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Events and Patient Recognition with Electronic Medical Records

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Based on interviews with nurses, this paper explores the place of nursing actions (events) with electronic medical records in the 'recognition' of patient and caring-of-patient relationships.

1. Introduction

In recent years, elements of computing have become ubiquitous throughout care environments. Some of this technology is used to aid the 'recognition' of patients or residents of care homes by the carers or systems. An example may be barcodes to identify patients in hospital, linking them to their medical records and treatment [Wideman 2005] or sensors used to monitor wandering in those with dementia and deviations from normal behavior patterns [Bitwas 2010]. In Japan, with increasing numbers of the 'super aged' [Arai 2015] coinciding with a lack of human care support, expectations are raised of data, robotics and associated artificial intelligence as the future of care [Cabinet Office 2013].

We can expect that advances in AI will continue to improve the ability to recognize the identity of patients as described above, or with newer technologies such as image and facial recognition. The current paper explores recognition in a slightly different, more socially embedded sense. The term is deliberately inexact and is influenced in approach by ethnomethodology [Garfinkel 1967], qualitatively exploring the place of recognition by nurses during working events with Electronic Medical Records (EMRs) in the achievement of care.

Previous work [Hope 2014] has explored some of the methodological issues of delineating what constitutes an 'event' in a study of social interaction around technology. The current paper continues this exploration in the context of nursing, considering an event to be a social action, comprising itself of a collection of discrete events (data inputs) with talk and/or physical interaction with patients, which may be recorded and potentially put into a database to help improve the service when used by staff [Watanabe 2013].

2. The study

Patients in hospitals are often seen by more than one doctor and multiple nurses during the course of their stay, meaning the handoff of the patient from one practitioner to another is key to consistency of treatment and care [Riesenberg 2010]. To date, much of the effort of computerizing the hand-written notes and data has focused on the medical information necessary to deal with the condition at hand. The information needs to be salient to the purpose of use and of course accurate, but unfortunately these handoff data in EMRs tend to present problems for the nurses who use them, insufficiently supporting their needs and contexts [Staggers 2011]. Our current research project aims to create a system in a large university hospital for nurses to share information about their practices to other nurses in the same hospital, but strives to support the sharing of information that is not currently made explicit, and which reflects the nurses' 'caring mind' in their daily activities.

3. Method

16 Nurses were interviewed individually at a large Japanese university hospital in a semi-structured interview format, giving them freedom to talk about their work practices. The purpose of the interviews was to establish how knowledge was inputted and shared in EMRs and compare with the use of paper records in order to develop a future system. Interviews were recorded with audio and video and data thematically categorized according to event discussed, form of input and the 'mind' or feeling reported by the nurses.

4. Results

Due to limitations of space, below we focus on only two aspects to initially emerge from the data.

4.1. Recognition of patients in different record format

Nurses commented on how the format of medical record can affect how they understand a patient's condition. Nurses who had experience of using earlier paper records, which consisted of bound loose-leaf A4 paper, commented that a thick record enabled them to recognize a patient as one who had had long-term stays in the hospital. Nurses would write freehand in these records, which were sometimes several books thick. A patient's history was easy to understand as old information remained when new information was inputted. Inputting could take time, but old information would help in their recognition of the type of patient.

Contrarily, the current EMRs make input easier in terms of speed, but old data is removed, making it difficult to recognize a patient's history–it loses its 'thickness'. The EMR also uses templates and checkboxes for input, which may increase efficiency of input, but restrict some information that nurses want to input. A benefit to this system is that specific information can be accessed quickly and on the spot without extraneous 'clutter'.

4.2. Achieving care with records and recognition

Paper records consist not only of handwritten text, but also printed medical test outputs and appended sheets, stickers and

annotations to these. Nurses commented on the 'art' of inputting data into the medical records. With paper, this might be double underlining in red ballpoint pen. Seeing this helps a nurse recognize the condition a patient and also the patient-nurse relationship as possessing 'weight' (see Table 1).

Table 1. Example interview responses

Event	Media	Comment
Writing a note about a patient	Paper	"Felt the weight doubly because it was about a patient and was handwritten with ball point pen"
Viewing history of patient who re-enters hospital	Digital	"Can know about the patient in a short time"
Filtering to access specific information	Digital	"Can find information without leaving the patients side"

Digital input and output can be efficient, allowing attention and time to be spent with the patient, For a patient, this can be an expression of the recognition of their importance in the relationship. For some nurses, writing about the needs of patients, their feelings and thoughts, can be done equally well with paper or digital records, while for others, the checkbox takes away a sense of freedom of what to write and how.

In this particular hospital, emphasis is placed on the primary nurse (the nurse in charge of a patient). It seems clear from the interviews that reading, writing or other means of inputting data into the medical records are a collection of discrete events that collectively recognize a patient and their needs, while also expressing the caring relationship between a nurse and patient.

5. Discussion: designing for expression of care

This small study has implications for design of medical records. Care may be considered to be an 'achievement' which, not necessarily aiming for 'cure' lies in the relationship between nurse and patient, and their ability to make patients feel comfortable. It is achieved by nurses, through their daily practices, some of which is direct 'body work' with patients [Twigg 2011] and some which is data input, which may be done in the presence of patients or at a nurse station. By listening to nurses describe their work, we can understand some of the affordances that formats of medical record give to this achievement of caring events. We have heard in the interviews how records allow nurses to give an 'account' of their care to other nurses (and to themselves) in different ways. Paper records enable relative freedom of expression, from choice of words to use of ballpoint pens. To achieve this with EMRs requires creativity in working with templates and checkboxes, but it is by no means impossible.

Expression of patient needs and relationship to the patient is clearly important to the nurses we interviewed and thus we should design for this expression of care. We can welcome ways to use artificial intelligence to identify a particular type of patient, and should also think creatively on how to incorporate the human act of recognition through data input, which as was clear from this study, is itself is a form of expression of care.

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