

Evaluation and Management Documentation and Coding Technology Adoption

by Susan H. Fenton, PhD, MBA, RHIA; and Larry D. Gamm, PhD

Introduction

The adoption of information technology in healthcare is anticipated not only 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 (Current Procedural Terminology) 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 EHRs.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 the Centers for Medicare and Medicaid Services (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

Full methods can be found in the online article by Fenton and Gamm in *Perspectives in Health Information Management*.¹⁷

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 organizations 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 centers 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 6 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.¹⁸⁻²¹

This research aligns with EHR technology adoption theories; however, the findings concerning the assignment of E&M codes were still surprising.²²⁻²⁸ 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 2005.²⁹ 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 the Inspector General.³⁰⁻³²

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.³³ There are also reports of increased levels of codes resulting in audits.³⁴ Others report a need for practices to compare their codes to national benchmarks to ensure they are coding accurately.^{35, 36} This assumes that E&M code assignment is reliable; however, a review of studies reveals independent inter-rater agreement rates that range from 17 percent to 69 percent.³⁷⁻⁴⁴ 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 that 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 that 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 for the Foundation of Research and Education of AHIMA 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.

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 and Medicaid Services. *Medicare Leading Part B CPT Procedure Codes Based on Allowed Charges*. 2006. Available at http://www.cms.hhs.gov/MedicareFeeForSvcPartsAB/04_MedicareUtilizationforPartB.asp (accessed July 25, 2006).
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 at <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. "Blending: The New Downcoding." *Medical Economics*, May 5, 2006, 1–4. Available at <http://www.memag.com/memag/article/articleDetail.jsp?id=322627>.
15. Centers for Medicare and Medicaid Services. *PFS Relative Value File* 2006. Available at <http://www.cms.hhs.gov/PhysicianFeeSched/PFSRVF/list.asp> (accessed September 13, 2006).
16. Zuber, Thomas J., Christopher 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." *Journal of Family Practice* 49, no. 7 (2000): 642–645.
17. Fenton, Susan H., and Larry D. Gamm. "Evaluation and Management Documentation and Coding Technology Adoption." *Perspectives in Health Information Management* 4, no. 7 (2007, August 27). Available at the AHIMA Web site at http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_034933.html.

18. Brailer, David J., and Emi L. Terasawa. *Use and Adoption of Computer-based Patient Records*.
19. Institute for Health Policy Research. "Health Information Technology in the United States: Information Base for Progress."
20. Rogers, E. M. *Diffusion of Innovations*. 5th ed. New York: Free Press, 2003.
21. 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."
22. Brailer, David J., and Emi L. Terasawa. *Use and Adoption of Computer-based Patient Records*.
23. Fonkych, Kateryna, and Robert Taylor. *The State and Pattern of Health Information Technology Adoption*. Santa Monica, CA: RAND Health, 2005.
24. Gans, David, John Kralewski, Terry Hammons, and Bryan Dowd. "Medical Groups' Adoption of Electronic Health Records and Information Systems."
25. Institute for Health Policy Research. "Health Information Technology in the United States: Information Base for Progress."
26. Rogers, E. M. *Diffusion of Innovations*.
27. 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."
28. 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.
29. Gans, David, John Kralewski, Terry Hammons, and Bryan Dowd. "Medical Groups' Adoption of Electronic Health Records and Information Systems."
30. Centers for Medicare and Medicaid Services. *Overview: Correct Coding Initiative*. Department of Health and Human Services. 2006. Available at <http://www.cms.hhs.gov/NationalCorrectCodInitEd/> (accessed February 26, 2006).
31. Office of the Inspector General. *Coding of Physician Services*. Washington, DC: Department of Health and Human Services, 1994.
32. Bowman, Sue. *Health Information Management Compliance: A Model Program for Healthcare Organizations*. 3rd ed. Chicago, IL: AHIMA, 2004.
33. Terry, Ken. "Blending: The New Downcoding."
34. Terry, Ken. "The Catch-22 in EHRs." *Medical Economics*, July 21, 2006. 37.
35. Hughes, Cindy, and Trevor J. Stone. "Are You Prepared to Defend Your Coding?" *Family Practice Management* 12, no. 6 (2005): 17–20.
36. Nicoletti, Betsy. "Are You Coding Accurately?" *Family Practice Management* 11, no. 6 (2004): 20–21.
37. 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.
38. 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.

39. 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): 144–146.
40. 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.
41. 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.
42. 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.
43. Institute for Health Policy Research. "Health Information Technology in the United States: Information Base for Progress."
44. 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.

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

Documentation Method/Technology (N = 440)	Number of Physicians in the Practice		
	1 to 10 (N = 161) (percent)	11 to 100 (N = 165) (percent)	101+ (N = 114) (percent)
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	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

Documentation Method/Technology (N = 441)	Organization Type			
	Private Physician Group (N = 181) (percent)	Managed Care/Military/VA (N = 61) (percent)	IHDS (N = 85) (percent)	Other (N = 114) (percent)
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) (percent)	1997 (N = 133) (percent)	Both (N = 171)* (percent)
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. <i>p</i> = .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. <i>p</i> = .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.

