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**The challenging nature of patient identifiers:
An ethnographic study of patient identification
at a London walk-in centre**

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Abstract

The correct identification of a patient's health record is the foundation of any safe patient record system. There is no building of a 'patient history', no sharing or integration of a patient's data without the retrieval and matching of existing records. Yet there can often be errors in this process and these may remain invisible until a safety incident occurs. This paper presents the findings of an ethnographic study of patient identification at a Walk-In Centre in the UK. We offer a view of patient identifiers as used in practice and show how seemingly simple data, such as a person's name or date of birth, are more complex than they may at first appear and how they potentially pose problems for the use of integrated health records. We further report and discuss a dichotomy between the identifiers needed to access health records and the identifiers used by practitioners in their everyday work.

Keywords: health records, ethnographic study, identifiers, patient identification, walk-in centre.

Introduction

‘Dr Murray told the hearing at Inverness Sheriff Court that Mrs Ross's records had been merged with another patient's records on a computer.’ She was given up to four times her normal medication and later died [1].

The correct identification of a patient's health record is a safety critical issue and a cornerstone for the implementation and use of integrated health records. The sharing and integration of patient data relies on the accurate retrieval and matching of existing records but the processing of patient records can contribute to misidentifications and record mix-ups that may remain invisible until a safety incident occurs [2].

From a technical point of view, electronic patient records should be matched, merged, and transferred on the basis of a unique identifier. The Department of Health in the UK considers the NHS number to be the preferred unique identifier for patient records across services [3], even though not all patient records have one. However, recognising the safety issues involved in failing to correctly match patient records, it also recommends more stringent matching with multiple identifiers:

‘[T]he NHS number should always be used as a key to link data... Its presence gives the best assurance of an accurate match ... If clinical data is being combined then the linking of the correct clinical diagnosis, test result or treatment outcome to the correct patient record is paramount and matching must be stringent. you would check a full set of additional patient

identifying items (i.e. forename, surname, date of birth, postcode, sex and address) once an NHS number match has been made, or in the absence of a number'. [4]

From a less technical perspective, patient identification in daily healthcare practice involves the correct matching of patients with their own 'samples, specimens, records and treatment' [5, emphasis added]. Recommendations and guidelines [6-8] require healthcare practitioners to always use at least two identifiers, of which names, date of birth and address are the most common. Various combinations of these and other data are used, depending on the specific situation, as different settings may have different needs [9]. Alternatively, a 'technical match' might be sought with the use of technology such as barcode readers or biometrics [10]. This is less frequently the case in primary care, though pilot studies have been carried out in doctors' surgeries where patients were given access to their own records with fingerprinting technology [11, 12].

This paper reports how patient identification is carried out in practice at a Walk-In Centre in the UK and articulates some challenges that this presents for the use of integrated health records. Walk-In Centres are a relatively new primary care setting in the UK and limited research is available concerning their work [13]. Focusing on patient identification, our study offers a less usual perspective on healthcare activities and reveals the complex nature of patient identifiers as well as a contradiction between what is used to identify records versus what is used to refer to patients in the daily working practice.

An ethnographic study of patient identification

An ethnographic study of patient identification was conducted in an NHS Walk-In Centre in London. The research investigated the wider issue of patient identification in a socio-technical context, how it is carried out and how technology supports the process. The study was based on non-participant observation of everyday activities and informal conversations with receptionists, nursing and medical staff. Twenty-five days of field study were conducted over a period of four months. The study was documented in written field notes and sketches, as audiovisual recording was not permitted. The various paper artefacts and computer systems were analysed, and copies were made when possible. The project received Ethical Approval by the local NHS Ethics Committee. Anonymity of all participants is maintained. All patient details have been changed.

The setting and its everyday work flow

A Walk-In Centre is a nurse-led healthcare setting aimed at providing unscheduled ambulatory care for people who do not have or cannot access a family physician. It is sometimes, as in this case, a complementary service to a hospital-based Accident and Emergency service, sharing patients and their data. A Walk-In Centre is not intended to offer continuity of care – patients should seek their family physician for recurring or chronic problems - but in practice, for the most varied reasons, people do often return to Walk-In Centres and their medical history is recorded accordingly.

The patient's journey in this setting was usually straightforward: upon arrival patients were asked to fill in a paper Booking In form and provide their details: gender, full name, date of birth, address, NHS number, reason for visiting, etc. This information was then entered by the receptionists into a computer-based system – the 'Clinical Assistance System'. The process involved: matching the patient's details to existing electronic records, creating a new patient record when necessary (i.e. when no match was found), and adding a new 'case record' for the present visit to the patient record. The clinician who saw the patient would then add consultation notes to this case record. At the time of the study there was also a second electronic patient record system in use – the 'Patient Administration System': receptionists used this to provide patient data to the Accident and Emergency department. The two systems were not connected to each other – there was no integrated health record, no automatic sharing of patients' data, so the Booking In form acted as a bridge between the systems (and between people and systems).

Patient identifiers: their use and their problematic nature

The critical point in the use of the electronic patient records at the Walk-In Centre was the 'booking in' done at reception, confirming the idea that – if the effective use of integrated health records relies on data – 'the data is only as good as the information that is captured on registration' [14].

The system relies on the patient providing correct, accurate, 'true' identifiers - and the same ones for each visit – for the patient's current record to be linked to his or her other records (held by the same or other healthcare services). As with Accident and Emergency services, patients arriving at a Walk-In Centre rarely have their NHS number with them. The Booking In form provides a space for it, but no receptionist would expect patients to provide this information. Patient record identification relies on other patient data – name, date of birth, address – and observations at the Walk-In Centre showed how this apparently simple information can be more complex than one might at first assume.

Identifier 1 - Names

The use of names as identifiers is particularly challenging. First of all, people can change name in the course of their life. When the receptionists were aware that this had occurred, they then recommended that the patient should choose one name - even if not the legal one - and remember to use the same name every time:

The receptionist tried to explain to the patient:

‘Because you know now the NHS is trying to give everyone an NHS number ...’

The patient said she changed her surname long time ago but that the GP surgery said ‘doesn’t matter’: ‘So maybe they did not update the name on the system ... The one I am using is my legal name...’

The receptionist said: ‘you have to choose which one to use, use one ...’

[Field Note 1 June 2006]

This is a common problem for married women who have the option of using either their married name or maiden name. Difficulties also arise because different cultures have different naming systems: for instance, they may not use surnames (Muslim names), or the surname may be the first rather than the last name (Chinese names). One observed case was that of an elderly lady from a Far East country, who came with her daughter to the Walk-In Centre: she only had one name, but she was asked to provide the same one as both first name and surname [Field Note 17 August 2006]. Patients from different ethnic backgrounds may use a different name for their Western and Ethnic identity, presenting one or the other depending on the occasion: ‘Her name was Chinese’ said a nurse who was sure she had seen the patient before despite the lack of an electronic trail, ‘she might have used a Chinese name the first time and a Christian first name with Chinese surname the second time’ [Field Note 18 July 2006]. Furthermore, the transliteration from non-Latin languages also produces several different spellings for the same name: for instance, Sulayman can also be written as Salayman, Seleiman, Sylayman, Suleiman, or Solomon [15]. Depending on who is writing the data in the Booking In form and providing the patient’s details – the patient themselves, a friend, the receptionist – a different combination of name and surname could be offered.

As has been also observed in another healthcare context, patients do not necessarily provide their ‘full birth-registered name’, but possibly ‘the name that they are known by’ [14] or the one they chose to use in the given circumstances. Indeed, some patients wanting to maintain anonymity may offer a false identity, in particular if they present what they think is an embarrassing medical problem. As explained in the Clinical Assistance System user manual, it would be technically possible to record patients anonymously (writing ANON in fields) – in fact from a public health point of view, it is better to cure an infectious disease anonymously rather than having it spread in the community [16]. However anonymity is not offered as an option to the visiting patients.

Identifier 2 - Date of Birth

Date of birth was also a problematic identifier. Elderly patients or people coming from abroad may not know, or may not remember, their own date of birth. This conversation with a doctor and nurse revealed the extent of the problem and the possible clinical consequences:

Anyway, the doctor says many people don't know their date of birth. They come to the UK and they need one. So they choose an easy one, first of January, and then a year. 'So you get all these people born on the first of January'.

The nurse confirms: '...or fourth of the fourth, you know, something easy to remember...' and the doctor says: 'I had this man the other day, he looked very good for an eighty year old man, looked sixty or so. So I congratulated him and his son said that that one may not be his real date of birth...' [Field Note 4 September 2006].

Identifier 3 - Address

Confusion with the address as an identifier was observed in the case of people who were moving out of their current address, or who were staying in temporary accommodation, and who did not have a fixed address. They were not sure what information they should provide. In primary care this is especially an issue because of the rule that people should re-register with a new surgery for every change of address. Students and other people who often change accommodation devise ways to avoid this, keeping old addresses on their medical record and having ways to redirect their mail if necessary.

Identifier 4 - Gender

Finally, the last identifier – a patient's gender – might not usually be thought of as an issue: it is just the ticking of a box, you are either Male or Female. However, during the period of the field study, a woman came in who had been born male. At which point in the history of her health record did she change gender? How would this be recorded? The nurse saw it from a personal point of view:

Researcher: 'Was she a lady?'

Nurse: 'Well, she is now'

Researcher: 'How would you record her in the system?'

Nurse: 'How I would record her? ... I suppose the way she sees herself. That should be the correct way I think....' [Field Note 17 July 2006].

While the receptionist offered a more ‘technical’ perspective, stating: ‘.. you know.. you can’t change your birth certificate!’ [Field Note 23 August 2006].

Illiterate, elderly and foreign users

In addition, many patients visiting the Walk-In Centre needed help with filling in the Booking In form. They were either illiterate, from overseas and not speaking English, elderly or visually impaired. They relied on friends or relatives or the help of the receptionists to fill in the form. The problem in this case is that, as a nurse suggested, patients who do not speak English may agree with anything you say [Field Note 22 August 2006].

However precise or trustworthy the details provided by the patients in the Booking In form, they were used for the rest of the ‘patient’s journey’ at the Walk-In Centre and were the basis for matching and retrieving their existing patient record and the building of their medical history.

Searching for and creating a ‘patient’s history’

On the basis of the Booking In form, the receptionist searched for an existing patient record and added a visit (a new case record) to this. This was the part of the process when a ‘patient’s history’ was created. The patient might have been treated at the Walk-In Centre before, but if no existing record was found matching the patient’s details, then the previous visit would not be linked and made visible to the current one. Here is an example of a second consultation – the nurse was sure she had treated the patient before, but no history was found on the system:

Nurse: ‘have I seen you before?’

Patient: ‘No.’

The nurse seats at the computer, opens the patient’s record, asks the patient for her date of birth, checks the patient’s details, explains to the patient that she is looking for her history.

Nurse: ‘Are you sure I haven’t seen you before?’

Patient: ‘No.’

The consultation proceeds fast and efficient. The patient leaves.

The nurse enters the consultation notes in the patient’s record. ...

Nurse: ‘I am sure I have seen her before. She must have given us a different name. I think she was here for urinary infection’. [Field Note 4 July 2006]

In the case presented above, the patient might have given different personal details or the receptionist might have missed an existing matching record. Mistyping of patient’s data was also seen as a cause for ‘losing’ records in the system, as a doctor

pointed out: ‘This is the problem with this system, spelt wrongly you can never find them again’ [Field Note 18 September 2006].

The receptionists’ task was not easy: their work was fast paced, often interrupted and very repetitive. Hundreds of times a day, for every patient, they searched records trying to make sure, on the one hand, that no duplicate patient records were created, and on the other hand, that any matching with existing records was correct. The matching of the patient identifiers with existing records was made extremely difficult by the fact the identifiers were definitely not ‘unique’. As a receptionist put it: ‘...And they have the same address, they live in the same house. Sometime they have similar name, similar date of birth and similar address. You have to be very careful’ [Field Note 23 August 2006]. The sharing of the same name is very common in many communities – like the well known case of Jones in Wales. In the community served by this Walk-In Centre, the name ‘Begum’ is shared by many people.

Receptionists interpreted the patient’s writing, checked if any existing record could possibly match and asked the patient to confirm their details. At times however the receptionists would rely on their own cultural knowledge and past experience:

The receptionist was working on a patient’s form, a child: Dean Begum
He found a matching record on the system – same date of birth and surname,
but the first name recorded as Mohammed.

The receptionist said this was the same patient: he said most people have
Mohammed as a name too. To check, he called the mother of the child and he
was right. [Field Note 2 June 2006]

This suggests another reason for taking into account local cultural knowledge in the implementation of integrated healthcare systems.

Patient identification from the clinicians’ point of view

The records created by the receptionists were used by nurses and doctors to record their consultations with the patients. Clinicians were presented with a limited list of records to choose from: only those of patients who had booked in but had not yet been seen. The records were listed in order of booking in time, and this was consistent with the practice at the Walk-In Centre of seeing patients on a first-come, first-served basis: the clinicians would expect the record for the next patient to appear on top of the list. For each patient, the list displayed surname, age, reason for visiting. The clinician chose which record to select on the basis of all these elements: the location of the record on the screen (top/bottom of the list), the illness (the same as the patient was presenting), and the surname (matching the one written on the Booking In form). If and when patients by the same or similar names were listed, again, errors occurred. The patient’s illness, their reason for visiting or, in general, any event that occurred during the clinician’s personal interaction with the patient, were usually the referents

used for remembering patients and for exchanging information about them. Statements such as those below were very common:

‘Did you see the patient, the one with long complicated history, diabetes...’

[Field Note 27 June 2006]

‘The lady with the bad back, I need her papers...’ [Field Note 7 July 2006]

‘The stitches is at 15:20’ [Field Note 24 August 2006]

‘This [showing the form to a colleague] is that bloke I drained the finger of...’

[Field Note 4 September 2006]

‘Have you seen the little girl? ...She had this big lump...’ [Field Note 4 September 2006]

It seemed that in their daily work practice, clinicians identified patients based on a combination of the patients’ characteristics and interaction with or around them. Only with the support of artefacts such as the booking in form, the electronic record or simple notes on paper, would staff use patients’ names or other identifiers that were more difficult to remember.

Discussion and Conclusions

Most healthcare practitioners would prefer to have an integrated healthcare records system, as they believe this would make their work more efficient and help them provide better care for their patients. In fact, staff at the Walk-In Centre lamented the lack of integration with the Accident & Emergency and the doctors’ surgeries systems, at least in the local area. They missed ease of access and completeness of patient medical information, especially because of the sporadic nature of their encounters with the visiting patients.

To achieve interoperability, the accurate identification and matching of patient records is one of the most important and safety critical requirements [17]. There is an extensive informatics literature on the subject of data integration. Technical solutions, such as probabilistic matching, may be devised to overcome problems of duplication of records, or generally ‘bad data’ [17, 18]. While there is a demand for a unique patient identifier across systems, this is counterbalanced by arguments against the use of a ‘universal identifier’ for database integration and information sharing, especially in view of the increasing phenomenon of identity theft, and a need for privacy and security [19, 20]. Indeed, when compared to other computer systems, data integration in relation to people’s records may have some extra specific challenges inherent with the subject matter. Dealing with patient records may be more difficult than dealing with records in general because of, for instance, issues of patient safety, considerations of ethics and confidentiality, the socio-technical practices around them, and last, but not least, even the fact that we are attempting to ‘map’ a person’s identity. Looking at William Kent’s analysis of ‘Data and Reality’ [21], it seems that

the problem resides in the nature of information systems and the ambiguities of reality. Discussing the structuring of people's information, he states:

'We seem to have little difficulty with the concept of 'one person' despite changes in appearance, personality, capabilities, and, above all, chemical composition. ... When we speak of the same person over a period of time, ... [what is] the 'same person'? ... The concept of 'same person' is so familiar and obvious that it is absolutely irritating not to be able to define it. ... [But] we don't know how to deal with them in a computer-based information system. It is only when the notion of 'person' is pushed to some limit do we realize how imprecise the notion is.' [21].

In creating patient records, we are trying to map a dynamic, living being, with a not necessarily stable set of attributes into a coherent stable entity. Over time, we may be recording different 'versions' of the same person and it may not be clear what one should do with the different versions (should we merge the versions? discard the old one? etc). Special requirements for patient identification may arise at different stages of a patient's life (for instance, for pre-natal and post-natal care [22]) or at the transitional stages, such as from childhood to adulthood. Our research at the Walk-In Centre showed patients' changes of name, changes of address, presentation of different identities at different times. Some of these reflected changes in their life history, some the patients' personal preferences. In some cases seemingly simple identifiers ended up having an uncertain nature even for the patients themselves.

To add complexity to the matter, there are socio-cultural elements to take into consideration that affect the recording of patient identifiers. This study revealed the impact of different naming systems, ethnic identities, embarrassment over illnesses, needs for anonymity, impact of personal interactions, work practices, individual practitioners' skills, etc.

A second consideration is that since health records are aimed at supporting patient care, patient identifiers should not only support record retrieval and cross-referencing from a technical perspective, but should also support more generally patient identification in the daily work practice. Our research at the Walk-In Centre - consistent with many people's experience of healthcare systems - revealed a dichotomy between the data used for searching patient records and how patients are actually remembered or referred to by staff: for instance, by patients' reason for visiting or elements of the personal interaction with the patients. Patient identifiers do not convey any of this information: names, like numbers, are arbitrary [9, 15] and they do not provide enough 'scaffolding' [16] or 'external aid' in support of the cognitive tasks involved in patient identification. As research for the National Patient Safety Agency [9] suggests, patient identifiers do not embody codified knowledge, they do not provide a shared cognitive representation transferable across different media: "A barcode, for example, would not be suitable for verbal communication" [9]. As a consequence, patient identifiers can be the cause of patient misidentifications and adverse events: evidence suggests that mix-ups are often facilitated by the similarity

of names [23, 24] so that the practice of ‘name alerts’ is usually recommended in hospital settings [25].

Again, the matter may be made more complex by the nature of healthcare practice itself, which is ‘plagued by the ubiquity of exceptions’ [26]. For instance, patients at the Walk-In Centre could be seen before their identity had been recorded in the system, a common exception to the expected workflow. A system lacking the required flexibility would hinder daily work and possibly patient safety. As observed in a hospital setting:

‘... there are still systems that very poorly support this. For example, during transfers between the emergency department and a patient ward, orders would not be transferred or new orders could not be entered in the system because the patient was not yet ‘in the system.’ [As remarked by a hospital nurse:] ‘If they don't remember or know their social security number, it's tough.’ [26].

Integrated healthcare records are the prospective and desired solution. But technology needs to meet the challenges posed by the dynamics of personal identity, socio-cultural and practice management issues. Biometrics, for instance, may appear at first to be an easy solution to the problem of uncertain identifiers. However, this technology not only interferes with some patients’ need for anonymity, but also does not support the cognitive work of healthcare staff. Radio frequency identification and barcode technologies also offer promises but still rely on the same uncertain, good or bad data recorded at registration [27] as well as on the correct association of barcode with patient [28]. Technical matches might be useful in some circumstances, but would not protect against hidden mix-ups of records. As a final conclusion drawn from our findings, we therefore recommend that further research on patient identifiers and integrated healthcare records should take a broader perspective on patient identity, expanding from a purely technical analysis, to include cultural, social and organisational aspects surrounding the use of technology.

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