CHALLENGES OF COORDINATION USING ELECTRONIC HEALTH RECORDS: A GENRE ANALYSIS

Sue Newell
Bentley University

Gary Davd
Bentley University

Follow this and additional works at: http://aisel.aisnet.org/ecis2012

Recommended Citation
http://aisel.aisnet.org/ecis2012/4

This material is brought to you by the European Conference on Information Systems (ECIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ECIS 2012 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
CHALLENGES OF COORDINATION USING ELECTRONIC HEALTH RECORDS: A GENRE ANALYSIS

Sue Newell, Bentley University, 175 Forest Street, Waltham, MA, 02452 and Warwick University, UK, snewell@bentley.edu

Gary David, Bentley University, gdavid@bentley.edu

Abstract
This paper explores how electronic health record (EHR) systems have introduced a new genre for physicians to use (a genre we refer to as check-list) that is used in addition to their traditional narrative genre as part of a single patient health record. Our analysis suggests that it is because the overlap between these two genres is created and used interdependently that breakdowns occur in the coordination of care. We also consider how the medium and the institutional context influences this confusion caused by the interactions between these two genres. We thus contribute to theoretical discussions about genre systems and illustrate the practical insights that emerge from a genre analysis.

Keywords: health records, EHR, communicative genre

1. Introduction

Healthcare costs are growing in almost every country, driven by a number of factors which include aging populations and advances in medical science that can keep people alive for longer, but often on expensive therapy regimes. At the same time, many countries are seeking to reduce public spending on healthcare, along with other kinds of services as well. Given this tension between burgeoning costs and tightening budgets, many are viewing Information Technology (IT) as at least a partial solution (Fichman et al., 2011) to solve communication and coordination inefficiencies in healthcare systems that research has demonstrated contribute substantially to healthcare costs. For example, Agarwal and colleagues (2010) estimated that in US hospitals alone (i.e., not considering costs across the multiplex of healthcare providers), over $12 billion USD were wasted due to communication inefficiencies among care providers. Based on such analyses, a 2005 RAND study indicated that the adoption of interoperable health records systems in the USA could provide efficiency and safety savings of $142-371 billion (Hillestad et al., 2005). Such research perhaps helps to explain why the American Recovery and Reinvestment Act of 2009 provided $36 Billion USD for health IT in the USA, an investment that is believed would improve care while lowering costs.

While there are a variety of IT systems that can be relevant in a healthcare setting, one of the major initiatives is the implementation of integrated electronic health record systems (EHRs). An integrated EHR system is a digital repository of data about patients that allows patient information to be shared across professional groups within a healthcare system (e.g., general practitioners and specialist consultants) and/or across organizations (e.g., clinics, hospitals, insurance companies). Typically, such systems include clinical data repositories, computerized patient records, decision support applications, transaction processing capabilities and features that allow the integration and sharing of data across a network (Angst et al., 2010). Within a particular patient record there will be a range of information, for example, health observation data (like blood pressure), interpretations of this data, problem lists, medications, allergies, treatment plans and patient outcomes. The sharing of this information is meant to improve the coordination of care (Davidson, 2000).

Despite the promise of EHRs, adoption has been a problem in many settings. For example, in the USA adoption of EHRs has been very low and slow (Jha et al., 2009), while in the UK the implementation of the NHS National Program for IT (NPfIT) has been fraught with difficulties, finally being deemed ‘unworkable’ in August 2011 after 2.7 billion pounds had been spent on developing and implementing parts
of the system (National Audit Office, 2011). The reasons for these problems with adoption and implementation are many and numerous, and are linked to the unique nature of healthcare settings (Fichman et al., 2011). For example, many primary care practices are very small, making the costs (both of equipment and costs associated with learning, Reardon and Davidson, 2007) of adopting prohibitively high, helping to account for the relationship found between organizational size and EHRs adoption (Simon et al., 2007). On the other hand, introducing an EHR across a large national healthcare system is also problematic because of the diverse needs and interests that must be accommodated by such a national system. For example, in addition to the NPfIT in the UK (see above), Aanstad and Jensen (2011) document the problems in Denmark where they were attempting to create a single national EHR system that would be used by all healthcare providers in the country. This initiative was eventually abandoned (again only after considerable money had already been spent). Thus, paradoxically perhaps, the problems of adopting EHRs are associated with both small size and large scale.

More importantly perhaps, adoption does not necessarily mean the same thing as use. Thus, Reardon and Davidson (2007) employ a measure of assimilation (based on Fichman and Kemerer, 1997) that goes from awareness at one end (where a clinical practice has little or limited knowledge) through interest, pursuing adoption and limited deployment to finally full deployment (where ‘many EHR capabilities are used throughout the practice’). They identified a number of learning and knowledge-related factors that influenced this assimilation level. While such studies are important in order to help governments and other organizations influence adoption, they tell us little about how EHRs are actually used, even when they reach the stage of full deployment. Thus, in the USA the Health Information Technology for Economic and Clinical Health Act (HITECH) not only attempts to encourage adoption through incentive payments but also promotes ‘meaningful use’, that is, use that results in significant improvements in care as evaluated through a variety of outcomes measures. Inspired by this agenda of meaningful use and the debates which it has generated, in this paper we focus on how an EHR is used in practice when it is fully deployed. This is done through extensive discussions with physicians regarding how the systems integrate into their work, how they use (and do not use) the system, and their overall view of the advantages and limitations of the system relating to its use.

In considering practices surrounding use, our findings suggested an important issue to consider is the type of record that is created since this was related to opportunities and barriers both for the individual clinician creating the record and for other stakeholders. This directed our attention to the idea of communicative genres (Orlikowski and Yates, 1994) since the recording practices of clinicians evidenced a new (check-list) genre that was added to the traditional narrative genre and new purposes with the introduction of an EHR system. Moreover, our analysis suggested that the form and purpose of the communicative genres in use were not always compatible. Our research question is, therefore: How are outcomes of EHR use influenced (and compromised) by the communicative genre that is enacted?

The structure of the paper is as follows: we begin with an examination of the literature on health records and then discuss the literature on communicative genres. Next we present our methodology and follow with a presentation of our findings and our discussion.

2. From Paper to Electronic Health Records

Doctors have long kept patient records. Initially these were for their own use so that they would be able to have quick access to the medical history of a patient at the time of a new consultation. These medical records were paper based and often quite short, each record being kept within a small file that was simply added to after each visit. Indeed, one of the sponsors for the research presented in this paper, in an initial discussion about our access, reminisced about ‘the old days’ when he first started to practice and had a single, portable box where all the files of his patients were kept. If another doctor saw a patient, they either
took a new medical history for themselves or got some kind of summary of the patient history, typically in a written (referral) letter or over the phone.

With the advent of computers, health records are increasingly electronic. On the one hand, one could think that this would have little impact on the record or how it is used – it is just a new (digital) medium for a doctor to create, store and reuse the record. However, the ability of doctors to create records as they like is being impacted by the EHRs that have been developed. EHRs are based on the principle of interoperability that allows the record to be easily shared across a variety of stakeholders in the healthcare system – other doctors, managers, insurers, researchers etc. Interoperability standards are aimed to ‘permit clinical computer systems to share health record data whilst preserving faithfully the clinical meaning of the individual authored contributions within it’ (Kalra and Ingram, 2006, 135). Thus, interoperability is seen to be critical for improving communication and coordination among healthcare professionals, for exploiting the clinical data for management and administrative purposes, and for monitoring public health and conducting clinical research (Davidson, 2000).

A major challenge of interoperability is to have data entered in such a way that it can be shared across users. One particular manifestation of interoperability is the use of check-lists and menu driven diagnosis and treatment. That is, instead of the clinician writing a narrative to describe her diagnosis and treatment prescriptions, she instead uses a menu to select a diagnosis from a range of pre-specified alternatives. Once the diagnosis option is chosen, a check-list then provides the range of prescriptive actions that would normally be associated with the given diagnosis and the clinician must then check-off those that she has opted for (or maybe uncheck those she has not prescribed when the system self-generates a list of items for the particular diagnosis). Such a menu-driven, check-list approach can make it far easier to share information across systems presuming that there is common understanding and use of the menus and checklists. So, once diabetes is selected, the system can remind the clinician of what and when prescriptions and tests should be administered; communicate this diagnosis to other medical professionals who might be involved in this patient’s care; feed into other systems that allow epidemiologists to count the number of cases of this diagnosis in a given population and how it is changing over time; feed into management systems that allow tracking of whether clinicians in a healthcare system are complying with best practices; and trigger reimbursement payments.

This check-list medical record is quite different to the traditional paper-based record that was essentially a short, often hand-written, narrative completed at the end of a consultation that used medical jargon that fellow professionals would understand (but not the average lay-person). The narrative component was seen as an essential element in that it provided a summary of a physician’s impressions and clinical decision-making. EHRs may also include some narrative capability, but the checklists dominate in the design of the systems because of the requirement for interoperability, as well as the belief that check-list systems are more efficient and expedient in producing records without the step of writing, or transcription of verbal dictation. Moreover, as the example above shows, the purpose of the medical record is no longer just for the user, but for the healthcare system in its entirety.

The changing form (from narrative to checklist) and purpose (from use by the clinical creator of the record to use by a host of other healthcare-related individuals and organizations) of the medical record suggests that its genre has changed (Davidson, 2000). Yates and Orlikowski (1992; p.301) define a genre as “a typified communicative action invoked in response to a recurrent situation.” That is, it is something socially recognized and habitually enacted to realize particular purposes. Genres can thus be viewed as organizing structures which help to produce and reproduce social structures as those in a particular community repeatedly reuse particular communicative genres (Devitt, 1991). For example, traffic wardens use of parking tickets reinforces the rules about where parking is allowed or not. As such, a communicative genre serves as ‘an institutionalized template for social action’ (Orlikowski and Yates, 1994, p.542) emerging from social action and also at the same time shaping social action by providing socially recognized templates for communicating (Kwasnik and Crowston, 2005).
Genres within a particular social community, however, can and do change over time either deliberately or inadvertently, and such changes reflect and reinforce changes in organizing structures (Orlikowski and Yates, 1994). Not all changes in communicative acts reflect genre changes; the key issue is whether the genre rules change. So, a new medium of communication may be used that does not reflect a new communicative genre in the sense of a new organizing structure. For example, paying parking fines online rather than posting in the fine does not reflect a new genre rule – the social rules about parking have not changed. On the other hand, the use of PowerPoint as opposed to blackboard and chalk in educational settings may reflect and reinforce changes in the social rules related to what it means to be a ‘good teacher’ – being prepared with a nice (entertaining, multi-media) slideshow becomes important, so changing how much time is spent and the focus of teachers’ classroom preparations.

Genres are identified by their form and purpose (Orlikowski and Yates, 1994). The form is characterized by the structural features that are used (e.g., a formal letter with address(es), openings and closing all in agreed places) and the language and symbols used (e.g., formal letter using polite forms such as ‘Dear Sir’). Genres are also distinguishable by their purpose. Some genres have multiple purposes. For example, tweets are used for rallying people around a cause, for informing people about something that has just happened, for proposing new ideas or for other purposes. Other communicative genres have a singular purpose. For example, the purpose of a court order is to define relationships between the parties involved in some type of court proceeding. Furthermore, genres do not exist in isolation (Czarniawska-Joerges, 1993). Genres both overlap and are interdependent (Orlikowski and Yates, 1994). Genre overlaps involve the use of more than one genre within the context of a particular communicative act. For example, lecturers may use PowerPoint and blackboard and chalk to reinforce some point they are trying to make. Genre interdependence refers to the way in which a communicative act using one genre may be responded to or reinforced with a communicative act using a different genre, creating a genre system (Bazerman, 1995). For example, a parent phones the school concerned about the progress of her child and the school follows up with a written report of the child’s grades.

This overlap and interdependence between genres reflects the fact that any given community will have a set of genres that are routinely enacted. Orlikowski and Yates (1994) refer to this as a genre repertoire and suggest ‘The set of genres that community members use (and don’t use) to conduct their interaction can reveal a great deal about a community its communicative practices, and organizing process’ (547). In other words, they suggest that studying a community’s changing genre repertoire over time provides a useful analytical tool for examining the organizing processes within a community and exploring how these are modified over time. In this paper we are focused on the genre use patterns in relation to EHRs. Thus, the introduction of EHRs has created a new genre and in our empirical case we explore the ways in which this new checklist genre interacts with the old narrative genre and some of the advantages and challenges associated with each and with their interaction.

3. Methodology

During the Spring and Summer of 2011, 18 physicians working in a healthcare area in Eastern USA were interviewed to gain insight into how they used the adopted EHR, as well as their general philosophy regarding the medical record, how it is constructed, and how it is used. This was part of a larger project on the creation and use of medical records. Each physician interview lasted between 45-60 minutes, and was recorded and transcribed with the consent of the physician. In total, approximately 17 hours of interviews were conducted. Of the 18 physicians, 8 were women and 10 were men. In terms of the type of medicine practiced, 9 were primary care physicians and 9 were specialists.

An interview schedule was approved before the project began, providing the outline of the questions asked. However, this was not strictly adhered to in order to allow physicians to have more freedom in expressing their experiences with the system and their philosophy toward health records. The
entire project was approved by the hospital Institutional Review Board, and no patient health information was ever accessed or reviewed by researchers. While no patient health information was accessed, both authors underwent HIPAA training in order to comply with US Federal Regulations regarding patient privacy of health information.

Analysis of the data was inductive and iterative (Eisenhardt, 1989) allowing us to constantly revisit and progressively refine our observations. We also triangulated across our data sources in order to ensure that there was consistency in our analysis (Glaser and Strauss, 1967). As this data collection was part of a larger project, past findings informed our understanding of the information and perspectives being shared by the physicians.

4. Case Description and Analysis

‘Buddies HealthCare’ was founded in the 1990s, bringing together community and specialty hospitals, PCPs, community health centers, home care and other health-related entities that were regionally co-located in a large urban center in the USA. It operates as a not-for-profit healthcare system. The idea of bringing together the various institutions was to improve the ability of all participants in the system to provide high quality patient care, research, teaching and service both locally and globally. A key vehicle for increasing collaboration across the affiliated organizations was the creation and implementation of an EHR, hereafter referred to as the Buddies Record System (BRS). The BRS was developed in-house and represented a key component of Buddies’ IS strategy. The rationale for the system was to allow providers in the network to efficiently maintain and share patient records electronically and manage workflow. The BRS was designed (and continues to be developed) through collaboration with world-class medical informaticians and researchers who work at Buddies. The in-house IT group developed and maintains the BRS, with input from physicians in the network. It is designed to structure patient clinical data and provides users with a variety of tools to help manage their work flow such as charting, result management, referral management, order entry. Most importantly in terms of its design, was the ability to share data with other clinicians across the Buddies network to facilitate communication and help to ensure the continuity of care for each patient. In presenting the results of the interviews we analyze the data in terms of first examining how the record is made and then how the record is used.

4.1 Making the Record

Interviewees indicated that in today’s environment, it is important to document every aspect of a patient encounter in order for it to count as an institutionally recognized action, or as physicians are apt to say: “If it isn’t written down, it didn’t happen.” This makes producing ‘complete’ documentation a major part of the work of physicians in this network and meant that many of the interviewees were interested in finding ways to do this more efficiently. The BRS was supposed to do precisely this, but our interviews made it clear that while the technology may provide the structure for how documents are written, the technology does not dictate exactly how the record is produced. In particular, there were significant variations in terms of how documentation was done and how the system was used.

The BRS is based on a database and physicians are expected to complete checklists and use menus that are standardized to allow for the sharing of data. However, this genre of keeping a medical record is not consistent with traditional practice and many of the interviewees continue to write narrative accounts of their consultation. While some complained that this led to more work because of a ‘double-entry’ requirement (they still did a narrative and then had to fill in the check-boxes), others pointed out that in practice, many physicians, especially specialists, failed to complete the check-boxes:

**PHYSICIAN #15:** I actually like the front flow sheet part of it [the check-list], where you can see the patient’s medications, the allergies, but people don’t update them. People don’t enter procedures, they
don’t enter problems. Somebody could carry a diagnosis of breast cancer and it’s not on the problem list, you have to go sifting around and say oh wow, I recognize that as the name of an oncologist, I wonder why that note is there, and you have to read through it. Well that took time. But if they just put breast cancer, okay, thank you, that gave me a lot of information...... I used to go through every med list and update it. There were doctors in the group who said it’s not my problem, it will be accurate in my note, you can read it in my note, why should I update it [the check-list]? I said because at the point in time that the patient is face-to-face with you and under your care, you have an obligation to that patient to do the right thing and to update the med list. People felt very strongly that it was just too much of a burden. Too much time. They’ll just do it in their note, that’s what they need to do.

The theme about the time it took to complete the record was very common. In the face of this, physicians used a variety of techniques to make record keeping more efficient as they continue to use the traditional narrative form. Some continue to use dictation and transcription, a traditional method through which health records were created (by oral dictation and subsequent transcribing) where a hand-written note was not sufficient. Almost every doctor interviewed has used this method. However, the majority no longer did primarily because of costs, and instead used other methods to create the record. Some had moved to using speech recognition technology (SRT). However, this was not the dominant method either, and indeed some had tried and stopped using SRT because they had been frustrated with its lack of accuracy, which could lead to records including ‘bloopers’ (physician 9) when users did not carefully check the record:

PHYSICIAN #9: Well I looked at a chart and the biblical name Isaiah was in it. I think I was saying hydrochlorothiazide and it heard Isaiah and I missed it.

PHYSICIAN #7: And here’s another consultant, he’s dealing with a sore shoulder. He says he does not have generalized spermatic problems, although he did recall his mother telling him he had dislocated shoulder at age two but he does not know. Completely useless information.

IM: I don’t understand, his generalized spermatic problems?

MD7: There’s no such thing. He didn’t correct his voice recognition program. So it’s complete nonsense. You’re looking at nonsense in a medical record that’s going to be there forever. Because once those things are signed off you can’t change that particular. You can append it or change something later, but this is in the chart forever.

Typically it was up to the originating physician to catch these errors in the editing process. For doctors that are already time-pressed, this can be a major challenge. Furthermore, “bloopers” were not considered that problematic, as they are easily spotted. Rather, it is when things are not caught which could possibly be true that problems can arise. This has compelled some physicians to insert speech recognition disclaimers at the end of their notes. One such example we were given reads: “This note was generated with a voice recognition program. Please excuse any errors which may have been overlooked during review. Sometimes, these errors may affect the content or meaning of a given sentence.” Such a note affixed to a medical record is surprising considering that the medical record is a legal document and that the physician who signs the document is accountable for all of its contents (and errors).

A more common strategy to make record keeping more efficient was to use the copy-and-paste functionality. Doctors indicated that this is useful when redundant information is to be put into a new note, saving time creating it anew. However, because of the relative ease of copy-and-pasting, there is a risk of errors being reproduced and old information not being removed:

PHYSICIAN #13: I mean I’ll get a four-page thing printed for the emergency room, which accompanies the patient, and I can’t figure out why I’m seeing the patient. And then the primary care adds the review of systems and then somebody else adds the same review of systems and they just cut and paste and it clogs it up, so the actual information that needs to be conveyed is buried within all this repetitive cut and paste to
satisfy all the insurers; satisfy everything because you have to be thorough, and so the same information or misinformation can be propagated.

This last quote shows how some physicians are frustrated by the amount of information that can be in the note, especially when that information is not germane to the patient’s current condition. However, many interviewees continued to use this copy-and-paste function because of the convenience.

Another efficiency strategy employed by physicians is the use of pre-formatted templates. Templates were seen to be especially useful when describing visits or conditions that routinely occur in a physician’s practice. There was no one way of using templates, and the ability to customize them made it possible for physicians to adapt them to the particular style that they wanted; some used templates as prompts while others had complete paragraphs that they use and insert in patient’s records as appropriate. One potential problem of the template system is physicians do not change information in the template that does not apply to the patient:

PHYSICIAN #2: I just saw a note from a gynecologist recently that talked about a patient who had had a hysterectomy. And then in this templated note, he talked about the normal uterus on pelvic exam. Those things don’t mix!

PHYSICIAN #13: ...you see it all the time where somebody forgets to change something in the template. Sure you examine that area. Person comes in with a hemorrhoid, I’m sure you looked at their retina. You didn’t. It’s part of a boilerplate to satisfy something.

What all these methods have in common is that while they can reduce the time to create the patient narrative record their accuracy depends on the physician taking the time to read and correct information that is not accurate (problems with the transcription or voice recognition) or not germane to the patient (problems with templates and copy-and-paste). The complication in doing so arises in the time-pressed nature of medicine, in which physicians are trying to complete documentation requirements as quickly as possible in order to see and/or respond to the next patient.

4.2 Medical Record Users

There are a variety of users of the medical record. Not surprisingly, one of the major audiences was the originating physician and other physicians. The record here is viewed as a way to coordinate care across time and space. For the originating physician, it is a way to remember what has happened in the past and what needs to happen in the future. It is also the primary way that physicians communicate with one another, either directly (through a record intended for a specific physician) or indirectly (as when physicians make a record that is used by another physician). Thus, it can be said that records are constructed in a manner that first takes into account how other physicians might use the record, and as a result what information they would need (and in a format that is recognizable to them).

Another user is the patient, but this presents a dilemma for many of the physicians interviewed. All acknowledged that medical records are in fact the property of patients, and as such patients have a right to see their medical records. However, while physicians generally (with a few exceptions) do not mind patients having access to lab reports, medication lists, and allergy lists (i.e., the parts that are check-list), few would like patients to have access to narrative summaries of patient visits and conditions:

PHYSICIAN #1: That scares us (patients having access to their own records). Because in order to communicate well with other physicians, sometimes we have to say things that patients don’t really want to hear, you know? In order to have an accurate physical exam, sometimes you have to write obesity.

Moreover, an increasing concern among physicians is the impact that information in the medical record can have on a patient’s ability to get (or keep) health and/or life insurance.

PHYSICIAN #4: So classifying someone as depressed. You have to be very, very careful. So I will write increased stress if I think it’s just a stressful situation. If someone dies in the family, the person can be
depended for a while but I don’t want to classify them as depressed because that will hurt them in terms of insurance.

Another issue in terms of completing the record was to ensure they are paid for the services rendered. Payment was activated by completing check-lists. The check-list part of the system was also used by insurers when they audit records, and by administrators within the Buddies network itself since the network, like other healthcare institutions is under pressure to reduce costs. The BRS was therefore used to audit individual physicians to make sure that they were in compliance with particular practices that had been deemed effective for reducing costs; practices like prescribing generic rather than branded drugs, following up on patients with particular diagnoses like diabetes to try and keep their symptoms under control, following up on patients when test results came back that suggested particular problems like obesity with a BMI index score or a high ‘bad’ cholesterol score that suggested interventions might be helpful. There were penalties for physicians who continued to not comply with the guidelines. However, as some examples illustrated these compliance systems were at times very ‘heavy-handed’, since it meant that doctors could be penalized when they did not follow-up with someone when actually the data was explicable given the circumstances of the individual. For example, a high BMI may be an indication of obesity but not when the individual concerned is a fitness fanatic; and a high ‘bad’ cholesterol reading may be a sign of problems except for when the blood reading was not taken under fasting conditions. In these instances the automatic compliance system that was generated by the check-list part of the BRS, could actually create additional costs where doctors were ‘forced’ to follow-up unnecessarily with their ‘normally abnormal’ patients.

5. Discussion

Medical records used to be primarily reserved for physician use; increasingly this is no longer so. The audiences for the medical records are continuing to expand, complicating what they need to say, how they need to say it, and how they are going to be used. While legally the health record belongs to the patient, patients rarely take possession of them. Beyond the patient there are other audiences, which can include: coders, documentation specialists, healthcare professionals, reimbursement agents, auditors, lawyers, and researchers. Some of these roles are particular to the US healthcare industry, as how billing and reimbursement occurs in the US can differ drastically from other parts of the world. Nevertheless, the multiple audiences indicate that health records are not only essential for the patient to receive proper care; they are essential for the healthcare system to function. It is the broad and diverse audience that creates problems because a single document is used to satisfy the needs of all.

The fact that each consultation results in a single document – the patient record – does not mean that the record reflects a single genre. Rather, two genres are evident – the narrative and the checklist – at least in the Buddies system. Indeed, the narrative part of the record was initially very restricted because those designing the BRS did not want to encourage free-form text as they saw such a format as less valuable for data extraction and analysis (Davidson, 2000). However, in Buddies, the physicians had resisted the attempt to restrict the free-text narrative that they could include so that at the time of the study, there were no limits on how much narrative could be included. The narrative genre reflects the original purpose of the medical record – for the physician him/herself as a reminder of past medical problems and treatments that can help in the current diagnosis. In other words, the narrative tells the patient’s health story.

Many of the interviewees continued to use the narrative form and many now use the enhanced capabilities of the computer to create their records, meaning that rather than a short note, the narrative often became a much longer note, enabled by copy-and-paste and template functionalities. However the narrative was produced, to be useful its accuracy must be guaranteed and information relevant. Evidence indicated that this was not always the case because doctors did not always thoroughly check their own
records. Narratives thus could be problematic from an accuracy point of view. But narratives were also problematic from a coordination point of view – because other doctors did not have the time to wade through the increasingly length narratives, much of which could be devoid of original content but rather produced from previous reports.

The second genre in the BRS was supposed to alleviate the problem of doctors (and administrators) needing to search for information in a patient record, with the checklist providing an up-to-date and standardized summary of the patient’s medical history. For those doctors who continued to use the narrative genre, this created a problem of double-entry. Moreover, this checklist was not always used, especially by the specialists, putting the onus on the PCP to input data from the specialist narrative which he/she would receive. Not all PCPs did this, feeling that it was not their responsibility. Moreover, sometimes even PCPs found it hard to understand the specialist’s jargon in the narrative. The result was that the summary checklist data was not always accurate.

Moreover, not only were there challenges associated with the two separate genres that exist in the BRS, there were also challenges associated with their interactions. Thus, the BRS provides two genres for physicians but often they will only use one of these. They will create a free-text document and upload that into the system. However, that data is not integrated with the rest of the BRS (i.e., in the checklist part), creating information in one part of the system that does not match what exists in another part of the system. Alternatively, some of the data may be uploaded on to the checklist, but not all the data. In some ways this is even more of a problem because a doctor looking at the summary data may assume that it is accurate and up-to-date when actually it is only partial. Given the time pressures that doctors are under, most admitted that they could not go through the whole of the patient record. The fact that this was typically necessary to get a complete picture of an individual’s health history attests to the problems of having two genres that are overlapping and interdependent, discussed next.

These findings have implications for our understanding of the interactions between genres in community settings. Yates and Orlikowski (1994) differentiate between genre overlap and genre interdependence. The two genres characteristic of the single medical record would be described as genre overlap – they reflect the use of more than one genre (narrative and check-box) within the context of a particular communicative act (a medical record). However, these overlapping genres are also interdependent in 2 ways, which we can describe as interdependent creation and interdependent use. Genre interdependence, according to Yates and Orlikowski (1994) refers to the situation where an actor uses one genre and this then is responded to or reinforced by a communicative act using a different genre. In terms of the ‘next’ communicative act in relation to the creation of the medical record, there is interdependence when the specialist uses a narrative form to describe the diagnosis and treatment of a patient and then expects the PCP to add this information to the check-box section of the record. The problem here is that not all PCPs saw it as their role to enact this next step, nor were they always qualified to do this given the unique language and style of different specialists. So the interdependence between the specialist and the PCPs in terms of record creation at times broke down and produced the problem of an incomplete or inconsistent record, at least from the perspective of having the diagnosis and treatment recorded in the standardized summary section.

In terms of the ‘next’ communicative act related to the subsequent use of the health record, here the interdependence refers to the fact that the narrative and check-box sections of the record are only partially overlapping because at least some physicians do not complete both the narrative and check-box sections (or because the creation of the record depends on the interdependent creation just described and this interdependent creation falls short). This means that users need to look at both genres to get the full patient record. The problem here, however, is that physicians often did not do this, assuming that they can get the necessary information by just looking at the summary from the checklist data. Thus, while Askehave and Nielsen (2005) point to one of the distinctive features of digital genres – that they are not only texts that are read but also texts that are potentially (relatively easily) navigable – busy doctors may not want to
spend the time navigating the record to get the full patient information. What may take less than a minute can be seen as time-intensive to a physician who is trying to quickly fit in what should be an easy task (e.g. looking up medical information) between other tasks.

Our contribution is therefore threefold. First, we have identified these different manifestations of interdependence between genres. Future research can usefully consider whether these forms of interdependence are characteristic of other examples of overlapping genres. For example, Ihlstrom and Henfridsson (2005) found sequential interdependencies between the print and digital genres of newspapers and identified a range of institutional factors that influenced this emergent interdependency. However, they did not identify different types of genre interdependence based on a distinction between creation and use because they were focused on the producers of the newspapers (i.e., their focus was on creation only and not creation and use).

Our second contribution relates to our finding that it was the interdependent creation and interdependent use of the two overlapping genres in the medical record which were key occasions for communication and coordination break-downs. Genres are used by particular communities and reflect and reinforce ongoing patterns of interaction. In our setting, like many others, particular genres are used to aid coordination and collaboration across the community, as when a traffic officer issues a parking ticket to coordinate the payment of a fine. In the medical setting, the health record has very important coordination functions and indeed the implementation of the BRS in our case was strategically aimed at encouraging more effective collaboration between those involved in the Buddies network. The narrative may be preferable for coordinate communication between physicians. The check-box record may be preferable for coordinating communication between physicians and administrators. Thus each genre is suited to different types of coordination. Our evidence suggests that such coordination may be imperiled when overlapping genres are used that rely on either interdependent creation or interdependent use.

Our third contribution relates to the influence of the communication medium on a genre. The narrative genre, traditionally written by hand or through dictation and transcription, was reproduced in the electronic environment. In this sense the medium was not important to the genre. This confirms prior research which has shown that users often apply, at least initially, their genre conventions to new medium through a process of implicit migration (Yates et al., 1999). However, over time, as the users exploited the potential of the electronic medium there was some change in the reproduction of the narrative genre in that they were able to create much longer narratives because of the ability to use pre-formed, template paragraphs which were cut-and-paste into the record. Thus, while the genre itself did not change – it remained a narrative description of the patient consultation – its length changed and was consequential for how useful it became – ironically becoming less useful by being more inclusive. This suggests that there may be two types of genre migration that may appear over time – first, the old genre is simply reproduced in the new medium; and second, the old genre becomes elaborated because of the functionality of the new medium (Shepherd and Watters, 1998). Such genre elaboration may be a distinctive form of implicit genre restructuring that can, at least at times, produce unintended consequences, as here. While genre elaboration may be afforded by the functionalities of the new digital medium, how this functionality is used in practice is shaped by a variety of social influences in the particular context, including here the broader institutional context for reimbursement and compliance. Thus, including a more inclusive narrative was influenced by a concern with satisfying requirements for billing and reimbursement as much as a desire to improve care, reflecting the multiple purposes of the medical record today. Our results suggest that genre elaboration may emerge when digital medium are used and further studies can review the extent to which this creates unintended (and negative) implications for the subsequent use of particular types of documents.

Aside from these problems arising from interdependent creation and use of overlapping genres, our evidence also suggests that problems arise when documents are used for multiple purposes. In our case, the health record was used not only for the individual physician to manage patient care over time, but also to: coordinate care across physicians; try to achieve patient literacy; enable management to monitor and
reward/punish physicians who were not complying with particular practices that were deemed ‘best’; ensure that an audit from the health insurer would be satisfied; process proper coding; trigger reimbursement; and enable research to be conducted across the patient population. When there are such diverse purposes for a particular communicative act then it is perhaps inevitable that compromises will be evident and this was certainly the case here. For example, some of the compromises were made because the information needs of billing and reimbursement were prioritized over other competing audiences. These multiple purposes accounted for the length of the record, which itself actually then became a barrier to the usefulness of the record. While it has been recognized that a particular genre may have multiple purposes it has perhaps not been so clearly articulated that these multiple purposes, when related to a single communicative act can cause problems. It is hard to think of another document that has so many diverse uses as the medical record. This raises the question of how interoperable systems may not only help but also hinder collaboration and coordination when the systems are used to connect very diverse stakeholders through single documents.

6. Conclusions

One central premise of any writing or form of presentation is that you should know your audience, and craft your message to them, using a genre that is appropriate for the particular communicative act. However, a complication arises for doctors when considering the number of potential audiences for the record, their differing levels of knowledge, and their purposes for using the record. The tension between the needs of these audiences can frustrate physicians as they seek to create documentation that will support their work while meeting the needs of others. Physicians attempt to satisfy these diverse audiences by creating ever-longer records that combine traditional narratives with standardized checklists. To use an American expression, the physicians can be said to trying to “cover their bases.” However, as we have demonstrated, this creates problems because of the interdependent ways in which these two genres are created and used.

These points demonstrate how the diverse audiences for the health record can complicate its creation and use. The EHR system compounds this further by having the record more easily accessible and shared, meaning that a doctor is not likely to know who is accessing his or her records and for what reason. This goes beyond concerns over security and those with no legitimate reason having access to private health information. Rather, doctors are concerned over how the information in the record might be used by those who have a legitimate use, albeit a use that may run counter to the patient’s interest. Again, this is not something that is a new concern. However, the concern has changed as doctors are attempting to go ‘paperless’ as paper was the thing on which they could note issues that were private to them and then share with select audiences.

Finally, the ability to widely share health records with patients has the potential to transform its content. Again, doctors have always known that patients can have access to their records. Rarely was this done. Now the model is being proposed where patients are actual consumers of their health records, with a goal of “health literacy” being part of meaningful use guidelines. However, health records are rarely written expressly for patients. The majority of doctors did indicate they would change how they did their records if they knew that patients would see them, in particular referring to the narrative components. The impacts of the personal health record requirement on the creation and use of the medical record by other audiences (especially other physicians) remains, however, an open question which deserves further research.

References


