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CRANFIELD UNIVERSITY

B ELLINGHAM

THE KNOWLEDGE MANAGEMENT REQUIREMENTS FOR THE TRANSFER OF
A STROKE PATIENT

CRANFIELD HEALTH
Organisational Knowledge

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Abstract

Health care is characterised by complexity, in terms of structure and number of individuals, teams & autonomous local organisations involved in the delivery of care. An obvious requirement in maintaining continuity for the patient is knowledge transferred between these groups. An example of this is the transfer of a stroke patient from one setting for their acute care to another for their rehabilitation.

Objectives of the research were within the context of a stroke patient transfer, to determine the knowledge management needs of the receiving community hospital team, provision of knowledge from the acute hospital team, shortcomings emanating from the current state and solutions for future better ways of working.

Research took the form of an exploratory case study involving semi-structured interviews with clinicians involved in specialist stroke care.

Findings showed that Knowledge Management is one of a number of management issues facing stroke care for the organisations studied, though currently not the most pressing. Operational, rather than clinical knowledge showed most scope for improvement. Current practises rely heavily on knowledge transfer by people, which was deemed appropriate in most cases.

The research provides an insight into knowledge management within health care at an operational level, specifically applied to stroke and patient transfers; examples of which could provide insight for other specific events in a patient's journey. Practically, conclusions could be used to guide ongoing improvement to process development for the acute and community hospital teams studied, as well as provide lessons for the opening of further community hospital stroke units.

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Abbreviations

EDD	Expected Date of Discharge
GP	General Practitioner
JR	John Radcliffe hospital
MDT	Multi-Disciplinary Team
NHS	National Health Service
ORH	Oxford Radcliffe Hospitals NHS Trust
PEG	Percutaneous Endoscopic Gastrostomy
PCT	Primary Care Trust
SALT	Speech and Language Therapist
SHA	Strategic Health Authority
TIA	Transient Ischaemic Attack

1. Introduction

Competitive advantage has long been the objective of most private companies and it is the knowledge within a company that is increasingly seen as the source of this. Consequently, firms of all description have made efforts to manage their knowledge. However, what these initiatives are called, how they are executed and the level of commitment behind them has varied hugely.

The public sector in the UK had until the 1990s been largely shielded from operating in a competitive and accountable environment. However attempts by the government to increase standards and drive efficiency have changed this significantly. Consequently, as one of the largest areas of spend, health care has seen huge changes, with expectations from the public higher than ever.

In response, a plethora of strategies have been rolled out with varying degrees of success. Possible reasons for this include the complex structure of the National Health Service (the UK's government-funded, single health care provider), resulting in fragmentation and a non-systems view when planning how to deliver patient care. This complexity also extends to the sheer number of individuals, teams and autonomous local organisations involved, an example of which is stroke care. It therefore seems obvious that knowledge management is an essential component to maintaining continuity, as a patient navigates through this network.

Stroke is the third leading cause of death and the single largest cause of long-term severe disability in the UK (nhs.uk, 2009). Yet there is a recognised lack of integration

between the many authorities, professionals and stakeholders involved in stroke care. Consequently, stroke has been a key focus of various governmental, regulatory and commissioning frameworks in recent years, e.g. the National Stroke Strategy (Department of Health, 2007), which has provided a blueprint for high quality stroke services.

Stroke and Transient Ischaemic Attack / minor stroke (TIA) services are of particular importance to Oxford Radcliffe Hospitals NHS Trust (ORH) on account of expectations borne of the National Stroke Strategy and the quality markers (metrics) therein. Specifically, the last audit highlighted a number of weaknesses in the provision of stroke services by ORH. Subsequently, ORH has reviewed its practise and developed a number of recommendations of “future states” that it believes should deliver performance to the required level, as dictated by the metrics mentioned above. One of these is reducing length of stay on the acute stroke unit at the John Radcliffe hospital (part of ORH) to approximately 12 days, freeing up beds to allow more patients to access care in this dedicated setting for the first part (acute stage) of their stroke.

However, in order to achieve this, downstream rehabilitation in the form of beds at Oxfordshire’s community hospitals have had to be made available for patients. However, again to fulfil the metrics of the National Stroke Strategy, this cohort of beds has to be recognised as a dedicated stroke rehabilitation unit. Consequently, investment has been made in these units to enhance their physical (e.g. requisite equipment etc) and human (e.g. requisite nursing and therapy staff levels & experience) resources.

Nevertheless, a gap has been identified in the planning for the opening of these units. This is principally around the knowledge required by existing staff at the new rehabilitation units to manage this new group of patients, as well as that required by staff at the acute stroke unit around transfer procedures and the impact of faster patient throughput to their current practise. Added to this is the inherent risk of loss of knowledge about the patient built up by staff during the patient's stay on the acute stroke unit. Within this context then, the question this thesis seeks to answer is **what are the knowledge management requirements for the transfer of a stroke patient.**

To achieve this, the thesis begins with an examination of existing literature on knowledge management and its relevance to healthcare to discover if this problem has been documented before, determining the factors that might influence this and any prior recommendations made. It goes on to detail the research methodology used, including the chosen approach to data collection and analysis. Subsequently, the thesis draws upon research from the aforementioned case study organisation within the National Health Service (NHS), with the aim of proposing a list of practical recommendations. Next, analysis will be combined with relevant theory in the discussion section to answer the research problem, by way of validating the results and prioritising specific areas of knowledge management the organisation should concentrate on. Finally, a conclusion is offered, which incorporates limitations and suggestions for further research.

2. Literature Review

2.1 Theory of knowledge management

Due to the unending quest for competitive advantage in whatever form it takes, most organisations will have resources dedicated to managing their knowledge. The exact nature of these resources may be different, depending on the organisation's vision, and consequently may be the responsibility of the Board (as part of the high-level strategy), Information Technology or Human Resources departments, a dedicated function or any combination of the above. In addition such has been the interest; a sub-industry of consulting companies has emerged to offer independent advice and guidance in this area.

Knowledge, as a resource an organisation could be said to possess, is "information combined with experience, context, interpretation and reflection that is ready to apply to decisions and actions", whereas "information is organised or structured data and data is raw material" (Bohn, 1994).

The literature offers a variety of definitions of Knowledge Management; an amalgamation of some gives us:

"The formal process of gathering, organising, refining and disseminating knowledge".

Its aim is to improve the competency and therefore performance of individuals working within organisations, which in turn increases an organisation's ability to achieve its goals. For example, the overarching goal of the case studied in this thesis was to reduce the level of disability following a stroke.

What the definition of Knowledge Management actually means in practice depends on the perspective one takes, which is largely related to professional background. This is due to its relative immaturity as a discipline and the continuous discovery of its many and varied applications. Nevertheless, the two main perspectives are that of technology-centric and people-centric.

The technology-centric perspective principally involves identifying how mainly Information Systems-based technology can be used to manage information, which often means enhancing the intangible processes of knowledge creation by codifying information. Examples of these codifying-type systems (often known as Knowledge Management Systems) include Expert Systems and Group Decision Support Systems. Other types of systems (useful when the information is too “tacit” to code) connect people who can share their knowledge. Examples of these are any virtual networks / communities or less interactive systems, such as company intranets. In health care, it is personalised electronic health records that are seen as the knowledge management technology that could revolutionise how clinicians manage patient information, which as this literature will discuss, is such a large part of their role.

However, “knowledge management is more than information management” (Edwards *et al.*, 2005), due to this second people-centric perspective, and it is this area the thesis will seek to explore. This aspect is concerned with the management of individuals and teams to foster knowledge sharing (Nonaka and Takeuchi, 1995). For the case studied in this thesis, this knowledge consisted of:

- the sum total of a team of clinicians’ knowledge about a stroke patient who is to be physically transferred to the care of another team for the subsequent stage of his or her care
- knowledge by one team of the systems in operation by the other team

2.1.1 Types of knowledge

Most strategies for managing knowledge have arisen from and aligned themselves to a framework that categorises it into its constituent types. These types display different characteristics (detailed below in Figure 1), which in this model is broadly based on relative ease of communication of that type.

Excluding the strong influence culture has, tacit knowledge can be defined as “the implicit, unarticulated knowledge that an individual uses to perform his work” (Lemon, 2008); in other words, “know-how”. Explicit knowledge, on the other hand, represents knowledge that the individual holds consciously in mental focus, in a form that can easily be communicated to others (Alavi & Leidner, 2001); or put more simply, “know-what”.

Explicit knowledge	Tacit knowledge
Relatively easy to communicate	Relatively difficult to communicate
Codified, therefore more easily captured	Expressed through action, therefore less easily captured
Replicable	Difficult to replicate
More easily shared with large numbers	Less easily articulated and therefore shared
Objective	Subjective and contextual
More easily interpreted	Less easily interpreted
More easily processed, stored and communicated	Less easily captured, processed, stored and communicated

Figure 1: Characteristics of explicit and tacit knowledge
Adapted from Polanyi, 1958

In healthcare, examples of explicit knowledge are formulae used to calculate drugs or anesthetic dosage and clinical protocols for diagnosing certain conditions. Tacit knowledge takes the form of judgments, skills and intuition, which is mainly built up from dealing with the quite diverse people and situations clinicians may experience as part of their careers.

The importance however of distinguishing between these two types of knowledge is that knowledge in its tacit form “cannot be imparted to junior staff as a skill” (Eraut, 2004). Consequently, efforts have to be made to convert it into a transferable form, the process for which is explained in Section 2.2.1.

2.2 Knowledge management strategy

An oft quoted article by Hansen *et al.* (1999) puts forward two main strategies for managing knowledge, depending on whether the product or service is standardised or personalised to the customer. If standardised, the approach is to capture knowledge and codify it for re-use by many and if personalised, one should create forums for individuals to share their knowledge in its current state. How this is done is explained more in Section 2.2.1. However, the result for most organisations, including healthcare is that of a mixed strategy, as it is unlikely either all internal and external products of an organisation are completely standardised or personalised.

Regardless of this however, most successful Knowledge Management strategies encompass an interdependent set of components, as illustrated below in Figure 2.

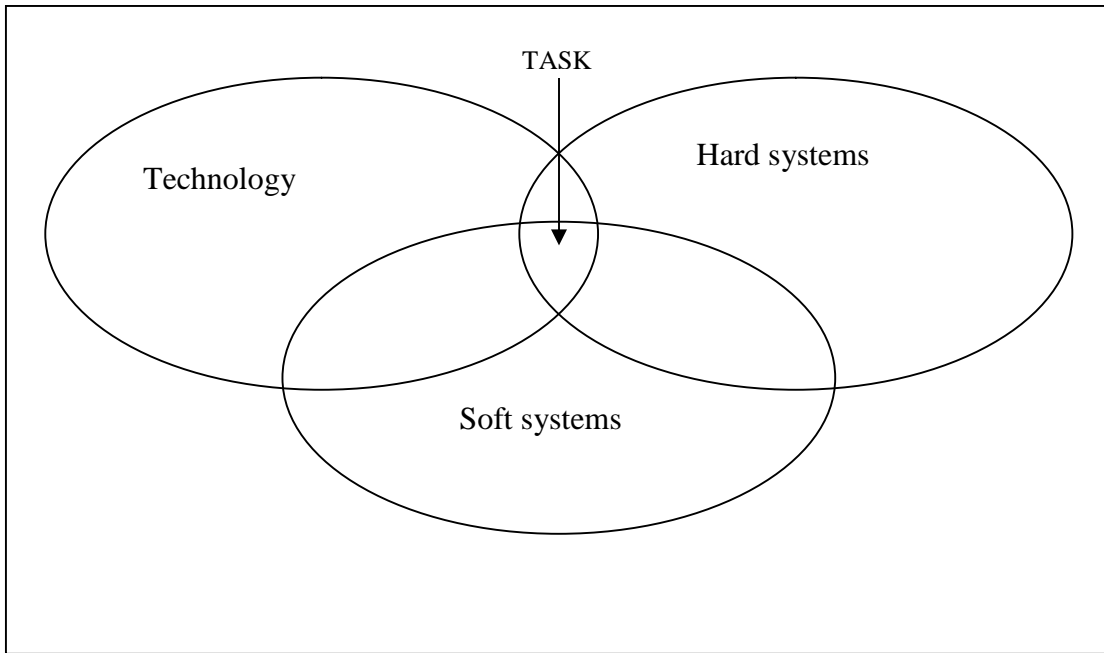


Figure 2: Components of Knowledge management strategies
Adapted from Spender & Scherer (2007)

These components comprise the “hard” systems of an organisation (e.g. strategy, systems, structure and processes), its “soft” systems (e.g. people / corporate culture) and often, an element of Information Technology.

2.2.1 The knowledge management process

Reviewing the definition of Knowledge Management, we see that some form of formal process needs to exist in order for it to achieve its goals. One sequential version of this process is detailed below in Figure 3.

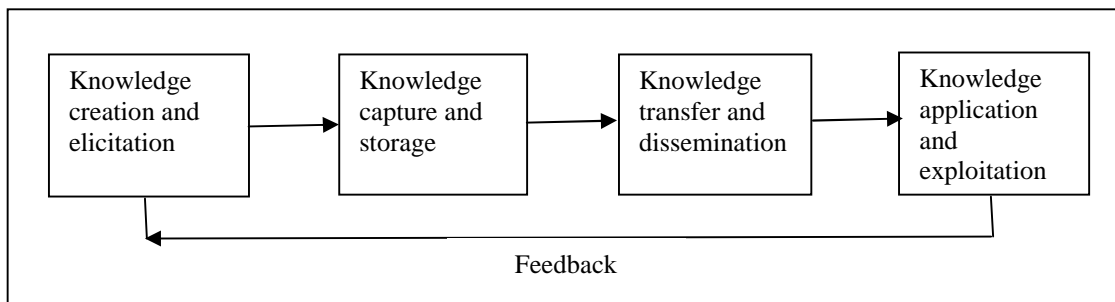


Figure 3: The knowledge management process (Desouza, 2002)

1. Knowledge creation and elicitation

Knowledge firstly needs to be created. Knowledge creation occurs via an iterative process itself and takes existing tacit knowledge and then converts it into explicit and subsequently new tacit knowledge, where the cycle begins again (Nonaka and Takeuchi, 1995). However, there still exists a source of the original knowledge, which is information.

Information is data that has been processed to be meaningful and can be generated using internal data or accessed ready-made. Knowledge then is generated when the information, once gathered and integrated, is analysed for patterns and trends, which impact the organisation (Desouza, 2002).

2. Knowledge capture and storage

The process of formalising and codifying knowledge for later use is important for the notion of turning individual knowledge into organisational knowledge, in that the original knowledge is separated from its originator and then made available for others to use, without them having to first find the original source.

For this to occur, tacit knowledge has to firstly be converted into explicit knowledge. Subsequently, this new explicit knowledge together with that which already exists has to be formalised, resulting in documentation or if possible, codified and presented electronically. These two stages are defined as “externalisation” and “combination” in a knowledge conversion model (Nonaka and Takeuchi, 1995). It explains the former as

discussion and debate between colleagues, where one takes what they have learnt and applies it to their situation. It gives anything that can be referenced by (e.g. reports, databases and procedures) as examples of the latter.

3. Knowledge transfer and dissemination

Nonaka and Takeuchi also talk of a “socialisation” stage, whereby tacit knowledge is shared, often through observation of others or on-the-job training. However, this is only possible where there is “shared context, co-location and common language” (Brown and Duguid, 1991); and is consequently highly labour-intensive.

In order for socialisation to occur, “senders” of knowledge must firstly understand the benefits of and therefore be willing to share their knowledge, for the good of the organisation. Secondly, the knowledge must be presented in an acceptable form for the receiver to interpret (Jabr, 2007).

4. Knowledge application and exploitation

The point at which any knowledge management initiative can be said to have achieved its goals is when individuals begin to use the knowledge created. It is only by completing this final, but crucial step that action, leading to improved outcomes will be achieved. Nelson (1991) and Tsoukas (1996) (cited in Newell, 2003) see this knowledge as residing (and hence applied) in groups, sharing common experiences. Consequently, managers need to detect any informal groups (which may not always be aligned with formal teams) and create a positive organisational environment that supports the sharing taking place therein (Desouza, 2002). Where these groups do not

exist, some organisations have introduced formal networks or “communities of practise”, which attempt to replicate this.

Nonaka and Takeuchi’s model completes a virtuous cycle with a “final” “internalisation” stage, where new insights (i.e. tacit knowledge) are gained from working with the newly converted explicit knowledge. This mirrors Desouza’s process of a feedback loop from step 4 (Knowledge application and exploitation) to step 1 (Knowledge creation and elicitation).

2.3 Knowledge management in healthcare

As is the nature of health care, a single health episode can involve consultations and tests (requiring interpretation) with a large number of specialists (Moumtzoglou, 2003). Consequently, a large number of teams (often aligned to clinical specialties) can deliver a part of any one patient’s front-line care. This contrasts with a manufacturer, for whom only a few staff routinely come into contact with the customer. For example, the case study detailed in this thesis consisted of two whole teams of individuals interacting with the patient and their relatives, as well as each other.

Hospitals, as one setting where healthcare is delivered, can be defined as “complex service organisations”, which is where interdependent work units exist whose work must be coordinated to provide customer service, but whose units often have conflicting priorities (Victor 1990, cited in Tucker *et al.* 2007, p. 894). Consequently, according to Edwards (2005), “there is a danger of fragmentation or compartmentalization in the planning and delivery of patient care”. This is because “each individual has only a

partial view of what constitutes a particular organisational routine or practice” (Newell *et al.*, 2003).

Other noteworthy characteristics of health care providers, some of which will be referred to later include:

- A hierarchical culture based on profession, not area of work (Van Beveren, 2003), possibly due to the potentially devastating consequences of mistakes, due to “inadequate processing of critical knowledge at the point of care” (Guptill, 2005, p. 11).
- A dynamic balance of power between physicians and managers.

2.3.1 Structural barriers to knowledge management in healthcare

Due to some of the aforementioned characteristics, health care providers are highly information intensive, when compared with other industries. The rationale for this assertion is provided by a study by Hersch and Lunin (1995) who found that physicians spend about one third of their time assimilating and recording a multitude of information to help them manage their patients; personal and professional communication in total representing a third of all a healthcare provider’s costs.

Coupled with the above, advances in medicine and increased awareness of treatment choices by patients (mainly due to information on the Internet) mean expectations of a clinician’s knowledge are higher than ever. Furthermore, their ability to process this mass of information efficiently within a context that enables the information to be used to make appropriate judgements was, according to Goldsmith in 2003 “the most critical issue facing most health care providers”; and one which ultimately defines their success.

This view is reinforced by Braithwaite *et al.* (1995) who cites the explosion of knowledge as one of a trio of “major driver[s] in the evolution of modern and future hospitals” (cited in Moumtzoglou, 2003, p. 231). This reinforces the justification for looking at this issue by the case study organisation.

However, the complex nature of health care organisations can impede efforts to create and share this much needed knowledge (Van Beveren, 2003). However, Van Beveren also states that for some reasons, this does not seem to detrimentally impact patient care in any visible way. This may explain the lack of many formal knowledge management strategies in these organisations found in the literature.

2.3.2 The NHS: a brief PEST analysis

The NHS according to Mark and Lynch (2000) is “one national organisation with a political strategy set by government and a series of local organisations with local strategies set within the national political and financial context” (p. 136).

Although UK politicians have made assurances that the NHS will not be affected by planned budget cuts resulting from the cost to the government of the recent financial crisis and economic downturn, expert commentators are less sure. According to the King's Fund and the Institute for Fiscal Studies, by 2016/17 there could be a predicted shortfall of between £6.4bn and £32.4bn (i.e. between 6% and 31% of the entire NHS budget). Put into perspective, this compares to an average 3% increase in spending in real terms by the government of the 1980s, which had historically been renowned for its severe cuts (cited in Robinson, 2009). Consequently, pressure to lower costs whilst

increasing quality, though no consolation to today's healthcare managers is essentially nothing new. Nevertheless, increased demand (due to an aging population), the growing availability of cutting edge, but expensive technologies with less money to fund it can only bring about more change, albeit at an increasing rate. Most of these competitive pressures are relevant to the private sector, with the difference that local NHS organisations (like the ones used for this case study) have limited ability to increase their income to meet these costs.

2.3.3 NHS operations management strategies

In order to respond to the changes in their environment, some early adopter local NHS organisations have become advocates of the need to take a systemic, customer-centred view, as proffered originally in the manufacturing-oriented fields of business process re-engineering, and more latterly lean thinking. The objective of these is to remove the costs of poor quality stemming from process variation (Institute of Medicine, 2001) thereby reducing associated costs, whilst increasing quality.

For example, the Royal Bolton Hospital NHS Foundation Trust has embraced these techniques wholesale across a wide range of its operations, including stroke services, with some impressive results (see Appendix A). In addition, benchmarking and best practice transfer have been favoured for some time by organisations of all types, including the UK public sector, as a means of improving efficiency. Some commentators argue that conflicts exist between these practises, as the latter results in the proliferation of performance indicators, which when strived for in isolation can

result in unsystemic actions. However, discussion on this is beyond the scope of this review.

Again, what is central to the success of all these ideas is the management of knowledge (Desouza, 2000). This makes sense when knowledge is viewed more as a key part of the system (Blackler, 1995, cited in Newell, 2003), rather than a resource or according to Jabr (2007), a corporate asset, when shared.

2.3.4 Knowledge management and the NHS

Talk of Knowledge Management in the NHS began in the late 1990s (Mark and Lynch, 2000), as one of many new ideas in strategic management thinking that could be applied to healthcare. The catalyst for this was the future impact of the Internet in health care, leading to a “reshaping [of] the relationship between patients and professionals (Mark and Lynch, 2000, p.137).

Today, the popularity of Knowledge Management is illustrated by the fact that the NHS devotes a specific category (or specialist collection) to it within its online resource “NHS Evidence”, formerly a specialist library of the National Library for Health (www.library.nhs.uk/knowledgemanagement).

However, there seems to be few examples of any deliverables to be found in the literature from this interest, with the exception of tools, such as care / treatment pathways, which attempt to bridge the gaps between the aforementioned local organisations and their teams, with the aim of providing “uniform patient care at the lowest cost” (Van Beveren, 2003, p. 92).

Specific references in NHS Evidence to either “stroke”, “discharge” or [patient] “transfer” and “knowledge management” were restricted to Van Walraven (2008) and a case study from the Newry and Mourne Health and Social Services Trust, both of which are detailed later. However, this lack of evidence of the tangible use of knowledge management may not be representative of reality. Instead, it could merely reflect the governance structure of the NHS, whereby local organisations operate independently, with the autonomy to implement Department of Health guidelines however they want to best serve their local population with the budget available. Consequently, Knowledge Management efforts may be seen as for purely internal use.

Nevertheless, one example of a national people-centric Knowledge Management initiative is the creation of networks, allowing clinicians to accelerate their learning by obtaining information about tried and tested evidence-based or “best” practices (Addicott *et al.*, 2006). However, the ever present inclination towards specialisation in healthcare has created worthy, but sometimes rather narrowly focussed schemes (e.g. the NHS Cancer Network), which may well have created a community of practice, where there was none. However, as the study by Addicott *et al.* found, its remit tended to be that of “structural reconfiguration”, rather than any knowledge transfer directly helping with the management of patients, especially those whose needs crossed multiple clinical boundaries. These examples therefore merit the need for transferable research in this area, aspects of which this thesis seeks to address.

2.4 Knowledge transfer among clinicians

Knowledge transfer or dissemination (stage 3 of Desouza's process) is one aspect of Knowledge Management where most of the available knowledge management literature in health care concentrates. This could be due to the fact health care sees itself as relatively weaker in this stage of the knowledge management process, due to the autonomy most clinicians exercise, which is inherent in their profession.

As already mentioned, a study by Van Walraven (2008) looked at the knowledge transfer occurring between Canadian physicians, albeit between hospital physicians and General Practitioners, rather than between two teams of hospital-based physicians. Van Walraven asserted a largely undisputed view that "information exchange between physicians who care for the same patient is essential to maintain continuity of care" (p. 1015) and that continuity of care is linked to the likelihood of better patient outcomes. Results showed an "extensive loss of information" (p. 1016), mirroring those of previous work. More interestingly, it observed that the level of exchange was more dependent on characteristics of the physician, than of the patient. Reasons given for this included "sending" physicians creating notes and reports that although met their needs, were not "easily transmitted to other [receiving] physicians" (p. 1016), as well as them generally omitting certain information they subjectively deemed "unnecessary to their care of the patient" (p. 1016).

Barriers to knowledge transfer among clinicians were reported by Jabr (2007) as the time required to share knowledge, given existing working commitments (especially amongst more junior physicians) in a study about how hospitals in Oman view their

organisational knowledge and use it to improve practices. Jabr also found that senior physicians were “unwilling to share knowledge”, which was associated with their relative status and power within the organisation. Another reason for this finding offered by Van Beveren (2003) was that knowledge gained by clinicians “remains isolated within their professions due to minimal interdisciplinary training” (p. 93) and is possibly reinforced by the aforementioned autonomy they exercise through most of their careers. Alternatively, it could be simply that there is not enough of an incentive for knowledge sharing to take place, as put forward in a survey by KPMG in 1998 as the number one barrier to organisational knowledge (cited in Desouza, 2002). A final barrier was given as organisational culture, which in the Oman study at least was deemed “not yet conducive for social networking, trust and professional reflection and discussion” (Jabr, 2007, p. 258). Linked to this was that knowledge transfer is made more difficult if relationships between those sending and receiving is either problematic or distant (Szulanski, 1996, cited in Jabr, 2007), as well as the level of communication skills they possess.

In summary then, it seems evident that knowledge transfer is an important factor in continuity of patient care, though the specific benefit of this continuity to the patient and their chances of positive outcomes has yet to be proven. The question remains therefore where, if at all would the benefit be felt through any initiatives to facilitate knowledge transfer, as presumably only knowing this will provide the motivation for health care managers to invest time and money in this area.

2.5 Reference to knowledge management in stroke care

National clinical guidelines for stroke state that the long-term nature of stroke and its many residual problems differentiate it from other acute illnesses (Department of Health, 2007).

In attempting to define what constitutes effective stroke unit care, Langhorne (2002) acknowledges that research has shown that stroke units do improve patient outcomes, but the specific reasons for this is still poorly understood, partly due to the complex multidisciplinary processes which exist in them. He also recommends that patients and carers should before discharge “be prepared and fully involved in plans for transfer, all necessary equipment and support services are in place and any continuing treatment required should be provided without delay”. The Intercollegiate Stroke Working Party adds in addition that, “local guidelines for stroke should ensure that relevant and easily understood local information is available in suitable formats and languages (cited in Mackenzie *et al.*, 2007, p. 111).

Although the study by Mackenzie *et al.* looks at the particular challenges faced by carers when stroke patients are discharged home, some of its findings could equally apply to the transfer of patients from one healthcare setting to another, as is the context for this thesis’ case. Specifically, these were:

- A lack of information provided about the patient’s “emotional and psychological problems” (p. 118)
- Discharge planning could be improved with a “regular face to face contact between a member of the multidisciplinary team and family carers” (p. 120).

Similarly, Reiley *et al.* (1996) in their study of what is important to stroke patients at time of discharge home included:

- “Information should be as concrete as possible and should be in writing”
- “There is a need for the discharge day to be less rushed” (p. 315)

A more relevant French study by Grimaud *et al.* (2005) looked at the factors that determine the quality of stroke patient referral. Its conclusions were that “mutual knowledge and reliability of information exchange between acute and rehabilitation teams” was key as well as an “awareness of admission procedures to rehabilitation” (p. IS12), the latter on which consensus was struck regarding its feasibility for improvement. Another factor was found to be the potential for acute stroke unit staff to call on the expertise of rehabilitation staff to help define rehabilitation objectives, whilst the patient is still in the acute setting.

2.6 Reference to knowledge management in discharge / patient transfers

As mentioned earlier, a case study from the UK also provided some findings relevant to the case studied for this thesis.

The Newry and Mourne Health and Social Services Trust sought to reduce the number of geriatric patients blocking beds in their acute hospital, due to delayed discharge, one identified cause of which was described as “information challenges”. Specifically, the team introduced the following strategies:

- Creating Care Management Co-ordinators with the authority to secure what was needed for an older person to be discharged, rather than taking a more passive role through mediating this process, as before

- Requiring all new admissions to have an expected date of discharge (EDD) recorded on admission or within the first 72 hours

The result of the aforementioned changes was an average reduction in patients' hospital length of stay and the reported number of delayed discharges falling from over 25 to only 1 per month.

Previously a patient's discharge required all members of the multi-disciplinary team to meet and agree arrangements, which took place periodically with protracted discussion. However, the role of the Care Management Co-ordinators changed this, as they liaised between all parties and had "the authority to action what [was] required for hospital discharge to occur as planned" (p. 3).

The implementation of the EDD target was found to be useful as all staff were expected to work towards getting the patient ready for discharge by the EDD, with the acknowledgement that this would not be met for some patients, due to unforeseen medical deterioration. However, these were also planned for as much as possible by the setting up of a strategic group to identify likely patients, who could fall into this group.

Further findings by Reiley *et al.* (1996) were that the overall discharge process had not evolved to take into consideration the impact of on average shorter lengths of stay, meaning patients are discharged with more complex needs. Consequently, relevant information about the next stage of the care had to be imparted to them and their carers while they were often still clinically unstable. This change in context required

“mechanisms for communication” to be changed where appropriate or “important discharge activities may be duplicated or not addressed” (Reiley *et al.* 1996, p. 313).

2.7 Justification for the research

The literature review confirms the need for primary research into the subject of Knowledge Management within stroke care, specifically at the time when a patient is transferred from one setting to another, an example which could provide insight into other specific events in a patient’s journey. Specifically, through an exploratory study it aims to understand the current system’s ability to transfer the right knowledge at the right time from the multi-disciplinary team at an acute hospital’s stroke unit to the receiving team at a community hospital’s rehabilitation stroke unit, as well as what this knowledge consists of.

3. Research methodology

3.1 Research setting, approach and strategy

The primary objective of the research was to uncover the knowledge management requirements to ensure the rehabilitation phase of stroke inpatient care is managed as best as possible. Through an exploratory study, specifically it aimed to understand the current system's ability to transfer the right knowledge at the right time from the multi-disciplinary team at John Radcliffe hospital's acute stroke unit (known from this point on as "the JR") to the receiving team at Witney Community hospital, when a patient is transferred from one to the other for the purpose of rehabilitation. Practically, the research's conclusions would be used to guide process development for the opening of additional beds at a second Community hospital in Abingdon, for the same purpose. No preconceived hypotheses were set. Rather, in line with the research strategy, patterns emerging from the data were used as the basis for conclusions.

Research took place at Wenrisk Ward, Witney Community hospital and the acute stroke unit at the JR; Witney being the patient's new preferred discharge destination for rehabilitation as prescribed by Oxfordshire's integrated stroke pathway (NHS Oxfordshire, 2009).

Only this single case study was undertaken, as agreed by the project's sponsor as a key strategic deliverable to ORH. This was due to the local issue of a relatively low performance of the JR versus comparable hospital Trusts within the South Central

Strategic Health Authority (to which the JR belongs) on a number of national targets for stroke care.

The JR, rather than the Horton Hospital (the other acute hospital within ORH) was chosen as the case study, even though its relative performance on the aforementioned targets was better. This was because the stroke pathway at the Horton hospital is different and the fact that the JR sees more than twice the number of patients, so was felt to merit a more pressing need for the research.

As broadly social (management), rather than natural science-based research, the chosen research approach was phenomenological (Saunders, 1997). This approach suited the research question, as it allowed for consideration as to the possible reasons (including social) for current practices, as well as identification of what they constituted. In addition, it acknowledged the practical constraints of researching the chosen question, which included the lack of the researcher's prior knowledge of the subject with which to frame a hypothesis, compared with a "clear theoretical focus for the research at the outset" required by other approaches (Saunders, 1997). The chosen approach was also particularly appropriate to the context of the research in that it was flexible enough to allow the researcher to change direction, even during the data collection phase.

As advised by Saunders (1997), the research strategy "should always be based on your research question(s) and objectives", justification for which is demonstrated throughout this chapter. For this research question, of the three traditional strategies of experiment, survey and case study, the latter was chosen (Robson, 1993, cited in Saunders, 1997.).

For reasons already discussed regarding research approach, only the strategies of survey and case study could feasibly have been employed in this instance. However, neither the narrow focus of highly structured interviews nor the time consuming nature of devising a robust questionnaire (given the relatively small sample population), could be justified. Consequently, the case study or “development of detailed, intensive knowledge about a single ‘case’, or a small number of related ‘cases’” was chosen (Robson, 1993, cited in Saunders, 1997, p. 76).

Qualitative methods, such as case studies, allow the researcher to investigate his chosen subject in its natural setting and are most suitable when the boundary of subject and its context are unclear (Yin, 1994). The benefits of this strategy were to permit exploration (as already mentioned) as to the possible reasons for the current situation and what may be a better or more appropriate future state.

The specific data collection tactics employed were face-to-face interviews. This phase of the research took place over four weeks in July 2009.

In line with the research approach, desk based secondary research was conducted through the review of relevant academic and professional literature. This was carried out methodically according to the framework of Easterby-Smith and Thorpe (2008) in order to identify the following issues:

- What is already known about this area?
- What concepts and theories are relevant to this area?
- What research methods and strategies have been employed in studying this area?

- Are there any significant controversies?
- Are there any inconsistencies in findings relating to this area?
- Are there any unanswered questions in this area?

3.2 Ethical considerations

The researcher followed standard ethical principles of research methods throughout the study, as recommended by Bryman & Bell (2007) below:

- Respecting the dignity of research participants.
- Ensuring a fully informed consent of research participants.
- Protecting the privacy of research subjects.
- Ensuring the confidentiality of research data.
- Protecting the anonymity of individuals / patients.
- Avoiding deception about the nature or aims of the research.
- Honesty and transparency in communicating about the research.
- Avoidance of any misleading or false reporting of research findings.

3.3 Primary data collection: participant selection and characteristics

As dictated by the chosen research strategy, the non-probability method of purposive sampling was used. In line with recommendations by Neuman (1991), the suitability of this method was based on the need for the researcher to select participants best able to help him answer the research question (i.e. particularly informed) and who were also quite small in number.

As the research context (i.e. stroke care) had already been identified, initial discussions to identify the most appropriate research participants began with the project sponsor (Directorate Manager: Acute General Medicine, Emergency Department and Geratology) and both Medical (Stroke Consultant) and Nursing (Stroke Nurse Practitioner) leads involved with the stroke pathway to date.

It was decided that a cross-section of clinicians and managers (that broadly mirrored the existing stroke multi-disciplinary teams) representing both the JR and Witney Community hospitals should form the research sample, e.g. Doctors, Nurses and Therapists. Specific attention was given to roles that had a direct impact on decisions about discharge from the JR and a lower threshold of organisational seniority was adhered to (i.e. no lower than Team Leader [Nurse], Specialist Registrar [Doctor] and Senior Therapist). The aim of this was to get as fair as possible responses from those with a broader view of the system and hence would be able to comment most objectively, avoiding over-emphasis of the rarest examples, which could bias the research.

Once agreed upon, the aforementioned Stroke Consultant and Stroke Nurse Practitioner made initial introductions face-to-face at an existing fortnightly project meeting, which the researcher was invited to attend. Prior to introduction, emphasis was made of the importance of the research being conducted, with the research project objectives being briefly outlined. The researcher then drew up a schedule of meetings and invited the participants to these individually by e-mail.

In total, seventeen staff from the two hospitals were invited to take part in the research and are listed below.

John Radcliffe hospital representatives:

ROLE (not exact job title)
1. Consultant (Stroke)
2. Consultant (Stroke)
3. Stroke Nurse Practitioner
4. Matron (Geratology)
5. Specialist Registrar (Stroke)
6. Sister (Acute Stroke Unit)
7. Senior Physiotherapist
8. Occupational Therapist Team Leader

Witney Community hospital representatives:

ROLE (not exact job title)
1. Locum Speech & Language Therapist
2. Consultant (Geratology)
3. Sister (Wenrisk Ward)
4. Specialist Registrar
5. Physiotherapist
6. Occupational Therapist
7. Consultant (Geratology)
8. Clinical Lead (Geratology)
9. Consultant (Geratology)

Although a relatively small number, the sample size reflected a high proportion of the total population (i.e. those clinicians directly involved in the care of stroke patients, as well those non-clinicians who managed the various processes facilitating this). Although this sample size still represents potential for sampling error, it ensured that those participants having the most impact on patient care were included in the sample and so was felt to be representative of the entire population.

3.4 Data collection methods

A joint strategy for conducting primary and secondary research (via the literature review) was utilised.

The primary field-based research took an inductive approach, gathering data via semi-structured interviews with relevant staff caring for patients at both the JR and then the Witney Community hospital. Due to the exploratory and fairly broad nature of the research question (based on a live and continuously developing case), the question areas were almost exclusively open-ended (see Appendix B).

Data collection through personal contact was deemed to be the best method to employ, a fact made easier by the researcher being based at the JR for the duration of the research. Consequently, the researcher was fairly flexible in being able to accommodate meetings when most convenient for the mostly clinical staff involved. Semi-structured, rather than in-depth interviews were chosen as the principal method of data collection, which met the objectives of an exploratory study; i.e. to “find out what is happening [and] to seek new insights”, whilst providing the less experienced interviewer with some

structure (Robson, 1993, cited in Saunders, 1997, pp. 212). In addition, the researcher attended twice monthly meetings to discuss the integrated stroke pathway at the JR, as well as a meeting at Abingdon hospital to discuss lessons learnt so far from opening Witney.

The researcher's main objective during each interview was to conduct a stimulating discussion according to a pre-designed interview protocol (see Appendix B) in order to gain qualitative information regarding the participants' feelings and views and any reasons for these (Saunders *et al.*, 2007). As there was only one researcher, he remained the participants' only contact throughout the research process.

The interviews followed a pre-designed structure of areas to question to ensure the same themes were covered each time. Question areas were mostly based on the study of internal documentation (e.g. pertaining to ORH's integrated stroke pathway) and the researcher's own reflection as to the unspecified implementation of some of the pathway's recommendations, including potential knowledge transfer issues therein.

The interview protocol constituted question "areas", which were structured around themes to ensure the interview remained within the given context and boundary of the subject being investigated (Gill & Johnson, 2002). These themes were initially tested on the Stroke Consultant and Stroke Nurse Practitioner to ensure these were broadly understood and that their responses were in line with the researcher's expectations. Some factual questions were used to develop a common understanding of the participant's particular role and influence. Where appropriate, questions were tailored

(ordered and phrased differently), depending on the participant's particular role, in order for them to make sense to them. During each interview, questions became more specific. Sensitive questions were left to the end of the interview where possible, to provide the participant with the opportunity to build trust with the researcher (Saks & Allsop, 2007).

Each participant was interviewed individually to allow for frank and open discussion, unhindered by lines of seniority, political sensitivities and relatively dominant participants steering discussion. Interviews lasted between half an hour and one and a half hours, with the average length being one hour. The researcher took notes throughout the interview, which was also recorded by dictaphone when permitted by the participants. This was done for ease of validation, should the researcher have needed to seek clarification on points made during the interview, after it had finished. All interviews were conducted within the offices of the participants. This was chosen on the basis of convenience and comfort and to minimise the risk of external influences (Gill & Johnson, 2002).

3.5 Interview structure

A semi-structured interview follows a series of scheduled questions areas that allows the researcher to vary the sequence (Bryman & Bell 2007). Semi-structured interviews offer the advantages of minimal risk of participant bias, high reliability & validity and offered the greatest flexibility (Easterby-Smith & Thorpe, 2008).

Each interview began with the researcher providing an initial introduction, which included the research objectives, the way in which it was hoped the findings would be used as well as an offer of the final report. The procedure for the substantive part of the interview was explained and assurances of anonymity were given, though participants were also made aware it was likely readers of the report could trace them, due to the relatively small sample who took part.

Questioning proper began by asking participants to briefly describe their role in order to increase the participants' awareness and engage their commitment. The questions used during each interview were intended to probe the participants to recount formal procedures as well as anecdotal stories of the knowledge transferred between staff working at the JR and Witney, when a patient is transferred from one setting to another. This was done to allow the researcher to explore interesting and relevant, but not necessarily planned for topics, in response to participants' answers. Conversations about the aforementioned process centred on the knowledge needs of the Witney team, provision of knowledge from the JR team, shortcomings emanating from the current state and solutions for future better ways of working.

3.6 Data analysis: a qualitative approach

The case study, as is common with inductive research, was formulated iteratively, with collected data continuously revisited.

The grounded theory approach of Strauss and Corbin (1990) to data analysis was used with the intention of developing a series of recommendations by comparing

explanations arising from the research with existing theory. According to Yin (1994), this involves collecting the data and then explor[ing] them to see which themes or issues to follow up and concentrate on. This approach was chosen as the literature did not demonstrate sufficient experience in this area on which to base any predetermined frameworks. In addition, the initial research question looked to encompass knowledge management requirements in their broadest sense and hence it was felt a framework may have resulted in too narrow a focus, which risked overlooking potentially significant data, which fell outside it.

The process of data analysis began with grouping participants' responses in note form according to similar broad themes or dimensions. Some of these dimensions fitted within those question areas initially identified to guide the semi-structured interview or were modified versions thereof, while others emerged during the process. Practically speaking this often meant dissecting responses into consistent parts, as they often covered more than one area at the same time.

Coding the data to retain an indication of the originator of the data was not felt to be required, given the nature of the research. Therefore, although the analysis did highlight differences in opinion between participants, it did not seek to make any conclusions relevant to the research question from these. Rather, it sought and focussed on the consensus in opinion. Consequently, the frequency to which the same response arose led to it being included as a principle or sub-dimension within the results, with more emphasis given to points where the participant was able to give an example as justification.

A summary of the discussion around the dimensions was then written from the notes, indicating strength of feeling in the text and only attributing authors if significant to the context or a minority view.

As is the nature of exploratory studies, the analysis stopped short of developing hypotheses to test any apparent relationships between the categories to develop any explanatory theories.

3.7 Limitations of the research enquiry

The risk of both researcher and participant bias is inherent when using a qualitative approach to research, which can affect reliability of data collected. However, it was felt that the value of this approach was warranted, due to its flexibility when tackling a fairly complex subject. In addition, as with any case study, the data collected is intended to “reflect reality at the time they were collected, in a situation which may be subject to change” (Marshall and Rossman, 1989 cited in Saunders, 1997, pp. 218) and not necessarily to make generalisations about the entire population (Yin, 1994). However, where relevant theory existed, Section 6 (Discussion) made use of this to create points of broader significance, beyond the boundary of the particular case study. Finally the grounded approach posed the risk that little of significance could arise from the research process, which in this case could result in any “requirements” identified being wholly non-knowledge management oriented, thereby causing a discord with the literature review undertaken. However, this was thought to be unlikely.

Any interview has a vast number of opportunities for measurement error, resulting from the interaction between researcher and participant. Consequently, comprehensive checking throughout the process was used to reduce this risk of interviewer bias, as recommended by Gill & Johnson (2002). This was achieved by following up any remaining uncertainties from the collected data directly with the participant by telephone, at which point the researcher also took the opportunity to ask additional pertinent questions, originating from the first interview.

Regarding the tailoring of question areas to suit the participant's particular role, the researcher ensured there was no risk of bias inherent in this strategy by remaining true to the spirit of the question's meaning, and more often than not, simply used different examples (more appropriate to the participant's role) as probes to help them understand the question. In addition, as the objectives of the research were not to specifically make any comparison between the different participants' answers, this was not seen as a significant issue.

Regarding overcoming the risk of interviewee bias, the research participants were specifically selected to reduce the likelihood of sampling and standard errors (Saks & Allsop, 2007).

4. Case description: Oxford Radcliffe Hospitals NHS Trust

People over 65 years of age are most at risk of stroke, but they can affect people of any age, including children. The main factors influencing the likelihood of stroke are gender, social-economic group, ethnicity, and primarily age (nhs.uk, 2009).

Although the majority of strokes occur in later life, a significant number happen to adults of working age. Consequently, stroke services need to offer appropriate care and support for all ages.

4.1 Stroke care

There has been much research in the field of stroke regarding which medical interventions and models of care offer the best clinical outcomes for patients. As this is not the specific focus of the paper, the literature review has not covered this topic. However, the general consensus is that access to specialist stroke services at the right time maximises the chances of a good outcome for the patient (Department of Health, 2007). For the purposes of this case this means better survival rates with care on an acute stroke unit (with access to appropriate diagnostics) and lower levels of long term disability with targeted specialist rehabilitation, during the recovery phase. The specifics of this aim are explained later in citations from the National Stroke Strategy (Department of Health, 2007). This evidence has been borne in mind with the design of the Oxfordshire integrated stroke pathway (discussed later), with the acute stroke unit at the JR aiming to satisfy the former, and specialist rehabilitation stroke units at Witney and Abingdon Community hospitals the latter. These and other care settings a stroke

patient may go through (excluding outpatients for TIA / minor strokes) are detailed below:

- **Acute Stroke Unit** (within an acute hospital): twenty-four hour specialist medical input
- **Specialist Stroke Rehabilitation Unit** (within a community hospital): Monday to Friday (9-5) consultant-led medical and own specialist multi-disciplinary team (MDT) input
- **Early Supported Discharge** (patient at home): Monday to Friday (9-5) therapy-led input by acute stroke unit's MDT, seven day nursing care (no night cover), GP medical cover
- **Non-stroke specialist rehabilitation** (within a community hospital): twenty-four hour nursing cover, non-specialist MDT therapy input Monday to Friday, GP medical cover.
- **Intermediate care (within a nursing home)**: limited registered nursing cover, non-specialist MDT therapy input up to five times per week, GP medical cover.
- **Intermediate care (patient at home)**: seven day nursing care (no night cover), non-specialist MDT therapy input up to three times per week, GP medical cover.

4.2 Impact of Stroke for the NHS in Oxfordshire

Since 2000 the rate of registered deaths from stroke across England has been falling year on year, as it has across the developed world. This is due, in part to improved health due to declining numbers of people smoking, better knowledge of dietary risk and improvements to treatment for conditions such as high blood pressure and cholesterol. Oxfordshire has a healthier population than the English average and this is

reflected in the fact that the Oxfordshire average for the rate of admission to hospital for stroke being lower both than that of England and the South Central Strategic Health Authority (SHA), to which Oxfordshire belongs (NHS Oxfordshire, 2009).

In 2007/08 16.5% of those patients living in Oxfordshire who were admitted to hospital due to stroke were under 65. Figures for October 2007 showed approximately 5% of the population over 65 in Oxfordshire was living with the effects of a stroke and another 5% had experienced a TIA, or less serious form of one (NHS Oxfordshire, 2009).

It is estimated that 20-30% of people who suffer a stroke are likely to die within four weeks. Of those who survive, 40% require rehabilitation and of those, 85% need ongoing support after hospital discharge. It is this last group that drive the cost burden to the NHS. On average, the calculated individual cost of a stroke to the NHS over five years is £15,000 (NHS Oxfordshire, 2009).

ORH is the main provider of acute care for the population of Oxfordshire and comprises three acute hospitals, two of which take stroke patients; the John Radcliffe Hospital (JR) in Oxford (700 inpatient beds) and the Horton Hospital in Banbury (220 inpatient beds) (oxfordradcliffe.nhs.uk, 2009). For stroke, ORH takes approximately 90% of those patients admitted to hospital who live within Oxfordshire (605 out of a total of 669 for 2007/08), with the remainder going to neighbouring hospitals, due to geography (NHS Oxfordshire, 2009).

4.2.1 Rehabilitation

Rehabilitation is the period when individuals undertake a comprehensive programme to reduce or overcome the deficits following the stroke. It is to assist the individual to gain the optimal mental and physical ability, which the damage of the stroke to the brain allows (NHS Oxfordshire, 2009).

Patients will begin rehabilitation in an acute stroke unit as soon as they are medically stable and can tolerate it. They will however only be transferred from an acute to a rehabilitation setting when they cease to need medical supervision / intervention overnight (i.e. unplanned). This is illustrated by the National Stroke Strategy quality marker 10 for recovery:

“People who have had strokes access high-quality rehabilitation and, with their carer, receive support from stroke-skilled services as soon as possible after they have a stroke, available in hospital, immediately after transfer from hospital and for as long as they need it.”

(Department of Health, 2007, p. 36)

Rehabilitation can be carried out in a number of settings and choice of setting is based on the individual’s medical and social requirements (e.g. patient and family choice of venue). Most rehabilitation settings are managed and funded directly by the PCT, though they may contract some services (e.g. consultant physician cover) from the acute hospital organisation. Consequently, from both a financial and health care point of view (i.e. best outcomes for the population served), there is considerable emphasis on transferring patients from an acute to a rehabilitation setting as soon as possible, mainly in order for new patients to be able to access acute services. One setting (the community hospital) acts as a bridge between hospital and home, particularly for elderly

patients who may need rehabilitation to help them regain their independence as they recover from an illness (oxfordshirepct.nhs.uk, 2009).

Little local data exists on the numbers of patients needing rehabilitation following a stroke. However estimates based on extrapolation of national data shows that 40% of individuals require this level of care and of these, 85% are discharged with some level of dependency that requires long term care. For Oxfordshire in 2007/08 this meant 268 patients required rehabilitation and of these, 227 required some form of long term care (NHS Oxfordshire, 2009).

4.3 Situational analysis: reason for change

Due to the profile of stroke nationally, the UK Department of Health has in recent years commissioned national audits to ensure care provided by local NHS providers meets pre-determined standards. The performance of ORH in the 2008 National Sentinel Stroke Audit (Royal College of Physicians of London, 2008) was relatively low, nationally and when compared with other hospitals within the South Central SHA. While there were pockets of excellence, the overall result reflected a lack of routinely coordinated service provision. In other words, an inequality in timely access for all patients to specialist stroke care.

Specifically the audit revealed that few patients were admitted directly to stroke units within ORH and those that were, spent an insufficient proportion of their inpatient stay on one (e.g. only 30% of stroke patients admitted to the JR spent over 90% of their stay

there on the acute stroke unit). This figure falls short of the 70% level specified in the National Stroke Strategy (Department of Health, 2007).

4.4 Oxfordshire's solution: the integrated stroke pathway

Further to the inadequate performance of ORH highlighted by the audit, in December 2008 a project team was established in Oxfordshire to implement the recommendations of the National Stroke Strategy locally. The output to date of this group is a future desired state, illustrated by a draft integrated stroke pathway. In order to achieve this new pathway, a number of changes to existing services were identified and it was hoped that this would improve the Trust's performance at the next audit.

4.4.1 Changes to rehabilitation stroke services

Except for those patients living in the north of Oxfordshire (Horton hospital, Banbury catchment area), acute stroke services are provided at the JR in Oxford and community hospital-based rehabilitation at any of any of nine community hospitals.

The acute stroke unit at the JR (Ward 5B) is a 23-bedded unit, of which 18 beds are funded for stroke patients. Historically, there had been an inadequate number of rehabilitation beds available in community hospitals. Therefore, delayed discharges meant new patients were unable to access a bed on the unit when they needed it most (i.e. immediately after their stroke occurred). Consequently, this situation did not comply with the National Stroke Strategy quality marker 9 for treatment, which states:

“All stroke patients have prompt access to an acute stroke unit and spend the majority of their time at hospital in a stroke unit with high-quality stroke specialist care.”
(Department of Health, 2007, p. 30)

In answer to this problem, a key feature of this new pathway was the setting up of specialist stroke rehabilitation services at two of Oxfordshire's community hospitals; Witney and Abingdon. The first of these units opened at Witney Community hospital in April 2009. It consists of a cohort of 10 beds within a 30 bedded-ward (Wenrisk Ward). To qualify as a dedicated stroke unit, it has had to develop a number of specialist nursing and therapy skills and although evolving, now exhibits some of these features, according to accepted national definitions. A similar set-up at Abingdon Community hospital is due to open in late 2009.

5. Results and analysis

In total, seventeen staff were selected to take part in the research. Of these, two participants did not partake, due to unavailability (annual leave) during the research period. Another kindly offered to review the results adding any comments, rather than be interviewed, due to time pressures.

The significance of this was that junior doctors were not represented in the sample. However, it was felt that as they were often obliged to follow the lead of the consultant physician in most aspects of patient care, their responses would be broadly similar to those of the consultants, who were represented. It was also expected that the consultants would draw on their experience as junior physicians when responding, which although historic, would have been recent enough to be relevant (due to the relative youth of most of the consultants who took part).

Of the final fourteen participants interviewed, six were solely based at the JR, four solely at Witney Community Hospital and four who were already working in both acute and community settings or were due to, when Abingdon Community Hospital opened.

In total, five physicians, four nurses and five therapists were interviewed (of which two were physiotherapists, two occupational health therapists and one speech and language therapist). This sample mix fulfilled the goal of a fair representation of the usual proportions of different clinicians making up the MDT.

Results are grouped under the following four dimensions, which broadly represent the topics discussed by the participants:

- General interaction
- Handover
- The referral process
- Referral planning

In addition, a summary of the improvements suggested by the participants is provided.

5.1 Dimension 1: General interaction

A formal visit by Witney Community hospital staff to the JR's acute stroke unit took place in April, shortly before Witney started to receive stroke patients for rehabilitation coming from the unit. All staff have met their peers working at the other site informally since, mainly at the JR, where Witney staff (principally the Ward Manager) had attended some MDT meetings. Nurses and physicians (mainly due to the fact one physician currently worked across the two sites) were aware of the Ward Manager at Witney as the key contact for patient transfers.

An informal programme of teaching sessions took place on key nursing and therapy issues for the management of stroke patients. The Ward Managers had started meeting informally, as they both lived in similar areas. A view was expressed by most that **more formal arrangements for working** across the two sites could be beneficial for learning, as well as the benefits of the **JR staff visiting Witney** to experience the setting, its facilities and way of working. Also, some participants from the **JR**

requested feedback, specifically on the outcomes of the patients transferred there, so they could verify that the “right” group of patients were being sent.

Most other interaction was related to a specific patient transfer (see Section 5.2). From the JR, this mostly involved the Ward Manager to co-ordinate and junior physicians to complete the discharge documentation. Therapists who cared for the patient would not be required to do anything specifically, other than hand over information at some point to their Witney peers. Consultant physicians and the nursing matron were not routinely involved.

5.2 Dimension 2: Hand-over

Comments on the importance of hand-over at the time of patient transfer, made by nursing staff were:

“It’s everything really”

“(We) handover as much as (we) know”

“You need to know all that to give proper care”

“The more you know, the better”

The information received at patient hand-over was felt by Witney staff to be broadly satisfactory, especially when compared with what they were used to receiving about patients arriving from other clinical specialties.

The specific items of interaction that were initiated by a patient transfer were:

- Specific therapy notes sent to peer at Witney by post
- Patient’s paper notes, which travelled with the patient
- A ward transfer letter, faxed on the day of transfer. This consisted of a

summary of the patient's medical, nursing and therapy needs and what treatment they were currently undergoing.

- A goal sheet
- An e-discharge letter and community drugs chart, completed by a junior physician.
- A verbal nursing handover to a peer at Witney by telephone on the day of transfer.
- Verbal therapy handovers to peers at Witney by telephone on the day of transfer or within one day either side.

Physicians at Witney were unlikely to receive much in the way of specific medical hand-over, other than the patient's notes, which they saw as standard and satisfactory. However, they did comment on nursing and therapy handover information, which they tended to use to build up a more holistic picture of the patient and the current point in their recovery.

However, physicians particularly felt a more thorough multi-disciplinary summary made at discharge would be useful, especially to receiving nurses at Witney. By this they meant to encourage therapists to take a broader view and provide more practical details regarding their patient's loss in function and the impact of given and recommended therapy, rather than the therapists' "usual narrow, purely assessment outcomes-based focus".

5.2.1 Verbal handovers

Therapists at the JR telephone their peers at Witney to provide a verbal handover for every patient transferred. This usually occurs after the patient has arrived, but can be on the day of transfer or sometimes the day before. The difference in timing depends on when the JR therapist becomes aware of the transfer, which can be after it has occurred, as they are not required to prepare any specific documentation to allow it to take place. A verbal nursing handover takes place on the day of transfer normally between either the Ward Manager or Team Leader at the JR and preferably the Ward Manager or Staff Nurse at Witney.

The content of the verbal handover was said to be fine by Witney therapists, with best timing being after they had seen the patient for themselves (i.e. on the day of transfer or the day after). Although the staff at Witney recognised the benefits of this interaction with their colleagues at the JR, it was felt the information received was usually a repetition of what was provided in the therapy notes, so not always necessary. The only exception to this was the need for them to be made aware in advance if the patient had any special equipment requirements or was a “heavy” / complex transfer (i.e. would require the Witney therapists to advise and / or assist the nurses in moving the patient).

It was felt by JR staff that Witney staff were less easily contacted by telephone, which could lead to a delay in finally speaking, by which time the patient may have been at Witney for a few days, rendering the handover of less use. This view was reinforced by Witney staff, resulting in an **overall preference for written information by them**. However, Witney therapists were broadly satisfied with the information provided in

their notes and saw little value in the JR creating something additional, if already contained therein. In addition, as the Witney physiotherapy and occupational therapy staff worked so closely, **only one verbal handover would be sufficient to either person**, unless there were special patient considerations that needed communicating, as mentioned above.

Although Witney nursing staff did not make this comment, it was felt that the risk of miscommunication due to the nature of verbal handovers was highest for them. This was because individually they do not carry a patient caseload, so are not accountable to individual patients in the same way that consultant physicians or therapists are. Therefore, information has to be continuously transferred (with the risks of misinterpretation this brings) between each and every shift.

Some participants voiced opinions that verbal handover should only ever supplement formal written handovers. **Their suggestion was a brief, typed, comprehensive, but focussed, easy to access multi-disciplinary summary, which any clinician could understand and find further information in the patient notes if necessary.** This was mainly felt to be required, as the state of the patients' notes could not always be guaranteed.

5.2.2 Questions after transfer

Therapy staff were found to be the only group who ever really communicated about a patient once he or she had been transferred. This consisted mainly of a telephone call by Witney therapists to ask about something not detailed in the notes or to clarify how

the JR had dealt with a particular issue and / or why certain decisions were or were not made. These calls mainly occurred because Witney staff currently did not have more senior colleagues working with them there, whom they could ask, a fact that JR staff were happy to compensate for.

Communicating about a patient once he or she had been transferred was rare between physicians, as they were broadly satisfied that the information contained in the patient notes provided them with all they needed to know. In addition, nursing staff at Witney tended to speak to nursing or therapy colleagues there, if unsure of anything.

5.3 Dimension 3: the referral process

Patient transfers are organised directly between the JR and Witney, which is different for other referrals to community hospitals whereby an intermediary team manages this. The biggest impact of this is that Witney has essentially devolved responsibility to the JR to decide which patients are appropriate to refer there, as opposed to other discharge destinations. A direct transfer process was thought to be better in this case, as it was seen as simpler, allowing for more control by the clinicians who would be directly caring for the patients.

5.3.1 Referral process problems

A number of problems were highlighted, which arose from the process. Most were felt to be teething problems. According to those participants who highlighted the problems, these were:

- The seeming lack of a key person (with appropriate responsibility and ability

to make the decision to accept a patient) at Witney to speak to on the day of patient transfer, should the Ward Manager be away.

- The “fax back” mechanism to demonstrate the faxed referral request had been received by Witney was often not completed, necessitating a telephone call from the JR to check this.
- Staff at Witney were sometimes difficult to reach by telephone.
- Some fax referral requests were either lost or not received by Witney.
- The JR occasionally wanting to transfer someone they had not previously referred via fax to Witney.
- The JR was often not given adequate notice from Witney regarding the availability of a bed (i.e. lunchtime onwards on day of transfer).
- There was no-one specifically designated to resolve disagreements regarding the appropriateness of the patient the JR wanted to refer. Instead, this was dealt with ad-hoc by the consultant physician who currently works across both sites.
- Witney did not seem to have a formal process their end to deal with incoming referral requests.

5.3.2 Referral process enablers

It was felt that due to the informality and lack of formal governance of the current process, **key to its success was the personal relationships** between staff at the JR and Witney. Although a risk, this was generally viewed as positive, with staff seeing it as down to them to make it work, with consultant physicians happy to lead this, should they need to. This was demonstrated by the comment:

“I think because it’s all internal; because we’re all colleagues, we’re all working together, it’s not a problem.”

Relationships existed already with some physicians working across both sites and some therapy and nursing staff having experienced working in both acute and community settings. In addition, it was not felt to be detrimental that in the future no one physician would be looking after stroke patients across both sites, as the Witney physicians all still carried a caseload of either geratology or acute general medicine patients at the JR, so could still interact with colleagues on the acute stroke unit there. However, the exact nature of input into decision making about patients by Witney physicians whilst the patients were still at the JR did evoke differing opinion, as detailed in Section 5.4.3.

5.4 Dimension 4: Referral planning

There was no explicit planned transfer or discharge date set when a patient was admitted to the JR. Currently, as expressed by one participant:

“They come onto the ward and then we wait and see”.

One physician said that a date should be set as soon as possible after the patient is medically stable and their therapy assessments have been vocalised, though there seemed to be no protocol for this. The main reason for this seemed to be that historically there was less sense of urgency around planning discharges to rehabilitation, as there were insufficient beds available. Which consultant the patient is listed under and when their next ward round is can also have an impact on planned transfer / discharge date setting.

However, with what is considered as the requisite number of rehabilitation beds soon available, there seemed to be no future reason for this state of inertia. Consequently, a target to **set planned transfer / discharge date at around five to seven days** (or sooner if the patient has been on another ward at the JR, prior to arrival on the acute stroke unit) was being explored.

5.4.1 Referral delays

Various delays in patients transferring to Witney were given. Unavoidable ones were mainly due to the lack of bed availability and any unforeseen deterioration in a patient's medical condition, which meant their level of acuity merited twenty-four hour medical care (e.g. relapse, infection etc). Known **avoidable** delays were due to the following:

- Initial reluctance of Witney to take patients requiring nasogastric or percutaneous endoscopic gastrostomy (PEG) tube feeding, leading to the issue being escalated to the consultant physician.
- A patient's family not being made aware in advance of the decision to refer the patient to Witney and when informed, decided against this.
- JR staff were unable to contact a patient's family on the day of transfer.
- Any of the above leading to the free bed at Witney therefore being utilised by another non-stroke patient.
- Inefficient MDT decision making.
- A view by some physicians and nurses of reservations by therapy staff regarding whether the patient was ready to transfer, given their perception that less than the required therapy input that would be provided there.

A possible future cause of delays of inadequate discharge planning by Witney was also given.

It was noted that discharge procedures would rarely, if ever, prevent a patient from being transferred that day, even if the JR was informed quite late of the availability of a bed. Instead, JR staff would be forced to attempt to complete the necessary procedures more quickly, with the common result that the patient would be left waiting in the ward or discharge lounge. The impact of this to the patient and staff at Witney who would receive them was not seen as ideal, due to the added stress caused to both parties of late admissions. The impact to the quality of information arising from the aforementioned discharge procedures was mainly that any written handover summaries provided to Witney staff could arrive some time after the patient.

5.4.2 The multi-disciplinary team referring

The multi-disciplinary team (MDT) was seen as instrumental in planning patients' discharges. Consultant physicians tended to have the most influence within the MDT, as befits their position in the organisational hierarchy, their role as being overall responsible for the patient and their culture of being generally less risk averse. However, all parties seemed open to making the decisions made at these meetings more efficient, including nominating someone to drive this. Certain improvements to the functioning of this team were given. These were:

- **If all parties were aware of which patients were next on the list to be transferred, this would help ensure all various written communications were prepared in advance and disseminated to Witney in a timely**

fashion. This was particularly important to staff who only worked Monday to Friday caring for a patient who could be transferred over the weekend.

- **Stronger leadership by one member of the MDT to manage transfers and discharges, as illustrated by the comment:**

“You need [the] MDT working, but you [need] somebody to draw the line... one person that has the final say.”

- **More structured MDTs, where a representative from Witney attends and it is made explicit by a representative from the JR which patients are at the top of the waiting list (male and female) and therefore due to transfer in the coming week are discussed.**

5.4.3 The role of the receiving team

There was slightly conflicting responses to the role of Witney staff in referral planning from the JR.

One camp firmly believed that it should be fairly obvious which patients should be transferred to Witney (i.e. their trajectory for recovery meant they would benefit from specialist rehabilitation and the patient and their family was happy with the choice) and this should nearly always be managed on a first come first served basis. Consequently, staff from Witney should not need to input into that decision making and to do so (unless there were critical limitations) would only succeed in slowing down the process.

A slightly alternative view expressed some concern with the system’s ability to always deliver a patient to Witney in a satisfactory clinical state with the necessary information. This was partly due to their view that the supply of rehabilitation beds may quickly

become a scarce resource. Therefore, a representative from Witney may be needed to “inreach” to the JR’s MDT to ensure that the most appropriate patients are transferred. It was emphasized this was not in order to influence decisions so that less “heavy” patients came.

In contrast, the former view did not see the scarcity of rehabilitation beds as an issue that in theory should affect the JR, as they believed it was the responsibility of Witney staff to plan their discharges at an appropriate rate (e.g. maximum length of stay of twenty-eight days) that would allow them to have a bed available soon after the JR requested one or place the relevant pressure downstream on social services. This would be achieved by the Witney consultant physicians having to “call time on rehabilitation” when appropriate. Broadly, the above was felt to be possible, given the Witney consultant physicians’ appreciation of the demand and supply pressures facing the JR and the potential buffer of moving patients to generic rehabilitation beds at Witney and other community hospitals in Oxfordshire.

A further reason for the Witney physicians to at least be aware of which patients were likely to transfer was so that they could visit them briefly while still in the JR, something that would be relatively easy given all the Witney consultants spend the majority of their time working there. This, they thought, would smooth the transfer by requesting certain medical items were resolved whilst still at the JR, as well as welcoming the patient and allaying any concerns they may have about the transfer. Finally, seeing the patients briefly would help them identify problems more quickly at Witney, as they had knowledge of how the patient was performing at the JR. It was

noted by the physician who currently covered the two sites that this had helped him in the past and the example given was a patient suffering nasogastric tubes aspirations, due to not being positioned far enough upright.

Although mistrust was emphasized as not a factor, a final reason given for this “inreach” was the benefit that the Witney clinicians (with more experience in stroke rehabilitation) could bring to the JR’s MDTs to help “select the best cohort for rehabilitation”. However, this was equally refuted with the opinion that after such a short length of stay at the JR (e.g. if such a discussion took place at the MDT meeting at the end of the patient’s first week), clinicians with rehabilitation experience would have no more insight into the patient’s likely recovery trajectory than those of the JR, such that any input of this nature would only be worthwhile if it occurred much later. In addition as already discussed, this selection process was seen by some as by and large straight forward.

Lastly, Witney staff presence at the JR’s MDTs was felt to be necessary by some Witney participants, not to ensure that the most appropriate patients were transferred, but to actually see and feel the demand, so they were able to manage downstream discharges so beds became available to meet this. This was not seen as an entirely selfless task, as Witney staff were well aware that the JR not achieving its length of stay targets could be ultimately attributed to them. Put another way, seeing and feeling demand at “the front door” (i.e. by attending the JR’s MDTs) some felt Witney’s clinicians could bring a healthy sense of urgency to Witney’s own discharge planning, mainly due to their experience of working in an acute hospital environment. In

addition, they would need to take this system-wide view, as any stroke patients moved from specialist to generic rehabilitation due to a delay in discharge to social care would be blocking a bed for general geratology patients requiring it, who may also come under that physician's care. Excluding then the real concern of the availability of social care beds, to enable this all to happen Witney staff explicitly requested:

- **The JR team always fully explores Early Supported Discharge as a real alternative to transfer to Witney, where appropriate for the patient.**
- **The JR MDT meetings are structured in such a way to give any Witney representative attending an accurate snapshot of numbers of male and female patients likely to be well enough to transfer in the coming week and a summary of any special clinical considerations they have.**

Alternatively, if proven to be necessary, a more formal patient access policy for referring stroke patients from the JR to Witney could be explored.

5.4.4 The ideal referral planning timeline

Certain participants expressed more work to be done on this aspect of the integrated stroke pathway.

There was some discord by physicians in how easy it was to predict with any certainty a patient's prognosis after only a few days stay at the JR, though they all seemed to feel that often their initial hunches were proved right.

Nevertheless, some expressed the benefit of **setting a target date of discharge and likely discharge destination at day one**, even if it was likely to change. This should

then be **firmed up around day seven at the MDT and a referral request put in** at this point, should that be the chosen destination. The MDT should then aim to **carry out the transfer between day ten to twelve**, with all necessary procedures, especially communication with the patient, family and Witney staff taking place during this time. **Availability of a bed should be communicated by Witney to the JR the day before transfer takes place or at the latest during the morning of the proposed day of transfer.**

5.4.5 Impact of better / more timely information

Currently, therapy staff (excluding the Speech and Language Therapist) and the Ward Manager at Witney would be most aware that a patient was due to arrive, due to there being empty beds, following patients being discharged. One consultant would also be aware, due to working across the two sites.

There were conflicting views regarding the negative impact of transfer on a patient's recovery trajectory and what could be done to minimise this. However, one participant voiced that it is a:

“disaster if they [the patient] gets to Witney and the therapy doesn't continue where it left off immediately”

Speech and Language Therapy (SALT):

It was felt that with the new shorter target length of stay at the JR of a maximum of twelve days, this would not constitute much time for SALT there to make any discernable impact on improving a patient's communication. Consequently, SALT assessment should be within two days of the patient arriving at Witney, when therapy

then begins. However, the therapist did point out that they were not always aware a new patient had arrived until one or two days afterwards. For swallowing, recommendations by the JR are followed, until re-assessment is required.

Physiotherapy:

The Physiotherapist at Witney takes into account the information provided by the JR, but has to re-assesses, before commencing any therapy. They emphasized that therapists are autonomous practitioners and that

“until I’ve seen something as a therapist I can’t comment on what I would do treatment-wise”

In addition, the physical transfer can initially have an impact on their ability to recommence certain more strenuous therapy, which the patient may have been able to do previously. Nevertheless, the information provided by the JR allows them to complete the assessment process more quickly and extra attention is paid to those areas highlighted as problems by the JR staff.

Providing other information about a patient in advance was felt to be less useful, as they considered things may have changed by the time the patient arrives and that there was not much they could do to plan anyway. The exception to this was if the patient had complex MDT needs (i.e. required special equipment, treatment or extra resources.), which Witney may need a few days to source.

Occupational Therapy:

The Occupational Therapist would also re-assess the patient, usually on arrival, or the day after if the Physiotherapist had already seen them, or if the patient was particularly tired. An added reason for this was they sometimes had different equipment to the JR, so a baseline of the patient's performance on that would first need to be completed before any therapy started. They did not feel that any other information provided prior to them seeing the patient would improve this, possibly for the same reason as given by the physiotherapist.

The only information which would help was felt to be a **basic manual handling protocol**, particularly useful for nursing staff to refer to. This was because, without this information, nurses tended to take the safest option, which was usually to use a hoist. The impact of this was that patients may then not move for up to 3 days (if admitted on a Friday and not seen by the Occupational Therapist until Monday), potentially reversing any gains they had made in movement from previous therapy and ultimately increasing their length of stay unnecessarily.

5.5 Suggested improvements

A number of improvements to the current way of working were put forward. For the purposes of this section of the thesis all are listed, regardless of either the author's or participants' view on impact and feasibility.

5.5.1 Improvements to content of information

- Social information provided about a patient (e.g. reaction to diagnosis and prognosis by family members)
- Patient's outlook / emotional state, particularly anything that impacts their motivation to actively participate in therapy
- Patients' expectations, based on what they have been told about their prognosis
- Techniques used to encourage patient compliance, including an indication at what point to offer assistance
- Complaints made by family members while the patient was at the JR
- Any nursing handover to contain a basic manual handling protocol, which could be followed before first occupational therapy assessment at Witney.
- Notes to contain what had been discussed regarding the patient being able to drive again
- Conversation with patients and family better documented in the notes
- JR staff to manage patient and family's expectations of Witney by providing them with standard information / descriptions, preferably in written format

5.5.2 Improvements to timing of information

- All patient information available by Witney staff by the time the patient arrives

- Special equipment needs included on fax referral request
- JR informed of bed availability at Witney earlier

5.5.3 Improvements to format of information

- Standardised communication assessment between the JR and Witney
- Potential use of a “family communication sheet” (as currently used at Abingdon Community hospital) to record the aforementioned conversations with patients and families.
- Joint ORH and Oxfordshire PCT patient notes
- If the above is not possible, any written summaries to be completed by JR staff on appropriate stationery (e.g. joint ORH and Oxfordshire PCT headed paper) that would allow Witney staff to insert into their notes, without having to replicate
- Key nursing information in a written summary or separate nursing notes, otherwise often lost within a copious nursing notes.
- Therapists writing in medical notes as well as keeping their own
- A therapy summary in the e-discharge letter

5.5.4 Improvements to delivery of information

- More structured MDTs, where a representative from Witney attends and it is made explicit by a representative from the JR which patients are at the top of the waiting list (male and female), and therefore due to transfer in the coming week are discussed

5.5.5 Improvements to staffing

- A pan pathway Stroke Co-ordinator and / or Stroke Nurse Consultant to monitor patients' progress through the pathway, leading the communication required therein as well as any strategic initiatives to overcome bottlenecks.
- Local implementers of the above acting as “Discharge Planners” at both sites, which was generally seen as the role of the nursing staff, other than the Ward Manager.
- A nurse specifically tasked to oversee PEG tube feeding patients across the whole stroke pathway.
- Staff rotations between the JR and Witney to share knowledge.

5.5.6 Other improvements

- More appreciation from both sites regarding how peers work
- More appreciation for the different systems in operation at the other site
- Stronger working relationships
- More involvement by the current Stroke Nurse Practitioner with Witney
- More feedback from Witney
- Standardisation in therapy practises (e.g. assessments etc)

6. Discussion

The research findings broadly divided issues around knowledge transfer according to timing; i.e. time leading up to the day of transfer (Sections 5.3 and 5.4, The referral process and Referral planning) as well as immediately before, during and after the transfer day itself (Section 5.2 Hand-over). Distinction was also made about the content of the knowledge (Section 6.5 below).

6.1 Scope of results

It is important to note that as initiatives around improving stroke care are so pertinent to the case studied, a variety of issues were uncovered, some of which although important, were beyond the scope of this thesis. There were:

- **Staffing:** initial concerns over levels, required grades and permanence of staff at Witney and subsequently the difficulty in recruitment of the required posts.
- **Ideology:** whether it was fair to give preference to stroke patients with a better chance of recovery (so often younger) for specialist rehabilitation beds, thus removing the available resource for those with less chance and non-stroke geriatric patients, requiring generic rehabilitation.
- **Stroke unit model:** the extent to which separate acute and rehabilitation settings fulfilled the criteria for an integrated stroke unit, the benefit to patient outcomes on which the evidence is based.
- **The commissioning process:** whether inadequate in that a contract was accepted designating Witney and Abingdon Community hospitals as providers

of specialist rehabilitation stroke care, before the brief had been fully detailed and an estimated cost of providing the service calculated.

- **Discharge planning:** the extent to which this is affected by knowledge management versus general management.

Nevertheless excluding the above, the breadth of topics that arose within the scope of knowledge management demonstrates the challenge of deciding which, if any, of these to address in a systematic way. This may also explain alternative much broader definitions of knowledge management (as applied to healthcare) as:

“Aligning people, processes, data and technologies to optimise information, collaboration, expertise and experience in order to drive organisational performance and growth”

(Healthcare Information & Management Systems Society, cited in Guptill, 2005, p. 11)

6.2 Organisational readiness for knowledge transfer

In general, the findings of the study present a predominantly uniform view amongst senior physicians, nurses and therapists at both of the healthcare settings studied of the challenges and potential solutions arising from the transfer of a stroke patient from one setting’s team to another. This level of consensus was somewhat surprising, given the relative isolation within which the literature suggests clinicians often operate. However, this may be a reflection of the blurring between where acute stroke care ends and rehabilitation begins, meaning clinicians on both sides of this divide have more of an appreciation than they may think of the different knowledge management needs of their counterparts.

It may also be an indication of the success of multi-disciplinary team working within each setting, which although was found to sometimes slow down decision making, has provided the appropriate organisational atmosphere for knowledge sharing to take place. Given the inherent hierarchical culture seen in health care, maybe the multi-disciplinary team then is the best means for cultivating the necessary relationships and trust for knowledge transfer to flourish and more informal, social networks as indirect vehicles for professional discussion are just not appropriate or workable. The only other formal mechanism for this put forward was job rotations, further information on which is provided in Section 6.5.1.

Finally, the relative immaturity of stroke care (and therefore any units or wards dedicated to it) as a distinct clinical discipline, separate from, but largely linked to geratology may have yet prevented culture from having any influence. In other words, a specific stroke unit culture has yet to emerge as “the way things are done around here”, unlike specialities such as the neonatal intensive care unit among others (Hunter *et al.*, 2008). In addition, as seen in other industries the results do not suggest any association between sharing knowledge and personal loss of value. This could be due to the fact that although health care places huge emphasis on the individual knowledge of its staff, the overriding aim to channel this for the good of the patient prevents any personal reluctance not to share this.

Participants demonstrated a systemic view, in that they were aware of the pressures staff at the other setting were under and how what they did could impact this. However, this could be partly due to the fact that only more senior and / or members of staff with a

management capacity formed the research sample, who would maybe be expected to both “walk and talk” this view. Nevertheless, this fact should reassure the organisations’ management of sufficient organisational readiness and motivation to improve by adopting some of the solutions presented, given lack of incentive for knowledge sharing is said to be its major barrier. Specific evidence for this was that participants from the JR endorsed the importance of knowledge transfer (e.g. through the request for “joined-up working”) slightly more strongly than those at Witney, given it would be Witney who would directly benefit from this as the receiving party for stroke patients. Again, this may be because JR staff know of the impact to their not achieving a reduction in patients' length of stay on their unit to allow more throughput, which could be caused by Witney not functioning optimally.

However, on an individual level from the results, it is difficult to see if this motivation will translate into willingness by all to share whatever knowledge they possess. On this point, the thesis can only say that there was a feeling it would, however it also notes that any specific examples of resistance for personal reasons would have been unlikely to have come from the data, even if they had been sought.

6.3 Diverging opinion

As mentioned, opinion on most points made was similar. This perhaps reflects work already done by different clinicians and teams in putting together the integrated stroke pathway, which all welcomed.

In general, the results suggest that the physician group seemed most satisfied with the medical knowledge transferred between their peers, as most of their suggested improvements were about knowledge transfer between or originating from either therapists or nurses, some of which was useful to them. Explanation for this could be that as overall responsible for the patient, the consultant physician needs this knowledge to build up a holistic picture of the patient in order to input into important decisions about their long-term care. However, therapists at least tended to focus on much more specific short-term therapeutic goals.

From this finding, one could say that the quality of the nursing knowledge transferred is perceived as lower or less robust. A hypothesis for this is this is due to the more tacit nature of some nursing knowledge and therefore the difficulty in transferring this adequately. This may also explain why there is a verbal nursing handover by telephone to supplement any written handover. An example of this knowledge is the techniques used to encourage patient compliance, which only seems to originate from nurses spending time with patients and which can be different for different nurses dealing with the same patient. Nevertheless, this does not apply to all nursing and therapy knowledge and suggestions for improving the transfer of this are detailed in Section 6.5.1.

6.4 Knowledge flow

The case study illustrated quite well the push and pull dynamics of knowledge flow, with the results that the JR team sought to “push” as much as knowledge as possible they thought Witney needed on the staff there, which was by and large welcomed.

However, there were fewer demands voiced by the Witney staff about the knowledge they wanted.

For physicians at Witney, it made sense there were few requests regarding the content of the medical information received from their JR peers, as diagnosis, treatments and largely prognosis had already been made and any uncertainty resolved at the JR. For others, this may be due in part to the command and control style management culture within healthcare. Alternatively, it could be that while the JR is used to providing information to a whole host of discharge destinations for stroke patients, as the Witney unit has just opened, staff there may not yet have a feel for what is available (and would be potentially useful to them) nor sufficient confidence in their relationships with JR staff to ask for it. Finally, it may be due to the transfer of accountability for the patient by the Witney clinicians when they are transferred that means any information provided by colleagues at the JR is borne in mind, though they still want to verify this by seeing the patient for themselves, before taking any action. This then can also be used to disprove the hypothesis (for therapists at least) that “better” or more timely information can help rehabilitation therapy to start sooner (see Section 5.4.5). The reason is also contrary to alternative views expressed by some participants as to the potential reasons Witney staff may not follow the JR’s assessments and guidance (e.g. they think it is wrong, doesn’t meet their needs or that it is not relevant for their setting).

6.5 Context-specific knowledge types

As detailed in the methodology, the research question was kept deliberately broad in terms of “knowledge management requirements”, so participants were able to voice

what felt most pertinent to them and their roles, though as the context was the transfer of a stroke patient from one clinical setting to another, patient information was thought to be the major topic.

However, two contextual, rather than pedagogic categories emerged. Similar to those found by Edwards (2005) in his study of knowledge management in emergency care, these were:

- clinical knowledge (e.g. about a specific patient's medical condition)
- operational knowledge (e.g. about the systems in place at the organisation that should help staff do their jobs).

A cross-over to these two categories emerged, in terms of the receiver of knowledge (i.e. the patient). However patient information (as detailed in the Results section), although pertinent to the case studied for them to standardise and provide in written format is seen purely as information, rather than knowledge. Consequently, providing this is viewed as a one-off exercise for the case, rather than an intrinsic part of their knowledge management requirements.

6.5.1 Clinical knowledge transfer

Clinical knowledge can be defined as:

“the accumulated clinical knowledge relating to the patient and his / her medical condition, and the perhaps more factual information about the patient”
(Edwards, 2005, p. 189)

As illustrated in the literature, the expectation of clinical knowledge is already high. However, a gap in this was identified for this case study as the explicit skills and

knowledge required by Witney nurses and therapists to care for a cohort of stroke patients, according to accepted national definitions of a stroke unit. A particular demand was also the tacit knowledge required by them to manage a younger mix of patients, whose expectations around their rehabilitation were higher. A further somewhat grey area was the combination of explicit acute nursing knowledge (e.g. about different feeding techniques) and tacit knowledge (e.g. reassurance they were able to do this, based on experience) that was required by Witney nurses in order to facilitate patient transfer.

Turning next to the general standard of clinical knowledge sharing about a patient witnessed between the two settings, this could be characterised as comprehensive, given the types of knowledge and number of methods employed for this process. However, although comprehensive, some Witney participants alluded to instances of waste through the time taken to both give and receive unnecessary and sometimes repeated knowledge, examples of which were multiple telephone handovers. This situation and the literature's assertion of the time and cost of assimilating and recording information could warrant the case studied to investigate more efficient methods of achieving this. Examples for this were a multi-disciplinary written summary on joint ORH and Oxfordshire PCT stationery to give an overall view of the patient, rather than separate medical, nursing and therapy summaries. Standardisation would take the form of showing patient performance versus baseline on the key national stroke strategy clinical domains. In addition, there was a request to make the initial referral form as explicit as possible. Both of these would require input from Witney to ensure the suggested format was acceptable for them to interpret.

However though no literature was found to validate this, caution should be noted in that efforts to formalise and make more explicit types of information that should be shared could discourage sharing of other more tacit knowledge, which in this case, the Witney participants may not have recognised they receive, nor consciously know the importance of to their practise and patients. In addition, even if certain tacit knowledge was made explicit and written down, certain participants had reservations about this. Specifically, there was certain extremely useful knowledge about the patient clinicians at the JR wanted to impart to their colleagues at Witney, but felt this was too subjective to document for fear of labelling the patient, which could potentially unfairly impact later decisions about them. This applied to social information about the patient & their family and their outlook / emotional state. These caveats to written information sharing indicate there may still be a rightful place for a telephone handover to communicate these, though it could be improved by better scheduling and be more focussed (i.e. less repetitive).

6.5.2 Operational knowledge transfer

Operational knowledge can be defined as:

“how they [staff] know what to do and how to act in the operational aspects of their work”

(Edwards, 2005, p. 189)

Generally, results showed that operational knowledge currently merited more attention than clinical knowledge, possibly as the transfer process of patients to Witney for their stroke rehabilitation is still relatively new, while all participants had clinical knowledge of caring for stroke patients.

The best examples of operational knowledge transfer were requests by Witney staff to know from the JR the demand for their beds at any one time, so they can use this in their discharge planning. In addition, JR staff would prefer more warning of a bed becoming available at Witney, so they can make preparations, meaning the discharge day there is less rushed. Of course, whether this knowledge transfer is achieved face-to-face (as requested by most Witney participants via a representative attending weekly JR MDT meetings) or via other non-personal means (as favoured by some at the JR) is debateable, mainly due to fears of slowing down the process.

Knowledge management was not explicitly addressed in the planning of the rehabilitation stroke unit at Witney. Therefore, the systems and processes staff have used since its opening have been largely adapted from incumbent ones existing at the respective organisations. The consequences of this according to Edwards (2005) are that:

“In the absence of a coherent view of the process, the organizations inevitably develop solutions in a fragmented way” (p. 188).

Consequently, although obvious to those staff based at the setting, understanding of the systems and processes there by staff based at the other setting may be not be obvious. In fact, wholesale changes to systems and processes (including the use of technology) were put forward by very few participants. Instead, they favoured making minor changes to what already existed.

Reasons for not requesting major changes could be cultural to the NHS as either staff had worked with current systems for so long; they could not envisage an alternative.

Alternatively, they stifled or self-censored any ideas, possibly due to a feeling of apathy that they would have any chance of being implemented. Nevertheless, this does not have to be the case. Consequently, what remains for the organisations studied to do is to identify other examples of operational knowledge that would benefit their ability to either change the system or function better within it. However, it will be up to management to decide on the most efficient way of sharing this information.

Finally, it was felt that as many of the systems are manual, they rely on effective human interaction. Hence, such emphasis was placed on the importance of maintaining good relationships between staff at both sites. This may also help therapists at the JR be more willing to “let go” of patients, as they would have more knowledge of and therefore trust in the therapy staff they were sending the patients to. A particular lesson for the opening of Abingdon Community hospital though was any early relationships formed between the JR and Witney will be wasted, as many of the staff at Witney were temporary and will make way for new permanent staff coming in.

6.6 Solutions

Aligned with the two perspective of knowledge management, comment is provided on what are considered the most significant solutions.

6.6.1 Technological solutions

Though the focus of the research was the people-centric perspective of knowledge management, opportunity for discussion about the role of systems and technologies, which are often seen as the deliverable of most knowledge management strategies, was provided. However, the hot topic to most clinicians of electronic patient records or even

the most basic systems were seldom mentioned, except for a request for some way of identifying pressures in the pathway proactively that could be viewed by everyone. This may be due to the fact that participants truly did not see systems as solving their knowledge transfer problems or possibly did not know enough about their capabilities to be able to comment. Alternatively, it could be that they have a generally negative view of their role, based on those systems they currently have. Nevertheless, it is perhaps encouraging participants' did not see information technology as the sole answer. This is because many organisations have found that systems rarely achieve their knowledge management objectives, without the people using them demonstrating the required level of commitment.

6.6.2 People solutions

Collective leadership, as put forward by Buchanan *et al.* (2007), as an enabler of knowledge transfer seems adequately catered for in the MDT structure. However, what was found to be lacking was a hub for this in the form of a central co-ordinator with decision-making power. As shown to be a key role in the Newry and Mourne case study, a pan pathway Care Management Co-ordinator seems an obvious solution to managing much of the knowledge transfer between the two health care settings. Fortunately, this role is already planned for in the integrated stroke pathway, with specific responsibility to manage the interface between the JR and Witney, ensure continuity of care for the patient as well as facilitating an ongoing teaching programme.

Furthermore, the benefits of “joined-up working” and job rotations in aiding knowledge transfer are quoted in the literature as well as already being put forward as a recommendation in the aforementioned pathway. The specific benefit of this is so staff

can experience for themselves the other setting to build up their own tacit knowledge of the systems in place there and care requirements of patients in that stage of their illness. In addition, a consultation education strategy for health and social care staff involved in stroke care was issued by the Department of Health in April 2009.

Specifically, Langhorne (2002) identifies education and training as a key component of effective stroke unit care. The Royal Bolton Hospital NHS Foundation Trust has implemented this in the form of an “in-service training programme” of stroke awareness and hyper acute stroke nursing, alongside specialist stroke courses for relevant staff (see Appendix A). In addition, registered nursing staff have worked with the relevant therapists to gain competency in swallow assessment and moving & handling, both of which were suggested as having improved in this case study’s results. Though not based on stroke per se., Hall and Weaver (2001) suggest medical registrars apprenticed to experienced nurses can gain a better understanding of nurses’ work and better communication, something which could embed multi-disciplinary working earlier, through inclusion into physicians’ formal training (cited in Hunter, 2008). This would also help physicians’ appreciate nurses differing decision making process, based on their relatively deeper insight of the patient (Spence, 2000, cited in Hunter 2008).

7. Conclusion

Knowledge management, as shown by the literature, is something that arguably applies more to health care delivery, than many other sectors. However at an operational level, efforts to improve it seem limited.

This thesis has examined the knowledge management requirements of clinicians working in the area of stroke care, specifically when a patient is transferred from one health care setting to another, a time therefore that knowledge transfer would appear to be quite critical.

Stroke care was chosen due to its current high profile nationally, as well as being identified as an area of relative weakness in performance by the case study organisation. Consequently, the organisation has introduced plans to improve, though specific reference to knowledge management in these was low. Nevertheless, the breadth of topics arising within the findings demonstrates that staff working there understood the importance of knowledge management and were able to articulate areas for improvement, with operational, rather than clinical knowledge being most lacking.

Knowledge Management therefore can be said to be one of a number of management issues facing stroke care for the organisations studied, though currently not considered by them the most pressing. The probable reason for this is that participants would argue that the application of more general management principles (e.g. staffing, planning,

roles & responsibilities, leadership, business processes etc) would have more impact (at least in the short to medium term) in terms of improving stroke care.

In fact, due to the publication of national guidelines with bodies set up to monitor local performance against these, as you would expect “improving” is currently seen through the quite narrow lens of achieving a defined set of metrics. Consequently, improvement efforts have focussed on areas that can be clearly measured against these metrics, as oppose to those that are not, but could possibly have more impact. An example of this is the Bolton case study, which showed significant improvements in a number of working practises (including knowledge management); though improvement in the metrics was mainly attributed to other factors (e.g. improved access to rehabilitation beds and diagnostics).

Another reason for the lack of priority attributed to Knowledge Management is that although knowledge transfer is an important factor in continuity of patient care, the specific benefit of this continuity to the patient and their chances of positive outcomes has yet to be proven. Given health care’s strong leaning towards evidence-based practise, it is little wonder then that it is only if and when this link is firmly established that managers will be able to justify investing time and money in this area. In fact, the findings suggest most benefit of improving knowledge management would be felt by staff in helping them work with the system, thereby making their job easier, the consequences of which may indirectly benefit the patients. However, even if this were found to be the case, whether this would be enough to justify diverting resources to this and thereby away from direct patient-improving initiatives is again debateable.

In terms of the time taken and efforts employed especially for tacit knowledge to be transferred and “socialised” by the recipient, little sense of urgency was shown, given the highly labour-intensive and hence cost of traditional on-the-job training and suggested job rotations. Consequently, there was a prevailing view that knowledge management would look after itself over time, purely from staff getting on with the job of working within the new system. This perspective is interesting given the importance clinicians and healthcare managers alike imbue to formal clinical processes and procedures in order to avoid errors and maintain quality standards. However, formalising of any sort applied to operational knowledge management was seen more as a barrier and bureaucracy, rather than an enabler.

Personal relationships were often seen as the best and only way for certain knowledge to be transferred. Whilst this was found to be true for certain examples of extremely tacit patient-specific knowledge, there did seem to be scope for the automation of other less tacit types. Reasons for potential over-emphasis on human knowledge transfer as the vehicle could be due to an underestimation as to the occurrence and risk of process variation in the current system. In other words an underlying, but largely false belief that people who work in health care are just more careful. In addition, there was also no appreciation for the cost of waste arising from tacit knowledge disappearing when staff leave the organisation.

Nevertheless, there was general consensus in both the source of problems and suggested solutions among the different clinician groups, which would indicate a favourable environment for change to take place.

In conclusion then it seems there are unmet knowledge management requirements that would undoubtedly improve the working lives of the clinicians studied and their ability to offer the level of care expected by the public. However, this does not seem to be a priority, due to often more fundamental management issues that have to be solved first.

7.1 Limitations of the study and future work

This thesis is limited by the fact that only one stroke pathway (involving two local NHS organisations) was studied, and as the range of results found in the National Sentinel Stroke Audit demonstrates, quality of stroke care across the country can vary considerably. However, the range of participants selected for the study was felt to make the results representative of the situation at ORH with regard to the research question, including the risk already mentioned of omitting junior physicians in the sample.

In terms of the results themselves, concerns noted in the methodology were not founded and although it was apparent participants construed the meaning of knowledge management in different ways, a good proportion of the views given could be linked to the literature. In addition, clear patterns emerged from the data, principally through the level of consensus found on most issues.

Nevertheless, it was apparent that issues raised by some were thought by others to have been addressed as part of the integrated stroke pathway. In other words, as participants could have been answering based on the situation at different points in time, the results may not be representative of the current situation, but the participants' perceptions of it. This was due to their answers being based on their prior experience of ORH, knowledge

of the planned changes coming from the pathway and to what extent they believed these have been adopted and will be successful. Nevertheless, the researcher feels that rather than invalidate any of the results, this inconsistency will have only succeeded in emphasizing or downplaying certain issues versus the reality. In addition, although the pathway introduced many changes that would impact knowledge management, as it did not address knowledge management specifically, we can assume the underlying processes around knowledge management would remain the same or change only slightly. Nevertheless with hindsight, the researcher would have been more specific in the questioning whether the participant was referring at any one time to the situation in the past, present or future. Given more time, he would have also tested the list of dimensions identified in order to identify their pertinence and feasibility. Proposed method would have been re-phrasing the dimensions into criteria as part of a Delphi questionnaire and circulated among all clinicians working at the two settings, as conducted in a similar study by Grimaud *et al.* (2005).

As discussed in the thesis, as models of stroke care vary across the country, it is difficult to say if the results and therefore ORH are typical. Certainly, the methodology did not set out to make generalisations about the entire population although where relevant theory existed; Section 6 (Discussion) did make use of this to create points of broader significance. Consequently, as an exploratory study the results serve only as a platform for further investigation, which could apply at ORH or equally to other local acute NHS organisations.

To improve generalisability, further more explanatory research would need to be undertaken, across multiple case study sites. These would probably need to be other NHS acute Trusts of similar size, serving similar demographics with a considerable medical training & research facility in order for results to be generalised to similar organisations.

One element which could also be included in further work is patient experience. In fact, this could be said to be vital in capturing a true systems-wide view of the knowledge management requirements of transferring a patient from one health care setting to another. The justification for this is that most authors admit that though knowledge transfer is vital to maintaining continuity of care, the impact of loss in continuity for the patient has not been studied.

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Appendix A: Interview protocol

- 1. Describe your role**
- 2. Describe any interaction you have with Witney Community Hospital / ORH?**

Prompts: e.g. patient transfer of info, meetings, networking etc

- 3. Describe the differences in referral for Stroke to Witney Community Hospital vs. other Community Hospitals?**

Prompts: better? worse? why? examples?

- 4. What is your input into planning for a patient's referral to Witney Community Hospital?**

Prompts: what process do you follow to identify patients? when? who else involved? why? how?

- 5. What elements are formalised / procedural?**

Prompts: what written documentation do you have to complete?

- 6. At one point (Day) into their length of stay do you know if a patient will be need to be referred to Witney Community Hospital?**

- 7. Do patients ever have their discharge to Witney Community Hospital delayed?**

Prompts: why?

Any elements of care [therapy, medicine etc] commonly causing delay?

- 8. At one point (Day) before a patient arrives, do you become aware of the referral of a new Stroke patient to Witney Community Hospital?**

- 9. What happens to help Witney Community Hospital plan for a new Stroke patient's arrival?**

Prompts: e.g. information given?

- 10. What happens (if anything) to plan for a patient's arrival?**
- 11. What is the nature and source of communication between you and anyone within Witney Community Hospital / the JR regarding a Stroke patient?**
- Prompts: face-to-face, care plans, meetings, e-mails, telephone calls, other written documentation*
- 12. What (if any) procedures or systems are there for communication (about the patient) between you and the Witney Community Hospital / the JR?**
- 13. How much "two-way" communication is there between you and the Witney Community Hospital / the JR in the run up to a patient being transferred?**
- 14. What information that you do not already receive would you like to get from Witney Community Hospital / the JR?**
- Prompts: why? impact? who can provide this?*
- 15. How better would you like the current information to be transferred?**
- 16. Are there ever miscommunications or misunderstandings between you and Witney Community Hospital / the JR?**
- Prompts: please describe them, how and why they arose and your thoughts on the impact of these to the patient care, delays etc*
- 17. What information (about the patient) do you feel is most difficult to convey?**
- Prompts: why? impact?*
- 18. What is the most important information (about the patient) that needs conveying to the Witney Community Hospital**
- Prompts: why? how is this achieved? who has the knowledge?, what are the barriers to it being transferred?*

19. Have you any suggestions for improving the information shared (about a patient) between you and Witney Community Hospital / the JR?

Prompts: how? what impact would that have?

20. Do you ever receive feedback or questions (about a patient) from Witney Community Hospital (after a patient is referred)?

Prompt: how? to / through whom? about what?

21. Do you ever ask questions (about a patient) to the JR (after a patient is referred)?

Prompt: how? to / through whom? about what?

22. What are the reasons why you do not do this?

Prompt: barriers, people, systems, time? etc

23. What would you have done differently in the setting up of Witney Community Hospital rehabilitation stroke unit?

24. How is length of stay managed?

25. Describe your input into patient assessment at the end / start of their stay?

26. When does therapeutic intervention commence after a patient arrives?

Prompt: what happens before this?

27. Which elements of the assessment are most often re-assessed?

Prompt: why?

28. Do you ever receive “surprises” about a new patient when they arrive you were not aware of?

Prompt: what? impact?