
EHR assigns codes	9.9
Total	100.0

Table 2

Documentation and Coding Method by Physician Practice Size

	Number of Physicians in the Practice		
Documentation Method/Technology (N = 440)	**1 to 10 (N=161)**	**11 to 100 (N=165)**	**101+ (N=114)**
Handwrite	19.89%	13.33%	3.51%
Dictation	30.43%	18.79%	5.26%
Handwrite & dictation	19.25%	20.00%	13.16%
Hard copy & comp template	6.21%	4.24%	7.89%
Hard & comp temp with other	15.53%	23.64%	37.72%
Free-form EHR	1.86%	4.85%	3.51%
EHR with other	6.83%	15.15%	28.95%
TOTAL PERCENT	100.00	100.00	100.00
Pearson Chi-square = 75.402	Sig. *p<.00001*		
Coding Method/Technology N=434	**(N=159)**	**(N=162)**	**(N=113)**
Clinician assigns	50.94	55.56	35.40
Coder manually	35.85	28.40	30.09
Coder encoder	6.92	8.02	16.81
EHR assigns	6.29	8.02	17.70
TOTAL	100.00	100.00	100.00
Pearson Chi-square = 24.419	Sig. *p=.0004*		

Table 3

Documentation and Coding Method by Organization Type

	Organization Type			
Documentation Method/Technology (N = 441)	**Private Physician Group (N=181)**	**Mgd Care/Military/VA (N=61)**	**IHDS (N=85)**	**Other (N=114)**
Handwrite	12.15	13.11	11.76	16.67
Dictation	27.62	1.64	23.53	13.16
Handwrite & dictation	20.99	1.64	17.65	21.93
Hard copy & comp template	6.63	13.11	4.71	1.75
Hard & comp temp with other	21.55	19.67	24.71	30.70
Free-form EHR	1.67	9.85	4.70	1.75
EHR with other	9.39	40.98	12.94	14.04
TOTAL	100.00	100.00	100.00	100.00
Pearson Chi-square = 84.095	Sig *p<.00001*			
Coding Method/Technology (N = 435)	**(N=178)**	**(N=60)**	**(N=85)**	**(N=112)**
Clinician assigns	53.93	16.67	56.47	50.89
Coder manually	35.96	26.67	24.71	33.04
Coder encoder	4.49	25.00	11.76	8.93
EHR assigns	5.62	31.66	7.06	7.14
TOTAL	100.00	100.00	100.00	100.00
Pearson Chi-square = 70.854	Sig *p<.00001*			

Table 4

Documentation and Coding Method by Documentation Guidelines Used

	E/M Documentation Guidelines Used		
Documentation Method/Technology (N = 411)	**1995 (N=107)**	**1997 (N=133)**	**Both (N=171)***
Handwrite	14.02	15.04	11.70
Dictation	23.36	16.54	16.96
Handwrite & dictation	17.76	15.79	16.96
Hard copy & comp template	0.93	12.03	5.26
Hard & comp temp with other	22.43	22.56	28.65
Free-form EHR	4.67	4.51	2.34
EHR with other	16.83	13.53	18.13
TOTAL	100.00	100.00	100.00
Pearson Chi-square = 18.622	Sig *p=.098*		
Coding Method/Technology (N=411)	**(N=108)****	**(N=133)**	**(N=170)**
Clinician assigns	47.22	48.87	46.47
Coder manually	39.81	26.32	31.76
Coder encoder	8.33	12.03	10.00
EHR assigns	4.64	12.78	11.77
TOTAL	100.00	100.00	100.00
Pearson Chi-square = 8.850	Sig *p=.182*		

**One of the respondents choosing this option did not answer the coding technology question.*
***One of the respondents choosing this option did not answer the documentation technology question.*

Table 5

Documentation Method by Coding Method N = 434

Coding Method/ Technology	Hand-write	Dictation	Handwrite & dictation	Hard copy & computer template	Hardcopy & Computer Temp with other	Free-form EHR	EHR with other	Total
Clinician assigns – count (percent)	30 (6.91)	46 (10.60)	42 (9.68)	11 (2.53)	56 (12.90)	6 (1.38)	20 (4.61)	211 (48.61)
Coder manually – count (percent)	24 (5.53)	32 (7.37)	29 (6.68)	4 (.92)	29 (6.68)	2 (.46)	18 (4.16)	138 (31.80)
Coder encoder – count (percent)	2 (.46)	3 (.69)	6 (1.38)	7 (1.61)	9 (2.07)	3 (.69)	13 (3.01)	43 (9.91)
EHR assigns – count (percent)	2 (.46)	1 (.23)	2 (.46)	4 (.92)	11 (2.53)	4 (.92)	18 (4.16)	42 (9.68)
TOTAL – count (percent)	58 (13.36)	82 (18.89)	79 (18.20)	26 (5.98)	105 (24.18)	15 (3.45)	69 (15.94)	434 (100)
Pearson Chi-square=74.663	Sig p<.00001							