Coding Professionals' Feelings toward Computers and Automated Coding

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Abstract

This qualitative research study was undertaken in an effort to better understand how coding professionals feel about the use of computers and automated coding. Observation of the coding process in the hospital setting and interviews of coding professionals were conducted. The resultant data was analyzed using the grounded theory approach. Scrutiny-based data analysis techniques as well as processing techniques of 1,462 lines of data revealed 18 specific themes in four categories. Results indicate that coding professionals generally accept the use of computers in the coding workflow. There are strong emotions about automated coding, many of them negative. Much of the anxiety surrounding automated coding is related to an underlying mistrust and concern that decision makers will misuse, or overuse, the technology. Outpatient coders are more likely than inpatient coders to feel threatened by automated coding.

Introduction

The manual workflow for capturing medical codes for reporting and claims processing is described as expensive and inefficient.[1] Despite this, and despite the fact that multiple studies on the accuracy of automated coding appear promising,[2–7] widespread adoption of automated coding has not yet occurred.[8] In an attempt to learn about coding professionals' attitudes toward automated coding, AHIMA conducted a survey of coding professionals in 2005. This survey revealed that coders are beginning to use automated coding software, and in general, coders are only slightly concerned that jobs will be eliminated with the use of automated coding.[9]

This qualitative research study was undertaken to investigate more fully how coding professionals feel about automated coding and the use of computers in the coding process. The purpose of this study was to determine how readily coding professionals accept the use of computers in the coding workflow and whether or not they feel threatened by automation.

Methods

The grounded theory approach was used to allow themes to emerge from the data that were gathered. The primary qualitative research techniques were personal interviews and field observation. A typical (nonautomated) coding process in a local hospital was observed. Personal interviews were conducted with coding professionals who do not use automated coding as well as with a coding professional who uses automated coding.

Informant Selection

The study population consisted of coding professionals performing medical coding in hospitals for the purpose of reporting diagnoses and procedures on healthcare claims. Three semi-structured interviews of one hour duration were conducted. Interview subjects included coding professionals who do not use automated coding as well as those who are presently using such a system. They were all coding professionals who perform medical coding of hospital charts for inpatient and/or outpatient visits.

Site Selection

Field observation was conducted in the coding department of a local hospital that reflected the typical coding process employed today. Observation focused on how the coding is performed, including how much the coders use a computer and for what, as well as how often they use paper charts, a coding manual of any sort, or other medical references (medical dictionary, drug handbook, and so forth) and for what.

Data Gathering and Analysis

Recorded interviews were transcribed, and jottings during observation were expanded into detailed, typed field notes. This yielded a total of 1,462 lines of data in 36 typed pages. These data were edited with a grounded hermeneutic approach by reading the whole to begin to get a sense of emerging themes and concepts without overlaying presumptions.

Data analysis was initially done via scrutiny-based techniques. This revealed multiple potential themes and subthemes that were analyzed for similarities and differences. Subsequently, cutting and sorting techniques as well as limited use of key words in context (KWIC)[10] were employed to narrow the multiple subthemes down to primary themes grouped into related main categories. These themes and categories were continually reviewed for consistency with the source data in an iterative manner. Resultant themes that emerged are described in this paper.

Results

Four main categories of themes were identified with a total of 18 specific themes. Results for each theme are summarized here. Representative quotes from transcripts are also presented for each theme in Table 1.

Use of Encoders

Notably, all of the coding professionals involved in this study use encoder applications. Encoders are viewed as an essential tool to assist coding professionals today. Coders find it particularly useful when encoders provide "ready access to reference materials and alerts of various coding rules." There is recognition, however, that encoders are just a tool and the coding professional must have a thorough knowledge of the coding classification system. "If the coder is not book savvy to begin with, if they've been taught how to code by the use of an encoder, rather than understanding the format of the coding book and the coding rules that are included in the coding book, they may very well arrive at the wrong code."

Increased Complexity of Computer Records

Coding professionals relayed that they experienced increased complexity in the coding process when computerized records were employed. Hybrid records require that the coder work from both a paper record and computerized images, and the coder is continually moving back and forth from the computer screen to paper on the desk surface. In addition, shortcuts from familiarity with colored forms and unique formats may be lost. "The hybrid record causes a problem for coding in that everything is black and white. So in the past the efficiencies they had from knowing to go to the pink sheet is not there anymore because the color is not there. So, unless it's specifically indexed as a document type, that complicates the coding process."

The use of electronic health records (EHRs) poses a unique challenge for coding professionals. The clinical data analysis required to accurately and completely code a patient record is much more challenging in an EHR. "In an EHR the story is lost. In a patient record you have a story and you just follow along in the text of the story and you can see what has happened. In an EHR the story gets segregated by the entering author and that segregation doesn't methodically flow."

Coding professionals further relayed that these complexities slow down the overall coding process. "I could meet the ER [emergency room] coding quota easily and do more sitting there with the actual paper records. But now the computer can be slow especially with all the pages that an ER record might have."

Use of Automated Coding

Coders recognize the benefits of automated coding systems. Interview subjects pointed out that it may result in significant gains in productivity ("They showed how fast it was and I thought that was really cool") and potential gains in accuracy as well ("It could help us find a code that we might otherwise have missed").

Anticipated effects on their job varied widely between inpatient and strictly outpatient coders. Inpatient coders appear to focus more on the productivity gains ("It will make the job go faster, so you can code twice as many cases") but question when it will actually be suitable for use in production ("For use in more complex records, like inpatient records, it isn't gonna be there for a long time"), whereas outpatient coders see the technology as more imminent and are more likely to wonder if there will be a job for them five years from now. "I would say 80 percent of the cases that I code are straightforward enough for the computer to be able to code correctly. Down the line will there actually be a need for me?"

Both inpatient and outpatient coders, however, indicated that automated coding will not entirely replace coding professionals. "I don't think the coder is ever going to go away. There is only so much of our job that can be automated." And both groups also indicated that use of automated coding systems will require coding professionals to increase their coding skills: "As you get more technology in here, coders will get harder and harder charts." "The computer will do the easy stuff."

Coders' Emotions toward Automated Coding

Coding professionals express strong emotions on the subject of automated coding. For the most part, these emotions are negative. There is some wonder and amazement in response to the technology, but on a personal level the potential impact of the technology causes anger, anxiety, insecurity, mistrust, uncertainty, and worry. Notably, the mistrust seems to be focused on upper management and their lack of understanding of the complexity of the coder's job with anticipated resultant misuse of the technology. "Where I used to work, the financial people, they totally didn't get it. They just look at the AR and wonder what those coders are doing. They think it's just a matter of looking up numbers. There is so much more to it, but they don't know that. I think if they thought a computer could do our job, they'd replace us. Man, what a mess that would be."

As noted above, the theme regarding the use of automated coding showed significant variance between inpatient and outpatient coders. Inpatient coders display more solid confidence that a computer cannot replace them. "A lot of coders worry that it will displace the coders but I could see where it did not displace the coders, it just made the coding job easier, it was just another tool that made it easier." The key words in context (KWIC) technique revealed no words denoting negative emotions in the inpatient coder interview. In contrast, strictly outpatient coders used multiple words denoting negative emotions.

Discussion

There are no data in this study to suggest that coding professionals are generally fearful of change or advances in technology. This study confirms that coding professionals accept automation. Use of computers, such as encoders, to aid the coding process is standard operating procedure. Computers are viewed as simply another tool to help the coding professional perform his or her job. An encoder, for example, is a tool that must be used properly and judiciously by the coding professional in order to assign codes correctly.

However, advances in technology that are useful for some segments of healthcare may not necessarily be an advantage to coding professionals. Electronic health records, whether fully electronic or in a hybrid state, have added complexity to the coding process. The lack of data-content standards is particularly problematic. In general, it takes longer to access the clinical information required for code assignment when using either a hybrid record or an EHR.

Automated coding is still an unknown entity, and coding professionals have strong emotions about this technology. Rogers's theory on the diffusion of innovations states that innovation adoption is a process of uncertainty reduction. As individuals synthesize information about the technology, they form beliefs about the technology that drive their decision to adopt or not adopt it.[11] Many coding professionals are still uncertain about automated coding.

A new theme emerged from this study by comparing interview transcripts from inpatient and outpatient coding professionals. Outpatient coders feel more threatened by automated coding than inpatient coders. This is no doubt validated by studies that report success with automated coding in outpatient domains but continued challenges in the inpatient domain.[12, 13]

Another important theme that emerged from this study is the potential mistrust of decision makers and concern that automated coding solutions will be misused. This is perhaps fueled by the fact that the complexities of the coding professionals' job are difficult to articulate. One interview subject stated that "the difficulty of the coding, the rules and so on, is the hardest thing to explain to people, even people in the healthcare profession." There are many instances where a judgment call is needed to consistently apply the underlying intent of coding guidelines and reporting requirements within the context of a particular patient visit.

Conclusion

The results of this study indicate that coding professionals generally accept the use of computers in the coding workflow. In regard specifically to automated coding solutions, outpatient coders are more likely to feel threatened than inpatient coders.

Much of the anxiety surrounding automated coding is related to an underlying mistrust of decision makers and the concern that they will misuse, or overuse, the technology.

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Notes

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Table 1

Themes and Quotations

Themes	Representative Quotations
Use of encoder	
Helpful tool	"I think encoders have been a breath of fresh air and I would think even the experienced coders today rarely look at their books."
Just a tool	"The encoder may walk the coder down the wrong path and if the coder is not book savvy, they may very well arrive at the wrong code."
Increased complexity of computer records	
Hybrid record	"…everything is black and white. I can't go right to the pink sheet because the color is not there."
Electronic health record	"In a patient record you have a story and you just follow along in the text of the story and you can see what has happened. In an EHR the story gets segregated by the entering author and that segregation doesn't methodically flow."
Slower process	"Having the paper record in front of me was a faster process. I have to wait for one page to abort and another to pop up or look for information in multiple screens. It slows you down."
Use of automated coding	
Benefits	"It's great, the computer gives you the codes and you check them over. It's one step up from an encoder."
Effect on coders' job	"I think it will do the same thing as what all technology has done. It will make the job go faster, so you can code twice as many cases."
Effect on coders' skills	"As you get more technology in here, coders will get harder and harder charts."
Likelihood on inpatient cases	"For use in more complex records, like inpatient records, it isn't gonna be there for a long time."
Likelihood on outpatient cases	"I would say 80 percent of the cases I code are straightforward enough for the computer to be able to code it correctly…the other 20 percent should be sent to a person to code it correctly."
To replace coders	"I don't think the coder is ever going to go away. There is only so much of our job that can be automated."
Coders' emotions toward automated coding	
Anger	"There are some angry folks out there right now…that was their job to code that low hanging fruit and some organization, some software has replaced them."
Anxiety	"If they improve that program where it did come up with the right codes where would that leave us?"
Insecurity	"Right now I think I'm OK. But 5 years down the road I don't know. I honestly don't know."
Mistrust	"I think if [Administration/CFO] thought a computer could do our job, they'd replace us."

Uncertainty	"I'm not entirely sure what to think. It could be good. But on the other hand it could be a threat to our jobs."
Wonder	"I saw the computer assisted coding demo and I thought that's absolutely wonderful, it's pretty amazing."
Worry	"I do worry about it. It doesn't occupy my mind a lot but I do worry."