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Ghost Charts and Shadow Records: Implication for System Design

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Abstract

Ghost charts, sometimes referred to as shadow charts, are duplicate medical records. Governance documents in several countries suggest that ghost charts present a risk to patient safety, to the extent that they contain information which may not appear in an official hospital record. Although most would agree ghost charts should not exist, their existence is widespread. This paper reports on an in depth multi-method qualitative study of ghost charts undertaken in two ambulatory care settings in a Canadian hospital. The study was undertaken in order to inform the design and implementation of a clinical information system which it is hoped will eliminate the need for duplicate charts. Our research demonstrated that ghost charts filled a variety of needs only some of which are typically accounted for in electronic record design. We suggest that if the functions ghost charts fill are not addressed, their existence will persist. This work is significant in that few studies of ghost charts have been undertaken, and in the in-depth understanding it contributes to design requirements for electronic record systems.

Keywords:

Medical records, Duplicate, Electronic health records, Ambulatory care, Patient safety.

Introduction

A study of duplicate medical records (referred to here as ghost charts) was undertaken in order to develop in depth understanding of work practice issues related to the existence of duplicate paper based medical records (PMRs) in ambulatory clinical settings, in order to gain insights about the use of paper based charts that can inform the design of electronic records. Study objectives were a) to develop an understanding of the work practices regarding paper medical records in 3 ambulatory settings; b) to document how different clinical user groups interact with the PMRs including ghost charts, (e.g., what information do practitioners require? what information is shared with other practitioners, and under what circumstances? why is some information maintained in ghost charts?); c) to develop an in depth understanding of ghost charts, including what information they contain, what needs they fill on clinical units that are not met with the official clinical record, and underlying reasons for their existence; and d) to share insights gained from the study described here with stakeholders who will engage in decision making about electronic medical records. Material reported here is based on findings from observations and interviews in 2 clinical settings (a neurosurgery unit and a gastrointestinal (GI) clinic), and focuses on the functions that ghost charts fill. Additional findings pertaining to other aspects of the study (e.g., a detailed analysis of the contents of ghost charts compared to hospital records, in depth information about how charts are used during clinical encounters, and different stakeholders' views of health records) are beyond the scope of this paper and will be reported elsewhere.

Our hypothesis was that ghost charts meet a variety of needs for varied groups of workers who interact with charts, and the need they have for these additional charts is poorly understood—and this has implications for system design. When work is computerized, if system designers do not have a thorough understanding of how work is carried out (or, in other words, if the existence of ghost charts and the needs they meet are not acknowledged), then the resulting system will in all likelihood not meet staff needs. Hence, it is important to understand what role(s) ghost charts fill so that computer based systems can be designed in a manner that meets the needs of varied stakeholders who interact with charts. Our goal was to develop a better understanding of the roles ghost charts filled.

Background and Scope of Problem

The term ghost charts is sometimes used to describe a uniquely identifiable patient record that does not reside in an officially sanctioned hospital record location. Other terms used to describe the phenomenon of maintaining a patient care record independent of the main medical record include shadow charts, soft charts, duplicate medical records, working charts and clinical or clinic charts or records. Ghost charts are "duplicate record[s] kept for the convenience of a department or healthcare provider."[1] They exist in addition to health records (here referred to as hospital records), which are defined by the Canadian Health Information Management Association [2] as:

> a compilation of pertinent facts of an individual's health history, including all past and present medical conditions, ill-

[1] AHIMA FAQ [1] http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_017169.hcsp?dDocName=bok1_017169

nesses and treatments, with emphasis on the specific events affecting the patient during the current episode of care. The information documented in the health record is created by all healthcare professionals providing the care.

Although there is a paucity of written material about ghost charts—no doubt reflecting concerns about exposure to legal risk associated with acknowledgement of their existence-- informal conversations with a range of care providers as well as a review of reports written as part of the hospital accreditation processes[2] suggests that ghost charts are a common phenomenon, and their existence is not limited to ambulatory care settings [3, 5-9]. Several sources suggest that ghost charts emerged because paper based records are unwieldy in that they cannot be in two places at once, which leads to the need for ghost charts.[3] One article suggests the problem is most prevalent in multidisciplinary care [10]. Other explanations for the existence of ghost charts identified though grey literature searches include:

- the need for quick access to charts for patients with unscheduled visits is too challenging to manage through a central hospital records department, which providers responded to by keeping ghost charts [6, 7, 9, 11, 12;
- that patients visiting multiple clinics, often on the same day creates a situation where the "chart could be anywhere" so staff create ghost charts [6, 7, 9, 11, 12];
- that some staff have ongoing unscheduled contact with patients (e.g. calls regarding patient education, medication or symptom management that the clinic handles without requiring a formal appointment) and want/need the records handy as a quick reference [9, 12];
- that test results, specialist reports and other documents arrive as hard copy and are not integrated into the chart immediately, so ghost charts are created to keep this information together and ready at hand and are used in conjunction with the medical record, until such time as the medical record is updated [5, 8, 13];
- that staff make up their own charts because they cannot readily access the information they need in the formal chart [11 -13];
- that ghost charts can contain information useful to clinical management but that are not part of the formal medical record, or are not kept for a long period of time (e.g. because of "thinning policies" for medical record storage);
- that ghost charts have a reminder function – the chart is put aside as a reminder that staff are waiting for critical test results etc., rather than filing them away and relying on memory or the return of the result to trigger subsequent steps in treatment or scheduling [12];
- that ghost charts support continuity of care across transitions (details about how this is accomplished are lacking, but presumably relate to the ghost chart as a receptacle for more detailed information than would normally appear in the hospital chart, which is required to manage care across transitions);
- that research study records are often kept in a ghost chart accessible to researchers (which can occur in the context of formal research involvement or clustering of charts to support ongoing quality improvement or retrospective chart review research in clinical areas, which is particularly important in terms of intern and resident projects) [11];
- that some clinical areas "hang on" to charts or pieces of information from the chart for an extended time period (e.g., 6 months) for their convenience before submitting them to medical records [6].

Ghost Charts as a Problematic Phenomenon

Ghost charts present many challenges. Within the context of this research project, while our primary reason for studying ghost charts has related to the eventual computerization of hospital records and a desire to develop an understanding of the roles ghost charts are filling in the provision of care, it is important to note that computerization is often cited as a means through which ghost charts can be eliminated. A frequently offered rationale for the use of electronic medical record (EMR) systems is that they can integrate across physical sites or services where ghost charts have been in use [7, 9, 12, 13]. It should also be noted that ghost charts are generally viewed in a negative light, for a number of reasons related to problems associated with the practice of using ghost charts, and exposure to medico-legal risk related to the use of ghost charts. Each of these is discussed briefly below.

Problems Arising from the Practice of Using Ghost Charts

The practice of maintaining and using ghost charts has been identified as problematic in both the Canadian Council on Health Services Accreditation (CCHSA) and the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) standards [3, 14]. Ghost charts are considered substandard practice in that they are presumed to compromise patient safety. Current norms and standards for good practice in patient safety are predicated on the need for complete, accurate, reliable and accessible patient data and information, and ghost charts are seen as a threat to record completeness, accuracy and accessibility. Hence ghost charts are seen as under-

[2] For example,

- A 2007 accreditation report for Capital Health (Nova Scotia) cites the existence of shadow records in 11 clinical areas, including acute geriatric medicine, surgery and neurosurgery and cancer care, and noted that the physician groups had begun stand alone medical record systems in some areas [3].
- A Saskatoon accreditation summary notes the recommendation for "examination of multiple chart approaches with the intent to make all healthcare information available during the healthcare encounter."[4].
- An accreditation report for PEI written in 2007 indicated that the Emergency Department stored ECGs separately from patient charts [5].

[3] AHIMA FAQ [1] http://library.ahima.org/xpedio/groups/public/documents/ahima/bok1_017169.hcsp?dDocName=bok1_017169

mining informational continuity of care,[4] as well as practitioners' abilities to be responsive and effective.

Problems identified with ghost chart use include that some ghost charts contain more information than the official medical record, which may lead to gaps in information among care providers [6, 11], and that a lack of up to date information may lead to inappropriate treatment and detrimental consequences to the patient [3, 14]. In addition to potential problems related to informational continuity of care, concerns have been raised about exposure to medico-legal risk related to the use of ghost charts. For example, issues have been raised about confidentiality/privacy and compliance with Freedom of Information and Protection of Privacy (FOIPOP) [16] and the U.S. Health Insurance Portability and Accountability Act of 1996 (HIPAA) legislation [11]. In addition, an organization's obligation to release records under freedom of information acts may be thwarted by the existence of unofficial records [16]. Finally, ghost charts may not comply with policies governing controlled access to patient information under FOIPOP regulations. Discussions about ghost charts suggest that they can be seen as both an adjunct to medical care, and as a legal document, and efforts to computerize hospital records should be undertaken with both of these views of a chart, as well as the notion of supporting staff in carrying out their work.

Although our primary purpose in exploring the existence and use of ghost charts has been within the context of future computerization of ambulatory care clinics, we have considered regulatory, governance and legal aspects of charting, and materials pertaining to the governance of medical charts (including ghost charts). While issues pertaining to the governance and legal status of ghost charts warrants further attention than space here allows, a preliminary examination of governance instruments pertaining to charting practices suggests that the push for a single medical record is rooted in accreditation standards rather than governance tools coming from professional associations or legislation (with the exception of the Canadian Health Information Management Association definition cited above), and that guidelines pertaining to the specific contents of medical records are often vague. Legal issues seem to arise when there is a discrepancy between what is documented in ghost charts and hospital records (the "officially sanctioned" record, herein referred to as hospital records), or when a hospital record is ordered under a freedom of information and protection of privacy request, and only the contents of the hospital record are furnished, and the patient is aware that a ghost chart exists, but it is not furnished in response to the FOI request.

The reliance upon ghost charts by medical staff for patient care raises important legal and ethical issues about what constitutes adequate information for good patient care. One view is that ghost charts should not be used because comprehensive information is not available for the doctors to make their decisions and do their work if they rely primarily on the ghost charts (GCs) rather than the hospital record, which is the officially recognized chart. In contrast, it can also be argued that the ghost charts exist for a reason (usually several reasons), and provides doctors with more in depth information about their patients than what is contained in hospital records, and, that they facilitate a number of other activities which take place in the ambulatory care clinics (such as scheduling of procedures, telephone-based nursing consultations), and elimination of ghost charts may compromise the clinics' ability to carry out their work (e.g., the removal of GCs from clinics would interrupt the provision of telephone support and education to patients and their family members).

Although the existence of ghost charts is well known, concerns about exposure to risk (e.g., based on an argument that a practitioner may not have consulted all available information when treating a patient, or has failed to release information held in ghost charts in response to a Freedom of Information and Privacy Act request) and questions about whether or not patient care is compromised as a result of ghost charts (seen by some as a threat to informational continuity of care, which in turn is seen as an important aspect of patient safety) result in a situation in which publication of material about ghost charts—whether scholarly, operational or in the form of reports—has been limited.

Methods

The study described here is a multiple method single-case study using embedded units of analysis. In this context, the single case is a single hospital, and embedded units of analysis are ambulatory care clinics (one hospital bounds the case, and three different ambulatory clinics—referred to in research design terminology as units, serve as focus for in depth study). Methods of data collection have included participant observation, formal and informal interviews and chart review. In addition, interviews have been carried out with staff from facilities other than the facility which serves as the focus of our study, in order to determine what practices are in place in other facilities in which ghost charts exist. We have also consulted medical literature and grey literature (e.g., hospital accreditation reports, material that is not peer reviewed but was located through on-line searches) about ghost charts, and conducted a search aimed at identifying governance instruments which address ghost charts.

Methods of Data Collection

Suchman's [17] observation that planned work activities differ from situated actions, and her observation that often people are unable to voluntarily describe what they take for granted (e.g., tacit elements of their work) lay the groundwork for the use of observational methods of data collection, in which researchers observe work activities, and seek clarification of activities from staff whom they observe. Observational methods of data collection are used to develop an overview of work practices in clinical settings, and interviews—both formal and infor-

[4] Informational continuity reflects the idea that details about past events should be available to inform current care [15]. See Reid et.al. [15] for a more extensive discussion of continuity of care. Varied meanings of the term continuity of care are useful to keep in mind within the broader context of discussions about both the functions that ghost charts serve, and both the explicitly and implicitly stated goals of computerization of electronic health records.

mal—have been used to clarify issues as well as gain additional insights about the nature of work.

Observations have focused on i) the setting (describing activities in a given space); ii) people's use of ghost charts and hospital records in order to understand practices from the perspectives of different persons/professions (physicians, nurses, secretaries etc.); iii) objects, (with a focus on the artifacts that mediate the work); iv) tasks (identifying tasks that constitute the work); v) information (focusing on information flow between groups of workers, in different locations, over time).

Sampling

The two units reported on here were chosen for in depth study because they represent varied service provision models within a single provider agency. In addition, units chosen for study fall under a single director, who was able to ensure access to each of these clinical settings. All staff members—from clerical and support staff to nursing, allied health and medical staff—working on the units included in the study have been eligible to participate. Only staff members who choose not to participate (n=1) have been excluded from participation. Research participants have been staff (doctors, nurses, and administrative staff) who work in two of three ambulatory care settings. Future study will add a third clinic.

Findings reflect data collection which occurred between August, 2007 and February, 2008. Observational data which forms the basis of what is reported here were collected on days when clinics occurred, and on days when no clinics were scheduled. Interview data and observations which formed the portion of material reported here were collected on 31 different days, in sessions ranging in length from one and a half hours (for an interview) to 8 hours (for observations).

Results and Discussion

Through this research it has become evident that clinic charts serve an important role as a working document (e.g., information in ghost charts is required to schedule procedures, support telephone based patient education, coordinate appointments between multiple units, etc.), and the removal of ghost charts in the absence of new mechanisms for addressing the needs that ghost charts fill would be likely to significantly interrupt work flow and patient care on those units using ghost charts.

While some duplication of information (e.g., lab results) exists between the hospital record and the ghost chart, the hospital record is archival in nature and serves as a repository of information, while the ghost chart serves as an active or working document, and must be ready at hand in order to support activities such as patient education, complex appointment scheduling, etc. Information required for the ongoing treatment and management of in-patients resides in the hospital record. Information in clinic charts which is not duplicated in the hospital record pertains only or primarily to the service maintaining the clinic chart (e.g., nursing notes pertaining to patient education). It is required for smooth operation of ambulatory care clinics, and would normally be culled from the hospital record.

Medico-legal norms and FOIPA regulations create a demand for a single record. The contents of the hospital record are ill defined and the legal status of a single hospital record is unclear. The current governance climate which identifies a single record as the standard of care is not reflective of the working realities of out patient or ambulatory care clinics operating within an acute care facility, in which paper based records are the predominant form of record. If the ambulatory care clinics were not located on-site or were not part of a single governing institution, there would be no expectation of a single record.

Although they fill critical roles for a variety of staff involved in the chain of care, ghost charts are not without their problems and challenges. If the use of ghost charts is to be reduced, any computer based system introduced will need to support the tasks that ghost charts currently support**.** Challenges related to the maintenance and use of ghost charts are numerous (e.g., the volume of paperwork created by interim lab results). To some extent, these problems could be mitigated with the advent of an electronic system, however, whether they are or are not mitigated will depend in part on the design and implementation of that system.

Building electronic records that reduce ghost chart use will require undertaking in depth data collection and analysis aimed at determining who requires access to what information in hospital records, so that the often neglected aspects of record use (e.g., scheduling, phone consultations) are supported. Additional research aimed at ascertaining how best to present clinical information to varied specialties in electronic format may also reduce reliance on specialty-specific charts.

Calls for a single record are also based on a normally tacit assumption that the availability of all information pertaining to a patient leads to better provision of care by a specialist than the provision of a relevant subset of information that relates to the providers' specialty. One of the things we observed is that each clinical group prepared its own 'face sheet' that summarized specialty-specific information about a patient, and that such specialty-specific views of the patient were essential to clinical consultations. This practice—along with our observation of differences in content of charts related to specialty areas-- suggests that ghost charts play an important role in organizing specialty-specific views of patients for providers. Further research is warranted in order to determine if providers are more effective in diagnostic work when they must deal with more information about a patient, some of which may not be relevant to their diagnostic frame.

Subsequent Directions for Research

As our work on this topic progressed, we undertook observational data collection aimed at determining how doctors use charts during clinical encounters. In addition, we explored issues related to the flow of patient information into and out of the health records department. Although not initially planned, chart review has been added to the study protocol and is being undertaken in order to determine to what extent chart contents vary from clinical area to clinical area and within clinical areas, and to determine to what extent there is overlap in the

contents of ghost charts and hospital records. Results from this chart review will be reported at a later date.

Anecdotal information has suggested that ghost charts may also be used to protect privacy in some circumstances. For example, care providers addressing issues such as psychiatric or mental health illness, sexual or other assault trauma, or addiction issues may rely on ghost charts to protect patient privacy. Additional research and policy discussion will be required to determine under what circumstances such information should be visible to all care providers, and when additional privacy is warranted.

Conclusion

Any attempts to computerize patient records beyond a single clinical area or geographic location will need to take into account the functions that ghost charts fill in supporting unplanned care (e.g., phone consultations), the work of nonmedical staff (e.g., in scheduling procedures), and should strive to preserve specialty-specific views of the patients, and at the same time adequately protect patient privacy. Failing to account for these aspects of charts—arguably the reason ghost charts exist—will fail to eliminate the need for ghost charts.

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