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Inside the Black Box: Creating Excellence in Stroke Care through a Community of Practice

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A thesis submitted to City University in accordance with the requirements for the degree of Doctor of Philosophy in Health Services Research

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Table of contents

List of figures

List of tables

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Declaration

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Abstract

This thesis looked inside the *black box* of stroke care, so called because its contents are not clearly defined. This case study of success illustrated how a new inpatient stroke unit (SU) was created in an inner London teaching hospital, transforming treatment for patients with stroke. Whilst it is known that good stroke care results in improved patient outcomes, it is not fully understood how or why. As stroke is the second major cause of death in adults worldwide, and a leading cause of adult disability in the UK, it is essential more is known about how evidence translates into practical knowledge for use in mainstream practice. This action research study, through the systematic documentation and evaluation of the processes and outcomes, has unpacked and illuminated factors that enabled development of success, and provides the first empirical account of its kind. This study adds to the knowledge of *knowing how.*

A variety of qualitative and quantitative methods were used to generate data between January 2001 and November 2002. Findings were analysed using Immersion / Crystallization and descriptive statistics. When the *black box* of stroke unit care was opened, four key interrelated themes emerged from the process findings: building a multidisciplinary stroke team; developing practice based knowledge and skills in stroke; valuing the central role of the nurse in stroke care and creating an organisational climate for supporting improvement.

Analyses of findings suggest the creation of excellence in stroke care was linked to the development of a Community of Practice (CoP), which combines three elements; domain, community and practice, into a conceptual framework of learning that fundamentally places the acquisition of knowledge into a social process of learning. Whilst improvement initiatives have recently been linked in the literature to CoPs, no guidance is available on how this should be done. This thesis makes an original contribution to the body of knowledge by providing the first empirical evidence of not only on how a CoP was created, but shows how it developed into a functional multidisciplinary CoP, a concept identified in the literature as difficult to accomplish. In concluding, issues related to practice, research, education and policy are raised for future considerations.

Abbreviations

ADL	Activities of Daily Living
A & E	Accident and Emergency
AHP	Allied Health Professional
ASU	Acute Stroke Unit
BASP	British Association of Stroke Physicians
BI	Barthel Index
BME	Black Ethnic Minority
CEEu	Clinical Effectiveness & Evaluation Unit
CHAI	Commission for Healthcare Audit & Inspection
CGDP	Clinical Governance Development Programme
CoP	Community of Practice
CoPs	Communities of Practice
CSU	Comprehensive Stroke Unit
DGH	District General Hospital
DGM	Divisional General Manager
DSU	Dedicated Stroke Unit
DT	Dietitian
EBP	Evidence Based Practice
EBHC	Evidence Based Health Care
ECU	Elderly Care Unit
ECW	Elderly Care Ward
EUSI	European Union Stroke Initiative
FG	Focus Group
FN	Field Notes
GM	General Manager
GMW	General Medical Ward
GP	General Practitioner
GRU	General Rehabilitation Unit
HCA	Health Care Assistant
HSR	Health Service Research
HTA	Health Technology Assessment
I/C	Immersion / Crystallization
ICP	Integrated Care Pathway
IR	Institutionalisation Rate
LOS	Length of Stay
M	Medical Staff
MARU	Mixed Assessment Rehabilitation Unit
MDT	Multi-Disciplinary Team
MST	Mobile Stroke Team
N	Nursing Staff
NAO	National Audit Office
NHP	Nottingham Health Profile
NHS	National Health Service
NICE	National Institute for Health and Clinical Excellence
NSF	National Service Framework
NSSA	National Sentinel Stroke Audit
OT	Occupational Therapist
OTA	Occupational Therapy Assistant
PCT	Primary Care Trust
PT	Physiotherapist
PTA	Physiotherapy Assistant
QoL	Quality of Life
RCN	Royal College of Nursing
RCP	Royal College of Physicians
RCT	Randomised Controlled Trial
RSU	Rehabilitation Stroke Unit
RSW	Rehabilitation Stroke Ward
SIGN	Scottish Intercollegiate Guidelines Network
SLT	Speech & Language Therapist
SPSS	Statistical Package Software System
STEP	Stroke Treatment for Every Person
SU	Stroke Unit
SUs	Stroke Units
SUTC	Stroke Unit Trialists' Collaboration
T	Therapy Staff
TIA	Transient Ischaemic Attack
UK	United Kingdom

Chapter 1

Introduction

"The Prophecy"

I firmly believe that this good work will continue and grow
into something absolutely big...we will be one of the best
units in the country... (Nurse 11)

This thesis explored lessons learnt from the development of a successful new inpatient stroke unit (SU) in an inner London National Health Service (NHS) Teaching Hospital in the United Kingdom (UK); and this chapter sets out a chronological account to frame the understanding of what happened over time. The objectives of the study were:

1. To describe the outcomes achieved from implementing a new inpatient SU.
2. To describe the processes of introducing a new inpatient SU.
3. To identify key factors that influenced outcomes.

This study used action research to systematically document and evaluate the process and outcomes of setting up a successful SU and looked inside the *black box* of how to implement evidence based stroke care. This area has not been previously researched and the exact nature of SU care remains poorly defined (Kalra et al. 2005). Action research is a form of participatory research in which researchers work explicitly *with, for* and *by* people, rather than undertake research *on* them (Reason & Bradbury 2001 p.2). This thesis provides a holistic account of the implementation of evidence based health care (EBHC) within a *real life* setting and demonstrates how stroke care at the hospital moved from the bottom 5% in the country (Clinical Effectiveness and Evaluation Unit [CEEu] 1998, 1999), to the top of the National Sentinel Stroke Audit (NSSA) in 2004 (CEEu 2004). The following year, the SU gained further national recognition and was awarded first place for clinical service redesign (Health Service Journal 2005). Findings make an original contribution to the wider body of knowledge about how research evidence is implemented in clinical practice and contributes to understanding why, despite strong evidence of the benefits of SUs, stroke care across the UK remains inconsistent. Findings are therefore likely to be of interest to those in the field of health and social care and others involved in the delivery of EBHC.

1.1. Background to the study

1.1.1. Origins of the proposal

This action research study arose directly from the effort of a multi-professional stroke working party that wanted to improve stroke care in the Trust[1]. Membership of this group included two nurses, a doctor, a physiotherapist, an occupational therapist, a speech and language therapist and a psychologist from within the area of healthcare for older people. This group, in conjunction with the Trust's lead nurse for research and development, put together the proposal for the action research study. In 2000, a £60,000 grant was secured from the hospital's Special Trustees. This was the first time funding in the Trust had been given to a non-medically led research project, and marked the culmination of three years hard endeavour by the stroke working party. Due to unforeseen circumstances, the planned lead investigator for this study relocated with her family overseas.

1.1.2. The role of the researcher

At the time of my appointment into the lead investigator role, I had been employed by the Trust for five years as a physiotherapist, the last three as Head of Physiotherapy managing a department of over 100 staff. For the duration of the project I combined a clinical specialist role in neurological physiotherapy (including stroke) with management responsibilities for three days per week; the remaining two days were dedicated to the role of lead investigator. As a physiotherapist I was familiar with quantitative research, but inexperienced in action research. I received supervision from the Trust's lead nurse for research and development until the study was registered for a higher degree at a university with a set of supervisors internationally recognised for their combined expertise in action research and stroke care.

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[1] The terms Trust and hospital are used interchangeably in this thesis. National Health Service hospitals are managed by Acute Trusts.

1.1.3. The local context

Action research is often written up as a case study in rich contextual detail in order that the reader can judge the relevance of findings to their own practice. The next section describes the study setting and health needs of the local population. Overall life expectancy in this location is lower than the national average and the most common cause of death (36%) is circulatory diseases including stroke and heart disease[2], demonstrating the need to address stroke care as a priority.

1.1.3.1. The hospital

The study took place in a large London teaching hospital that had been rebuilt in 1970 from its original site three miles away. The monotonous grey concrete architecture of the tower block made a stark contrast to the surrounding green landscape. This once modern hospital, now over 30 years old and in need of major refurbishment, had over 1000 beds and 4500 staff. It enjoyed a well-established reputation as a centre of excellence, providing many regional, national and international specialities. Despite having a comprehensive tertiary Neurosciences Unit, the Trust had no specialist stroke service for the 325 patients that were admitted each year with stroke.

1.1.3.2. Population demographics and local health issues

The hospital sits within an inner city borough with an approximate population of 210,000 people (http://www.statistics.gov.uk/census/accessed 07.08.05) but serves the health needs of over 300,000 people, thus reflecting its wider specialist role. The local population is comparatively young; only 10% are aged over 65 (compared to 16% nationally) and 22% aged 20-29 (against 12% nationally). The area is culturally and ethnically diverse with 27% of residents from black and ethnic minority (BME) groups (2001 census). The largest BME groups are Bangladeshi (6.4%), Black African (6%) and Irish (5%). Mortality datum shows that Bangladeshis, the largest BME group in the borough, have the highest mortality rate and are the most disadvantaged Asian group with respect to coronary heart disease, with high risk of stroke.

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[2] To preserve and protect the identity of the research participants the reference for this information is withheld

Black Africans, the next largest BME group, have an incident rate of stroke twice that of white people and the death rate amongst Black Africans from stroke is three times the national average (Eame & Ben-Shlomo 1993). Concurrent levels of disability from stroke in the local population are hard to extrapolate from public health data, but as stroke is known to be one of the leading causes of adult disability in the UK it is likely to be considerable (National Audit Office [NAO] 2005), and supports the local need for a specialist stroke service. Indeed, a specialist unit for stroke had been a subject of discussions between the local Community Health Council and the Trust on a number of occasions.

The social and economic status of an area serves as an important predictor of the likelihood of cardiovascular disease, including stroke. The socio-economic pattern in the borough is diverse; out of 354 English boroughs, it ranks as the 19th most disadvantaged. In addition, the borough has small pockets of deprivation characterised by high crime rates, few job opportunities and poor health making the inhabitants amongst the most disadvantaged in the country. Housed alongside these people are some of the country's most affluent individuals, living in property worth in excess of £1million[3]. This makes a stark comparison with the 11% (6% nationally) of housing in the borough that is considered unsuitable for human habitation. Lifestyle factors such as smoking and alcohol consumption are other important risk factors for stroke. Within the borough, 31% of the inhabitants over the age of 16 years smoke, (compared to 28% of England as a whole), whereas 30% of men and 19% of women drink more than the recommended weekly limit for alcohol consumption; the national average is 31% and 18% respectively. This additional health datum further strengthens the local need for a specialist SU.

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[3] A typical semi-detached house in this area would sell for over £1.3 million (www.ourproperty.co.uk 2005).

1.1.3.3. Stroke care prior to specialist unit

Stroke care in the hospital was fragmented, uncoordinated and spread over 18 wards. Information from the Patient Administration System (PAS) showed it was not unusual for stroke patients to stay on five or six different wards during their time in hospital. If the patient survived the initial period of acute brain injury, they would be moved to a quieter part of the ward to make room for other acutely unwell patients to be admitted into the high dependency area. Subsequently, there was inequality of service provision based on age and geographical location. Patients over 65 years could be admitted to one of three elderly care wards. These practised a model of consultant led multi-disciplinary teamwork (MDT) and were better suited to dealing with the needs of patients with stroke. In reality, many older patients, along with younger strokes (i.e. those under 65 years) could end up on general wards where intervention for stroke was more limited. Neither of these pathways provided specialist stroke management and the general rehabilitation unit only admitted people over 65 years. Consequently, younger patients had to be referred to regional rehabilitation units and often had to wait several months in an acute hospital bed.

1.2. Getting the "go ahead"

Poor results in the first and second rounds of the NSSA (CEEu 1998, 1999) coincided with key changes made to senior management of the Trust, which included the posts of the divisional general manager (DGM) for medical services that incorporated elderly care, the medical director and head of therapy services. Together with the incumbent nurse director, the new appointees advocated on behalf of the stroke working party, reinforcing the need for a SU. The DGM presented the business case as a priority at his first Trust executive conference, concluding that it was unacceptable for a renowned teaching hospital to be providing such a poor service for stroke, the inadequacies of which were clearly demonstrated in the national audit results. These audit results along with the forthcoming National Service Framework for Older People (NSF for OP) (Department of Health (DH) 2001), led the Trust board to agree, subject to funding, to open a new SU the following April.

In the interim, the DGM worked at regional level to secure finances to re-open wards previously closed for financial reasons, for the new SU. Following the appointment of a stroke coordinator and the re-deployment of displaced staff from previous ward closures, the unit opened ahead of schedule in November 2000.

1.3. The stroke unit

The newly established SU was situated over two sites (acute and rehabilitation wards) within half a mile of each other, yet operated as a single unit linked by the stroke policy and some shared staff i.e. the stroke co-ordinator, the stroke physician and therapists. The service became known as "STEP", an acronym for *Stroke Treatment for Every Person*. This reflected the underlying vision of equality in care for all people over the age of 16 years with stroke, and included the right to receive end of life care by specialist staff knowledgeable about stroke.

1.3.1. Acute stroke unit (ASU)

The Acute Stroke Unit (ASU) was based within a 22 bedded ward divided into five bays of four beds and two single rooms and was part of the Elders Services division. The two bays situated at the front of the ward are in close proximity to the nursing station and allocated for the care of acute strokes. Remaining beds are used for older people with non-stroke related illness. After the unit had been open for a year, the ASU expanded from eight to 12 beds to better match capacity with demand; original calculations had underestimated the local incidence of stroke. Bed managers adopted a *flexible wall policy* which meant the number of stroke beds available were dependent on need. On average, there were 12 acute stroke patients in the Trust at any one time.

1.3.1.1. ASU staffing

As measured in the NSSA, staffing on a typical mid-week day at 10am on the ASU consists of four qualified nurses and two health care assistants (HCA); these nurses and HCAs also cared for medical patients on the ward. Two qualified nurses and two HCAs are on duty at night. The nurses, whilst having cared for strokes before as part of their wider role in looking after older people, were not specialist stroke nurses. A G grade sister (a member of the original stroke working party) was supported on the unit by a team of nurses and HCAs (two F grades, seven E grades, seven D grades and six HCAs), and the stroke coordinator (H grade) who had over ten years experience in nursing stroke patients.

There were two consultant geriatricians; one oversaw patients with stroke and one acute elderly care. There were also junior staff who gave medical input to the ward. A consultant neurologist was also available for specialist advice and treatment for more complicated and unusual presentations of stroke.

Therapy was provided by a senior occupational therapist (OT) who was also responsible for patients with stroke outside the unit, a senior physiotherapist (PT), a part time junior PT and physiotherapy assistant (PTA), a part time senior speech and language therapist (SLT) and a senior dietitian (DT) with responsibility for all strokes and other neurological patients in the hospital. The therapists, whilst having some familiarity in the treatment of stroke, were also not specialists. The PTs and SLTs had some prior experience in stroke as they had previously treated stroke patients in the hospital alongside other neurological patients on the neurosciences unit. However OT intervention for stroke had solely been aimed at discharge planning and not rehabilitation.

When compared to national mean levels of staffing (as measured by the NSSA 2004 (CEEu 2004) see Table A1.1 and Table A1.2 in Appendix 1) the numbers of doctors and nurses are above the national mean levels, albeit the latter only just, whereas staffing for therapists and HCAs are all low. Therefore, when considering overall reasons for success in this action research study, it is unlikely that staffing ratios played a significant part.

1.3.2. Rehabilitation stroke unit (RSU)

In addition to the ASU, there was also a Rehabilitation Stroke Unit (RSU) where patients came once past the acute intervention phase of stroke care. Here they continued their inpatient rehabilitation, which could be as long as six to eight months, or as short as four weeks depending on individual need. The RSU started with a planned capacity of 11 beds within a 22-bedded ward at the Trust's rehabilitation facility for older people. A further six beds in the ward were allocated for general rehabilitation and the remaining five beds were commissioned by the Primary Care Trust (PCT) for patients who required long-term nursing care. A year later the bed capacity for stroke patients rose to 15 beds and a flexible wall policy meant more often than not, over 17 stroke patients were on the RSU.

This satellite site is a two-storey building with a calm peaceful atmosphere and houses three rehabilitation wards plus two further wards for the care of older people with dementia and mental health needs. The RSU was based on the ground floor of the building with access to gardens and provides an environment conducive for rehabilitation. Whilst the RSU had no dedicated rehabilitation space on the ward, the therapists had a gym, purpose built kitchen and bathroom with quiet rooms nearby.

1.3.2.1. RSU staffing

A G grade ward sister led the nursing staff on the RSU, supported by a junior sister (F grade), three (one part time) senior staff nurses (E grades), four (one part time) staff nurses (D grades), one B grade[4] and seven HCAs. On a typical weekday shift at 10am, there were four nurses and three HCAs for all patients and two qualified nurses and two HCAs at night. The remit of the ward prior to its temporary closure was to nurse patients with long-term care needs, respite patients and the occasional patient for general rehabilitation, hence very different to the newly created stroke rehabilitation unit. Consequently in the early days, the stroke coordinator provided specialist-nursing advice to the nursing staff.

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[4] A B grade nurse is a HCA with additional training

Medical cover during the weekday was from an on site senior doctor (a clinical assistant) with the stroke physician from the ASU present for two sessions per week.

Therapists at the RSU, whilst familiar with principles of rehabilitation, were not specialists in treatment of stroke patients. Therapy input was provided by two senior PTs, two senior OTs, a junior PT, a PTA and OTA, part time SLT and DT. Input was also available from a clinical psychologist.

In comparison to national figures stated in the NSSA (CEEu 2004), staffing levels at the RSU were mixed. Like the ASU, numbers for nurses and doctors were above the national mean, whereas staffing levels for therapists and HCAs were comparatively low (see Table A1.1 and Table A1.2 Appendix 1). Like the ASU, the overall differences in staffing numbers were small when compared to the national picture and not thought to be a major factor in the success of the unit.

1.4. Phases of the study

This section lays out the order of events in the action research study so each event can be understood in the context of the wider setting. In keeping with the action research process this structure was applied retrospectively rather than in advance, thus permitting data collection and development work to be adapted in response to events as they unfolded in practice, and findings fed back into the clinical setting. For the requirements of the PhD, the study systematically documented events for 23 months between January 2001 and November 2002. In reality, the development of the SU was ongoing and served to provide a medium to deepen the understanding of the ongoing processes within the environment during the analysis of findings. Furthermore, due to my prior role in the Trust I could also draw upon my knowledge about the early development work of the multidisciplinary stroke party. In addition, the NSSA provided a measure of change and a benchmark for outcomes across time.

1.4.1. Settling in

Due to the previously mentioned departure overseas of the original planned lead investigator, there was a six-week gap between the SU opening, the start of the study in January 2001 and my appointment. A research steering group was assembled and had representation from a service user, the partner of a stroke survivor, The Stroke Association, a local resource centre, therapy, nursing, medicine, social work, psychology, management and the Trust's research and development department. The research steering group met quarterly to provide operational advice and direction to the study, to oversee and review progress and monitor financial matters. In addition I received monthly academic guidance from my supervisory team at City University.

In addition, the early days were spent developing relationships and working alongside staff to establish myself both as a researcher and work colleague. I actively encouraged staff to come forward and become co-researchers on the project, and this laid the foundation for the formation of the STEP team. This team, which was integral to shaping the implementation process, had representatives from nursing, medicine, PT, OT, SLT and DT and consisted of a core membership of six to eight people at any one time. Additional SU staff joined the team for time limited projects (see action cycles Chapter 4, section 4.4.2.2).

During these early days, for the most part I felt welcomed by staff including those from the original stroke working party and there was widespread enthusiasm for developing the new service. However a notable exception came from a senior staff member, who showed passive resistance to moving the project from paper to action, and wanted to drive practice developments through management meetings and not in response to staff in the field. The situation was partially resolved by the staff member being persuaded to become a co-researcher on the project, and was ultimately settled four months later when the person resigned from the Trust.

However as described earlier, prior to undertaking this study my post in the hospital combined clinical and managerial duties. Furthermore, the responsibility of becoming a researcher, whilst I welcomed this opportunity, did place additional demands upon my working (and personal) life and was not without conflict even in this early project stage. Coghlan (2001) highlights the problem of ambiguity in trying to maintain a full organisational membership role whilst undertaking action research in your own work place. Whilst my clinical credibility with SU staff enabled change to happen from the bottom up and my management position facilitated top down support for that change, it was not without personal cost. At times I struggled to leave my physiotherapy role behind and become "just a researcher" (field notes (FN) Feb 2001), with access to a patient being almost denied by a relative when she realised that I was seeing her mother in my research capacity and not to "do anything useful" (FN Jan 2002). I also sensed some of my departmental colleagues resented my protected time for research as they made comments about my lack of visibility and support for the department despite having arranged managerial cover. This led to me feeling "like I am sinking whilst juggling too many balls" and indeed at times I felt alienated from my peer group (FN Feb 2002). In their exploratory study that looked at the impact on researchers of collecting sensitive data, Johnson and Macleod Clarke (2003) highlight the need for the definition of sensitive to be expanded to topics and situations where outcomes can be personally demanding and have social implications. My own situation particularly resonated with their findings related to working in uncharted territory, confronting or dealing with resistance and role conflict between researcher versus health care practitioner. However, in contrast to reports that participants in Johnson and Macleod Clarke's study felt unable or were not given the opportunity to express their concerns at project meetings and supervision sessions, I was able to use my university supervision to receive adequate support throughout the duration of the study.

1.4.2. Exploration phase

This phase began in earnest in February 2001 and was the first of three phases of data collection. This stage concentrated on gathering views from the multi-disciplinary team and stakeholders on how the stroke service should be developed and evaluated, plus thoughts on anticipated challenges associated with achieving the vision. Data were generated through eight focus groups held with staff and stakeholders (see Chapter 4, section 4.4.1.1) and a range of stroke care and general rehabilitation issues were identified, including educational needs of staff and the perceived low profile of stroke in the Trust. It also emerged that MDT documentation and goal setting paperwork that had been designed by the original stroke working party prior to the start of the SU were not working in practice and consequently not well used. As a result, the development of new team documentation and staff educational needs formed the basis of project work in the next phase of the study.

1.4.3. Innovation phase

Issues and ideas raised in the exploratory phase became the main focus of the study's development work, and the team began to address these with immediate effect, continuing through to the end of the study in November 2002. The innovation phase took place within a framework of action cycles, which involved a process of diagnosing issues, planning, taking and evaluating action based on a solid pre-understanding of context and purpose of the project (Coghlan & Brannick 2005). In this project three action cycles (see Chapter 4 sections 4.4.2.1 – 4.4.2.3) took place concurrently:

- Valuing and profiling stroke.
- Building a stroke team
- Sharing knowledge and skills.

Data were primarily generated through participant observation reflective field notes.

1.4.4. Reflection phase

The main reflection phase occurred during the last six months of the project, ending in November 2002. In reality, reflection happened throughout the study, and reflective field notes of informal conversations and participant observations in the field were kept. Data collected during this period concentrated on staff views about what had been achieved (or not achieved), and learnt in practice. Data were generated through the use of in depth semi-structured interviews (N=28) with staff (see Chapter 4, section 4.4.3.2).

1.5. Thesis overview

This thesis is presented in seven chapters. This chapter has presented a chronological framework to aid the understanding of what happened during the course of the study, and has described the setting in rich contextual detail to assist the reader to judge the relevance of findings to their own practice situation. Chapter 2 provides further contextual details of the socio-political aspects of stroke related to the implementation and development of SUs, followed by a review of the stroke literature in Chapter 3. Details of data collection methods, including the action cycles, are given in Chapter 4. Chapter 5 reports outcomes achieved in the delivery of inpatient stroke care and Chapter 6 looks at process findings to examine how the evidence for stroke was implemented. Chapter 7 discusses findings and their empirical and theoretical significance; contributions to knowledge are highlighted. The chapter finishes by drawing together future issues for consideration for policy, education, research and practice.

1.6. Final comment

This thesis is an account of a collaborative inquiry and all generated data has been shared with the staff at the project site and permission gained for the inclusion of findings. However, for practical reasons, mainly related to time constraints and staff moving on, it was not possible to feedback the final thesis to all staff and check if the account reflected their experiences of taking part. Nonetheless, this thesis has been read in full by one member of the STEP team, who commented that it strongly resonated with her involvement. Furthermore, whilst this study was a collaborative inquiry, it is written in the first person to reflect the personal framing of the narrative.

Chapter 2

Stroke: the context

This chapter presents contextual details of stroke care in the UK, highlighting key factors surrounding current health service provision to assist understanding of why stroke treatment, whilst having made good gains in specialist care, remains wanting (Clinical Effectiveness and Evaluation Unit (CEEu) 2006). Firstly, the term *stroke* is defined, followed by a review of its impact and effects. The historical perspective of stroke is then considered as a backdrop to an exploration of wider influences on UK stroke care. Current best practice and models of stroke care as laid down by national policy (DH 2001) and detailed in the National Clinical Guidelines for Stroke (NCGS) (Intercollegiate Stroke Working Party [ISWP] 2004) are described within the socio-political factors related to inpatient stroke care, including evidence-based practice (EBP). The chapter goes on to suggest that despite stroke having been identified by UK Government and other agencies as a clinical priority, previous outcome-driven quantitative studies have been unable to clarify processes involved in delivering good care. Inequalities in service provision continue to exist at both local (McKevitt et al. 2005) and national levels (Rudd et al. 2005). The challenge therefore remains how to implement what is known about best stroke care to reach the largest number of patients (Lyons & Rudd 2007).

2.1. Stroke: definition, impact and effects

The World Health Organisation (WHO) (1978) defines stroke as a focal or global neurological impairment of sudden onset lasting longer than 24 hours or leading to death, and from a presumed vascular cause. Stroke is caused by a disruption in blood flow carrying vital oxygen to the brain (Stroke Association 2006).

In the UK, it is estimated that one in four men and nearly one in five women over the age of 45 will have a stroke during their lifetime (Wolfe 2000). A quarter of new strokes each year happen to people under the age of 65 years, countering the common negative misconception that stroke only affects older people (National Audit Office [NAO] 2006). Stroke strikes people of the same age and in the same numbers as those who have coronary heart disease (Rothwell et al. 2005). Even though stroke rates declined by 30% between 1992 and 2002 for those under 75 years, due to the ageing population the chance of dying from stroke has remained constant at about 24% (NAO 2006). The overall incidence rate of stroke, which is the number of first time strokes occurring per unit time, is approximately 2- 2.5 per 1000 population, with a total prevalence rate, i.e. the number of stroke survivors in the population estimated to be 5 per 1000 (Wolfe 2000).

The socio-economic impact of stroke is considerable; it is the second major cause of death in adults worldwide (WHO 2006; Lopez & Mathers 2006), and the UK's biggest cause of severe disability with a yearly economic burden of £2.8 billion (Saka et al. 2006). Given that this cost is over £1 billion more than for coronary heart disease, the persisting disparity in combined government and charitable research expenditure over recent years of £12m for stroke in comparison to £95m for coronary heart disease is difficult to uphold (NAO 2005).

Stroke patients occupy 2.6 million acute bed days annually and outcome following stroke is varied; of those 110,000 new strokes each year in the UK (NAO 2006), one third will die, one third will have residual disabilities and one third will make a good recovery (Sandercock et al. 2001). A person who survives the initial insult can be left with varying deficits and subsequent alteration of function depending on the site and size of the lesion. Common problems include loss of movement and sensation down one side of the body, speech and swallowing problems, incontinence, visual defects, imbalance and decline in cognitive function (Michel 2003). Cognitive impairments (33%), lower limb difficulties (30%) and communication problems (27%) were the most commonly reported residual impairments in a study by Geddes et al in 1996. Stroke therefore can have a major impact on the long-term needs and quality of life for the stroke survivor, their family, friends and carers (Bunn 1996; Young & Forster 2007). How best to address the complex requirements of stroke survivors, families and carers still remains elusive some 10 years later (Tilling et al. 2005).

2.2. Historical perspective

Stroke has long been associated with a hopeless attitude that can be traced back to Ancient Greece. Hippocrates declared, "to get over a strong attack of apoplexy[6] is impossible, over a weak one not easy" (Biller & Love 1991 p.1105); Arateus in 1st century AD pronounced the patient would be as good as dead should his apoplexy be severe (McHenry jr 1981). This prevailing nihilistic attitude towards stroke persisted until midway through the 20th Century when it finally began to be challenged. Results started to emerge during the 1950's (Adams & McComb 1953) and the following decades from small individual studies which indicated apparent benefits of organised stroke care (Adams 1974; Bonner 1973; Waylonis et al. 1973). However, these studies were primarily descriptive in nature, too small to show a statistical effect, and had little effect on service provision (Langhorne & Dennis 1998). Unfortunately, the opinion that nothing can be done for a patient who has had a stroke is still heard today amongst health practitioners and members of the general public (Yoon & Byles 2002; Wolfe et al. 2001; Biller & Love 1991); and "the status awarded to stroke has not been commensurate with other leading diseases such as heart disease" has been highlighted as a key message from a recent government agency (NAO 2006 p.11).

Despite early indications of the benefits of specialist stroke care, debate continued to occur over whether organised inpatient care was more effective than conventional treatment for stroke, which typically meant care spread over elderly, general medical or surgical wards of a general hospital (King's Fund Consensus Conference 1988; O'Connor 1996). As a consequence, the treatment for stroke remained largely unchanged until 1993 when a landmark systematic review of 10 randomised stroke trials was published (reviewed in Chapter 3, section 3.2.1). Results of this review suggested stroke unit (SU) care prevented premature death and challenged the negativity associated with management of these patients (Langhorne et al 1993). Importantly, the paper led the way for a Cochrane review undertaken by the Stroke Unit Trialists' Collaboration

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[6] This was the more commonly used term for stroke

(SUTC) headed by Langhorne, (www.Cochrane.co.uk), which demonstrated that SUs were the single most effective treatment for stroke, and if a stroke patient was treated on a specialist SU they were less likely to die, be less disabled and more likely living at home at one year (SUTC 2001). What is more, the evidence showed that all stroke patients regardless of age, severity or subtype of stroke, demonstrated benefits from being treated in a SU (Brainin 2003).

Despite this evidence clearly demonstrating that stroke is both a preventable and treatable condition, response from health care services has been slow (NAO 2005). Results from the most recent National Sentinel Stroke Audit (NSSA) (CEEu 2006) show that even though most hospitals in the UK have rehabilitation facilities, only 50% have an acute SU. This is unacceptable given that evidence shows that specialist inpatient care not only saves lives but also lessens residual disability of those that survive (SUTC 2001). Furthermore, management in a SU has been shown to confer survival benefits in excess of 10 years after stroke (Drummond et al. 2005). Indeed the right for all stroke patients to be treated in a SU has been recently reiterated in the Helsingborg Declaration (2006[7]), which has set out the European Stroke Strategies for stroke care in Europe until 2015. The following section takes a closer look at what a SU comprises.

2.3. What is a stroke unit?

The concept of a SU has evolved over the last 20 years and as yet there is no one widely accepted definition of what constitutes a SU or what facilities they should provide (Rudd et al. 2005). The term stroke unit (SU) is an umbrella phrase used to describe a range of organised inpatient care models (SUTC 2001), but most commonly used to refer to a system of complex inpatient care delivered by a coordinated specialist multidisciplinary team with expertise in stroke and rehabilitation (Langhorne & Pollock 2002). However, in keeping with the shift in emphasis to include service users in contemporary health care, Redfern

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[7] Consensus Conference sponsored by World Health Organisation (Europe) was held in March 2006 to set overall aims and goals of stroke management to be achieved by 2015. Available at www.euro.who.int/document/E89242.pdf

et al. (2006) add patient and carers to this description by explicitly including their involvement in the overall prevention and management of stroke.

Currently in the UK, specialist stroke care is most frequently delivered within a geographically discrete unit by a co-ordinated MDT with expertise in stroke and rehabilitation; as shown in Table 2.1 this model can be further subdivided into acute, rehabilitation and comprehensive units (SUTC 2001). Specialist rehabilitation of stroke patients can also take place in mixed (or general) rehabilitation units, where a multidisciplinary team (MDT), including specialist nurses, provide generic rehabilitation, but not exclusively for stroke survivors. Furthermore, in the last NSSA (CEEu 2006) 32% of hospitals were noted to use a mobile stroke team to deliver expert care to patients in a variety of settings and to provide education for non-specialist staff (CEEu 2006). However, a recent systematic review that looked at six controlled clinical trials involving the care of 1,085 patients by mobile stroke teams demonstrated no major impact on death, dependency or need for institutional care (Langhorne et al. 2005). Kalra et al. (2005) found similar results in a randomised controlled comparison of alternative strategies for stroke care, thus supporting the continued preference for a 24-hour dedicated SU.

1.	**Stroke ward:** A multidisciplinary team including specialist-nursing staff based in a discrete (geographical) ward caring for stroke patients. This category includes the following sub-divisions:
a)	**Acute stroke units (ASU):** Accepts patients immediately or soon after stroke but discharge patients early (usually within 7 days). This could include an "intensive" model of care with continuous monitoring and high nurse staffing
b)	**Rehabilitation stroke units (RSU):** Accepts patients usually after the acute phase, often after 7 days or more and focus on the rehabilitation phase, which can be offered for a prolonged period
c)	**Comprehensive stroke unit (CSU):** Acute and rehabilitation beds are provided within one unit, and so provide early acute care and rehabilitation that can be offered for a prolonged period.
2.	**Mixed rehabilitation ward:** A multidisciplinary team including specialist nursing staff in a ward providing a generic rehabilitation service but not exclusively caring for stroke patients
3.	**Mobile Stroke team:** A multidisciplinary team (excluding specialist nursing staff) providing care in a variety of settings [7]
4.	**General medical ward:** Care in an acute medical ward without routine multidisciplinary input

Table 2.1 Models of stroke care in the UK (SUTC 2001)

The reasons why geographical SUs have better outcomes than other forms of service organisation remain unknown, and this represents a gap in the current literature on inpatient stroke care. Findings of the Cochrane systematic review (SUTC 2001) indicated staffing in SUs and conventional care settings were very similar, and main differences noted were in areas of actual practice and organisation of care. Furthermore, as other models such as the mobile stroke team, have specialist staff, it is thought enhanced benefits of defined units may be linked to how the team interacts (Langhorne 1995). In particular, the role of specialist 24 hour nursing has been highlighted as a potential, but yet unproven, key factor in providing a therapeutic environment and preventing early complications (Langhorne et al. 2005). The components of good stroke care are considered next.

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[7] The last NSSA (CEEu 2006) recommends that a mobile stroke team should consist of a doctor with responsibility for stroke, a specialist nurse and a minimum of two kinds of therapists. The team should meet at least once a week to discuss patients.

2.3.1. Components of good stroke care

Complex interventions like stroke care contain a number of components that act either independently or interdependently, making the active components more difficult to identify (Campbell et al. 2000). As such, the processes and components that make up good SU care remains poorly understood (Langhorne & Pollock 2002) and details of what is inside the *black box* of stroke care remain elusive (SUTC 2001; Gibbon et al. 2002; Pomeroy & Tallis 2000; Langhorne & Dennis 1998). Nonetheless, there are characteristics to guide delivery of organised SU care that are consistently described in the literature (SUTC 2001; Langhorne & Dennis 1998; Langhorne & Pollock 2002), and recommended in the NCGS (ISWP 2004). These characteristics are:

- Co-ordinated MDT meetings at least once per week.
- Staff with specialist interest in stroke or rehabilitation.
- Routine involvement of carers in the rehabilitation process.
- Regular programmes of education and training.
- Provision of information to patient and carers.

Chapter 3 looks in more detail at the evidence base of these characteristics.

Moreover, the significant advances in the management of stroke demonstrated by the Cochrane review of inpatient stroke care (SUTC 2001) are thought to be largely due to improved processes of care (Sinha & Warburton 2000). For instance, the randomised controlled trial (RCT) carried out by Indredavik et al. (1999) showed that SU care achieved recommended higher levels of intravenous saline hydration, early mobilization (within 24 hours), oxygen therapy, better use of paracetemol and heparin, together with the prescription of aspirin and insulin within 24 hours. These factors were seen to be fundamental in achieving successful outcomes for patients, yet it was not possible from the design of the study to actually determine how this was achieved in practice.

Kalra and colleagues (2005) have recently reiterated this lack of information related to processes of management as a major limitation of existing research. As such, it has been acknowledged that evaluation of complex and heterogeneous services like stroke care cannot be measured by the same methodology that underpins randomised controlled trials (RCTs) (Gladman et al. 1996; Campbell et a. 2000; SUTC 2001). It has been proposed that until research trials have been conducted to unpack the *"black box"* of SUs, service developers should aim to replicate the identified features of organised stroke care (Rudd et al. 2005).

Whilst there is no doubt that RCTs have advanced the management and intervention for stroke, the continuing preference for this methodology does not allow for surrounding organisational and cultural details to be collected; these are important in understanding the complexity involved in delivering stroke care (Harrison 2001). The role of context in the implementation of research findings is well documented in the literature on innovation and service development (Dopson & Fitzgerald 2006; Greenhalgh et al. 2004; McCormack et al. 2002) and factors thought to influence stroke care in the UK are explored next.

2.4. Factors shaping acute stroke care in the UK

This section gives an overview of current factors shaping acute stroke care in the UK and considers both social and political perspectives. The role of the public attitude towards stroke is considered first.

2.4.1. The public

Despite an estimated 300,000 people in England living with significant effects of stroke, it continues to be a poorly understood condition (NAO 2006). A recent poll commissioned by The Stroke Association found that 51% of people could not correctly identify what a stroke is, and nearly half of those asked did not think death from stroke could be reduced by seeking emergency care (Stroke Association 2005). It is likely that the negative assumption that stroke only affects older people contributes to lack of urgency for stroke treatment (Stroke Association 2006). Many strokes, like heart attacks, are preventable but lack of awareness about warning signs and symptoms, risk factors and importantly, the effectiveness of treatment, among the general public remains problematic (Kothari et al. 1997; NAO 2006). Furthermore, the wide array of associated symptoms of stroke can make recognition difficult and adds to the problem of prompt intervention (Yoon & Byles 2002). This is important as specialist management in the initial hours after stroke, for example delivery of thrombolysis via medication to dissolve clots following stroke in selected patients, and other specialised intensive rehabilitation, can limit damage to brain tissue and therefore lessen the potential for disability, however prompt action is required (ISWP 2004; Kalra & Ratan 2007). If advances in treatment are to be maximised, action from the public is essential in the overall prevention and management of stroke.

A stroke may be heralded by a transient ischaemic attack (TIA), often called a mini stroke (Commission for Healthcare Audit and Inspection [CHAI] 2005), but defined as "focal neurological symptoms caused by cerebrovascular disease which resolve within 24 hours" (Langhorne & Dennis 1998 p.99). A TIA is associated with 11.5% risk of recurrent stroke at seven days, rising to 15% at one month and 18.5% at three months; if this warning was acted upon a full-blown stroke might be prevented (Coull et al. 2004;). For instance, whilst thrombolysis is not suitable for everyone, it needs to be administered within three hours of the stroke occurring, so delays must be minimised (Hacke et al. 2005). Indeed, people who suffer a TIA are more likely to progress to stroke in the first 24 hours than those with angina to experience acute myocardial infarction (DH 2006). Yet, for reasons not fully understood, people at risk from TIA and stroke delay seeking urgent medical attention, and research findings over the last 20 years indicate little has changed. Findings from a study in the 1980s found that 54% (n=27) of patients whose stroke was preceded by a TIA did not seek medical attention at that time (Dennis et al. 1989), with results from a recent study indicating 44.4% (n=107) delayed seeking medical help for more than one day (Giles et al. 2006). It could be postulated that delays in seeking medical intervention may be linked to lack of knowledge about TIA or stroke, yet Giles and colleagues found delays that occurred in their study happened regardless of ability to correctly recognise symptoms of stroke, albeit people with highest predicted risk did act more swiftly. These results add to those from an earlier study by Carroll et al. (2004) who also found that even if knowledge of stroke was good in individuals, it was reported they would still call their general practitioner (GP) rather than an ambulance, hence delaying access to acute specialist care. A recent campaign headed by The Stroke Association in 2005, called FAST (Face Arm Speech Test), was instigated to raise public awareness of symptoms of stroke as a medical emergency and need to dial 999.

Paradoxically, as measures are taken to raise the profile of stroke amongst members of the public, stroke continues to have a low priority with much of the medical profession (Bogousslavsky et al. 2003). The role of healthcare professionals as a contributory factor in acute stroke care is looked at next.

2.4.2. Healthcare professionals

Historically stroke has never been a high priority in any speciality of medicine, and labelled by some as being a "Cinderella speciality" (Wolfe et al. 2001 p5; Rodgers et al. 2003). The literature has even suggested that stroke whilst tragic, has traditionally been seen as uninteresting, possibly due to the association with older age, the chronic nature of the condition and the belief that little can be done for it (Pound & Ebrahim 1997). Findings from an early Canadian study showed healthcare professionals were filled with dismay when a stroke patient was admitted to the ward, perceiving the patients as unrewarding and difficult to work with (Hoffman 1974).

In the UK, the care of stroke patients has traditionally been the remit of geriatricians, but in most European countries stroke is considered a neurological condition rather than an older persons' condition (NAO 2006); the inclusion of stroke in the National Service Framework for Older People (NSF for OP), which only covers England (DH 2001) could arguably have strengthened this association. Furthermore, the continuing difficulties faced by those involved with stroke is not helped when other medical conditions are seen as higher priorities, the most commonly cited reason for low standards of stroke care in one health district in the UK (Tyson & Turner 1999).

Until very recently stroke was not recognised as a subspecialty of medicine by the Specialist Training Authority of the Medical Royal Colleges in the UK. However now, largely due to the British Association of Stroke Physicians (BASP), specialist registrars can spend an extra year in their training to gain a specific qualification in stroke medicine (CEEu 2004 p.21), and thus help increase the numbers of consultants specialising in stroke. Figures from the most recent NSSA are encouraging as results showed that 97% of hospitals in England and Wales now have a consultant physician with special responsibility for stroke (CEEu 2006). This audit also indicated that the median number of stroke sessions for consultant stroke physicians has risen from three to five sessions per week, which whilst better, is still only a fifth of the number of consultant sessions recommended by BASP. There are 640 patients per stroke consultant, compared with 360 patients per cardiac consultant (House of Commons Committee of Public Accounts 2006). The need for more specialist doctors is evident when results from a survey of 1,700 stroke survivors in England are taken into account, as 40% stated they believed their care was delayed due to the hospital doctor not recognising they had experienced a stroke (CHAI 2005). In the same survey, a further 33% perceived a delay in their treatment was linked to a failure of their GP to recognise the symptoms of stroke. Harraf et al. (2002) in a multi-centre observational study of 22 hospitals in the UK and Dublin (n=739 patients) discovered most GPs did not send stroke patients into hospital via ambulance. Overall in this study, the GP only used emergency services for 5% of patients with symptoms of stroke, suggesting a lack of awareness about the efficacy or need for prompt treatment of stroke. It is hoped that the new GP contract introduced by the UK Government in April 2004 will help to further raise awareness of stroke, as points are awarded for recording stroke-specific indicators, for example blood pressure and cholesterol levels, which can translate to additional funding for the GP. However, findings from the NAO survey of GPs showed that GP behaviour still varies, with just over half of those asked saying they would refer a patient with suspected stroke immediately for emergency care (NAO 2005). Therefore, GPs can expedite hospital admission for people suffering from stroke or TIA by prompt utilisation of emergency services but the near 50% of GPs who do not refer on to specialist stroke care requires action.

Of all the professions involved in the care of stroke patients, the nurse is the only healthcare professional to have a continual presence on the ward and so is ideally placed to provide a pivotal role in the care of stroke patients (Burton 2000). Perry et al. (2004) reporting on a focus group that explored the nurse perspective of stroke care, identified that nursing was seen to encompass all aspects of stroke care from primary and secondary prevention strategies in the community to acute intervention and rehabilitation. However findings from a recent study reported that 23% (N=13) of nurses who worked in an acute medical ward and looked after stroke patients did not consider stroke as an emergency event (Carroll et al. 2004). Whilst this study cannot be said to be representative of the wider nursing body it is a source of concern; elsewhere it is has been documented that nurses felt they had much to offer people with stroke and gained many rewards from their work with them (Pound & Ebrahim 1997). Furthermore, it was noted that therapists generally liked treating stroke patients, finding the progress patients made both rewarding and satisfying (Pound & Ebrahim 1997). This is important as the main burden of stroke to individuals and society is the residual disability, and this requires input from therapists, along with other members of the team, to ameliorate (Young & Forster 2007).

Altogether, stroke continues to have a mixed profile among the general public and health professionals, and certainly lags behind that of cardiac patients. This was highlighted in a report from the Royal College of Physicians (2004), which stated that people with stroke need and deserve facilities similar to those who have had a heart attack. The role of national drivers in advancing stroke care is explored next.

2.4.3. Drivers for stroke care: policy, clinical guidelines & audit

Over the last decade, the UK Government have been taking steps to modernise the NHS through such initiatives as clinical governance, the introduction of National Service Frameworks (NSFs) and standards, all of which are integral to securing patient safety (DH 2005). Whilst there were some concerns about stroke being incorporated into a policy framework developed to improve care for older people, the publication of the NSF for OP by the Department of Health in 2001 has undoubtedly raised the profile of stroke. Standards for the management of stroke were established in standard five of the NSF and divided stroke care into four main elements: prevention, immediate care, early and continuing rehabilitation and long-term support. Within this framework, all hospitals caring for patients with stroke were expected to achieve milestones laid down for good care and implement the National Clinical Guidelines for Stroke (NCGS) (ISWP 2000, 2004). These clinical guidelines were based on the best available evidence and drew heavily on the RCT research methodology.

The implementation of the NSF stroke standard five and the NCGS are measured using the NSSA, which is undertaken approximately every two years (CEEu 1998, 1999, 2002, 2004, 2006). Recent findings demonstrate that stroke services are continuing to improve but still face considerable challenges in delivering high quality care (DH 2006). Indeed, the first NSSA (CEEu 1998) found that only between 10 and 27% of stroke patients spent any more than 50% of their time in a specialist SU and this was largely due to a shortage of appropriate beds (Rudd et al. 2001). By 2004 the number of stroke patients spending more than 50% of their time on a SU had risen to 47%, and whilst this is an improvement it was still woefully inadequate (CEEu 2004). Results from the fifth and most recent audit indicate that whilst there has been an increase in the number of SUs (79% of Trusts reported a unit in 2004 compared to 91% in 2006), there has not been a substantial change in overall bed capacity; site median only moving from 0.77 in 2004 to 0.89 in 2006. So whilst the NSF for OP (DH 2001) made stroke a priority and gave milestones for establishment of stroke services, it fundamentally failed to direct on issues of capacity.

Furthermore, results from the audit show there continues to be inconsistent implementation of stroke evidence and varied compliance with stroke guidelines. So whilst the target set for all hospitals dealing with stroke will have a SU is nearing achievement, the inequalities that remain in standards of implementation means not all patients receive specialist SU care. It is therefore very important that stroke intervention is improved across the country to maximise the potential benefits of specialist care and reduce the impact of stroke on individuals, their families and the wider economy. However, implementation is rarely described in the stroke literature, and where it is the content is largely atheoretical and anecdotal, thus learning is limited (see Chapter 3, section 3.6). It is now recognised that provision of clinical guidelines with an expectation that staff will implement findings into practice is insufficient, leading to patchy and incomplete implementation, and require active dissemination and implementation strategies (Grimshaw et al. 2001; Harvey et al. 2002; Greenhalgh et al. 2004; Rycroft-Malone et al. 2004; Fixsen et al. 2005; Dopson & Fitzgerald 2006; McCormack et al. 2006). Whilst the National Institute for Health and Clinical Excellence (NICE) has published broad assistance on how organisations can implement guidance (NICE 2005), it does not address the challenge of implementation at a local level. Indeed, it is recommended that the process of embedding research evidence into pluralist organisations like the NHS should be informed by contextual factors as the implementation of evidence is not a straightforward linear process (Pettigrew et al. 2004). It is argued that more value should be attributed to knowledge from formal evaluation of local projects, such as this thesis, which can play an important role in the improvement of healthcare, particularly in building theory recognising the complexity of behaviour change and research implementation (Harvey & Wensing 2003). Action research, along with realistic evaluation has been identified in the service innovation literature as a preferred way to do this (Greenhalgh et al. 2004).

Stroke remains high on the Government agenda; the Planning Framework for 2005/06 – 2007/08 reiterates the call in the original NHS Plan for a 40% reduction in heart disease, stroke and related diseases in people under 75 years by 2010 (Different Strokes 2006). The development of a new Vascular Board at the Department of Health promises a greater focus on the prevention and treatment of stroke in the future. This national target is one of the few remaining targets and stroke is now a priority throughout the NHS. In response, the Government has asked NICE to develop guidance for acute stroke care, and the Department of Health has set up a working party to deliver a new National Stroke Strategy in 2007. The challenge is to maximise this focus and achieve equitable service delivery with implementation of evidence based stroke care for all.

2.5. Chapter summary

This chapter has considered a range of current and historical elements influencing stroke care in the UK. Systematic reviews of research evidence demonstrate SU care results in improved patient outcomes, and government policy sets out a timetable for implementation with national guidelines indicating what good care should comprise. However, none of these factors explain how to implement best practice at a local level. This thesis argues more process-orientated studies that are practice based and action orientated, for example using action research, are needed to inform implementation of stroke care and the translation of clinical trials evidence to practical reality. The following chapter explores the strengths and limitations of the current literature related to the implementation of stroke care with critical examination of individual studies.

Chapter 3

Stroke: the literature

This chapter critically reviews evidence informing healthcare practitioners about how to provide stroke unit (SU) care to meet requirements of government policy (Department of Health (DH) 2001) and evidence based national stroke standards (Intercollegiate Stroke Working Party (ISWP) 2004). This chapter presents results of a systematic search to examine evidence informing the implementation and development of stroke units (SUs); thus positioning this thesis within the wider body of knowledge, and highlighting gaps which this study will address. The prevailing discourse in the stroke community is to draw upon outcome driven quantitative studies, however these are unable to clarify processes involved in delivering good stroke care. This review has deliberately incorporated literature from a plurality of research approaches.

3.1. Search strategy

The most recent versions of the following databases were searched in March 2007: Medline, Cinahl (Cumulative Index to Nursing and Allied Health Literature), Allied and Complementary Medicine, EMBASE (Excerpta Medica), Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, ACP Journal Club (American College of Physicians) and DARE (Databases of Abstracts and Reviews of Effects) and explored using a maximally sensitive search strategy to identify studies relating to inpatient stroke care (see Appendix 2 for details of terms used to guide the search.).

Papers were limited to English language, adult care, research, systematic reviews, and descriptive studies published since 1951, which is the start of the MEDLINE database corresponding with the first published literature on SUs. Titles and abstracts of papers identified through this initial search were scanned for relevance to the topics of interest and pertinent papers obtained. The reference lists of all items obtained were then checked to identify further items for inclusion. Recent editions of Stroke, British Medical Journal, Journal of Interprofessional Care, Journal of Advanced Nursing, Cerebrovascular Diseases, and Clinical Rehabilitation from 2000 to March 2007 were hand searched to check for articles that may not have been identified in electronic searches. Professional publications such as the National Clinical Guidelines for Stroke (NCGS) (ISWP 2004), the European Union Stroke Initiative Guidelines (Hacke et al. 2003) and the 2006 Helsinborg Declaration on European Stroke Strategies were also reviewed for noteworthy references. This initial broad search yielded a total of 504 items.

3.1.1. Studies selected for review

The 504 items were assessed for their relevance, due to the contextual nature of stroke care; results were further narrowed to largely focus on papers that described UK studies. Non-UK studies were selected for review if deemed to have influenced development of stroke care in this country. International studies that were part of a systematic review of stroke have also been included for completeness. These decisions resulted in 56 studies being selected for review. For clarity, the literature review is reported in three main sections; the first examines the contribution of experimental studies, including systematic reviews[8], to the implementation and development of SUs, the second section assesses the specific contribution of non-experimental research to this area of healthcare, whilst the third looks at author descriptions.

3.2. Assessing the contribution of experimental research

This section provides a review of research studies related to the implementation and delivery of SU care using an experimental approach to inquiry and primarily focussed on outcomes. Given the emphasis in current healthcare and government policy on the importance of evidence contained in systematic reviews of randomised controlled trials (RCTs), this is reflected in the placement of this approach at the top of research

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[8] Systematic review: "A review in which evidence (usually from randomised controlled trials) on a topic has been systematically identified, appraised, and summarised according to predetermined criteria. Such reviews can be systematic (taking steps to reduce bias) without using statistical synthesis (meta-analysis) to reduce imprecision" (Langhorne & Dennis 1998 p.99).

hierarchy[9] (Scottish Intercollegiate Guidelines Network (SIGN) 2002; NICE 2004; ISWP 2004), the contribution from this area of literature will be considered first. Four relevant systematic reviews of stroke care were identified in the literature search (Langhorne at al. 1993; Stroke Unit Trialists' Collaboration (SUTC) 1997 updated in 2001; Langhorne and Duncan 2001 and Langhorne et al. 2005). As the landmark review of 1993 (Langhorne et al.) formed the basis of the SUTC systematic review (1997, 2001) these reviews are considered together in the next section, followed by the reviews from Langhorne and Duncan in 2001 and Langhorne et al. in 2005.

3.2.1. Stroke Unit Trialists' Collaboration Systematic Review

The Stroke Review Group (SRG) carried out this seminal work on behalf of the Cochrane Collaboration (www.cochrane.org), the objective being: 1) to determine the effectiveness of organised inpatient stroke care and 2) to define the characteristics of that intervention in comparison to conventional care (SUTC 1997, 2001). The review asked the deliberately broad question *"Can stroke unit care improve the outcomes of stroke patients?"* and a search was carried out that included computerised databases (Medline and Embase), hand searching of core neurology and stroke journals, reading dissertation abstracts and conference proceedings, supplemented by conversations with colleagues in the field of stroke. Key criteria stated for a trial to be included in the review were:

- Trials were hospital based
- Had incorporated attempts to improve organisation of stroke care
- Patients had suffered an ischaemic or haemorrhagic stroke
- Outcomes measures included death, levels of disability, length of hospital stay, discharge destination and quality of life and/or patient satisfaction.

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[9] Grade A = meta-analysis of RCTs or evidence from at least one RCT; Grade B = one well-designed controlled study without randomisation or quasi-experimental study; Grade C = at least one well-designed non-experimental descriptive study; Grade D = expert committee reports, opinions & /or experience of respected authorities (ISWP 2004).

The SUTC systematic review in 1997 incorporated 19 randomised trials and built on results from the 1993 ground breaking review of stroke trials by Langhorne and colleagues, which gave the first collective indication of benefits of SU care that had been surfacing in piece meal fashion over the past three decades. Whilst the 1993 review represented a major milestone in the advancement of stroke care, it nevertheless could only demonstrate benefit from organised SU care for moderately impaired stroke patients, meaning only selected patients received specialist care. It was not until the review was updated in 2001(SUTC 2001), incorporating four further studies, Laursen et al. (1995 cited in SUTC 2001), Ronning and Guldvog (1998a) and Kalra et al. (2000), all published after the 1997 cut off point, and the von Arbin et al. (1980) (a trial *"previously overlooked"* SUTC 2001 p.18), that results demonstrated patients managed in a SU, regardless of gender, age or severity of stroke, compared to those receiving care in a general medical ward (GMW), were more likely to survive, regain independence and return home (SUTC 2001).

Today, the contribution of the SUTC systematic review (2001) to stroke care in the UK (and indeed internationally) is unequivocal, the extent of its influence reflected by inclusion of its findings in all recent key drivers for stroke care, such as standard five for stroke in the National Service Framework for Older People (NSF for OP) (DH 2001), the National Clinical Guidelines for Stroke (NCGS) (ISWP 2000, 2004) and the National Sentinel Stroke Audits (NSSA) (CEEu 1998, 1999, 2002, 2004, 2006). It will undoubtedly play an important part in the formulation of the National Stroke Strategy due to be published in the autumn of 2007. Nonetheless, despite the significant role of this systematic review within the international stroke community, questions remain at a local level about how to achieve outcomes demonstrated in research settings in everyday practice (Langhorne & Dennis 1998; SUTC 2001; Kalra et al. 2005, Norrving & Adams 2006). To understand why this might be, the next section takes a closer look at individual trials of the systematic review and their contribution to SU care delivery.

3.2.1.1. Overview of individual trials

The 23 trials (see table A3.1 in Appendix 3) varied in size from 52 (Peacock et al. 1972 cited in SUTC 2001) to 550 subjects (Ronning & Guldvog 1998a), 5000 patients in total, spanned 38 years from 1962 to 2000, and covered practice from eight different countries: the UK; Finland; Norway; Sweden; Canada; USA; Australia and Denmark. Unfortunately, a number of publications included in this meta-analysis are not accessible for public scrutiny. For example, Peacock et al. (1972 cited in SUTC 2001), Feldman et al. (1962 cited in SUTC 2001), Gordon and Kohn (1966 cited in SUTC 2001), despite efforts by The British Library, could not be obtained. Furthermore, the main publication for the trial by Laursen et al. (1995 cited in SUTC 2001) is not available in English; the study by Svennsson et al. is unpublished to date; work reported by Ilmavirta et al. (1994 cited in SUTC 2001) remains only an academic dissertation[10]. Whilst these trials are part of an eminent publication, they are nevertheless not fully in the public domain or available for wider examination, making it difficult to independently assess the strength of evidence from individual studies underpinning the review, reducing the opportunity to learn more about how outcomes were achieved.

However, trials included in the review largely mirror current SU care in the UK, which continues to demonstrate a range of service provision models. Fifteen of the SUs in the meta-analysis admitted patients in the acute phase following stroke and the remaining eight units accepted patients one to two weeks post initial stroke. Twenty-two of the units were able to provide rehabilitation for several weeks if required, whereas the study in Tampere, Finland (Ilmavirta et al. 1994 cited in SUTC 2001) provided only acute stroke care, but no details were given of where patients received rehabilitation. The next section looks in more depth at the methodological approaches taken by individual trials, to critique the quality of this evidence.

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[10] Unable to obtain through interlibrary loan

3.2.1.2. Methodological approach: explicit and reproducible?

A basic principle of a quantitative systematic review is that primary studies use *"explicit and reproducible methods"* (Greenhalgh 1997 p.672), including the process of randomisation, whereby each participant in the trial has an equal chance of receiving each of the possible interventions (Langhorne & Dennis 1998). Methods to randomly allocate patients to receive either stroke care in a unit providing specialist organised inpatient stroke care or management in a generalist ward setting were varied across the individual studies of this systematic review. Indeed, four of the studies were quasi-randomised and used allocation to treatment by: a) bed availability (von Arbin et al. 1980; Strand et al 1985), b) the day of admission (Hamrin 1982) and c) date of birth (Ronning and Guldvog 1998a). Furthermore, 10 trials: Feldman et al. (1962 cited in SUTC 2001); Gordon and Kohn (1966 cited in SUTC 2001); von Arbin et al. (1980); Hamrin (1982); Stevens et al. (1984); Strand et al. (1985); Hankey et al. (1995); Ronning and Guldvog (1998a); Fagerberg et al. (2000) and Svennson et al. (unpublished cited in SUTC 2001) had insecure and unclear allocation procedures. Thus not all studies met the criteria for the randomisation procedure, illustrating that the underlying premise of systematic reviews to include *"primary studies that used explicit and reproducible methods"* (Greenhalgh 1997 p.672) may not be so easily achieved in practice. Furthermore, due to the requirements of the randomisation process of this research approach (Bowling 2002), large numbers of stroke patients were often excluded from trials. For example, Stevens et al. (1984) only included 27% of the patients screened for the trial and Sivenius et al (1985) 25%; thus reducing the application of results to the diversity of stroke patients seen in everyday clinical practice.

Details of stroke care interventions are also varied, making replication and assessment of trials difficult. The study by Peacock et al. (1972 cited in SUTC 2001) is reported in the SUTC as not defining the intervention given, and the paper by Gordon and Kohn (1966 cited in SUTC 2001) is said to give a poor service description. Many of the papers provide little detail on the intervention given which limits others reproducing the work elsewhere. In general, comments are restricted to having a team approach (e.g. Hamrin 1982; Stevens et al. 1984; Wood-Dauphinee et al.1984), team meetings to co-ordinate care (e.g. Indredavik et al. 1991; Kalra et al. 1993; Hankey et al. 1995; Juby et al. 1996), the provision of staff education (Strand et al. 1985; Ronning & Guldvog 1998a; Fagerberg et al. 2000), encouraging family and carers to participate in rehabilitation (Wood–Dauphinee et al. 1984; Strand et al. 1985; Kaste et al. 1995; Juby et al. 1996), and an emphasis on the provision of information (Indredavik et al. 1991; Fagerberg et al.2000). Whilst these descriptions broadly match the characteristics of good stroke unit care outlined in chapter 2, the limited insights given reduce the learning about how good stroke care develops in practice.

The trial by Hamrin (1982) in Sweden stands out from the others for highlighting the importance of the enhanced nursing role to the recovery of stroke patients. The aim of the study was to find out if an individualised programme of *"systematized activation in the daily nursing care of stroke patients...with an educational programme on stroke"* (p.101) would make any difference to the rehabilitation of surviving patients. The experimental arm of the study compared 60 stroke patients admitted to two GMWs during a nine-month period, with 52 stroke patients on two other wards forming the control group, and demonstrated positive gains in the experimental arm. Daily individualised activation programmes in nursing (APN), which incorporated a range of activities including psychological stimulation, verbal communication, movement therapy, and prevention of contractures, were worked out for patients by the project group (a doctor, physiotherapist and nurse) and adapted according to progress. Overall, greater levels of improvement in carrying out activities of daily living (ADL) at discharge and three months later at follow up, were demonstrated by patients in the experimental group with results attributed to the enhanced rehabilitation role of the nurse. Yet, during the final three months of the study an equalising trend was noted between results of the experimental and control groups. This was thought to be due to an enhanced awareness of stroke care plus a general interest in the study, leading to a competitive atmosphere in the control environment with consequent carry over effect of improved care for stroke patients in that setting. As Hamrin points out, this illustrates how even in RCTs it is not possible to control all environmental influences and the challenge of managing extraneous variables continues to be an issue in today's healthcare climate, particularly given the increased reliance upon evidence from RCTs. Moreover, Susman and Evered (1978) in a now classic paper, claim that it is this self-directed, uncontrollable nature that is characteristic of human action, as described in the Hamrin paper, that makes it difficult to directly transfer findings from controlled studies to new settings.

Altogether, this section illustrates the challenges of carrying out RCTs with complex interventions like stroke care, and highlights the need for different types of research approaches to reflect the diverse nature of practice and maximise lessons learnt from clinical settings. As a consequence there is a lack of understanding of what shapes the development of good stroke care, and as Griffiths (2002) states it is not enough to just know whether an intervention has worked or not; we also need to understand why. Indeed, this demonstrates the need and value of a more pluralist approach to research and evaluation of health care interventions to maximise learning from context specific situations. This study attempts to address this gap.

3.2.1.3. Supplementing quantitative data to inform practice

Given the focus of the RCTs on outcomes, none of the studies reviewed involved the systematic data collection of contextual influences on the implementation and delivery of stroke care. Apart from brief descriptions of hospital setting and the local population, i.e. Strand et al. (1985), Fagerberg et al. (2000) and Kalra et al. (2000)[11], the paucity of specific contextual and procedural information in available documents meant details on how or why improvements noted in stroke outcomes could not be given. Therefore additional details were sought from lead investigators of individual studies. Langhorne carried out structured

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[11] This study by Kalra et al. (2000) was also published as a Health Technology Report in 2005 " A randomised controlled comparison of alternatives in stroke care" and is reviewed later in this chapter.

interviews with investigators, although no specific details were given on how the interviews were conducted (except for stating that Feldman et al. 1962 (cited SUTC 2001); Gordon & Kohn 1966 (cited SUTC 2001) and Peacock et al. 1972 (cited SUTC 2001) were unable to be contacted). The Trialists' acknowledged methodological limitations in this data gathering process. This included: a) that information was based on what lead investigators believed was happening; b) data were gathered retrospectively, and some questions could therefore not be answered; c) the open question format used for parts of the questionnaire may have led to lead investigators reporting activities based on what they believed to be important and not on what was done, thus some routine but essential activities may have been under-reported; and d) equivalent information could not be directly obtained from conventional care wards (SUTC 2001; Langhorne & Dennis 1998). As reported activities from individual sites could not be confirmed through observation, these findings were solely reliant on the accurate recall of events by lead investigators. Given the long passage of time, in some cases over 10 years (Garraway et al. 1980 and von Arbin et al. 1980), this reduces confidence in the generated findings. Yet, the Trialists' concluded that because findings were compatible with others reported in two observational studies of stroke unit practice, Lincoln et al. (1996) and Pound et al. (1999), (both of which are examined later in the chapter), confidence in their data findings was increased. However, the data gathering process was driven by a predetermined schedule consistent with the a priori approach inherent in quantitative research, and thus lessens the opportunity for naturally occurring data to emerge from the field. Furthermore, as the researchers in the two afore mentioned studies were not practitioners in stroke, they may not have been able to identify all the influential factors and nuances of practice. Conversely, those outside the immediate field may generate new interpretations of practice.

Nevertheless, information generated about the structure, staffing, organisation, selection criteria, procedures and practices within the SU and conventional settings (SUTC 2001), led the Trialists' to conclude that staffing in SUs and conventional care settings was very similar, and the main differences were apparent in the practice and organisation of care; the resultant core characteristics of care were outlined in Chapter 2 (section 2.3.1).

Despite data from these interviews with lead investigators, questions still remained about how outcomes were achieved and more information was required on how stroke care was implemented in practice. Hence four study sites from the main systematic review were selected to provide *"mentorship"* to help further *"unpack the multiplicity inherent in the individual trials"* (Langhorne & Dennis 1998 p.50). Two combined SUs that provided acute care and rehabilitation, a 12 bedded unit in Australia (Hankey et al. 1995) and a six bedded unit in Norway (Indredavik et al. 1991) were chosen, along with two UK rehabilitation SUs: a 13 bedded unit (Kalra et al. 1993) and a 15 bedded unit (Juby et al. 1996). These sites were selected as they were recent trials, and lead investigators involved could therefore give a good account of what had taken place in practice. Studies also represented two common models of stroke care from a spread of three countries, where outcomes had shown a reduction in disability (Langhorne & Dennis 1998).

Langhorne collected information from these sites using *"standard qualitative research methods"* (Langhorne & Dennis 1998 p.84), stated to consist of a structured interview schedule, followed by a detailed questionnaire which *"usually used an open format"* (Langhorne & Dennis 1998 p.84), and two hypothetical patient case studies, but no further detail was given. Furthermore, whilst it was stated that the four studies were selected on the basis of providing a good benchmark for other stroke services, applicability to the clinical setting is questioned given that in two of the studies the majority of stroke patients failed to meet the inclusion criteria for the trial. In the study reported by Juby et al. (1996), only 315 patients (18%) were eligible out of a possible 1,760; and the study by Hankey et al. (1995) also stated most patients failed to meet the inclusion criteria (the total number of patients screened was not given) with 30 patients being randomly allocated to a GMW and 29 to a SU. Therefore one can question how representative these patients were of those admitted to clinical settings, and this could limit its generalisation to everyday practice. Whilst the findings from these four mentor sites were congruent with core characteristics of stroke care outlined in Chapter 2, this is not surprising given data were collected in the same manner, in retrospect with an a priori approach, using a predefined agenda, which may have precluded factors emerging independently from clinical settings.

The acknowledgement by the Trialists' of the anecdotal nature of some findings in the systematic review supports the need for a contemporaneous empirical study that systematically documents and evaluates actual practice to capture the complexity of the processes involved in the implementation and delivery of SU care. This action research study addresses this identified gap.

3.2.1.4. Reporting of findings largely atheoretical

In addition to the general lack of attention to process and contextual factors in the stroke trials outlined in the preceding section, there is also a tendency to report study findings without reference to any theoretical framework. Whilst most of the studies mentioned teamwork as an important factor, this point was generally not expanded. However, Kalra and Eade (1995) postulated the positive changes in outcome seen in their study were due in part to improved staff confidence following a specific stroke education programme, which seemed to have enhanced rehabilitation skills and improved teamwork by blurring professional boundaries. Increased involvement of the patient's family in the overall rehabilitation process was also noted. Nonetheless, the opportunity to locate the findings within the wider body of knowledge was missed through the absence of a theoretical framework. Wood-Dauphinee et al. (1984) whilst attributing success to improved skills amongst the team, earlier targeted intervention and increased family involvement, also did not report findings in the context of theory.

In summary, this trend of atheoretical reporting of individual study findings arguably contributes to the inability of the systematic review to contribute to the wider body of knowledge on how good stroke care is delivered.

3.2.2. Systematic review of post acute care

This systematic review, carried out by Langhorne and Duncan (2001) aimed to evaluate the effectiveness of multidisciplinary post acute in-patient stroke rehabilitation. Trials that treated patients within the first week post stroke were excluded to eliminate any confounding variables from acute intervention. The review incorporates the post acute care of 1437 stroke patients in nine separate trials (see Table A3.2 Appendix 3): Feldman et al. (1962 cited SUTC 2001); Gordon and Kohn (1966 cited SUTC 2001); Peacock et al. (1972 cited SUTC 2001); Stevens et al. (1984); Sivenius et al. (1985); Kalra et al. (1993); Kalra and Eade (1995); Juby et al. (1996) and Ronning and Guldvog (1998b). Findings indicated that for every 100 patients receiving organised inpatient care, five more patients were discharged home. The authors concluded that multidisciplinary rehabilitation in the post acute period is both statistically significant and clinically important (Langhorne & Duncan 2001). Details relating to organisation of care that arose from this systematic review were noted to have a number of consistent features previously identified in the SUTC (2001). This is not surprising as eight of the nine trials were part of the SUTC systematic review; the study by Ronning and Guldvog (1998b) being the exception as it compared organised care on an in-patient general rehabilitation unit with a community based programme. Whilst the in-patient care was not on the SU in the hospital, patients who had passed the acute phase of care received intervention from a coordinated MDT reported to be *"specially trained to treat and rehabilitate stroke patients"* (p.780); apart from taking part in a stroke education programme no details were given on how expertise in stroke was achieved. However, as 30% of patients in the community did not receive any treatment following discharge from hospital, the 48% reduction in death and dependency in the experimental arm of the study supports the evidence for the effectiveness of organised stroke care, but the focus on reporting outcomes further contributes to the *black box* of stroke unit care.

Due to the strong overlap of studies in this systematic review of post acute stroke care with those in the SUTC (2001), the same methodological limitations identified in the previous section relate to this review and will not be repeated. However, it does demonstrate how evidence from the SUTC (2001) is used as a benchmark of quality for another study without referral to the limitations of how the original findings were obtained.

3.2.3. Systematic review of mobile stroke care

This systematic review aimed to establish the effectiveness of mobile stroke teams and assess if they were able to reproduce good results achieved by defined SUs (Langhorne et al. 2005). This meta-analysis was included in this review of the literature as the investigation of a different approach to stroke care may help to identify key elements of stroke care. On closer examination (see Table A3.3 Appendix 3), four of the six stroke studies (Feldman et al. 1962 (cited SUTC 2001); Wood–Dauphinee et al. 1984; Hamrin 1982 and Kalra et al. 2000) included in the review, were presented in the SUTC systematic review (2001). Findings from two new studies have been added to those of the aforementioned review; a study in South Africa (n=149 stroke patients) reported as a Master of Philosophy higher degree, thus not in the public domain for wider scrutiny, (Patel 2000 cited in Langhorne et al. 2005) and a two centre trial in Manchester UK (n= 308 stroke patients) by Dey and colleagues (2005). In the study by Dey et al. (2005), the mobile stroke team which consisted of a consultant with a special interest in stroke and a senior therapist (the specific therapy profession was not stated), would visit patients within 12 hours of randomisation to the intervention arm of the trial to offer advice to ward staff on the management of acute complications and other aspects of early care. However, it is suggested elsewhere that a mobile stroke team should consist of, as a minimum, a physician with responsibility for stroke, a specialist nurse, and at least two kinds of therapists; this study falls short of the recommendation from the Royal College of Physicians (CEEu, 2006). The trial was terminated early when one of the sites withdrew from the study and the data monitoring committee advised that the necessary sample size would not be reached in a reasonable timescale. Given that 75% of stroke patients admitted during the study period were not eligible to be recruited to the study, this is not surprising and illustrates the controlled, selective nature of RCTs, to the extent that conditions may bear little resemblance to clinical practice (Bowling 2002).

Overall, Langhorne et al. (2005) reported care by a mobile stroke team had no major impact on death, dependency, or the need for institutional care compared to non-specialist care, but did improve some aspects e.g. assessment by a speech and language therapist (SLT) or occupational therapist (OT), and concluded that care on a defined SU remained the delivery mode of choice. Whilst technical processes of care were reported, and the importance of skilled nursing care in the acute stages of stroke to prevent early complications and provide a therapeutic environment were indicated in the discussion, details on how this was to be achieved in practice were not given. Previous comments in relation to the three earlier systematic reviews also apply to this review and will not be repeated here. The considerable repetition in content within the systematic reviews however has been noted, as the amount of published literature to guide the delivery of SU care is not as comprehensive as first appears.

3.3. Additional UK RCTs not included in systematic reviews

This section examines the contribution of six additional UK RCTs identified during the literature search and not included in previous sections. The studies are assessed for their specific contribution to how inpatient stroke care is implemented and delivered.

The Health Technology Assessment report (HTA) by Kalra and colleagues (2005) provides extensive details of a clinical evaluation and economic analysis that compares alternative strategies in stroke care[12] (the clinical arm of this study[13] was included in the SUTC (2001)). Although this four-year study was primarily focussed on outcomes, it did

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[12] The three strategies were: a) inpatient stroke unit care provided by a specialist MDT, b) mobile stroke team involved in management on general wards, c) domiciliary care in the patient's home under the supervision of a general practitioner (GP) and support from a specialist community stroke team.

[13] Kalra et al. (2000)

collect a number of specific process measures, for instance, which patients accessed specialised care, resources used and patient and carer satisfaction. However, Pope and Mays (1993) argue that such a narrow interpretation of *process* reduces learning and represents an oversimplification of the situation. Instead they suggest a broader understanding of process is taken to include detailed interactions between people, sequences of events and structural influences within the organisational context as well as what happens to the patient. Furthermore, whilst results show inpatient SU care to be more cost effective than the mobile stroke team or home care, the opportunity to place the findings within their wider theoretical context was missed. The report concludes by recommending further evaluation of proven stroke interventions are undertaken using non-RCT methodologies in a variety of clinical settings to capture the complexities of care, stating that a major limitation of existing stroke research to be a lack of detail on the wider processes of management. This thesis aims to help address this identified shortcoming in the literature.

The study by Drummond et al. (1996) is also connected to the SUTC (2001), although this is not made explicit, it uses the cohort of subjects reported by Juby et al. (1996), but focuses on comparison of activities of daily living (ADL) and mobility outcomes of 176 patients on the SU and 139 patients on medical or elderly care wards (ECWs). Again the intervention is poorly described in the paper but included details about the nurses being trained in principles of therapeutic washing and dressing (as part of the rehabilitation process) by the unit OTs. Findings showed the ADL skills of stroke patients improved, and this was attributed to the overarching rehabilitation philosophy and policies of the unit, such as team working, as opposed to the individual occupational therapy intervention. Adapted eating equipment was also made available for patients which helped to promote functional performance. These factors were in contrast to what occurred on GMWs where mobility was seen as a priority, and other aspects of function such as washing and dressing, were not routinely addressed. Interestingly there was no difference in the level of mobility attained in the two study settings, which prompts questions about the role of the physiotherapist (PT) in providing additional mobility training on the SU; however no details were given. This study has aided the investigation of the *black box* of stroke care by highlighting the need for specialist equipment to facilitate function, whilst the benefits of enhanced nursing concurred with the earlier findings of Hamrin (1982) and Indredavik et al. (1991).

Like the earlier Drummond paper, Evans et al. (2001) also reported on an aspect of a RCT included in the SUTC (2001), and examined differences in processes of care in relation to outcomes of patients on a SU (n=152) and those managed by a stroke team (n=152). A predefined structured format was used to gather prospective data on the frequency of interventions associated with assessment, investigations, processes of care and treatment. It was observed that patients in the SU were assessed and monitored more frequently and so complications related to stroke, for example, chest infections related to swallowing difficulties, were more commonly seen on the GMWs. Drawing upon findings the study concluded that process and organisational factors on the SU appeared to lead to fewer complications as a result of earlier detection, thereby resulting in better outcomes. However the authors, in keeping with other papers utilising this research design with the focus on outcomes, were unable to say how this happened in practice.

Integrated care pathways (ICP) have been suggested as a way of managing process issues in complex rehabilitation settings like SUs (Sulch et al. 2002a). In an earlier study, this research group (Sulch et al. 2000) unexpectedly found that use of an ICP had an adverse effect on quality of life, with lower scores in quality of life measures associated with the group managed with an ICP approach compared to the group receiving traditional MDT stroke care. This group of researchers drew the conclusion that the ICP model of management lacked the necessary flexibility to deal with the multiplicity of factors involved in stroke rehabilitation (Sulch et al. 2002b). However there appears to be some inconsistency in the recommendations, as in another paper by the same authors (Sulch et al. 2002a), they advocated using an ICP as a way to improve standards in care processes within specialist stroke settings. These study findings seem to reflect some of the difficulties in trying to deconstruct what process means in practice, with the concept being viewed in one trial as mechanistic, linear procedures that can help improve audit standards, but also that the same procedures may be too rigid and inflexible for broader quality improvement. The debate on the role of ICPs in the delivery of stroke care remains (Kwan & Sandercock 2004).

As before, closer examination revealed that findings from the above studies were based on pre-defined schedules, and may have constrained emergent factors in relation to process issues naturally arising from the clinical setting. None of the studies have been able to further the debate on how effective stroke care is achieved in mainstream practice. As five of the six studies (Evans et al. 2001; Sulch et al. 2000; Sulch et al. 2002a; Sulch et al. 2002b; Kalra et al. 2005), came from one SU, this could also have narrowed the range of findings, particularly as the studies were all based on a priori assumptions. With the exception of the HTA report by Kalra et al. (2005), none of the studies looked in any detail at contextual factors, which are important in the study of SU organisation and delivery, and may have influenced findings (Haines & Donald 1998). This may reflect the inherent difficulty in investigating processes via outcome focused research design. What has come into the public domain has been said to be superficial or based on selective case studies (Langhorne & Dennis 1998; Kalra et al. 2005). It is difficult to ascertain if the effectiveness of SUs is due to the total package of care or to inter-relationships of component parts, and moreover if RCTs are the most appropriate methodology to evaluate the complexity of stroke care (Dennis & Langhorne 1994; Campbell et al. 2000). This could indicate that evaluation methods capable of reflecting the complexity of stroke intervention, such as action research, could help address this need.

3.4. Summary of experimental research studies

This section has demonstrated the influence exerted by findings drawn from the SUTC (2001), seen by the prevalence of their use in eminent UK publications like the NCGS (ISWP 2004), the Scottish Stroke Guidelines (SIGN 2002), the NSF for OP (DH 2001), the NSSA (CEEu

2004) amongst others. Nevertheless it has been shown that whilst this systematic review has undoubtedly helped to progress stroke care, findings must be interpreted in the context of the methodological limitations of the quantitative approach. It has been seen that published evidence to inform the organisation and delivery of stroke care is based largely on findings driven by an a priori approach and on retrospective self-reports; these are acontextual and not related to any explanatory theory. Whilst these studies have identified beneficial outcomes of SU care, taken together these factors lessen the opportunity to situate findings to the wider body of knowledge, limiting the understanding of how factors identified, many of which may be inter-related, translate into practice.

3.5. Assessing the Contribution of Non-Experimental Research

This section assesses the use of non-experimental research designs in contributing to the knowledge base relating to the service, delivery and organisation involved in specialist stroke care. Eleven papers were identified in the search, consisting of ten UK studies (Stone 1987; Gompertz et al. 1995; O' Connor 1995; Bath et al. 1996a; Kalra et al. 1996; Lincoln et al. 1996; Patel et al. 1998; Pound et al. 1999; Pound & Ebrahim 2000; Langhorne & Pollock 2002) and one systematic review incorporating various international papers (McKevitt et al. 2004). Together these articles, which cover a range of methodologies, including observational studies, interviews, survey techniques and comparative controlled trials are examined in the coming section; results from the systematic review are considered first.

3.5.1. Systematic review of qualitative stroke studies

Unlike the systematic reviews in earlier sections, this review by McKevitt et al. (2004) did not aim to conduct a meta-analysis but looked at the scope of published qualitative stroke studies within the social science framework to help explain social processes at work in the delivery and uptake of an intervention. For example, authors asked what aspects of stroke care lead to improved outcomes and crucially how does this care happen in practice.

The authors undertook a systematic search of the literature and considered qualitative studies of stroke or stroke care published in English language peer-reviewed journals for inclusion. One hundred and thirteen papers were initially identified and reviewed independently by two of the authors using a specifically designed matrix to record details. Selected papers were organised according to the framework based on the European Stroke Initiative (EUSI) for stroke management (Hacke et al. 2003). These recommendations draw strongly on the work by the SUTC (2001) in relation to the organisation of SUs and represent another example of how these findings, despite their limitations, have been incorporated into published examples of best practice for stroke.

Eighteen papers did not meet predefined criteria and were excluded; 95 papers remained in the final review. The authors state that as qualitative studies focus on process and organization they may offer an avenue to help explain unanswered questions, such as which factors of stroke care contribute to improved outcomes and importantly how they do so. The studies in the review address the continuum of stroke care from the acute phase through to support in the community; as the focus of this thesis is inpatient SU care, studies outside this remit will not be considered. No studies were found that specifically addressed how SU care was implemented, although some were identified that directed attention towards exploring the contribution of nurses to stroke rehabilitation. As the role of the nurse in stroke is central to the delivery of SU care these studies were examined for insights into factors that may influence how stroke care is implemented and delivered.

Burton (2000) analysed findings of 35 in-depth reflections from 13 nurses working in a rehabilitation unit that predominantly, but not exclusively, cared for stroke patients. Three key role categories were identified in the data, the nurse as caregiver, facilitator of personal recovery and care manager; findings were verified using a purposive sample of four nurses. Amongst the insights generated by this study, nurses cited their continual presence on the unit as the root of being able to be principal care providers for patients, and contrasted with how other team members would come and go, frequently leaving the nurses with instructions to continue with practising tasks in their absence. However, it appears this assistance was not reciprocated and nurses reported feeling largely unsupported in their delivery of rehabilitation. Findings from this study therefore seem to suggest the need for more democratic ways of working within the MDT to not only maximise the nursing contribution in the rehabilitation of stroke patients, but in how the team works together as a whole.

The study by O'Connor (2000) aimed to identify patterns of nursing care delivered in SUs, and data were collated from 90 nurses in 21 SUs across the UK. Continuity of care resulting from their 24-hour presence on the ward was a common theme and included a role in linking the team by conveying information between different members and carrying on rehabilitation on behalf of others. They also spoke of these aspects of care being a "frequently ignored part of their intervention" (p.227) and highlight again the need for the role of nurses in rehabilitation to be recognised and valued by others. Jones et al. (1997) similarly reported the nursing role in stroke rehabilitation was not acknowledged and appreciated by others in the team, and led to a negative influence on building more positive relationships necessary for successful rehabilitation.

Two more studies (Forster et al. 1999; Dowswell et al. 1999) report on the development of a stroke training programme for nurses in a rehabilitation unit. Undertaken within a participatory action research framework, a course of theoretical and practical sessions were delivered primarily by physiotherapists, but designed following input from the wider MDT, over a five month period to their nursing colleagues. Findings generated through pre and post intervention attitude questionnaires showed that the negative thoughts expressed by nurses pre intervention about their interprofessional working relationships, and their perception that physiotherapists did not respect their nursing experience, were found to be improved following the completion of the training. As specialist staff is an identified characteristic of good stroke care (SUTC 2001), how skills and knowledge in stroke are shared amongst team members is therefore an area of importance. Indeed, the lack of specialist skills in providing rehabilitation by stroke nurses when compared to elderly care nurses was highlighted in a study by Pound and Ebrahim (2000) and is examined in more detail later in this chapter.

Meanwhile, McKevitt and colleagues (2004) identified a number of other studies which aimed to develop or evaluate novel approaches to rehabilitation. Two studies by von Koch et al. (1998, 2000) compared stroke rehabilitation in the hospital with a home intervention programme following early transfer of care to the community setting are commented on next. Like earlier studies, the concept of democracy and equality emerged from the findings, and in particular the relationship between the patient and therapist. It was found that in the context of the patient's home, therapists had to learn to modify their behaviour to allow the patients to take more responsibility for their own rehabilitation. Together with the findings from studies described previously, the need for attention to be paid to holistic partnership working across the full spectrum of SU care, including the notions of mutual respect and valuing others' contribution to the whole rehabilitation process, have been illustrated.

However, whilst making other valuable contributions to stroke care, none of these studies have systematically explored the implementation and development of SU care, and thus were unable to address this gap in the knowledge base. The authors concluded that significant problems remain in how best care for stroke is delivered, requiring greater collaboration across multi-agencies and the use of new research strategies to maximise the potential of qualitative approaches. Hence, the following papers which used a variety of methods within the qualitative paradigm, were examined for their contribution towards illuminating the *black box* of stroke care.

3.5.2. Survey design

Langhorne and Pollock (2002) utilised a descriptive survey design to explicitly look at processes of care in SUs that had previously been shown to be effective in a major systematic review (SUTC 2001). Even though the authors appear to be replicating or reworking earlier work

(SUTC 2001), they justify this by declaring previous attempts at describing SU care as inadequate, as they were either broad, superficial descriptions (SUTC 2001) or detailed analysis of individual examples (Langhorne & Dennis 1998). The descriptive survey differed from the previous SUTC (2001) work by focussing on trials that took place on discreet wards between 1985 and 2000. The study utilised a data collection schedule based on previous pilot work, (although not stated as pilot work in the original 1998 publication by Langhorne and Dennis) and combined a questionnaire and case studies to assess the processes of care for two hypothetical stroke patients. Pollock initially completed the data schedules using information available to the SUTC; Langhorne checked data prior to circulation to the participating trialists for verification. There was no indication what additional information if any, was added by individual trial investigators and so it is difficult to make a judgement on what new information has been added to previously published data (Langhorne & Dennis 1998; SUTC 2001).

The researchers concluded that this procedure provided a description of typical processes of care in the SU trials, which could, in turn, in the absence of more robust evidence, be used as a benchmark for stroke services and future clinical research. Based on the information available, it is not surprising that the authors of the paper identify shortcomings in the study that concur with those stated in the SUTC (2001) as it drew heavily on studies included in the systematic review. Methodological limitations cited by the authors include data being retrospective and incomplete, yet it was not acknowledged that the a priori approach might have led to emerging or novel concepts being missed. Although the paper identifies common characteristics of SU care, for example MDT work, it lacked attention to detail on how these processes were achieved in practice, or in what context they took place, limiting the understanding about what shapes the delivery and development of stroke care. Therefore whilst this paper adds little to how components of care are best implemented, Langhorne and Pollock rightly state that it adds empirical support for the stroke guidelines, based on expert opinion.

3.5.3. Non – randomised comparison design

A study by Gompertz and colleagues (1995) uses a non-randomised comparison design to explore factors at play in the delivery of stroke services. Furthermore the authors level criticism at the increasingly popular research approach of meta-analysis, claiming that insufficient attention is paid to the context of services studied, thus limiting their contribution towards identifying beneficial elements of stroke care. Gompertz et al. (1995) frame the argument for their paper on the basis that purchasers (commissioners) of services need information on effective models of care that are locally available, thereby identifying the requirement for contextual details as significant.

This study took a prospective observational approach to compare the outcomes in 361 stroke patients admitted consecutively to hospital in two adjacent health districts in East London, one without a special stroke service (district one, n=192 strokes per year), the other with a comprehensive stroke service (district two, n= 169 stroke per year), demonstrating results in accordance with those from other published stroke trials. In addition, 103 carers identified by the stroke survivors took part in a postal survey about care received at six months after admission. Even though the authors describe the design as *observational* there is no evidence in the paper from observation of practice. One of the authors did visit the hospital sites but appeared to have only gathered background patient data such as level of functional ability prior to admission and the severity of stroke on admission. In addition to information gleaned from the postal survey, data on stroke care were also collected from a case note audit. Differences are noted in availability, with 75% audited at district one and 66% in district two. Royal College of Physicians (RCP) stroke audit standards were used, which only measured medical management of stroke, one aspect of the overall care intervention.

Based on the above information, the authors concluded that outcomes of care did not differ between districts even though one district had a SU for which the literature consistently shows better outcomes. However in summary they noted that service outcomes were not purely based on differences seen in the stroke services, but those factors such as socio-economic status, primary care and social services provision also had an impact. For instance, district two, with a SU, only had one third of the resources for rehabilitation in comparison to district one, even though population sizes and admission rates to hospital were similar. They cautioned purchasers when making comparisons of services between districts and highlighted the importance of taking into consideration local contextual factors.

Interestingly, the documented standard of stroke care in both districts was below that set by the Royal College of Physicians of London, calling into question the aim of the study to provide robust information on effective stroke care to commissioners of services. Furthermore, whilst the methodology appeared to have attempted to link context and process, it used predefined standards that solely related to medical management of stroke. Thus findings reveal little new information about the overall components of stroke care in these areas.

3.5.4. Comparative controlled study design

Patel et al. (1998) attempted to identify components of stroke care by comparing processes in two UK SUs. The study took place over a two-year period across two non-adjacent health districts, which were stated to be comparable for socio-economic factors, population, age and structure. Unit A (16 beds) used an impairment focused rehabilitation approach, meaning that treatment was primarily directed towards trying to correct problems caused by the stroke such as changes in muscles and body posture. Unit B (10 beds) took a more disability-orientated approach, aiming at restoration of normal function. The number of patients included in the study was comparable with n= 85 in Unit A and n= 99 in Unit B. Common outcome measures included Barthel Index [14] scores, institutionalisation rates and length of stay; data were analysed using descriptive statistics. The study concluded that differences in the rehabilitation approach showed no effect on functional recovery of patients, but length of stay was longer in Unit A. This was thought to

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[14] Barthel Index (Mahoney & Barthel 1965) is widely used as a functional outcome measure, although it was original developed to measure the burden of care.

reflect differences in the discharge planning process and not the approach to rehabilitation. Importantly, staff on Unit B had access to better post discharge support for patients, which highlights the role that good community specialist care can play in stroke rehabilitation. Whilst one objective of this study was to determine which components of stroke intervention are important, there was insufficient attention to detail of wider working practices in the Units and so lessons are limited by the narrow focus on outcomes.

3.5.5. Non-participant observation design

Three papers: Lincoln et al. (1996); Pound et al. (1999) and Pound and Ebrahim (2000) all used non-participation observation methods to explore aspects of processes in relation to SU care.

Lincoln et al. (1996) compared processes of care between a SU, wards for the elderly and GMWs to determine differences in rehabilitation received in individual settings, and identify factors influencing outcomes. The observational study was set across four sites in Nottingham and used an assistant psychologist as an independent researcher to carry out the non-participant observations using a predefined schedule. In total, 39 patients were observed on the SU and 37 patients in the conventional ward settings. Findings indicated that patients on the SU had more therapeutic contact with staff and were more likely to be better positioned than patients on conventional wards. This was not explained by differences in staffing resources, as poorly positioned patients in non-SU settings were not observed being repositioned even when staff were present to do so. No further details were given on how or why these incidents occurred in practice, but highlighted once more the important role of nursing staff in the overall process of stroke care. Patients on the SU also spent more time in rehabilitation (46 minutes per day) compared to patients on the conventional wards (21 minutes per day). Furthermore, SU patients spent less time lying down and more time sitting and standing. Whilst this study has contributed to knowledge about differences in activities between SU and conventional settings, no specific details were given on how this happened in practice

Pound et al. (1999) also conducted a non-participant observational study to contribute to the debate on why SUs have better outcomes. In particular the research hoped to be able to differentiate between SU care, interdisciplinary care received on an elderly care unit (ECU) and conventional care received on GMWs. The research took place across three different settings in two inner city teaching hospitals, the SU (24 beds) being on a different site to the ECU (18 beds on an acute ward and 22 beds on a rehabilitation ward) and a GMW (32 beds). Contextually, both the SU and ECU had multidisciplinary teams, promoting independence and non-institutionalised behaviour like encouraging patients to dress in their own clothes, to spend time away from their bed area including meal times, and delivered therapy in a joint therapy area close to the wards. As care for stroke patients on the ECU met the original criteria for inclusion in the Cochrane Collaboration stroke systematic review (SUTC 2001), this indicated the level of care on this unit for stroke patients was similar to care received on good SUs. The GMW had patients from nine different consultants and no MDT meetings on the ward, hence making a strongly contrasting environment to the other two units.

A predefined schedule was developed in one of the settings (not specified) to collect quantitative observational data from a total of 36 patients, 12 in each setting, which were compared for differences in processes of care received. Results indicated that patients on the SU and ECU were more likely to spend time out of bed and away from their ward bay, but patients on the ECU spent less time asleep and more time interacting with nurses and were given more help appropriately. What was meant by *appropriately* was not expanded upon and as the researcher came from a non-clinical background it raises the question on what basis this judgement was made. Additional observations demonstrated that patients on the SU were given less eye contact, ignored more frequently and treated in a *"dehumanising way"* (Pound et al. 1999 p.437). As there were more patients on the SU with speech and cognitive impairments this may have influenced findings, but this point is not raised. Furthermore, the behaviour reported may be indicative of a lack of specific knowledge, as nurses have reported more difficulty in caring for patients with cognitive impairment or depression, such as patients with stroke, due to the lack of specialist preparation (Kumlien & Axelsson 2000; Sundin et al. 2002). A postscript in another paper from the same study by Pound and Ebrahim (2000) (described below) reports that since the research fieldwork finished, a new ward manager of a higher grade had been put in place on the SU along with instigation of a training programme for nurses. This indicates the importance accorded to specialist knowledge to support practice.

Pound and Ebrahim (2000) reported qualitative findings from the study, which aimed to broaden the quantitative data by capturing details about how components of care occurred in practice. In particular, relationships and communication patterns between nurses and therapists were of interest, along with the rehabilitative behaviour of the nursing staff. These areas were investigated using periods of unstructured observations, where the researcher recorded everything seen and heard as opposed to using a predetermined schedule. Observations were made over a period of two to three months, with qualitative data being collected in parallel with quantitative data at *"information rich events"* (Pound & Ebrahim 2000 p.1439) like team meetings, ward rounds and other general ward activities. A total of 66 hours was spent conducting observations on the SU and 40 hours in both the ECU and GMW settings; it was not clear from the results what proportion of the total observations were qualitative or quantitative.

This paper reported that both SU and ECU demonstrated positive aspects of care towards stroke patients, including previously identified care principles such as teamwork and good communication. In addition the SU had more emphasis on carers needs being addressed, and was headed by a consultant who was said to be respected by the wider stroke staff and considered part of the team. None of these features were reported from observations on the GMW. However, nursing interaction with both patients and therapists was poorest on the SU, and may in part be explained by the nurses on the SU having limited training for the specialist nature of stroke. O'Connor (1996) reported from a survey of nurses working in SUs, where only 34% had a post-basic qualification and of these, rehabilitation courses were undertaken the least and elderly care the most frequently. This inherent lack of key training in stroke may also have led to the observation that SU nurses were less involved with decision-making in comparison to the nurses on the ECU, perhaps finding it more difficult to express a professional opinion in an area in which they did not feel confident. Moreover, the nursing establishment was more stable on the ECU, even agency staff being noted to be long term. It was not stated whether the observed negative interactions which were said *"to be the norm on the stroke unit "* (Pound & Ebrahim 2000 p.1440), ranging from not encouraging patients to do things on their own, to patients being treated as *"non-persons"* (Pound & Ebrahim 2000 p.1440), were related to permanent or agency staff or both. The authors postulated that lack of interpersonal care demonstrated by the SU nurses may have been related to desire to increase their professional status by taking on more technical tasks. They illustrated this point with an example from Berry et al. (1996), stating the nursing role in the SU hardly mentioned rehabilitation activities, but instead listed a set of extended role techniques like screening for swallowing problems and insertion of nasogastric tubes for feeding. Both of these clinical procedures are entirely appropriate for stroke nurses to undertake, given that the Royal College of Nursing (2007) has expressly identified ensuring provision of nutrition as a key nursing role. Nurse completion of these vital tasks is paramount in maintaining patients' nutritional status in the early phase of recovery and is part of the overall team effort to initiate rehabilitation. This includes addressing emotional, physical and psychological needs. This lack of in-depth understanding of treatment for stroke, as well as insight into the context of an acute setting, may indicate the need for research to be carried out by clinicians with relevant experience in the field. Nevertheless, the paper concludes that best practice for stroke may be dependent on various nursing processes: improved involvement of the nurse in the team, better training in rehabilitation and more emotional engagement with patients. It goes on to say that:

> *"...the better outcomes achieved in stroke units are being achieved at the expense of patients' emotional well-being and that patients on stroke units have better outcomes despite rather than because of the nursing they receive there"*
>
> (Pound & Ebrahim 2000 *p.1445*).

The paper did not provide substantial evidence to support this statement, as emotional well being was not formally measured in these patients. Further, this comment was based on extrapolation from observations made in one SU, for which staffing and training issues were previously identified. Moreover the SU was compared to an ECU, whose own practice in caring for stroke would have met the original inclusion criteria for the SUTC (2001), and where standards of patient care were extremely good.

The three above studies all aimed to add to the knowledge base about essential components and processes of SU care. Whilst they made valuable contributions, in particular highlighting the role and importance of the nurse, they still lacked detail on how to achieve this in practice. It is acknowledged that the method of non-participative observation of practice gives more informative data on clinical processes than interview or questionnaires, but most findings were primarily based on a predetermined schedule. Furthermore, this schedule was derived from observations made in an unspecified setting, and its structure may have reduced the opportunity for recognition of emergent unpredictable findings arising. In addition, the non-scheduled open observations detailed in Pound and Ebrahim (2000) were made by a non-clinician, and possibly may have been weakened by lack of in-depth knowledge of clinical and professional areas. This is an important aspect to consider, as whilst observation offers the opportunity for the researcher to record events and interactions as they happen, and so do not have to rely on recall, a degree of interpretation maybe required. In spite of methodological limitations identified, the studies do show how a qualitative approach can help illuminate aspects of health care delivery that cannot be gleaned from quantitative approaches.

A further four papers (Stone 1987; O' Connor 1995; Kalra et al. 1996; Bath et al. 1996a) were identified in the literature search. These papers were reviewed individually but are not reported separately as they confirmed findings from earlier studies.

3.6. Author descriptions

Seven descriptive author accounts of the implementation of new SUs in the UK were identified in the literature search (Blower & Ali 1979; Langton Hewer & Holbrook 1983; Wood & Wade 1995; Berry et al. 1996; Wood & Langton Hewer 1996; Bath et al. 1996b; Dick et al. 1998). These papers were reviewed individually but are not reported separately (see A3.4 Appendix 3), as whilst relevant, they are nevertheless non-systematic and anecdotal, thus limiting their use.

3.7. Summary of non-experimental research

The studies in this section have added to the body of knowledge about how stroke care is delivered by using non-experimental designs of inquiry. However, in order to capture the less tangible and unpredictable aspects of how good care is delivered more studies are required that let issues emerge over time from the field without having been pre-defined first. None of the studies reviewed in this section took a longitudinal approach, which would enable a view of how SUs develop over time, and insight into what factors may shape implementation of care. There was also a tendency for studies not to draw on the wider body of knowledge, for example, the organisational or sociological literature, or to ground findings within a theoretical understanding. Therefore it is suggested that more process-orientated studies are needed, that are practice based, action orientated and take account of socio-economic and contextual factors.

3.8. Conclusions from the literature review

The aim of this review was to identify the evidence base to inform healthcare practitioners about how to implement and provide effective stroke care. As the review has shown, no studies systematically described how good care was developed in practice. Instead, there was a preference to report outcomes without examining associated processes. Where accounts of development and implementation of stroke care were given, findings were largely anecdotal and dependent upon memory and self-reports of participants. Furthermore, findings were driven by an a priori approach, were acontextual and not related to any theoretical framework. Consequently it is suggested that these studies are less able to capture *the hard to define* aspects of how good care is delivered.

Current research evidence lacks a prospective study using a broad methodology implemented without a predefined agenda. Methodological limitations of both the experimental and non-experimental studies reduce confidence in claims made by their respective authors. The methodological strengths and weaknesses associated with this have been discussed and indicate that a more pluralist methodological approach is needed to inform the multifaceted intervention of stroke care. It is argued that an over reliance on any one particular research method can lead to a narrow understanding of an area of interest (Pope & Mays 1993) with different kinds of evidence contributing to knowledge of clinical practice development in stroke. Given the findings of this review, the gaps in knowledge that this study seeks to address are:

1. Absence of systematic investigation of implementation of SU care over time.
2. Limited understanding of how SUs improve patient outcome, given the predominant focus of studies on outcomes rather than processes of this intervention.
3. Identification of key factors that influence achievement of outcomes.

By taking an action research approach, the present study aims to explore these issues and contribute to these identified gaps in knowledge.

Chapter 4

Methods

This study used an action research approach to explore lessons learnt from the implementation and development of a new inpatient stroke unit (SU). This chapter begins with an explanation of action research, the methodological approach that underpins this study. Then the aims and objectives of the study are revisited, followed by details of methods used for data collection and analysis, action research cycles, assessment of the quality of the research and ethical considerations of the study. Whilst on one level my formal role in this study began in January 2001 and finished 23 months later in November 2002, being an *insider* researcher within the Trust presents difficulties in clearly delineating the entry and exit points of the study and thus should be seen within a broader context. As described in Chapter 1 (section 1.1.2) I had been employed in the Trust since 1995 and so came to the project with extensive knowledge of the organisation, had established my clinical credibility with staff and management responsibilities as the head of physiotherapy, meant I was known to service leaders and managers within and external to the Trust. Alternatively, the start and finish dates could be marked by the data sets drawn on to describe the contextual setting at the beginning i.e. the first National Sentinel Stroke Audit (NSSA) in 1998 to the fourth audit in 2004 which demonstrates changes made over six years. However for the purpose of this thesis the study is described as being 23 months in duration, from January 2001 until November 2002, as this represents the intensive period of data collection.

4.1. Action research

Action research is a form of participatory research, an approach that involves carrying out research *with* and *for* people, in the context of its application, rather than undertaking research *on* them (Meyer 2006a).

Action research has gained popularity over recent years and is used in a wide range of fields including organizational development (Coghlan & Brannick 2005), education (Carr & Kemmis 1986), community development projects (Reason & Bradbury 2001) and health (Meyer 2006b), including a small number of stroke related studies. For example Gibbon and Little (1995) looked at improving stroke care and rehabilitation on a general medical ward (GMW) and the development and evaluation of an acute stroke care pathway by Underwood and Parker in 1998. However specific details were not given on how these studies implemented best practice care.

The increasing level of interest in practitioner research in the UK is linked in part with the National Health Service (NHS) Modernisation agenda (Department of Health (DH) 1997, 1998, 2000) and action research, along with realistic evaluation, has been identified as a useful framework for researching innovation (Greenhalgh et al. 2004). Furthermore, action research is stated to be particularly suited to identifying problems in clinical practice and in developing solutions to improve practice (Winter & Munn-Giddings 2001), differing from other forms of participatory research with its focus on action (Meyer 2006b). Practitioners can choose to research their own practice, or an outside researcher can be engaged to help them identify problems, seek and implement practical solutions and systematically monitor and reflect on the process and outcome of change (Titchen & McGinley 2003). Therefore action research addresses actual problems that "occur in real situations as opposed to contexts artificially created by a research project" (Whitelaw et al. 2003 p.12).

Action research is not easily defined, with many different models used in practice influenced by the focus of interest, the emphasis on participation and how the production of knowledge is viewed i.e. a positivist or interpretivist perspective (Whitelaw et al. 2003). Nonetheless, after a period of extensive investigation and reflection on the literature for a commissioned systematic review of action research by the English Department of Health Technology Assessments Research and Development (R & D) programme, Waterman et al. (2001) arrived at the following definition

> *"Action research is a period of inquiry, which describes, interprets and explains social situations while executing a change intervention aimed at improvement and involvement. It is problem-focused, context-specific and future orientated. Action research is a group activity with an explicit value basis and is founded on a partnership between action researchers and participants, all of whom are involved in the change process. The participatory process is educative and empowering, involving a dynamic approach in which problem identification, planning, action and evaluation are interlinked. Knowledge may be advanced through reflection and research, and qualitative and quantitative research methods may be employed to collect data. Different types of knowledge may be produced by action research, including practical and propositional. Theory may be generated and refined, and general application explored through cycles of the action research process."*
>
> (Waterman et al. 2001 p.11)

Whilst this is a lengthy definition, it does encompass the wide variety of approaches in healthcare action research. Most definitions incorporate three key elements:

- Its participatory character (whereby researchers and practitioners work together in directing the course of change and the accompanying research).
- Its democratic impulse (whereby all participants are seen as equals, have a voice in the process and are empowered to change the contexts in which they work together).
- Its simultaneous contribution to social science and social change (of knowledge argued to be more meaningful to practice).

(Carr & Kemmis 1986; Waterman et al. 2001).

Action research uses a cyclical process, whereby findings are fed back to practitioners as they are generated, and used to inform further action and data collection cycles (Coghlan & Brannick 2005). A range of data collection methods, both qualitative and quantitative, can be used to best address the identified problem being researched, although action research is often written up in its rich contextual detail as a case study

(Meyer 2006a). The next section reviews the study's research aim and objectives to provide a framework for the chapter.

4.2. Research aim and objectives

This aim of this study was to explore lessons learnt from the development of a successful new inpatient SU in an inner London NHS Teaching Hospital in the UK. The objectives of the study were:

1. To describe the outcomes achieved from implementing a new inpatient SU.
2. To describe the processes of introducing a new inpatient SU.
3. To identify key factors that influenced outcomes.

4.3. Participants

This study focused on all staff working within and in support of the new SU. Participants were invited to reflect on their practice and consider new ways of working, using an action research approach designed to monitor the processes and outcomes of change. The transient nature of the workforce meant that not all staff there at the beginning of the study remained at the end. During the course of the study (23 months) a total of 40 staff (excluding junior doctors on rotation and nursing and therapy students) left the stroke unit team and 39 staff joined (see Chapter 1 sections 1.3.1.1 and 1.3.2.1 for a brief outline of their roles and responsibilities). Whilst all participated in the change process and were the focus of participant observation field notes, it was not possible to engage all staff in all other forms of data collection throughout the study. Data were gathered at different time points in the study from the following staff:

Nurses (n=22)
Physiotherapists (n=10)
Occupational therapists (n=8)
Doctors (n=5)
Therapy assistants (n=5)
Healthcare assistants (n=4)
Trust managers (n=3)

Speech and language therapists (n=2)
Discharge coordinator (n=2)
Red Cross volunteers (n=2)
Dietitian (n=1)
Social worker (n=1)
Clinical psychologist (n=1)
Stroke coordinator (n=1)
Pharmacist (n=2)
Ward clerk (n=1)
Domestic staff (n=1)
Catering manager (n=1)
Friends of the Hospital (n=1)
Volunteer service representative (n=1)

Whilst staff and service development were the focus of the research undertaken, patients and carers were involved throughout the study as members of the research steering group, through informal discussions on the SU, by attending selected STEP team meetings and via an "expert patient" who kept his own notes and gave feedback throughout the patient journey, including the initial period following his transfer home. In addition, the National Clinical Guidelines for Stroke (NCGS) (Intercollegiate Stroke Working Party (ISWP) 2000, 2004), which had been developed with input from stroke survivors and carers (Kelson et al. 1998), were used as a framework for good practice in the SU.

4.4. Data collection and action research cycles

This section focuses on the data gathered to generate findings and the action research cycles through which innovations were managed and evaluated. A variety of qualitative and quantitative methods were used to systematically generate data and monitor the processes and outcomes of change over time. Methods used included interviews, focus groups, reflective field notes based on participant observations and national audit data. Trust documents, for example policies and minutes from meetings were gathered to further inform the context and background to the study. Quantitative data from four rounds of the National Sentinel Stroke Audit (NSSA) were used to indicate the quality of stroke care delivered pre and post implementation of the stroke intervention. In addition, the researcher kept reflective field notes of informal conversations and observations in the field throughout the 23 months of the inquiry. Issues arising from data were fed back to participants through the weekly STEP team meeting for verification, further exploration and action planning.

For ease of description the study is divided into three main phases of data collection, and tools used in each are given below and later summarised in Table 4.6. In practice the phases were not as distinct and linear as this suggests. This is in keeping with the flexible dimensions of action research in response to naturally occurring events in the field. The three phases were exploration, innovation and evaluation.

4.4.1. Exploration phase

In the exploratory phase of a study, data are generated to explore the nature of the problem and focus of the study. Thus views were gathered from the multi-disciplinary team and stakeholders on how the stroke service should be developed and any associated challenges anticipated in achieving the vision. A number of different data sources were used during this stage of the project, and consisted of focus groups, national audits, reflective field notes based on participant observations and minutes from meetings; these are now described in detail.

4.4.1.1. Focus groups

A total of eight focus group sessions were held (see Table 4.1) to explore how staff in the Trust and neighbouring Primary Care Trusts (PCTs) wanted to develop and implement the new stroke service, and to consider any related issues. Focus groups are sometimes defined as being like a group interview between a facilitator and a group of six to 12 participants (Hollis et al. 2002). The participants are generally drawn from a group of people with a shared interest in a topic or experience, and are encouraged to interact with each other rather than the facilitator (Carpenter 2004). Sessions generally last between one and two hours and the facilitator may use a topic guide to help promote discussion amongst the group. An advantage of focus groups is that through participant interaction a wider range of communication genres can be accessed than in a one to one interview, including the use of humour, anecdotes or even argument (Kitzinger 1995). Krueger and Casey (2000) suggest that focus groups provide a more natural and realistic situation than individual interviews, as group dynamics mean that participants can both influence and be influenced by others during the discussion. However, attention needs to be paid to the possible effects of a hierarchy within a focus group as data collected may be influenced, for example by someone feeling inhibited in speaking out in the presence of their manager or against the prevailing view (Kitzinger 1995).

Following consultation with SU staff on the composition of the focus groups, they were kept broadly profession and area specific to facilitate communication and group dynamics at this early stage. In this study, focus groups averaged six participants, the exception being the session with colleagues from the PCTs where 18 people attended. The focus group meetings lasted between one and two hours and were held in a venue close to, but away from the immediate workplace to limit distractions or interruptions. The date and time of the focus groups were negotiated with relevant staff and arranged to suit the majority.

Focus group	Staff group	Staff base
1st	Nurses (n=5)	Acute Stroke Unit
2nd	Nurses (n=7)	Rehabilitation Stroke Unit
3rd	Nurses (n=3)	Medical Wards
4th	AHPs (n=7)	Acute Stroke Unit
5th	AHPs (n=9)	Rehabilitation Stroke Unit
6th	AHPs (n=6)	Medical Wards
7th	Mixed (n=17)	Local Primary Care Trusts
8th	Non- clinicians (n=6)	Trust wide

Table 4.1: Focus groups undertaken during exploration phase

The difficulty in protecting confidentiality, due to the necessary presence of others in a group setting, was discussed at the outset of each focus group (Bowling 2002), and participants were asked to respect each other's right to express their views without redress outside the session. It was explained that data produced, and any subsequent published information from the focus groups, would use codes in lieu of names.

Participants were advised they could stop or leave the focus group meeting at any time. Furthermore they were asked to respect each person's right to speak and not to be interrupted or talked over.

Topic areas to guide the focus group discussions were decided jointly by the STEP team, but it was emphasised to participants that themes were only there as ideas and all contributions were considered relevant. The suggested areas for discussion were as follows:

- Exploration of staff views about SU care
- The role of the MDT in the management of stroke
- Exploration of the needs of the stroke patient, family and carer
- The educational requirements and development needs of staff in order to deliver specialist SU care
- How should the SU be implemented and developed
- Open question time

At the request of the STEP team, I took the lead in facilitating focus group discussion and re-iterated the aim of people talking to each other and not me. A different member of the STEP team assisted each focus group by scribing as much of the discussion as possible with key points put on a flip chart and checked with participants at the end of the session for accuracy of content. Ideally focus group discussions should be tape-recorded and fully transcribed (Kitzinger 1995), but technical difficulties with the tape recorder at the start of the first session followed by lack of availability for future focus groups, precluded recording sessions. Reports based on the notes and flip chart entries were written up in full and circulated to participants of each focus group. Comments were invited on the accuracy of reports; no requests for alterations were received. Once all the focus groups sessions had taken place, collective findings were fed back by the STEP team at an open meeting attended by over 70 people. Subsequent to this meeting, MDT projects were set up to address issues and ideas raised from the focus groups (see section 4.4.2.2 for more details).

4.4.1.2. Pre-implementation National Sentinel Stroke Audits (NSSA)

This section provides an overview of the development of the NSSA. The audit was used to provide an objective measure of the stroke service at that time, thus providing a baseline measure for any subsequent change. Firstly, the development of audit and its use in the NHS will be explored as a basis to understand its role within the overall action research project.

4.4.1.2.1. Development of Clinical Audit in the NHS

Audit was introduced, along with other reforms to the NHS in 1989, to provide evidence of effectiveness of interventions and to improve quality of service (Buttery 1998). Clinical audit has been defined by the NHS Executive (1996) as the systematic and critical analysis of the quality of clinical care, including the procedures for diagnosis, treatment and care, associated use of resources and resulting outcomes and quality of life for the patient. The key feature of clinical audit is that current practice is compared against recommended standards that, where possible, are evidence based (French et al. 2001). The audit cycle is made up of a number of distinct stages: identification of a clinical audit topic; agreement of standards or guidelines; implementation of standards or guidelines; assessment of compliance with standards; agreement of changes if required, and implementation of any changes. In keeping with the aim of continuous improvement it is usual to re-audit to complete the audit cycle (Buttery 1998). Clinical audit is said to be a useful way of getting evidence into routine clinical practice (Swage 2000), but for it to be truly successful it must generate changes in the clinical behaviour of professionals (Buttery 1998). Furthermore, audit requires commitment and support from all levels in the organisation and often time and resource pressures may present barriers to staff involvement (Swage 2000). If audit is undertaken as part of a wider action research study, the collaborative manner inherent within the action research approach may encourage ownership of the audit and enhance commitment (French et al. 2001). In keeping with all audits that use documented information to measure performance, it must be remembered that for a variety of reasons not all that is done is documented and not all that is documented is carried out.

4.4.1.2.2. Overview of the National Sentinel Stroke Audit

The NSSA is a multidisciplinary audit developed at the Royal College of Physicians (RCP) Clinical Evaluation and Evaluation Unit (CEEu), in conjunction with the Intercollegiate Stroke Working Party (ISWP). The ISWP consists of representatives from a wide range of professional and patient organisations (Gompertz et al. 2001). The objective of the audit was to assess the quality of care for people who have had a stroke, from acute onset through to rehabilitation and longer-term care, and to help trusts use audit as a means of quality improvement. Individual hospital performances are compared against standards derived from research evidence and expert consensus-based national stroke guidelines (ISWP 2000, 2004). As the NSSA is possibly the only known documented national stroke audit to have been carried out, it provides a unique opportunity to view stroke care at not only a national level, but also for Trusts to benchmark their performance (Hammond et al. 2005).

A total of five national audits have taken place, the first in 1998, followed by subsequent audits in 1999, 2001/02, 2004 and 2006. Table 4.2 illustrates the growth in the number of participating sites taking part, culminating at 100% in 2004 and 2006, thus strengthening claims for comprehensiveness.

Year	Number of sites	Patient cases	% UKsites[15]
1998	197	5589	80%
1999	174	5375	64%
2001/2	199	8200	95%
2004	203	8697	100%
2006	224	13,625	100%

Table 4.2: Number and percentage of sites and patient cases audited in the 5 rounds of NSSA between 1998 and 2006

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[15] All Trusts in the UK, excluding Scotland, that care for acute stroke patients

Each audit occurred at a specific point in time to identify comparable levels of practice and service provision across the country. Auditors extract data retrospectively from case notes of up to 40 consecutive patients admitted with stroke detailing their process of clinical care. This was increased to 80 patients for 2006. Data are also collected on hospital admissions and management information to detail the organisation and facilities for treating stroke.

As the NSSA has developed over time, small changes have been made in the audit questions asked in each round and thus it is not always possible to make direct comparisons between each audit round. However the themed content of the process, which looks at aspects of clinical care received by the patient, and the organisational domains that assess the structure in which stroke care takes place, have remained broadly the same and are shown in Table 4.3 (see Appendix 4 for more details).

Organisation Domains	Process Domains
Organisation of care	Initial patient assessment
Interdisciplinary services	Clinical diagnosis
Continuing education	Multidisciplinary assessment
Team working – records, team meetings, assessment measures	Screening and functional assessment
Availability of information to inform practice	Management / care planning
Communication with patients and carers	Communication with patients and carers
	Primary secondary interface

Table 4.3: The broad categories of organisation and process domains assessed in the NSSA

To facilitate comparison of data between Trusts across the country and between individual audit rounds, patient details including stroke severity, age, gender, previous abilities and outcomes were collated to inform the case mix of patients included in the audit.

To promote consistency in the data collected, auditors were supplied with an instruction booklet providing clear criteria for the applicability of each standard. A telephone helpline was also available. At the

Trust site, each individual patient case note audit took approximately thirty minutes to complete, representing a time consuming process for practitioners to undertake. In addition, each Trust was requested to conduct an inter-rater study to measure the reliability of data extraction by examining the first five patient cases twice using different auditors. Inter-rater reliability testing demonstrated moderate to good agreement (kappa values of 0.60 and higher) between auditors of differing professions (Gompertz et al. 2001).

Despite high levels of validity and reliability, it is questionable how representative 40 consecutive sets of notes from a defined three-month period can be in their portrayal of the process of clinical care throughout the year. For instance, the project site has approximately 325 patients per year, and so the audit cohort of 40 comprises only 12% of the total number of stroke patients admitted. Proportionate sample size will therefore vary across Trusts, dependent upon numbers of stroke admissions per year, and may inadvertently favour those sites with either very large (over 350-400) or small numbers (less than 100).

4.4.1.2.3. The 1998 and 1999 National Sentinel Stroke Audits

Prior to the exploratory phase, the Trust had participated in the first and second rounds of the NSSA (CEEu 1998, 1999). The Trust's Clinical Audit department carried out the initial audit between January and March 1998. Twenty-four (out of a maximum of 40) consecutive cases were submitted to the CEEu in October that year using data extracted from medical and nursing documentation. Members of the stroke working party undertook the second audit, submitting 36 (out of a possible 40) consecutive stroke cases between August and November 1999. Information was extracted from therapy documentation, nursing and medical notes, which also included a new stroke proforma based on RCP standards of stroke care for assessment of patients admitted with suspected stroke. This proforma greatly helped the gathering of pertinent medical information required for the audit. Members of the STEP team along with myself carried out a secondary analysis of results from these two audits to establish a pre- implementation baseline.

However, in common with all audit data that is collected retrospectively, it could be incomplete (French et al. 2001). This critique of the audit method in general can be applied to the participation of the project site in the first NSSA as it was difficult for non clinicians to extract information from patient case notes that were not designed to describe specialist stroke care. No cases for either the first or second audit were submitted for the inter-rater reliability study.

The two year time frame of this audit cycle had been of concern to the CEEU as it meant a higher proportion of patients (8%) were still inpatients in 1999 when the forms were submitted, compared to only 0.7% in 1998, and so may not have meaningfully reflected any effect of changes made (CEEu 1999). However a follow up questionnaire sent out by the CEEu to the participating Trusts found it had not been an issue at the individual Trust level, but nevertheless they recommended that the difference in timing of the audit rounds should be borne in mind when interpreting local results. There were no recorded indications of this issue causing any difficulties at the project site.

Despite some of the limitations in the audit method, the results (see Chapter 5) were used to highlight the need for improvement in stroke care to the Trust board and to support what clinicians had been saying about the paucity of treatment for patients with stroke. Results showed stroke treatment in the Trust to be of poor quality; the standard of care did not meet any of the five identified key components of stroke intervention defined in Chapter 2 (section 2.3.1) nor the National Clinical Guidelines for Stroke (ISWP 2000, 2004). In essence, stroke care was not provided by a MDT, intervention was not delivered by staff specialised in stroke care, there was no stroke specific education programme or training available, carers were not routinely involved in the rehabilitation process and there was no structured information provision to patients and carers. Lack of organisational structure has been identified in the literature as adversely affecting overall processes of care which are necessary for effective treatment e.g. initial patient assessment, clinical diagnosis and management/care planning (Rudd et al 2005), thus contributing to the already fragmented and uncoordinated management of stroke patients at the Trust (see Chapter 5 for more details).

4.4.1.2.4. Reflective field notes based on participant observations

Reflective field notes based on participant observations of events within the SU and the wider hospital environment were kept throughout the exploration phase.

Four distinctive research roles in the field have been identified in the literature: the complete participant, the participant as observer, the observer as participant and the complete observer (Gold 1958 cited by Hammersley & Atkinson 1995). The complete participant hides their real identity from those being observed, whilst at the opposite end of the spectrum, the complete observer has no contact at all with the subjects. The distinction between the observer as participant and the participant observer is made upon the degree of participation, with the latter being more participative in the field. My role in this study was one of a participant observer, whereby I had an active development role within the STEP team. Field notes, a written record of what is seen and heard outside the immediate context of an interview or focus group setting, were maintained based on the observations I made. Whilst working within the team, the field notes provided a place for the systematic collection of my thoughts about events and ideas that I thought could become relevant at a later stage in the research process (Arthur & Nazroo 2003). Any other relevant contextual information that I thought might impact on the service was also recorded in the field notes. Emerson et al. (2001) comment that field notes cannot provide a complete record of events because the researcher has to make decisions about what to include as relevant and what to omit as not significant. As these decisions may not be at the conscious level it is important that the researcher is reflexive.

Reflexivity is defined as "the process associated with researchers' self-awareness – of how they impact and transform the research they undertake" (p.622); keeping reflective field notes or diary journal is integral to the researcher being able to take a critical gaze towards themselves in the construction, collection and interpretation of data (Kingdon 2005). As described in Chapter 1, I had multiple roles within the organisation and the research setting and thus it was important that I looked at how my personal and situational influences could affect the process of change. For example an extract from early field notes (FN Feb 2001) showed how my personal history of having trained as a physiotherapist might have led me to favour more quantitative methods of research to generate knowledge, and create a possible tension with the collaborative nature of action research:

> *I feel really lonely, a physiotherapist in a non-physiotherapy world of research. I can't even find a physiotherapist to supervise me... it feels like I have been rejected by my own kind! I am finding it hard to make the transfer from quantitative to qualitative research, uncertainty is scary, I am used to controlling the situation, knowing what is going to happen, must try to get a physio angle into the research... perhaps I can look at an early standing programme...*

Monthly discussions with university supervisors were used to rigorously examine and reflect on underlying assumptions, such as that described, and to acknowledge the possible impact of my history and personal perspective on the direction of the research.

In addition to the above, findings were fed back to participants and members of the wider organisation in an ongoing process. Finlay (2003) calls this *reflexivity as mutual collaboration*, whereby at a minimum participants are involved in dialogue during analysis and evaluation of data and this was integral to the overall reflexive approach of the work.

As stated, participant observation reflective field notes were used to record events that occurred where service and staff development were the primary focus or during informal encounters, and it was not realistic to obtain consent on each occasion. However, at the outset of the project and at regular intervals along the way, the aims of the study were restated and my role within it explained. Nevertheless, this had inherent difficulties as although I saw myself primarily in the role of an insider researcher I had multiple roles of researcher, clinician, manager and PhD student. I found this personally hard to manage, particularly in the early months of the project and wrote, "*I feel like I have a split personality with all these roles... what chance do others have if I don't know who am I?* (FN Mar 2001). I was not sure if I was an *insider* or *outsider* or both, and it was important that I recognised the potential effect of how others saw and positioned me within the project, and consequent effects on the research process. Indeed being an insider/outsider is more complicated than just being internal or external to the organisation, the personal characteristics of the investigator can also play a role in how others position you. For example a manager may encounter more difficulties in being accepted in a healthcare team than someone from a health professional background, yet a physiotherapist may also not be accepted as a change agent by nurses and vice versa. The insider/outsider debate needs to reflect on this complexity and perhaps consider how roles can be utilised strategically to enhance the project role. Halstead (2001) addressed this issue in a study looking at the experience of being an indigenous fieldworker among East Indian localities on the West Bank Demerara in Guyana. Even though Halstead was an *outsider* to this community her Indian and Guyanese ethnicity, she suggests, allowed participants to see her as both an insider and outsider depending on the context. For instance, if participants situated her as *different* and therefore as an outsider it enabled her to fulfil a status position and help them facilitate external links outside the locality. Alternatively her cultural knowledge meant she could also be seen as the *same*, and thus be positioned as an insider. Hence Halstead describes her boundaries of insider/outsider as "inextricably intertwined" (p.320) as were my own multiple roles within this action research study. Some participants were quick to learn that by working alongside me as a clinician also gave them managerial access that could be beneficial. For example, a member of the STEP team who wanted to take part in the Clinical Governance Development Programme for Stroke but had been told by her line manager that this could be financially difficult, asked me for advice and help (FN April 2001). In this situation my insider-outsider role was useful as my management position meant I was able to assist access funds for the therapist to attend. However as described in Chapter 1 (section 1.4.1), problems also arose from being positioned as an insider within the organisation. Indeed, at times this insider role and the personal tensions that arose from it could make me feel like an *outsider* in my own physiotherapy department. This is discussed further in Chapter 6.

The reflective field notes allowed events in the field and other informal conversations to be captured and recorded for analysis later. Contemporary handwritten notes were made at the time in the field or, if that was not possible or practical, were written up the same day and later word-processed and kept chronologically according to the month. Fifty-two A4 pages (font 12, line format 1.5) of field notes were recorded during this exploratory stage.

4.4.1.3. Minutes from meetings

Minutes from 23 meetings served to supplement data gathered from the baseline audits, focus groups and reflective field notes during the exploratory phase. As I was part-time in the project, the minutes also served to inform me of proposed actions and developments from meetings I was unable to attend. Minutes collated during the exploration phase included the weekly STEP meeting, bi-monthly joint acute stroke unit (ASU)/ rehabilitation stroke unit (RSU) development meeting, the stroke oversight committee[16], goal setting and key worker meetings and the research steering group.

4.4.2. Innovation phase

This phase began in June 2001 and was ongoing throughout the study. During this period, a number of action research cycles usually emerge as spirals of activity. Each cycle comprised a period of planning, acting,

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[16] A working group convened at the implementation stage of the SU

observing, reflecting and re-planning. In practice a number of problems may be addressed at the same time, often leading to spin off spirals of further work (Meyer 2006a). As the primary purpose of this phase was to implement change through a variety of innovations, data collection was not a separate activity but ran concurrently with the development work. Reflective field notes based on participant observations and minutes from meetings were the main data sets generated and were used to monitor the process of change and reflect on learning gained; interim findings were fed back to participants to guide subsequent action. Details of individual action cycles are described next.

4.4.2.1. First action research cycle: valuing & profiling stroke

Data collected in the exploratory phase identified that clinical staff recognised stroke care was fragmented and marginalized within the many regional, national and international specialities in the Trust. Results from NSSAs in 1998 and 1999 confirmed that delivery of stroke care was poor. The STEP team, along with other stroke service staff who expressed an interest, embarked on a number of initiatives to address these issues. Firstly, a publicity strategy to raise the profile of the SU was undertaken and included having the unit officially opened by the Chairperson of the Stroke Association, writing editorials for the British Medical Journal (Stone 2002) and the International Journal of Therapy & Rehabilitation (Kilbride 2003), along with having articles published in the local press (Ham and High 9th November 2001; Camden New Journal 7th November 2001, 14th February 2002) and hospital publications (Freestyle 2001, 2002a, 2002b; Pullin 2002), and contributing to a Department of Health publication on stroke services (DH 2002a). In addition, members of the team undertook local, regional and national presentations on how we were developing our SU. Furthermore, an inaugural National Stroke Conference and two stroke study days were organised and hosted at the Trust by the STEP team. An information stand was staffed during Stroke Awareness week in the main foyer of the hospital to further raise the profile of the SU, educate other hospital staff and members of the public about the need for stroke prevention and SUs, to reduce unnecessary death and disability.

Another particular highlight of this phase was a Charity Ball held at a major London venue, attended by over 200 people including stroke survivors and their families.

Running alongside the above activities was a widespread consultation and profile raising exercise to seek views on how the service should be developed. Key internal stakeholders consulted included the Trust's Chief Executive, Medical Director, Divisional General Manager, Nurse Director, Therapy Director and the Trust Executive Board. External organisations contacted included the RCP, the local Community Health Council, local general practitioners, patient representatives and voluntary agencies like The Stroke Association, Different Strokes and Connect, a communication support group.

As a direct consequence of this consultation process, the Medical Director instructed that the STEP team was to join the Stroke Oversight Committee. This was a working group that had been set up by senior medical and management representatives to oversee the implementation of medical input to the stroke service. The drive behind establishing the committee was to resolve some early difficulties encountered between the Neurologist and Geriatrician when the SU opened. Both doctors had different ideas about the purpose of the unit, the former favouring drug trials and the latter the instigation of holistic care. Once the doctors in question agreed in principle upon a working partnership, the remit of the Committee became one of strategic planning. Hence membership of this Committee gave the STEP team indirect access to the Trust Board via the Divisional General Manager (DGM) who attended the meetings and so provided an ideal vehicle to keep stroke on the Trust's agenda.

4.4.2.2. Second action research cycle: building a team

During the exploratory phase, staff expressed concerns that the SU had opened very quickly, leaving them very little time to prepare for a new way of working. Therefore the focus of the second action cycle addressed the issue of building a specialist stroke team. Furthermore, the sites selected for the ASU and RSU were wards that were closed at the time due to financial constraints, and so there was no prior foundation of collaboration upon which to build a stroke team. In particular, as RSU staff had previously looked after continuing care and respite patients with only a few admitted for rehabilitation, these nurses and therapists had not previously had the opportunity to work together in a rehabilitative way. Hence, practical projects of clinical relevance, based on topics identified in the previous phase were embarked upon first. Multi-disciplinary groups were formed to take up these projects that included developing new MDT documentation, collating information resource files about facilities for patients with stroke, establishing team processes relating to goal planning, holding joint sessions and communication strategies. A weekly one-hour development meeting was established to create an important “space” for the STEP team to get together on a regular basis with protected time to reflect and plan further actions.

The originating impetus for the above weekly meeting arose from a stroke specific Clinical Governance Development Programme (CGDP) run by the UK Government NHS Modernisation Agency attended by STEP team members with representation from nursing, medicine and therapy. A feature of the series of five workshops held over nine months was for teams to regularly have protected time for thinking and planning. Formal agreement and support for participation in the programme had to be given by the Trust's Chief Executive prior to starting; this effectively paved the way for continuing management support for the STEP team to have time out to instigate change. Furthermore, attending these workshops in Leicester, (each of which were held over two days, necessitating an overnight stay in a hotel), proved another valuable team building opportunity, a point revisited in the findings chapter.

4.4.2.3. Third action research cycle: sharing skills and knowledge

During focus group sessions held in the exploratory phase, a common concern expressed by staff was their perceived and real lack of specialist skills and knowledge in treating stroke patients. Staff felt ill prepared to implement the NCGS (ISWP 2004), and they were not confident how to redress areas of weakness highlighted in the NSSA

(CEEu 1999). This action cycle was therefore undertaken to address the training needs of staff in this area. Members of the stroke team shared knowledge from their professional domain, instigating a variety of learning activities. Initially, this learning took the shape of a formal weekly multi-disciplinary seminar programme and was later supported with more informal ways of staff sharing knowledge. In one example, staff worked together in a variety of patient care activities, such as sitting patients out of bed. In conjunction with the Trust's Learning Resource Centre, core stroke competencies for health care assistants (HCAs) were defined and a teaching programme devised. Furthermore, a computer based stroke care pathway was developed as part of a wider Trust Information Technology initiative.

4.4.2.4. Reflective field notes based on participant observation

During the innovation phase, reflective field notes based on participant observations were maintained and used to record the processes and outcomes of development work in this phase. Participant observations in the field, informal discussions and my own notes from meetings were also recorded. Seventy-four A4 pages (font 12, line format 1.5) of field notes were recorded during this stage.

4.4.2.5. Minutes from meetings

Minutes from meetings (n=35) served to supplement data gathered from the reflective field notes during the innovation phase. Minutes collated during the innovation phase included the weekly STEP meeting, bi-monthly joint ASU/RSU development meeting, the stroke oversight committee, research steering group and the ASU and RSU development meetings.

4.4.3. Evaluation phase

In reality, evaluation and reflection were ongoing throughout the study, and by the time the education and training cycle was established the process of development and evaluation was self-sustaining. This phase began in earnest in May 2002 and lasted until November 2002 when formal data collection ceased. This period of recognised review was undertaken to capture staff reflections on what they felt had been achieved, what remained to be done and what had been learnt during the process of change. Data were collected from a variety of sources during this phase of the study, and consisted of a post implementation audit, semi-structured in depth interviews, reflective field notes based on participant observations and minutes from meetings. It is essential that all findings should be shared with participants to allow them to critically comment on whether they feel their views have been adequately represented and to check agreement for the material to be shared with a wider audience (Meyer 2006a). All descriptive findings from this study were shared with participants and permission given to use them in this PhD thesis.

4.4.3.1. Post implementation of National Sentinel Stroke Audits (NSSA)

These audits form the post implementation data, using information extracted from multi-disciplinary documentation (CEEu 2002, 2004). The third NSSA (CEEu 2002) was carried out by the stroke coordinator and myself; as I had withdrawn from the field by the time of the fourth audit, (CEEu 2004) this was undertaken by the stroke coordinator (a post now occupied by a therapist) and a senior nurse. Even though the fourth audit round was undertaken after the completion of the formal project work, the results are included as an indication of the project's sustainability (see Chapter 5). As with the first and second rounds, multi-disciplinary case notes of 40 consecutive stroke patients (N= 80 in total across both audit rounds) were audited retrospectively for clinical processes, whilst the service organisation data were recorded onto a standardised proforma.

The CEEu requested all trusts to have two auditors independently extract data from five sets of notes to test inter-rater reliability of data extraction. These notes formed part of the final number submitted for analysis, but represented additional time demands for health professionals who undertook the audit in addition to their daily duties. The difficulty of this additional workload was reflected nationally as the same number of cases (N= 652) was submitted for both the third and fourth rounds of the NSSA (CEEu 2002, 2004). Approximately 58% of the participating trusts in both rounds were able to contribute to the inter-rater study of reliability. Unfortunately at the project site, the stroke coordinator and myself independently audited five sets of notes for the 2001/02 audit but the process forms were destroyed by mistake and hence were not able to be submitted. Due to workload constraints it was not possible to double audit another five patient case notes. However the only area where discrepancies arose in the local inter-rater study was related to prescription of specialist medications. Physiotherapists do not currently receive pharmacology training and hence I occasionally needed to seek advice from other colleagues, for example to clarify generic and trade names of medications. Issues regarding accurate extraction of data related to medication were also seen in the pooled national data (see below). As the information was extracted from specially designed stroke documentation no further challenges were encountered during the audit. A kappa value of 0.6 and above, a measure of agreement, was achieved nationally in the inter-rater reliability studies for the third and fourth NSSAs (CEEu 2002, 2004). Levels of agreement for pooled national data were generally good (0.60 or higher) with the exception of the following areas:

- Conscious level 0.52
- Social work assessment within 7 days of referral 0.59
- Carers' needs for support assessed separately 0.55
- Other reason for indwelling catheter in first week not documented 0.20
- Reason for indwelling catheter in first week not documented 0.58
- Pre-stroke: other anti-hypertensive medication 0.45
- Pre-stroke: Other anti-platelet/thrombotic medication 0.00
- Inpatient: thrombolysis 0.50
- Inpatient: type of lipid regulating medication 0.13

4.4.3.2. Semi-structured interviews

Semi-structured interviews were used in the reflection phase as the primary means of data collection to explore in depth with staff their individual perspectives on what had been learnt and achieved during the action research study, coupled with any outstanding issues. A key feature of these interviews as a research method was their ability to provide an in-depth personalised perspective of the research context for study participants. Interviews also provided an opportunity for clarification and further understanding of the research phenomenon being studied (Ritchie 2003).

To a large extent the success of an interview depends on the personal and professional qualities of the interviewer (Legard et al. 2003). A number of key qualities for an interviewer have been identified in the literature, and include the ability to listen and think quickly (Legard et al. 2003), to have respect and interest in people and to be able to establish a good rapport (Thompson 2000). Despite my lack of specific training in qualitative interviewing skills, my interpersonal skills developed throughout my physiotherapy career, both as a manager and a clinician treating people with varying communication difficulties, meant I was well placed to carry out semi-structured interviews in this project phase.

As I wanted to gain a broad perspective about the implementation and development of the SU, a stratified purposive sample of 28 semi-structured interviews took place with a range of members from the stroke team (see Table 4.4). A stratified purposive sample is a hybrid approach, which aims to recruit a group that provides variation but is self-selected (Patton 2002). All participants that were interviewed came forward independently in response to notices placed in the ASU and RSU, from flyers circulated at meetings and by word of mouth. Despite best efforts, only one HCA expressed an interest in participating in the semi-structured interviews but a subsequent long-term illness prevented her taking part. The occupational therapy assistant (OTA) had previously worked as a physiotherapy assistant (PTA) in the RSU, and so was able to report both perspectives. The PTA posts at the RSU at that time were vacant.

Occupational Background of interviewees	Number of interviews
Nurses	10
Physiotherapists	7
Occupational Therapists	4
Speech and Language Therapists	2
Doctors	2
Dietitian	1
Occupational Therapy Assistant	1
Manager	1
Total	**28**

Table 4.4: Occupational background of participants interviewed

The absence of support staff in the interview cohort is suggestive of a power relationship at play. My senior role in the Trust may have prevented HCAs coming forward, even though I thought my relationship with unit staff was good. The HCA that volunteered to take part took the informal lead of this occupational group and her absence left the group without a role model. Had she been interviewed, perhaps other HCAs may have followed her example. Furthermore as many of them had actively participated in a focus group during the exploratory phase of the study, they may have gained confidence from a group situation that was not present in the individual situation. Power imbalance in social interactions can be introduced based on ethnicity, gender, disability or age (Lewis 2003). All the HCAs were of black Afro-Caribbean origin, were young women and their occupational status was low in the organisational hierarchy. I was white, a senior manager, a researcher, a physiotherapist and older in age and all this may have influenced the situation.

The interviews took place in a quiet private location away from the immediate ward environment to prevent unnecessary interruptions. A "do not disturb" notice was placed on the door. Interviews lasted between 30 to 90 minutes and guided using a topic schedule (see Table 4.5) that included a number of open questions. Open questions are those that require more than a single word or a few words to be answered (Legard et al. 2003). The open questions used in this cohort of semi-structured interviews had been agreed by the STEP team with a view to informing the aims and objectives of the action research outlined at the beginning of this chapter (section 4.2). Even though a topic schedule was used in the interviews, discussion was allowed to develop freely with the interviewer using prompts and probes e.g. "can you expand on that last point" or "tell me more about …" where necessary.

	Topic schedule
1.	In your opinion what is care for stroke patients like in the Trust?
2.	What are your views about the role of stroke units in the care of stroke patients?
3.	Has the stroke service led to any change in the care of patients?
4.	What further changes, if any, would you make to improve the function of the stroke unit?
5.	In your opinion what role do structures such as multidisciplinary documentation play in stroke care?
6.	How has the last year been for you? How do you feel about working with stroke patients?
7.	Are there any other issues related to the stroke unit or treatment of stroke patients that you would like to cover?

Table 4.5: Topic schedule used for interviews

Interviewees gave written consent following discussions of confidentiality and anonymity. Participants were given reassurance that if they later became uncomfortable about any information they had disclosed, if requested it would not be used. No requests to withdraw data were received. All interviews were taped and transcribed verbatim and returned to participants to check for accuracy of understanding and any possible changes to the content.

4.4.3.3. Reflective field notes based on participant observations

Reflective field notes based on participant observations in the field were kept of events both within and outside the SU throughout the reflection stage (n=62 A4 pages, format 1.5). All informal contact and discussions, plus my own reflections on events in the field were documented.

4.4.3.4. Minutes from meetings

Minutes from various meetings (n=35) were used to augment the other data sets. Meetings held during this stage included: weekly STEP meeting, joint ASU/RSU meeting, research steering group, development meetings at the ASU and RSU, patient and carer support group.

Table 4.6 summarises data generated from the three study phases.

Exploration phase data sets	
Focus groups	N = 8 groups
Pre-implementation audit	N = 60 patients
Reflective field notes	N = 52 x A4 pages (Font 12, format 1.5 lines)
Minutes from meetings	N = 23 meetings
Innovation phase data sets	
Reflective field notes	N= 74 x A4 pages (Font 12, format 1.5 lines)
Minutes from meetings	N = 62 meetings
Evaluation phase data sets	
Semi-structured interviews	N = 28 staff
Reflective field notes	N = 62 A4 pages (Font 12, format 1.5 lines)
Post-implementation national audit	N = 80 patients
Minutes from meetings	N = 35 meetings

Table 4.6: Summary of data collection in the three study phases

4.5. Methods of data analysis

The study described in this thesis took a mixed method approach to data collection. Qualitative data provided information on process issues related to implementation of the new SU, whereas the quantitative data were used to indicate change over time.

In reality, the analysis of qualitative findings was conducted throughout the data collection process. Emergent findings were shared and reflected on for meaning at the weekly STEP meeting, with the wider unit staff at the joint ASU/RSU meeting and at the research steering group. As I was adopting the role of an insider researcher in my own organisation (Coghlan & Brannick 2005) reflective discussions with University supervisors gave the analysis an important external dimension; in particular helping to rigorously examine any possible assumptions held by myself.

Following the end of the data collection phase, I undertook a formal period of analysis and this is the process described below. I also continued to share my thoughts and written drafts of findings with STEP team members, and sought comments and suggestions during the Research Steering Group and the ASU/RSU meetings. However, in reality, I had the major influence over the translation of raw data into findings, and as such the findings are affected by my internal values and life experiences. Attempts to minimise effects of any potential bias were addressed through rigorous examination and reflection on any of my underlying assumptions (Argyris et al. 1985) i.e. my positivist dominated physiotherapy training which may have led to me to overemphasise or favour a particular line of inquiry above other options. These potential issues were addressed in reflective discussions with university supervisors throughout the project, including the write up stage, and via member checks through the regular feed back of findings to the wider stroke team.

4.5.1. Qualitative Data

Qualitative data generated from the focus groups, interviews and reflective field notes were analysed using the process of Immersion/ Crystallization (I/C) (see Figure 4.1). The I/C approach, a term first coined by Miller and Crabtree in 1992, is a style of data reduction that is suited to exploratory research where knowledge in the area is limited and research is participatory. I/C involves the systematic review of accumulated data and text in an iterative process, consisting of cycles whereby the researcher immerses into and experiences the text, emerging after concerned reflection with intuitive crystallizations (Miller & Crabtree 1992; Borkan 1999). Every stage of the I/C process of data analysis in this study required judicious judgement and decision-making on my part. I placed myself in a quiet environment, identifying days and times that would be potentially free from outside interruptions, so giving time necessary for immersion.

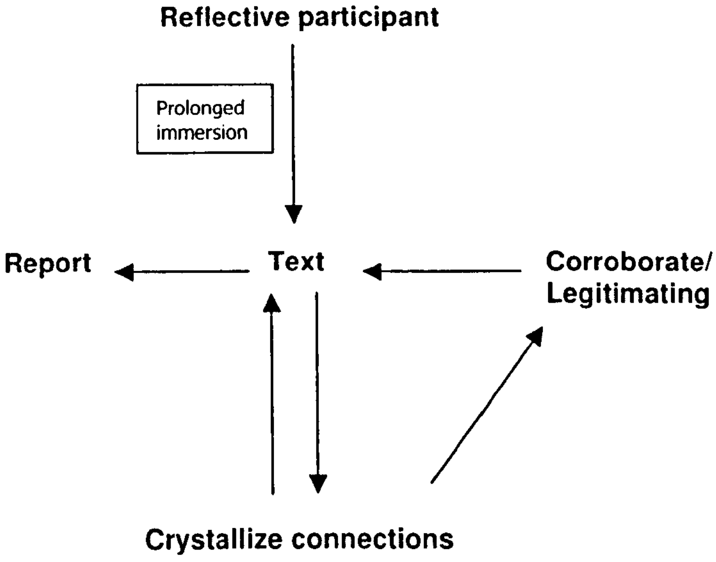

Fig. 4.1: The process of immersion and crystallization (Adapted from Miller & Crabtree 1992 p.18)

Each original transcript was first read in its entirety to get a sense of the content, then read again whilst making notes in the margin of the paper of any pertinent topics raised by participants, looking for patterns and connections, were re-read once more and followed by a final read. Each time the texts were searched for different evidence or alternative interpretations. Data that emerged unrelated to a question or action were noted and recorded separately. *Crystallizations* generated (see Appendix 5) through this process were grouped under broader themed headings, for example "Positives and negatives of team working", "Education/training" "Key changes" and "Problems encountered". Data within each category were then read and reflected on to ensure that contained data had a similar meaning and sub themes developed (see Appendix 6).

Once the analysis of qualitative data was complete, the original texts and transcripts were loaded into the computer software package NU*DIST NVivo 1.3[17] to assist with data management and the data were coded according to themes that had emerged during the I/C process.

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[17] NVivo = NUD*IST Non- numerical Unstructured Data Indexing Searching and Theorizing Vivo

NVivo permits passages of data to be tagged for later retrieval by code (see Appendix 7).

4.5.2. Quantitative Data

Quantitative data were extracted from each of the four rounds of the NSSA data to track change over time in outcomes for patients with stroke at the project site. Each Trust that took part in the NSSA received an individual audit report on the performance of their own stroke service so local standards could be benchmarked against national performance. All submitted audit data from participating trusts were analysed using a statistical software package (SPSS) by the CEEu. Data were analysed descriptively in frequencies and percentages, and rounded to the nearest whole number to represent national averages. The percentage change in results between audits for different subsets of clinical standards is presented as median values (Rudd et al. 2001; Hammond et al. 2005). Rudd et al. (2001) went on to state that inferential methods of analysis, like tests of significance and confidence intervals to compare results between audit rounds were of limited value for the organisational audits as they were "close to being a census of the organisation of care of all trusts in England, Wales and Northern Ireland."

Results from the first and second rounds of the NSSA were examined post hoc by the STEP team to give a baseline measure of pre-implementation care, and to identify areas of the service that required specific attention. The results from the third round were again used to highlight any change from the service intervention and areas that were in need of development. For example, it appeared that routine screening of mood was not taking place, or at best not recorded; this led to an adjustment in the unit documentation to prompt staff to carry out and record details of the mood assessment. As the fourth audit round took place after the formal withdrawal of the action researcher and the close of the project, the results were used to demonstrate sustainability of change as well as functioning as a continued driver for change.

4.6. Ensuring quality of data

4.6.1. Trustworthiness

Trustworthiness of data, whatever the research strategy used, is essential if findings are to stand up to critical appraisal by external agencies. For knowledge to be put to use in contexts beyond the field of the original research there must be reasons for knowledge generated to be trusted (Feldman 2007); although it has been suggested that any evaluative criteria to assess the quality of data are reflective of academic desire to impose conformity on diversity (Rosenau 1992). However in the present climate of evidence-based healthcare (EBHC) it is evermore important that the quality and relevance of findings generated from research are evaluated. To this end, Waterman et al. (2001) have produced specific guidance to assist funding agencies, policy makers, ethics committees, users and researchers to evaluate action research proposals and projects with criteria relevant to the action research process, and not on standards developed for another research methodology. The guidance, which consists of 20 questions, is shown below:

1. Is there a clear statement of the aims and objectives of each stage of the research?
2. Was the action research relevant to practitioners and /or users?
3. Were the phases of the project clearly outlined?
4. Were the participants and stakeholders clearly described and justified?
5. Was consideration given to the local context while implementing change?
6. Was the relationship between researchers and participants adequately considered?
7. Was the project managed appropriately?
8. Were ethical issues encountered and how were they dealt with?
9. Was the study adequately funded/supported?
10. Was the length and timetable of the project realistic?
11. Were data collected in a way that addressed the research issue?
12. Were steps taken to promote the rigour of findings?

13. Were data analyses sufficiently rigorous?
14. Was the study design flexible and responsive?
15. Are there clear statements of the findings and outcomes of each phase of the study?
16. Do the researchers link the data that are presented to their own commentary and interpretation?
17. Is the connection with an existing body of knowledge made clear?
18. Is there discussion of the extent to which aims and objectives were achieved at each stage?
19. Are the findings of the study transferable?
20. Have the authors articulated the criteria upon which their own work is to be read/judged?

Drawing on these criteria, along with support from other key authors in the field of action research, the case is made for the quality of this PhD study.

4.6.1.1. Relevant, meaningful and valid

The participatory action research process ensured issues addressed in this study were encapsulated in the study's aim and objectives, and findings uncovered were of direct relevance to practitioners along with other stakeholders in the Trust. The project findings (chapters 5 and 6) generated through the cyclical process of problem identification, action and evaluation, and the collection of process and outcome data demonstrate participants were at the centre of improvements seen in stroke care, and provide further support to the claim that this study was relevant and meaningful. Hammersley (1992) connects relevance with authenticity; the account being valid if it accurately represents those features of the phenomenon it intended to describe, explain or theorise. On the other hand, Bradbury and Reason (2001) suggest people energised and empowered by being involved in research can also be seen as a mark of quality. In this study a number of members of the STEP team undertook data generation i.e. involvement in focus groups, leading project teams, undertaking audit, and the direction of the multidisciplinary project work was driven by findings from the field. This criterion is similar to that proposed for catalytic authenticity, which is the ability of an inquiry to prompt action on behalf of the participants to engage with changing their practice (Lincoln & Guba 2000a), and the extent to which participants were engaged in the need to change and how they made changes to their own practice is described throughout the thesis.

Whilst not an objective test of validity, member checks are a mechanism for enhancing the trustworthiness of data. This involves requesting participant views, on the resonance and interpretation of findings. In addition, member checks aim to reduce errors in understanding of individual perspectives and any potential bias. Respondent validation is said to be particularly valuable in action research where collaboration with participants is a key ongoing feature in the process of facilitating change (Barbour 2001). In this study, findings were fed back at the weekly STEP meeting, the bi-monthly ASU/RSU meetings and at the research steering group. In addition, interview and focus group transcripts were returned to participants for verification. The manner of member checking within the action research approach is arguably more robust than in other methods, where the findings are generally only fed back towards the final stages of the project and critical commentary is not invited. Respondent validation in action research is woven throughout the process from start to finish, including collaboration on how data is to be gathered. The iterative feedback process also helps to check data are free from bias and incorporates all participant perspectives.

In addition to quality indicators already mentioned, Waterman et al. (2001) also asks if the researchers address issues related to interpretation of data and self; this was covered earlier in the chapter in section 4.4.1.2.4.

4.6.1.2. Ethical considerations

Ethical approval for the study was obtained from the Local Research Ethics Committee prior to commencement. Procedures included provision of written and verbal information about the study, an explanation that there was no obligation to take part, that participants could withdraw at any time, and that working relationships would not be affected, through to gaining of consent from participants and working to protect confidentiality.

An important aspect of the researcher's responsibility in action research is the well being of participants; an area normally addressed through the process of formal ethical approval. However, the non-predictive nature of action research makes the process difficult to define in advance, and the researcher may encounter difficulties in gaining informed consent in advance from participants. As such, whilst it does not replace the need for research governance and formal ethical approval it is additionally important to agree a mutual ethical code of practice at the outset of the project (Meyer 2006a). Furthermore, as action research is inherently collaborative in nature; the distinction between researcher and subjects seen in more traditional forms of enquiry is more ambiguous in action research (Whitelaw et al. 2003). As the lead facilitator in this study and working as an "insider" (Coghlan & Casey 2001) from the Trust, issues of informed consent were further muddied by the duplication of roles held by myself in the organisation; staff would sometimes ask if I was present in the hospital on a particular day as a manager, researcher or physiotherapist. I was likewise mindful of my position in the Trust and how my seniority could affect the willingness of people to take part and whether non-participation was really a voluntary option. Moreover, whilst consent to take part was made explicit prior to the more formal data collecting methods i.e. focus groups and interviews, this was more difficult to establish throughout the day to day participation. This viewpoint is only said to be problematic if the process of consent is seen as a single event as opposed to one that is continually negotiated (Williams 1995). The iterative process of feeding back findings to the team was part of a mechanism whereby any contentious issues could be raised. In reality it can also be questioned as to how much choice the practitioners in the field really had in withdrawing from their project site, which was also the place of their employment. With hindsight, most day-to-day participation throughout the stroke service and wider trust occurred on the assumption that people knew about the project, were willing to take part and could choose not to participate if they wanted to. Whilst it was not practical to raise the issue of informed consent at each encounter or exchange of information, it may have been better to have included a mechanism whereby people's rights as co-researchers and their wish to take part were regularly reviewed.

However, it has been suggested in the literature that action research has the potential to pose few ethical dilemmas due to its collaborative approach (Badger 2000). Nonetheless, action research can have political consequences; it challenges the status quo and attention needs to be paid as to how to prevent harm to participants (Coghlan & Brannick 2005). The process of change can be challenging and resistance may be encountered along the way possibly causing emotional difficulty for some staff (this point is explored further in Chapter 6); the Trust's occupational psychologist had agreed to be available a resource to be drawn upon if needed, but in the event was not required. I used my university supervision sessions for external support.

As this study took place in the lead researcher's place of work it was necessary at all times to consider the impact of the inquiry process on participants and even those not directly involved in the study. It was important that staff felt confident to speak freely and without fear of repercussions from people such as their line manager or those who had the ability to influence their work life. Pettigrew (2003) states that there is a fine line between acting unethically and being politically astute. He goes on to highlight the importance of building relationships and trust so that people will co-operate with you, but recognising the difficulties of doing this with openness, honesty and transparency. Data should be treated sensitively, whilst maintaining confidentiality but also acknowledging the difficulties this can present. For example, when the STEP team presented details of outstanding issues in the service to the Trust Executive Board, we had to be careful not to be seen to apportion blame to individuals or divulge individual sources of information. This was particularly difficult when raising the problem of continuing non-referral of stroke patients from other elderly wards, especially as one of the Consultants from these wards was present at the meeting.

Taking part in an action research study brings working practices under the spotlight, and this can highlight inadequacies in both the system and the ability of staff to carry out their jobs. This can cause an ethical dilemma in itself, presenting a potentially harmful situation to participants that need to be actively managed. As such, a commitment to ethical practice meant a continual review of the impact of the process on staff involved in the development of the SU, alongside a continued negotiation of staff involvement.

4.6.1.3. Transferability

In addition to addressing the trustworthiness of the data, it is also important to consider their transferability. Transferability, or the extent to which findings can be generalised beyond the field of origin, is a contested area in the literature, which Seale (1999) proposes is strongly influenced by the epistemological and ontological stance of the researcher and the practitioner in the field. Nevertheless, findings must relate to more than the immediate and unique situation of the project setting if they are to be critiqued and utilised by others within the wider milieu. Action research is often written up as a case study and findings reported in rich contextual detail; this thesis has been written with the aim of giving sufficient detail and depth of description for readers to be able to judge the relevance of findings with their own area of practice (Lewis & Ritchie 2003).

This vicarious experience of events is also described as giving a *thick description* (Denzin 1989). Indeed, it is claimed the intrinsic worth of case studies is the in-depth study of one unique case, and that findings are of value in themselves (Stake 2000). It is likely the recipients of the markedly improved stroke care at the project site would agree with this last statement. Case studies are not usually designed with the purpose of generalisation (Hammersley & Gomm 2000; Stake 2000), however Sharp (1998) suggests that case studies lend themselves to theoretical generalisation, and the broader appreciation of how to apply findings beyond the immediate makes it possible to address issues of transferability from single studies. In other words, case studies are a means by which theoretical explanations of phenomena can be generated (Sharp 1998). Frank (1997 p.85) describes this process of analysing data in terms of theory as "data are recontextualized in the world of social thought". Lewis and Ritchie (2003) add to this by stating theoretical propositions, principles or statements drawn from the findings of a study can be used to further strengthen or refine an existing theory. Indeed, Meyer et al (1999) cautioned against ignoring findings from the single case, drawing on findings that compared a single case of action research with those generated by a systematic review of action research. The authors found nine key barriers to change identified in the single case study were replicated in the systematic review, thus suggesting that findings related to the process of change appeared to hold true in other settings, arguably reflecting reality and so potentially more meaningful and valid to others. Before drawing this chapter to a conclusion, outstanding quality indicators from Waterman et al. (2001) are addressed.

4.6.1.4. Other indicators of quality

In addition to quality indicators already considered, Waterman and colleagues (2001) advocated looking at other factors such as the length of time spent in the field, thus recognising that change interventions take time, and how the project was managed and supported to give an indication of thoroughness. I was engaged in the project field for 23 months, and took the role of an inside action researcher, meaning that I came to the project setting with a depth of local knowledge not so easily accessible to a researcher from outside the organisation (Coghlan & Brannick 2005), which may have enhanced the quality of the study. Results in Chapter 5 show that improvements made in the stroke service were sustained following the formal closure of the action research study and enhances claims of worth (Bradbury & Reason 2001). A research steering group that included representation from users, managers and practitioners, along with an identified funding stream meant support for the work was forthcoming. Furthermore, as the work was registered for a higher university degree this ensured the research was strongly grounded in the requirements for academic rigour of doctoral studies, whilst the action research methodology maintained the real world focus of the work that sought to directly improve practice.

4.7. Summary

This chapter makes the case that action research is a participatory approach to inquiry, which involves participants in both the change and research process and privileges the generation of practical and theoretical knowledge. Arguably it is therefore well placed to address the identified gap in knowledge of how to implement and deliver best care for stroke. The aim and objectives of this study, along with details of methods used for data collection and analysis, and quality assessment issues including ethical considerations were comprehensively provided. The information in this chapter is provided as a precursor to following chapters so that the reader will be able to judge the quality of the findings presented. The next chapter looks at the quantitative outcomes related to the implementation of a new SU.

Chapter 5

Findings 1: Positive change in outcomes for stroke

This chapter addresses the first objective of the study by describing outcomes achieved following the implementation of a new inpatient stroke unit (SU), and demonstrates a unique case of success. This is an important area of study, as research evidence demonstrates that well-organised care delivered in a SU can reduce the incidence of death and disability enduring in excess of ten years (Stroke Unit Trialists' Collaboration (SUTC) 2001; Drummond et al. 2005). The findings from this study illustrate the establishment of a SU led to improved care for patients with stroke. Results from National Sentinel Stroke Audits (NSSAs) shown in this chapter provide before and after data that demonstrate change in practice. Whilst differences in audit rounds mean results should be interpreted with caution, they clearly illustrate that stroke care at the project site was initially generally poor compared to national recommendations (Intercollegiate Stroke Working Party (ISWP) 2000, 2004). Improvements were sustained over time and beyond the end of the formal project phase in November 2002; the Trust was placed top in the 2004 NSSA (Clinical Effectiveness and Evaluation Unit (CEEu) 2004) and was awarded first prize for Clinical Redesign in the prestigious Health Service Journal Awards (Health Service Journal (HSJ) 2005) stating:

> *The trust has transformed one of the worst stroke services into a service second to none. Prompt access to specialist care for all patients has halved mortality rates, which are now well below the national average (HSJ 2005 p.15)*

Project results are set alongside national audit scores to benchmark the development of local change against the wider picture. This chapter serves to quantify changes achieved, and results are presented as a preface to following chapters that explore in depth, within a qualitative framework, how this positive change was achieved.

5.1. Changes in stroke care 1998-2004

Outcomes achieved at the project site are supported by pre and post implementation results from four NSSAs, spanning a period of six years from 1998 – 2004. Findings are divided into clinical process and organisational scores; thus providing direction to where additional input is required to meet the National Clinical Guidelines for Stroke (NCGS) (Intercollegiate Stroke Working Party (ISWP) 2004).

5.1.1. Pre implementation data from the project site 1998-1999

5.1.1.1. Organisation scores

This section reports organisational audit results based upon information supplied by the project site on the organisational proforma. Findings provide a baseline of the organisational structure that was in place for the management of stroke prior to implementation of the SU. As results form part of a complete audit cycle (Rudd et al. 2001), data from the first and second audit rounds are presented individually and then together as a mean. Results are presented under domains (Table 5.1) and cover organisational factors identified by the Cochrane Stroke Review (SUTC 2001) as important to stroke care, such as staff expertise, team meetings, staff training and involvement of carers. Audit information was also collected under the domain of interdisciplinary services, on the number of dedicated stroke beds available, staff delivering stroke care, and access to services such as gastro-enterology, psychiatry and brain imaging. However, although this domain remained broadly similar across the audit cycle, information was collected in different formats and a summary score could not be computed. Details are given below in the text.

Domain	1998	1999	Mean score
Assessment measures	0	67	33
Team meetings	33	67	50
Staff knowledge & skills	24	53	39
Availability of information to inform practice	100	78	89
Communication with patients & carers	4	10	7
Multidisciplinary records	50	83	67
Total score	**26**	**45**	**36**

Table 5.1: Pre implementation organisational scores from NSSAs 1998-1999 measured out of 100 (except *availability of information* measured out of 200).

As described in Chapter 1 (see section 1.1.3.3), prior to the commencement of the SU, treatment was fragmented and uncoordinated with no dedicated stroke beds in the Trust, and no recognised multidisciplinary stroke team. The absence of an infrastructure to support stroke care was mirrored in audit findings. For instance, the domain of communication with patients and carers looked at whether patients had access, for example, to specialist information on stroke and expected standards of care, or whether their management plan was made available to them. It also asked if the Trust had any formal connections with community stroke groups or voluntary organisations and links with social services. This area scored 7/100, demonstrating this aspect of stroke care was severely limited and in need of urgent attention. This was deemed particularly important by the team as the stroke literature emphasised the need for patients and their families to have access to specialist information to help them understand their own care and be involved in decision-making in a meaningful way (ISWP 2000, 2004). The linked domain of staff knowledge and skills looked at whether the organisational structure enabled stroke care to be planned and delivered by professionals with expertise in stroke, supported by a staff education programme. This domain scored 39/100, reflecting the absence of a designated specialist stroke team and organised teaching programme. Closely associated to this domain, is a section that assessed availability of information to inform practice. This looked at the accessibility of information and practice guidelines in a range of key areas such as swallowing and continence, scoring a mean of 89/200. This domain received double weighting in the scoring system to reflect the fundamental role of information as a foundation for good practice. Central to well organised stroke care is teamwork (SUTC 2001). Team associated functions, such as regular team meetings, which are necessary for exchange of information about patients, scored a mean of 50/100. Access to team members' notes, or a system of multidisciplinary team (MDT) documentation and agreed assessment measures which aid communication and help form a shared understanding of disability or progress made during rehabilitation scored 67/100 and 33/100 respectively.

Collectively, these results signalled that the infrastructure for stroke care was beginning to appear in pockets from the work of the multidisciplinary stroke working party described in chapter 1 (section 1.1.1). Yet overall the mean organisational score was low at 36/100, and showed that the formal structure to support stroke care at this time was not conducive to quality clinical management. The next section looks at the clinical process for stroke care at the project site and how it was delivered within the organisational structure described.

5.1.1.1. Process scores

Process scores reflect key aspects of clinical care provided for patients with stroke. Scores from the project site are presented in the context of the patient journey from acute admission to transfer of care into the community. Compliance with predefined standards of care are illustrated in Table 5.2 and figures serve to denote the baseline of clinical care available for stroke patients at that time.

Domain	1998 % Compliance with standard	1999 % Compliance with standard	Mean score % Compliance with standard
Initial Assessment in 24 hours	59% (14/24)	57% (21/36)	58% (35/60)
Clinical Diagnosis	82% (20/24)	61% (22/36)	72% (43/60)
Screening & Functional Assessment	24% (6/24)	32% (12/36)	28% (17/60)
Multi-disciplinary involvement	16%(4/24)	43% (15/36)	30% (18/60)
Management Planning	46% (11/24)	43% (15/36)	45% (27/60)
Continence management	43% (10/24)	17% (6/36)	30% (18/60)
Secondary prevention	29% (7/24)	49% (13/36)	39% (23/60)
Documented giving of information	22% (5/24)	20% (7/36)	21% (13/60)
Communication with carers	9% (2/24)	19% (7/36)	14% (8/60)
Communication with GP	70% (17/24)	62% (22/36)	66% (40/60)
Discharge planning	43% (10/24)	70% (25/36)	57% (34/60)
Total % compliance with standards	**40%**	**43%**	**42%**

Table 5.2: Pre implementation process scores from NSSAs 1998-1999 measured as percentage (%) compliance with predefined standards.

Process scores show that clinical care provided for a patient with stroke admitted to the Trust at that time was inconsistent and uncoordinated. Only three out of four stroke patients (72%, 43/60) had a clinical diagnosis documented, including whether a brain scan was performed to provide information about the site and type of lesion, which is central to subsequent management. For example, it is essential to exclude a haemorrhagic stroke prior to commencing treatment with aspirin or thrombolysis due to the risk of a recurrent bleed. Just over half of the patients (58%, 35/60) admitted with stroke received a comprehensive appraisal of key aspects of their clinical condition within 24 hours e.g. level of consciousness, limb movements, swallowing, vision, communication, memory and sensation. Again, this information is important to assist in the diagnosis of severity and type of stroke suffered by the patient.

Treatment received after immediate acute care fared even worse, with less than a third of patients (30%, 18/60) assessed within the allocated timescales by core members of the MDT. This included physiotherapy (PT), and speech and language therapy (SLT) assessments within 72 hours and occupational therapy (OT) within seven days. These evaluations are important as they determine the course of patient treatment during their stay, and promote forward planning related to transfer of care into the community. Results from the screening and functional assessment domain showed that less than one patient in three (28%, 17/60) had documented evidence of being weighed at least once; assessment of nutritional needs; record of pre-stroke function; assessment of functional level at discharge e.g. Barthel index score (Mahoney & Barthel 1965) and mood. Furthermore, less than half the stroke patients audited (45%, 27/60) had documented management and care plans which assessed aspects of intervention related to the formulation of treatment goals, and whether preventative plans were in place for common secondary complications like painful shoulders and deep vein thrombosis. Less than a third of patients, 30% (18/60), had adequate management plans for the promotion of continence.

Regular dialogue with patients and carers about their prognosis, and the setting of individualised treatment goals maximises their involvement in the rehabilitation process. Unfortunately, this key area of patient care had the lowest documented compliance of all audit areas and scored only 14% (8/60). If extrapolated to the yearly number of stroke patients admitted to the hospital, it meant that only 45 out of 350 patients received adequate care in this area. In keeping with this poor performance, for only 21% (13 out of 60) of patients was it documented that they had been given information related to their stroke and discharge plans.

Remaining domains involved activities related to patient transfer from the hospital setting to the community. This covered areas such as whether a home visit had been carried out or alternatives to nursing home placement assessed (57%, 34/60); if secondary prevention measures, such as prescription of aspirin, and discussion of risk factors for further strokes had taken place (39%, 23/60); and communication with the general practitioner (GP) (66%, 40/60). Compliance scores in this area of care ranged from 39% to 66%; at best management for just over half of stroke patients met the standards for their care pathway into the community.

5.1.2. Summary of the pre implementation baseline

In summary, the pre implementation results from the audit cycles of 1998 and 1999 demonstrated that the majority of stroke patients in the Trust did not receive care that met recommended standards for stroke care (Langhorne & Dennis 1998; ISWP 2000). A specialist stroke team did not manage patients admitted to the hospital with suspected stroke, and no stroke pathway existed for patients to follow. However, there was evidence of patchy team work starting to emerge. Medical assessments and communication with GPs were relative areas of clinical strength but engagement with patients and families was very poor. The organisational infrastructure to support stroke treatment only provided limited opportunities to work in a coordinated manner to improve the specialist care for stroke patients.

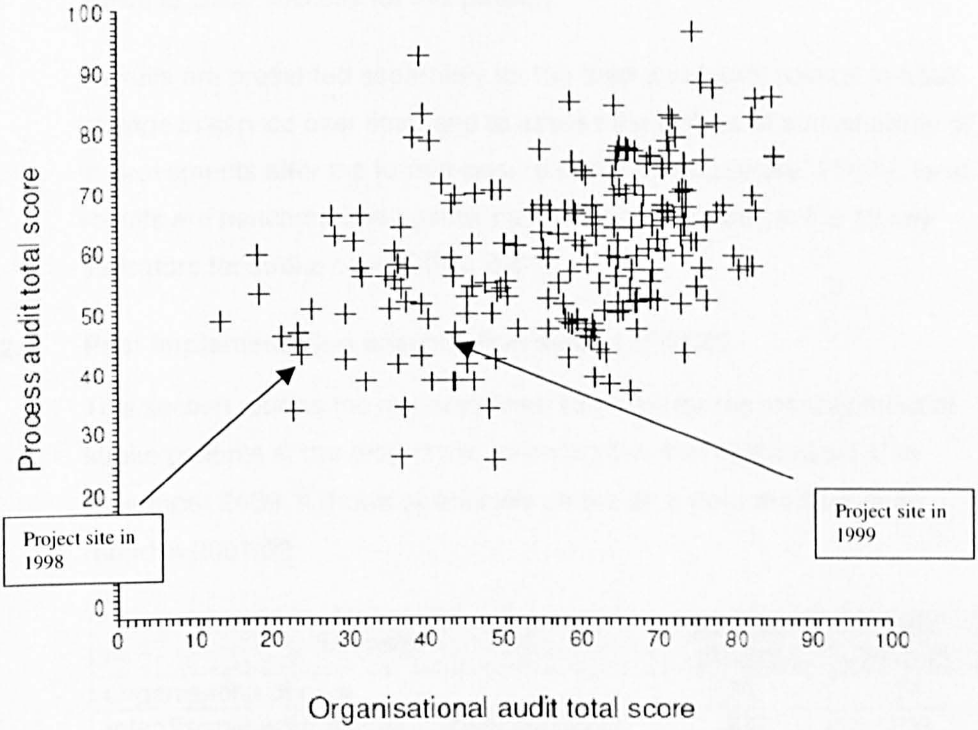

Figure 5.1: NSSA pre implementation process and organisational scores for the project site in 1998-1999

This is illustrated in Figure 5.1, which benchmarks the Trust's performance against that of other participating sites across the UK. The scattergram shows the Trust situated towards the bottom left hand corner, which demonstrated lack of processes and organisation for stroke care at the project site. These findings substantiated views held by members of the multidisciplinary stroke working party, that there was scope for improvement in stroke care. The next section describes changes following the implementation of the inpatient SU in November 2000.

5.2. Post implementation audit findings 2001/02 - 2004

This presents results from the third and fourth rounds of the NSSAs in 2001/02 and 2004 respectively. As with the previous NSSAs, some amendments were made between the different rounds but broad audit themes remained constant. Whilst results need to be interpreted with care, they provide strong evidence of improvement in stroke care on which to claim success for this project.

Results are presented separately for the third and fourth rounds to track change in service over time, and to assess the degree of sustainability of improvements after the formal closure of the project phase. Finally, local results are benchmarked against national performances in the 12 key indicators for stroke care (CEEu 2004).

5.2.1. Post implementation organisation scores 2001/02

This section reports the organisational structure for the management of stroke patients at the project site following the start of the new SU in November 2000. It draws specifically on the data from the third audit round in 2001/02.

Domain	2001/02 (0-100)	2004 (0-100)
Organisation of care	75	75
Interdisciplinary services (overall services)	83	100
Interdisciplinary services (sites with a SU)	63	68
Continuing education in stroke	67	100
Team working - records	75	75
Team working - meetings	63	89
Team working – assessment measures	100	100
Availability of information	67	95
Communication with patients and carers	31	89
Total	**69**	**88**

Table 5.3: Post implementation organisational scores (out of 100 points) NSSAs 2001/02 – 2004.

Results in Table 5.3 illustrate that the organisational structure of stroke care had progressed since the instigation of the new inpatient SU. The first three domains related to the specific organisation of care and associated interdisciplinary services, and showed that stroke care was now delivered within a designated SU by staff with developing expertise in stroke. Notable areas, which remained wanting and as reflected in the 2001/02 overall scores, were the lack of a specialist stroke team in the community and the absence of an allocated social worker to the MDT.

The infrastructure to support the stroke team was strengthening and there was now a framework of agreed assessment measures for patients, a system of stroke specific MDT documentation and regular scheduled meetings for exchange of patient information. A programme of MDT education was an integral part of the team's development, but needed a means to outreach other staff in the Trust to improve its audit score from 67. Availability of information to inform practice was good on the SU itself, for example local guidelines on common secondary problems of stroke were now in place, but again the unit needed to disseminate the information more widely within the Trust to attain a higher score. Figures for these last two domains were suggestive of an early stage of SU development, as the procedures and activities needed to be embedded internally first with SU staff prior to expansion into other areas.

Finally, the area of communication with patients and carers, whilst improving from previous audit scores, was still a weakness in the stroke service. A score of 31/100 indicated a gap in the communication network into the community and a need to establish formal links with patient and carer organisations. The next section looks at how the improved organisational structure impacted on the processes of stroke care.

5.2.2. Post implementation process scores 2001/02

This section reports on the processes of clinical care at the project site following the implementation of a new SU in November 2000.

Domain	2001/02 % Compliance with standards	2004 % Compliance with standards
Assessment in 24 hours	96% (38/40)	94% (38/40)
Clinical Diagnosis	90% (36/40)	98% (39/40)
Multi-disciplinary assessment	73% (29/40)	97% (39/40)
Screening & Functional Assessment	81% (32/40)	89% (36/40)
Management/ Care Planning	88% (35/40)	94% (38/40)
Communication with patients & carers	84% (34/40)	100% (40/40)
Primary/secondary interface	87% (35/40)	98% (39/80)

Table 5.4: Post implementation process scores NSSAs 2001/02 - 2004 measured as percentage (%) compliance with predefined standards.

Results from the third national audit (Table 5.4) demonstrate that the new pathway for stroke patients admitted to the Trust was largely compliant with NCGS (ISWP 2000, 2004). On admission, most patients (96% 38/40) had a full medical assessment that was conformant with pre-defined standards of care, and had received a brain scan and clinical diagnosis within 24 hours. This meant that correct intervention could be given promptly e.g. aspirin or anti-coagulants to help reduce the potential risk of further strokes.

As most members of the MDT were now incumbent on the SU, nearly three out of four stroke patients now received comprehensive assessment within defined time scales. The main exception to this was social work involvement, with demand generally outstripping supply in the Trust. Good team processes are also integral to screening and functional assessments, such as being weighed and evaluation of nutritional needs. Stroke may result in many difficulties with eating, and it is important that nutritional needs are appraised, as malnutrition is associated with a worse outcome and a slower rate of recovery (FOOD Trial Collaboration 2003). This area of care improved with over eight in ten patients, instead of only one in three, receiving appropriate input. Processes related to management and care planning, for example written evidence of goal planning and plans to promote urinary continence were documented for 88% of patients, an improvement of almost 100% on figures from 1999.

Communication had been a major cause of concern in previous audits. Levels of communication and the amount of information available on stroke care have been shown to be a widespread source of dissatisfaction with patients and families (Kelson et al. 1998). Furthermore, in a survey carried out by the Commission for Healthcare Audit and Inspection (CHAI), 52% of patients said they had not been involved in decisions about their care as much as they would have liked (CHAI 2005). Knowledge enables patients, relatives and carers to actively participate in a more meaningful way. Recent evidence suggests that giving information combined with education sessions is more effective than giving information alone (Forster et al. 2004), and is reported by Smith et al. (2004) to reduce levels of anxiety in patients' at six months post stroke, and support anecdotal findings from the local patient and caregiver education group. The project site scored 84% in this area, representing a marked improvement on the previous poor performances of 9% in 1998 and 19% in 1999.

For many patients the move from hospital to home or to an alternative community setting is a time of great concern that requires considerable planning (Gilbertson et al. 2000). National guidelines (ISWP 2004) state that it is essential to have discharge protocols and documentation in place to assist the smooth transfer of care. For hospitals, delayed discharges from poor planning result in increased lengths of stay (Hakim & Bakheit 1998). The domain for primary and secondary interface incorporated aspects related to discharge planning, for example, whether a home visit was performed, and if communication with GPs had taken place, scored 84%.

5.2.3. Summary of post implementation 2001/02

In summary, the service for stroke patients admitted to the Trust following implementation of the new SU showed significant changes. Stroke patients followed a defined stroke care pathway and were now admitted to a geographically defined SU where they were cared for by a MDT with a specialist interest in stroke. In addition, the Trust had a dedicated Lead Physician for Stroke and a stroke coordinator. This meant that for the first time in the Trust, stroke patients received prompt intervention compliant with NCGS (ISWP 2000, 2004).

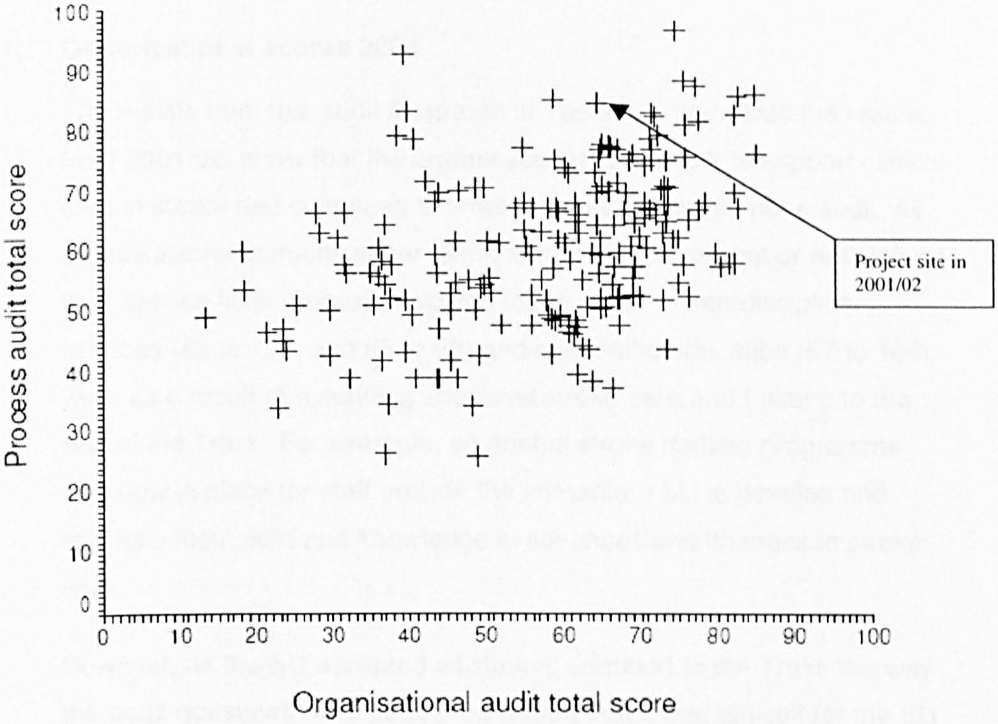

Figure 5.2: NSSA post implementation process and organisational scores 2001/02

This is reflected in Figure 5.2, showing the position of the project site on the scattergram has moved from the bottom left hand corner (see Figure 5.1), which denoted low levels of organisation and process, towards the top right hand corner showing a marked improvement in both clinical care and organisation of services. Clinical processes scored higher overall at 87%, compared to the organisational score of 69/100. This indicated that the SU needed to focus more on its structural framework, for example to improve its links with support and voluntary groups in the community, and engage with the Primary Care Trust (PCT) to promote the establishment of a community based specialist stroke team.

The next section looks at how the SU performed in the fourth NSSA, which was carried out 18 months after the formal closure of the project phase. Hence, this presented the opportunity to assess the robustness and durability of the stroke infrastructure developed during the action research project. Local scores are then benchmarked against the national key 12 indicators for stroke care.

5.3. Post implementation audit findings

5.3.1. Organisational scores 2004

The results from this audit illustrated in Table 5.3, alongside the results from 2001/02, show that the organisational framework to support clinical care in stroke had continued to strengthen since the previous audit. All organisational domains either demonstrated improvement or maintained their service level. Improved scores in the areas of interdisciplinary services (83 to 100, and 63 to 68) and continuing education (67 to 100) were as a result of extending specialist stroke care and training to the rest of the Trust. For example, an annual stroke training programme was now in place for staff outside the immediate SU to develop and maintain their skills and knowledge in advances and changes in stroke care.

However, as the SU accepted all strokes admitted to the Trust, the way the audit questions were structured meant that it was difficult for the SU to improve some of its scores. For instance, even though the domain on availability of information improved its score from 67 to 95, it was prevented from obtaining a maximum score of 100 as it failed to provide all wards with reference information on functional assessment or measurement tools used in stroke care. Similarly, the domain related to communication with patients and carers, which improved by 58 points from 31 to 89, lost points by not making stroke specific information available on all wards in the Trust. For a large teaching hospital with over 1200 beds spread over in excess of 18 wards, the practicalities and appropriateness of this is questioned. However, the local stroke booklet has since been distributed to the wards most likely to take a stroke patient if the SU did not have a bed available. A similar issue occurred with the domains related to team meetings and team records. The organisation of care score remained at 75 as in 2001/02 as a specialist domiciliary stroke team was still needed in the community.

Results relating to clinical processes are looked at in the next section to see if previously good levels of care were sustained after the close of the project. However as the CEEu (2004) had developed a new minimum data set to represent key components of stroke care, these 12 key indicators were used to form the basis of the discussion instead of the process scores displayed in Table 5.4, so local results could be benchmarked against national figures.

5.3.2. Process of care and the 12 key indicators for stroke

Individual Trust key indicator scores were published for the first time in 2004 and released to the Department of Health and Strategic Health Authorities. The results for the project site are shown in Table 5.5, demonstrating a 97% compliance rate. This was the joint top score in the UK (excluding Scotland), along with a rehabilitation SU situated in a community hospital; the national score was 37% lower at 60%.

Results show 100% compliance scores were achieved in seven of the 12 key indicators: patients treated in a SU; patients treated in a SU for more than 50% of their stay; aspirin given within 48 hours; PT assessment was completed within 72 hours of admission; patients on anti-thrombotic therapy and a home visit performed before discharge.

Key Indicator	**Project Site %**	**National median score**
Patients treated in a SU	100% (40/40)	49% (4262/8697)
Patients treated for more than 50% of stay in a SU	100% (40/40)	40% (3479/8697)
Screening for swallowing disorders within 24 hours of admission	93% (37/40)	64% (5566/8697)
Brain scan within 24 hours	95% (38/40)	63% (5479/8697)
Aspirin by 48 hours of stroke	100% (40/40)	70% (6088/8697)
Physiotherapy assessment within 72 hours of admission	100% (40/40)	64% (5479/8697)
OT assessment within 7 days of admission	100% (40/40)	58% (5044/8697)
Patient weighed during admission	83% (33/40)	51% (4435/8697)
Patient's mood assessed by discharge	54% (22/40)	42% (3653/8697)
Patient on anti-thrombotic therapy by discharge	100% (40/40)	97% (8436/8697)
Rehabilitation goals agreed by MDT	95% (38/40)	74% (6436/8697)
Home visit performed before discharge	100% (40/40)	71% (6175/8697)
Average for 12 key indicators	**93%**	**60%**

Table 5.5: Percentage compliance with the 12 key indicators for stroke 2004

These results reflect the continuing development of the stroke service by the STEP team, with notable achievements such as improved capacity of stroke beds following service reconfiguration (see chapter 1 sections 1.3.1 and 1.3.2) enabling all patients to access the SU within 24 to 48 hours and to stay in the specialist unit throughout their rehabilitation. As only 49% of stroke patients were treated in a SU across the country, this result was very pleasing. Having an incumbent MDT on the unit meant that patients were assessed promptly, rehabilitation goals were set to direct intervention and home visits were planned early to ensure they took place before discharge. Furthermore, having a Lead Stroke Physician plus a Consultant Neurologist for Stroke, gave additional medical input, so 95% of patients at the Trust received a brain scan within 24 hours compared to 63% nationally. Senior nurses on the SU were trained in assessment of dysphagia by the SLT, and 93% of patients were screened for swallowing disorders within 24 hours of admission. In contrast, this occurred in 64% of cases nationally.

Even though no key indicator score at the project site was less than the countrywide average, two key indicators related to patients being weighed during their admission (83%) and mood assessment (54%) stood out as areas that required attention. Subsequently, the stroke team acknowledged that whilst mood was assessed as part of overall care, it probably was not documented systematically. This was rectified by project work jointly undertaken by the clinical psychologist, a stroke nurse and a SLT.

Briefly, the compliance percentage scores in Table 5.4 support the claim that good standards of clinical care had been maintained since formal close of the project.

5.3.3. Summary of post implementation audits 2001/02-2004

The findings from NSSA 2001/02 demonstrated that patients admitted to the Trust with a stroke after establishment of the SU, received care that was broadly compliant with national guidelines. Patients had a dedicated unit that specialised in management of stroke and were cared for by a multi-disciplinary stroke team. Staff, for the first time, were able to deliver care within a structure that supported stroke as a specialism. They worked as part of a MDT within a bounded geographical space that facilitated sharing and development of knowledge and skills in stroke.

Furthermore, results from the 2004 audit illustrated that change had been sustained and development had continued to occur following the end of formal project work. This sustainability suggests that real learning had taken place amongst staff, and establishment of the structure to support change over time was robust. As shown by Greehalgh et al. (2004) in the systematic review of literature on diffusion and sustainability of innovations in health service delivery and organisation, these issues are very complex and there is almost invariably regression following cessation of a project.

Figure 5.3 shows that taken jointly, the post-implementation organisational score from 2004, which increased from 69/100 in 2002 to 88/100, and the 12 key process indicator scores placed the SU as the top performing stroke unit in the UK. The following year, the unit won the "Clinical Redesign" category in the prestigious Health Service Journal National Awards 2005 (Health Service Journal 2005). A strong claim of sustained success is thus made.

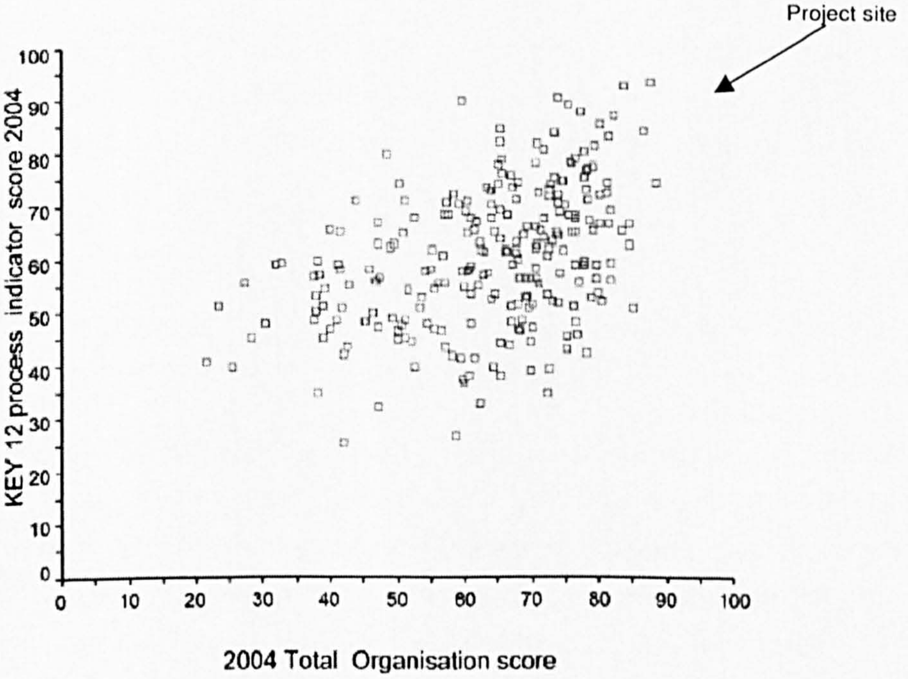

Fig 5.3: Scatter gram to illustrate the overall top score of project site in 2004

5.4. Chapter overview

Overall, results illustrate that initially the project site had one of the worst stroke services in the country, as evidenced in two consecutive national audits in 1998 and 1999. Through implementation of a specialist SU, which concurrently developed the organisation of services and clinical processes of care, the stroke service was transformed within four years into the top performing stroke unit in the UK. The basis of gains in scores is testament to the work of the STEP team, other staff within the stroke team and wider senior management as described in Chapter 1. Chapter 6 and 7 explore in depth how this sustained service development occurred.

Chapter 6

Findings 2: Unpacking the successful implementation of a complex intervention.

Although the previous chapter demonstrated change had taken place over time, these data were unable to indicate how or why it had happened. This chapter addresses the second and third objectives of the study by describing the processes of implementing a new stroke unit (SU), and by contributing to knowledge about key factors that influenced the outcome. Data sets from reflective field notes (FN) based on participant observation (n=188 A4 pages), focus groups (FG) (n=8), semi-structured interviews (n=28), and minutes from meetings (n=120) form the basis of the evidence utilised in this chapter. Findings presented in this chapter relate to the three actions cycles of: valuing and profiling stroke; building a team and sharing skills and knowledge in stroke. Findings show how success in this case study was achieved and illustrates some of the challenges that can arise from implementing change in practice. Whilst the areas of challenge were broadly in keeping with those documented in the literature (Fitzgerald & Dopson 2006; Iles & Sutherland 2001; Meyer et al 1999/2000) others arose from unexpected sources and thus serve to illustrate the complex and unpredictable nature of implementing organisational change.

6.1. Key process findings

Four main interrelated factors strongly emerged from the data, which seemed key to the outcome of successful stroke care. These were:

- Building a multi-disciplinary stroke team
- Developing practice based specialist knowledge and skills in stroke
- Recognising and valuing the central role of the nurse in stroke care
- Establishing an organisational climate for supporting improvement

For ease of explanation and understanding, the process findings are described separately in this chapter, yet in practice they were co-dependent and interrelated. As described by one member of the team *"there was no silver bullet, it was a coalition of factors and forces..." (General manager (GM)1).* Those factors and forces will now be described.

6.2. Building a multidisciplinary stroke team

I've never worked in a team like it before...it is fantastic. (T 13)

Multidisciplinary team (MDT) work is the keystone of specialist stroke care (Stroke Unit Trialists' Collaboration (SUTC) 2001; Langhorne & Dennis 1998; Clinical Effectiveness and Evaluation Unit (CEEu) 2006). Yet paradoxically, evidence of how to establish a MDT in practice is sparse (Lowe & O'Hara 2000). Additionally it has been recognised that health care teams are different from those in other types of organisations, as invariably health care workers also have individual professional loyalties, as well as being part of a wider MDT, this may present conflicts of interest (Firth-Cozens 2001). In turn, this can present complex situations that require active management to promote optimum working (Booth & Hewison 2002). The key stages of building the stroke team that took this stroke service from bottom to top in the country (CEEu 1998, 1999, 2002, 2004) are explored next and include: making space for stroke; different starting positions; understanding and respecting individual roles; managing enthusiasm for change; creating opportunities for joint working and building an operational infrastructure to support team activity.

6.2.1. Making space for stroke

As described in Chapter 1, prior to the opening of the SU, care for patients with stroke was fragmented, uncoordinated and spread over 18 wards in the hospital. Findings indicated that *making a space for stroke* was beneficial for both patients and staff, but the creation of a dedicated area for people with stroke presented an unanticipated situation that had to be managed at the start of the project. As outlined in Chapter 1, the SU bed base arose from closed wards being re-opened; these wards had previously been allocated for the care of older people and led to an initial undercurrent amongst some staff that the beds should be "returned to their rightful owners and we shouldn't be stealing from those who need the most help ...the elderly" (FN Jan 2001). Myself and other early proponents of the STEP team addressed these staff concerns through giving verbal reassurance that overall bed numbers had not been affected, in fact the SU had been a catalyst to get wards reopened, and beds allocated to the SU were gained through reconfiguration. The benefit of specialist stroke care for older people was also highlighted. Once staff saw that stroke care, and indeed the care for older people was improving, this unease settled.

The importance of achieving a geographical SU as a fundamental step towards providing better care for people with stroke should not be underestimated. In the first instance, the centralised location gave patients a place of their own to be referred to:

> *The stroke unit stops patients being scattered... they are not lost in the system. (Therapist (T) 2)*

One of the nurses poignantly commented on a very important aspect of SU care:

> *A stroke unit...it's where they [patients] can feel good for themselves, and they feel that they are worthy and that their life hasn't reached the end. (Nurse (N) 10)*

Having a dedicated unit seemed to act as a catalyst in creating for the first time, an identity for patients who had suffered a stroke.

> *Patients are now recognised as a stroke patient and not just a general patient on a general medical ward. (FG 4)*

In addition, the SU provided a forum where families could receive support not only from staff, but where they could draw upon each other for help.

> *They [stroke patients] need never find themselves alone now, patients and family alike. (N 8)*

> *The stroke unit has created a space for mutual support between carers and patients. (T 6).*

In terms of staff, making space for stroke, which crucially placed patients at the centre of care, was likewise essential in bringing different professionals together as a basis for building a team.

> *Having a base allowed people to build up relationships and created a space for stroke patients. (FG 1)*
>
> *Having strokes all in one place is really beneficial... having staff in one place so they become specialists in stroke care...having an allocated ward gets everyone more involved... (T 1)*

The SU provided a central hub for connections and a shared point for networking. Staff named the unit "STEP", an acronym for **S**troke **T**reatment for **E**very **P**erson, which reflected the ethos of equality for all patients with stroke. A distinct unit logo was chosen (Figure 6.1), and along with the name, helped people start to identify the stroke team.

Figure 6.1: The STEP logo

6.2.2. Different starting positions

When building a MDT, it is important to give consideration to the starting point of the team; all team members come together with different histories, which may impact on the way forward. As previously noted (e.g. Chapter 4 section 4.4.2.2), staff involved in the setting up of the SU came from a variety of clinical areas within the hospital, none of them specialist in stroke care. Early on in the project it became evident that just having staff together, even in a much-wanted development, and calling it a SU did not, and would not, constitute team working. Many members of staff found being part of a new team challenging, and this presented a barrier to the delivery of effective and efficient patient centred care. For instance, divisions became apparent between physiotherapists whose commitments to a particular speciality area i.e. gerontology or neurology took precedence over their professional loyalties. This manifested in practice as a reluctance to work together to treat people with stroke, and through discussion with staff in supervision sessions it seemed that the staff behaviour was largely rooted in a perceived lack of knowledge (FN Mar 2001). This was subsequently addressed through profession specific targeted teaching sessions as well as the multidisciplinary education seminars (see section 6.3.1).

Likewise it became evident that more attention needed to be given to building the team before people could work together in a truly collaborative manner; people had their own ways of doing things, which had to be unlearnt first.

> *At first it was quite difficult as each and every team has their own way of doing things, or strategies to achieve things, or ways of coping. To get all these groups together, or to have the same mind, can be a little hard. (N 5)*

In general, the therapists were keen about the new stroke service as it had been a long awaited development. Whilst they were not specialists in stroke care, they were nevertheless familiar, and in some cases experts, in the treatment of other neurological conditions on the regional neurosurgical and neurology units. The starting point for the therapists and the majority of the nurses was different.

> *When we started it was all new to us [nurses]. We had looked after some stroke patients before, but here we are in a stroke unit where care is supposed to be coordinated and was supposed to be a lot of team working now...(N 1)*
>
> *The therapists had a strong interest in stroke, nurses not so interested generally. (T 10)*

To compound this situation, the nurses were also less experienced in general rehabilitation; hence they had to contend with implementing organisational change whilst trying to build knowledge in a specialist area and this placed an additional and largely unrecognised demand on the nursing staff.

> *The nurses were not so experienced in the beginning as the therapists and so they had extra demands on them that we didn't recognise. (T 10)*

> *The nurses were not prepared in the beginning, therapists were keen and had lots of ideas, the nurses were in a more stressful situation and they [the therapists] couldn't see it from our side...(N 9)*

For the nurses now working on the RSU (rehabilitation stroke unit), who had primarily cared for continuing care and respite patients, the change to stroke rehabilitation seemed most marked. In particular they were not used to working as part of a MDT with therapists and initially they found this change quite threatening. This stress was something that appeared mostly to go unnoticed by the therapists and managers.

> *The nurses had always worked on their own, then physiotherapists came and then the OTs came...now felt inhibited with so many people on the ward...seven to ten everyday, it was like being invaded.... the therapists were like vultures descending onto the ward. (N 7)*

The nurses at the RSU found making change in their own practice hard enough without having to make suggestions for improvements to others. For example, the required change in the dominant nursing culture from *"doing for"* towards *"helping people help themselves "* was a fundamental matter that warranted recognition of the size of the task in hand (FN Feb 2001). Yet some therapy staff found this difficult at times to understand and appeared to expect the nurses to be able to instigate service initiatives whilst undergoing major reform in their own work practices:

> *Sometimes I feel a bit apologetic...like I am sorry to introduce something else new, can we change things...and it is never something that they [nurses] come up with for us [therapists] to change...(T 3)*

With hindsight, the new ways of working needed to be introduced at a slower pace. However to an extent, the pace of change was influenced by the STEP team participation in the Clinical Government Developing Programme (CGDP) (Chapter 4 section 4.4.2.2), which involved trying to achieve planned service goals before reporting back on progress at subsequent meetings of the CGDP and thus presented competing targets for staff involved.

6.2.3. Understanding and respecting individual roles

When building a MDT, it is important to understand and respect individual member roles. Multidisciplinary collaboration on the SU brought together many different professionals, each with their own individual role to play and sometimes aspects of these specific roles overlapped (Smith et al. 2000; Brown & Greenwood 1999). In practice, professional relationships in teams can be undermined by lack of understanding of other people's roles, which in turn may impact on communication and contribute to poor teamwork (Pethybridge 2004; Skjorshammer 2001). Furthermore, findings indicated that a lack of recognition from team members about an individual's contribution to the whole could leave a feeling of demoralisation.

> *It's quite demoralising if people don't understand your role, like the role of the OT is doing lots of referring and so it can look like you are not doing anything. (T 13)*

If roles and areas of responsibility are unclear it can lead to further frustration:

> *Therapists were saying "this is how you must do it!" ...the nurses saw caring for a patient as doing more for them not less. (T 15)*

Teamwork requires time to evolve and effort to understand each other better

> *It's (teamwork) something that is built up over time...we were all trying to identify our roles...trying our best to work together...we've done a good job on that eventually...it was difficult in the beginning. (T 4)*

The role of the doctor as part of the stroke team required clarification; one of the doctors described his role as being *"like a cog outside most of the working" (Medical staff (M)1),* and his role was not rehabilitation but patients' health needs. Despite voicing a feeling of being on the periphery of the team, he also saw himself as being "*in charge from Monday to Friday*". In contrast, another doctor declared that the days of a *"medical hierarchy were over"* and that the SU should be run by the nurses and therapists (M3). SU staff had a variety of opinions about the role that doctors took. In one focus group staff felt the doctors showed minimal respect for the other members of the team, in particular over-riding MDT decisions that made them feel demoralised and worthless (FG 1). They thought that the doctors spent too much time locked in power struggles with each other, which led to inconsistencies in the management of stroke patients. Yet in another focus group (FG 3), staff thought they made the rehabilitation decisions and then they told the doctors what had been decided. The latter group consisted of therapists whereas the first focus group was nursing, and perhaps differences in perception at this time may have been linked to the role of the nurse within the MDT. This topic is considered in more detail later in the chapter (see section 6.4 *Valuing the role of the nurse in stroke).*

Findings also indicated that perceptions of my multiple roles, described in Chapter 4 section 4.4.1.2.4, unexpectedly led to personal tensions that made me feel like an *outsider* in my own physiotherapy department. In particular, negative comments from a small number of colleagues regarding my ability to effectively manage the department and be involved in a PhD research study made me look forward to my time on the SU:

> *I always feel welcome on the SU...it is nice to escape the fire of downstairs...why are they like that to me? I feel like a lamb going to the slaughter...what gets me is that they then leave me flowers on my desk to say they didn't mean to make me feel bad and that I am a good manager really! They seem to think doing a PhD is a walk in the park and that when I am not in the department I am having a jolly elsewhere...they don't seem to understand my new role and what it entails...and this is not from the want of trying to explain* (FN May 2002).

I also used my university supervision sessions for reflection and additional support and felt somewhat reassured when I heard this phenomenon, which was likened to professional jealousy, was not uncommon (FN June 2002). Whilst comments were mostly made in my absence, they nevertheless filtered through to me from others in the department that understood and supported my research role. I tried various ways to address the pockets of unrest in the department by having one to one meetings with the individuals involved, ensuring staff had my contact details (including my home telephone number), my timetable and by scheduling regular supervision sessions. At first these measures appeared to stop the comments but re-surfaced a few months later, when a complaint was made directly to my line manager about my lack of visibility in the department; I saw this as a "vote of no confidence" and tendered my resignation. Again I received a number of apologies and requests to withdraw my notice to leave. The head of therapy services, who fully supported my involvement in the research study, facilitated a meeting for staff involved in an attempt to resolve the incident. Whilst this meeting seemed to be uncomfortable for all involved, by the end staff said they had a better understanding of my research role and what that meant for the department and for them as professionals. I withdrew my notice and remained in the Trust for another four years (FN Oct 2002).

6.2.4. Managing enthusiasm for change

When building a MDT for a new service, enthusiasm generated by eager staff may need to be managed so as not to cause unforeseen problems. Reeves (2005) noted during the introduction of an interprofessional training ward in a London hospital, that enthusiasm acted as both an inhibitory and facilitatory factor, calling it a "double-edged sword"(p.161). Enthusiasm for the SU at the start was high and for many staff, particularly the therapists, it was a long awaited change and they were keen to get underway. Once it had been decided to open the SU, it happened relatively quickly, and staff had to respond as best they could. Whilst the start up circumstances described earlier did not provide optimal conditions for the new team, this nevertheless represented the reality of change. The NHS has been characterised as a complex organisation undergoing constant change, where staff have little time to adjust to new ways of working (Cortvriend 2004). Further, when building a MDT, it is not only individual and team roles that need to be understood, but also the perceived ownership of space. If this is not negotiated sensitively in the beginning this can cause problems amongst the team at a later stage. Therapists in this research project did not consider whether their enthusiasm for instigating new ideas was shared by all; and whether for some it could be excessive. After having waited so long, the therapists had developed a collective sense of eagerness for getting the SU underway, which may have been perceived as overbearing by some. Consequently, they were

> *Gung ho and ... barged onto the ward like we owned it.*
> *(T 11).*

During an interview, one of the therapists explained:

> *We had built up so much enthusiasm and ideas as we had waited for so long and then wanted everything right away and wanted to introduce so many ideas...so it was hard to keep our mouths closed and just let it develop at its own pace...(T 10)*

Indeed it was one of those initial ideas (FN March 2001), which in hindsight, became a key event in changing the behaviour of the team. The therapists wanted to convert a longstanding ward storage space into a dining area for patients to have their meals, and in their eagerness began to change things. The nurses saw this as being one step too far in altering *their* environment and it became a flashpoint between the two staff groups. A situation erupted that ended with a nurse and therapist having an unpleasant exchange of words that was reported to have included racist comments. Whilst at a clinical level the therapists responded by largely withdrawing from the ward treating patients where possible in the gym and the nurses in return kept a low profile and tried not to interact with the therapists. Due to the serious nature of the incident senior staff began an investigation; I interviewed the physiotherapist and the most senior nurse from the stroke team spoke to the nurse involved. Both individuals acknowledged that on reflection their behaviour had been unacceptable and understood that any repeat performance would not be tolerated. Additional accounts were also sought from other individual staff members to garner other perspectives on the event. As the physiotherapist in question was on rotation from the main hospital site and due to leave the SU in under two weeks the situation came to a natural resolution and furthermore through discussion and feedback as part of the action research process, the incident came to serve as a point of reflection for all staff (FN Mar 2001). The therapists later described how, if they ventured onto the ward during that time:

> *People felt threatened by each other, nurses and therapists...Therapists didn't want to go to the ward...they felt they were met with frosty stares. (T 15)*

In particular, the therapists recognised they had been pushing too hard and needed to adjust the way they approached the nurses and give them space.

> *Now we can go to the ward and not feel hated. It has taken time for people to stop fighting with each other... (T 15)*
>
> *They [therapists] work with us now, they don't tell us...(N 1)*

Another therapist talked about making a conscious effort to be "*ten times friendlier*" and would go out of her way to ask the nurses' advice, "*I wanted to get them on my side*" (T 12). Others said they needed to show each other more respect, and recognised that there was more than one way to achieve aims and that true MDT working was hard and needed to be worked at *(T 6, 11, 15)*. The nurses also shared the new approach to working as a team and acknowledged that even though it was difficult at times, they had to work together and should make the most of the opportunity presented by the SU.

> *I think what has really changed is the approach of different members to each other...the OTs weren't working together with the nurses...the nurses weren't working with the OTs...now we are beginning to understand that everyone has to have their time to do their bits. So we are now trying to work together, respect each other's time and role. (N 6)*

These findings show that team building in the SU was broadly in keeping with the forming, storming, norming and performing stages described in the literature by Tuckman (1965). However, the findings serve to illustrate the need for caution if the pace of change is influenced by an external agency; in this case the NHS Modernisation Agency, and that local factors should be taken into account to minimise the storming phase (Tuckman 1965).

6.2.5. Creating opportunities for joint working

The team building process continued through giving staff the opportunity to be together by jointly undertaking MDT projects. In essence, this gave people the chance to get to know each other better through activities that did not involve direct patient care. Staff commented that it was good to have a project, a practical focus, rather than a professional focus.

> *It's good teamwork having the joint projects...you don't get that elsewhere where it is just battling with staff. (T 8)*

As described previously, shared activities and projects were part of the second action cycle and included the design and printing of a local stroke booklet for patients and carers, an information file for staff and patients on "*local resources for stroke survivors*" to assist with the transfer of care into the community; and the development of MDT patient records. Whilst the MDT notes provided an opportunity for joint working, it was initially also a double-edged sword with the team. Whilst these notes helped to strengthen the team approach they also presented a number of challenges to the ongoing team building process. Even though the new documentation had been an agreed unit development, it was difficult to get some staff to relinquish their own profession specific documentation and this appeared partially linked to professional identity.

> *I think people feel quite uncomfortable about not having their own set of notes...we're clinging onto the past. (T 13)*

> *There was nowhere for our clinical reasoning...a cognitive bit here...commenting on ADL...oooh it felt like loosing control...that was really negative...(T 10).*

Consequently, some practitioners were writing in as many as three different sets of patient health records, and when questioned cited legal reasons as a key driver behind this behaviour. It was not until I stepped outside my research role and spoke to the respective heads of departments in my capacity as their manager that this duplication of writing began to cease; thus highlighting the potential advantage of having a change agent with a senior position in the organisation (FN July 2001). Yet despite initial challenges, the MDT documentation became a valuable team "tool", and was part of an evolving infrastructure that supported the developing teamwork (see next section 6.2.6 *Building an operational infrastructure to support teamwork*).

An equally ambitious, but perhaps more unusual project was undertaken by another MDT group; namely, the organisation of a stroke Charity Ball at a prestigious Central London venue. The ball was held for staff and stroke survivors in celebration of the SU and was attended by over 200 people. Furthermore, as senior managers also attended, it helped to keep the profile of the SU high in the Trust and helped with staff bonding.

Importantly all these projects, plus the stroke Clinical Governance Development Programme, afforded people the opportunity to be together and forge links as a prerequisite for team working in the clinical environment.

6.2.6. Building an operational infrastructure for teamwork

This section explores how the development of an operational infrastructure assisted the overall building of the stroke team in the early stages, to facilitate ongoing teamwork for the future. It was essential to make the framework strong enough to give shape or rhythm to the daily working of the team, but not be so rigid as to impede flexibility necessary to respond to the changeable environment. For instance, the MDT documentation and goal setting meetings provided structure to the teamwork.

> *Goal planning is really useful and having an overall plan gives you something to work towards as a team. (FG 2)*

> *It's [MDT documentation] a constant reminder that you are part of a team, and that you're working towards joint goals, and that you are not on your own. (T 1)*

The case coordinator system, joint assessment tools, team meetings and family meetings helped people join the team with minimum disruption as they were guided by the infrastructure (see Table 6.1). For instance, during the 23 months of the project a number of staff changes occurred in the team (see chapter 4 section 4.3). A transient workforce is not unusual in a city like London, which has a multitude of hospitals and care settings providing choice and opportunity for health staff; indeed many of those who moved on did so reluctantly and left due to rotational placements coming to an end.

Component parts in the SU Infrastructure	
Joint intervention sessions	Senior management meetings
Goal planning	Board rounds
Case coordinator system	Ward rounds
STEP meetings	Staff rotations
Structured assessments	Patient Information group
SU joint progress meetings	MDT education series
Development meetings	Timetables
Family meetings	Information Whiteboards
Guidance on common stroke problems	MDT documentation

Table 6.1: Examples of component parts in the SU infrastructure

Central to the SU activities was the establishment of a regular weekly one-hour STEP meeting attended by core members of the team including: nursing; medicine; therapy; psychology and on occasion, social work. These meetings, whilst informal in that they had no formal pre-arranged agenda, were problem focussed, promoted democracy through giving a voice to those that came or had views represented through a third party, and by not consultant being led. Initially it was difficult to persuade staff to take time out from direct clinical work, but soon it became a protected slot in work schedule when they realised the longer-term benefits of taking time to stop, think and be together. Meetings were likened to an informal action learning set (McGill & Beaty

2001). Examples of these sessions included presentations from organisations like the Stroke Association and Different Strokes, health care practitioners presenting prospective proposals to undertake research in the SU, planning of staff education days and the annual national stroke conference. Staff also used these meetings to discuss development ideas amongst themselves. Other aspects of the infrastructure consisted of simple ideas like whiteboards, which were used to write key patient related information on and were seen to help keep the rehabilitation process running smoothly. Structured assessment tools, like the stroke proforma, were seen as educational tools for less experienced members of the team, and assisted in their self-development.

In summary, this section showed there were various areas that required attention as part of the team building process, and as a prerequisite for improved team working in the clinical setting. Findings also illustrate the complexity of team building as part of the overall change process and how challenges can arise from unexpected sources. Although this finding is important in itself, it cannot be seen in isolation as team working is dependent on many factors, is interrelated and co-dependent on other process findings discussed in this chapter. The development of a shared knowledge base is examined next.

6.3. Developing practice based knowledge and skills in stroke

> *It's like a family [the MDT] and you feel like a family and you can talk to anyone. You learn from each other, it's fantastic. (N 9)*

The second key finding to emerge from the process findings was the development of practice based knowledge and skills in stroke. This section looks at the contribution of the following factors: developing a common body of knowledge; the creation of a positive work environment; learning from patients, and learning in action from activities like working alongside each other, goal planning and using MDT documentation.

6.3.1. Developing a common body of knowledge

As staff had various levels of previous experience in stroke there was an initial educational deficit to be met. Knowledge is both theoretical and practical, and can affect what we do and how we do it (Gustavsson 2004). Thus, to encourage team participation, it was important to address these differing levels of capability in the early stage of the SU development. This was the focus of the third action cycle (see Chapter 4 section 4.4.2.3) and included amongst other initiatives, the design of a formal MDT education programme based on the National Clinical Guidelines for Stroke (NGCS) (Intercollegiate Stroke Working Party (ISWP) 2000, 2004). All professions involved in the MDT contributed in some way to the delivery of the programme, with discrete support given where necessary by team members who were more familiar with stroke care. For instance pertinent journal articles were made available, suggestions given about ideas for inclusion, plus offers made to have a *dry run* to practice before the planned session. The seminar series were well received by all and findings indicated they positively impacted job satisfaction, with staff feeling more competent in undertaking their role. As is often the case, it was more difficult for nurses to have time away from the ward to attend training sessions, hence a rota of therapists was drawn up to facilitate more nurses being able to attend.

> *The education programme has been key, so we understand more, makes the job more enjoyable, feels better because you know things. Knowledge and participation is the trick. (N 8)*
>
> *Having confidence from learning is so important especially when dealing with the complicated and really dependent patients. (T 10)*

Nonetheless, health care assistants (HCAs), although keen to undertake more training, said they needed more encouragement to take part and that they lacked confidence (FG 2). This concern was registered for action and addressed through a specific program of teaching for this staff group in conjunction with the Trust's in-house training department. The program was based around the framework of the NCGS (ISWP 2000, 2004).

In addition, the Trust decided the new post of stroke coordinator, despite usually being open to a range of health professionals, had to be filled by a nurse with proven experience in stroke, providing a strong role model in this area of nursing. Whilst this decision was not popular amongst some of the therapists as some were interested in applying for the post (FN Jan 2001); it was nevertheless seen as a practical way to tackle the relative inexperience in the current nursing staff in learning to deal with stroke, whilst helping to address staff development. Nurses commented that the stroke coordinator played a major role in their education, for example a typical comment heard was:

> *The stroke coordinator always tries to answer my questions and if she doesn't know she will come back and give you the information. (N3)*

During one of the staff focus groups, some nurses expressed a wish for the stroke coordinator to work alongside them in uniform once a week as they felt they could learn from the experience of having joint patient contact. Through feeding this back at the next development meeting, this became part of the stroke coordinator's weekly programme.

The literature related to ongoing professional practice highlights the attainment of knowledge as an important factor in providing a firm foundation upon which to advance a clinical unit (Higgs & Titchen 2000). The MDT seminar programme in this project was typical of an activity undertaken within the traditional formal learning format. But importantly it was instrumental in developing a common body of knowledge amongst staff and paved the way for knowledge and skills to be shared more *informally* between individuals in the practice setting. The next section looks at how the creation of a positive work environment contributed to the learning agenda.

6.3.2. Creating a positive work environment

To develop knowledge and skills in a particular area, it has been documented that adults learn best when topics are of immediate value, relevant and occur within a meaningful situation (Ramsden 1992). Staff found caring for stroke patients a rewarding experience, with visible progress often cited as a reason for satisfaction.

> *Strokes are probably one of the biggest areas of seeing fairly immediate or definite changes within a short time span. Always good for job satisfaction... (T 1)*

> *One of the most satisfying things, you know, is if you see a patient come in and initially you are using hoists, and then, you know you see them gradually standing with two...and I have got a patient who is walking...you know it is a success. (N 1)*

For staff that did not work exclusively on the SU the positive work environment was in marked contrast to other areas of the hospital or previous experiences of teamwork.

> *It is really nice to work closely and get to know the MDT...in other parts of the hospital you feel like you are battling with staff that don't really know what you are trying to do...constantly have to teach and explain, whereas on the stroke unit you just say it (T 8)*

> *When you talk to a colleague or to anyone else in the MDT, you're talking the same language, so everybody, you know, you don't have to spend hours on end saying whatever, because you immediately, you have the response from your colleague...it never used to be like that in the old so called team (N 8)*

Moreover, the staff universally expressed positive comments about the SU being an excellent environment in which to learn.

> *It's a really positive environment for learning. (FG 1 & 4)*

> *We've been on a huge learning curve since the opening of the unit. (FG 3)*

Analysis of the data gave a strong sense of staff becoming empowered through education and gaining confidence from learning, which positively impacted on their clinical practice and direct patient care.

> *The more we are able to develop, the more our confidence improves. (FG 4)*

> *If you have more knowledge you're bound to give better care, because you can empathise more with them [patients]. You can sit and explain things to them. (N 1)*

> *My whole approach is more holistic since working in the stroke unit, like looking at seating not just from my point of view but how it may affect nutrition …I feel more confident now than before I came to the unit. (T 14)*

As the level of self-belief improved across the team, the capacity for learning experientially from each other was raised. Individual and collective gains in stroke specific knowledge amongst the team led to an iterative cycle of experiential learning. This concept is illustrated in Figure 6.2

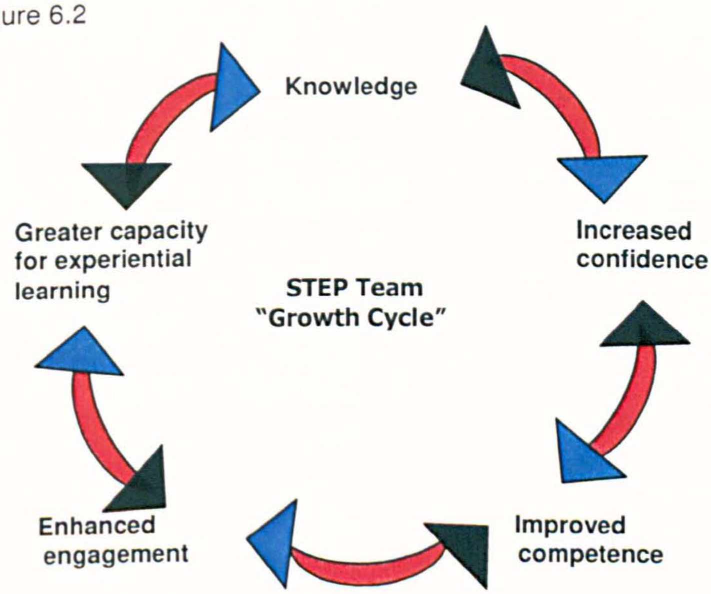

Fig. 6. 2. STEP Team Growth Cycle – the role of knowledge

6.3.3. Learning from patients

Increased confidence levels had an encouraging effect on the perceived competence of individuals and played a key part in the development of staff knowledge and skills in stroke. Importantly, this improved sense of capability led to more staff engagement with patients and carers, who were then able to use this feedback as a mechanism to reflect on their performance and learn.

> *We always look for a way to improve, review, reflect…listen and learn so much from relatives and patients. You get good feedback from them. (N 1)*
>
> *Working with families and patients is hugely educational. (FG 1)*
>
> *I have learnt so much from patients here. (T 6)*

By being able to interact more confidently with patient and carers, so patients and carers became more involved in the process of rehabilitation, which is a cornerstone of good stroke care (ISWP 2004). This improvement was reflected with a reduction in the number of patient complaints and an increase in thank you cards and chocolates. For many of the staff this was a very different situation to that previously experienced on the elderly care ward and it contributed to a feeling of well-being:

> *It is fantastic, we actually get thanked now, they give us cards and chocolates. People don't want to leave the ward [to be transferred to another ward]... it's a wonderful feeling...(N 4)*

This affirmative experience in turn helped reinforced the positive nature of person-centred care.

6.3.4. Learning in action

Developing knowledge and skills in stroke was enhanced by the positive work environment, which helped staff make the most of everyday unit activities for personal learning. Analysis of the project data indicated that learning informally occurred in a variety of ways, many of which were part of the team infrastructure (shown in Table 6.1). The three strongest themes to emerge from the data, joint working, goal planning and MDT documentation are now looked at in more detail.

6.3.4.1. Learning from working with each other

Learning from working along side each other was the strongest theme in this research subset of data. Through having a shared space and improved team relationships, people gained practice based knowledge from a variety of sources that complemented their expanding professional experience in the field of stroke. When initially some staff showed reticence to engage with other team members, which they expressed as being associated with *finding their feet*, I felt it was important to lead by example and be seen visibly working with different team members in the ward environment (FN Apr 2001). Later as new working patterns became established it would not be uncommon to see the nurse teaching the therapist about areas such as catheter management or blood pressure. The therapist would then reciprocate by sharing ideas relating to areas like positioning, mobility or communication.

> *Having different people together, we've been talking of different things, mixing ideas so we have been learning together. When the physio comes to the ward, obviously with the positioning of the patient and we help them move. From there we have to learn different things, and we have speech therapists and OTs, we have different things to learn from each other. (N 10)*

> *I have learnt a lot from working with nurses, SLT, physios etc it broadens your own knowledge and skills in working with stroke. (T 6)*

Furthermore, by working together as a team, a wider variety of ways become available to tackle the multi-faceted problems presented by patients (Eva 2002).

> *Being ward based you may go and help a nurse reposition a patient...talk it through...gives us the opportunity for both to ask and answer questions. (T 14)*

> *The stroke coordinator and the consultant are really good to talk problems through with...they are really good at sharing their knowledge. (N 1)*

6.3.4.2. Goal setting

Goal setting is described as a process of agreeing on an achievable target for a specified activity and is commonly used within a rehabilitation setting to guide treatment (Playford et al. 2000). Goal setting presented another opportunity for sharing knowledge and learning amongst staff and gave a focus for teamwork.

> *Goal planning has been a good way of sharing skills and knowledge with each other...to communicate and let go and be a little less protective and to share and educate each other...(T 10)*

The attainment of goals provides motivation for patients during the rehabilitation process and the success was also a source of satisfaction for staff that enjoyed seeing the patients' progress.

> *Patients achieving goals, even just some or part of one is really satisfying. (N 10)*

Goal setting is a good example of how "knowledge comes from doing" (Brydon-Miller et al. 2003 p.14). One team member described the practice of goal setting as being a difficult process, but one that you nevertheless learnt from:

> *Goal planning helps with learning about judgement and education...sometimes get it right, nearly right or not! (T 6)*

The nurses had difficulty in getting released from their ward duties to attend goal setting meetings, and the SLTs also experienced problems attending due to staff shortages. When the importance of having nurses as part of the goal setting process and the difficulty experienced in getting staff released from the ward was explained to management in terms that explicitly connected goal setting with length of stay, financial support was forthcoming to provide additional cover for the goal setting sessions. The team saw this as an indication that senior managers valued service development through practice-based learning, even though more senior staff, including myself, also attributed the positive response to the association made with the length of patient stay (FN Nov 2001). The scale of transition that many of the nurses had to make to their clinical practice in setting goals was substantial, and was in addition to the logistical difficulties mentioned above. As the process of goal setting was new to these nurses, it required specific support and training. In response to this identified gap, one nurse began a specific project to look at how nursing interventions and goal setting could be linked. Two or three actions were identified for each patient goal, which nurses could encourage patients to practice in the ward environment. For example, promoting the use of both hands whilst eating or washing. This practice development in effect meant that the team were working towards common goals for the first time.

> *We are all working towards the same goals...we weren't doing that before... (N 1).*

6.3.4.3. Multidisciplinary team documentation

The development of knowledge and skills in stroke was facilitated by the use of MDT documentation. Previously, patient documentation was locked in respective team bases away from the ward and rarely seen by other health professionals; now MDT documentation was centrally located on the SU. As the MDT records were easily accessible they provided another way for members of the stroke team to informally share knowledge; staff could read each other's entries and keep up to date with events when they had been away from the workplace.

> *For nurses on shifts it helps with communication when you are not there, you can learn and practice on and work with the rest of the team when you come back. (N 6)*
>
> *It's great, as they are not locked up in different offices, like if you need to find out more about a patient being on thickening fluid and the SLT isn't here, you can look in the MDT notes. (T 15)*

Through reading each other's entries the MDT notes served as a stimulus for enquiry about the practice of others and thus acted as a source of learning.

> *They stimulate people to ask questions of each other, not consciously but as you go through them you pick up what the physio has been doing for example and then you may ask them about it...they have been a huge learning experience. (N 2)*
>
> *They are a very good source for accessing what the members of the team have been up to, and they are less jargonised so you can understand more about what others are doing. (T 1)*

In summary, this section has shown that the ongoing development of the SU and the personal growth of staff in their level of specialist knowledge led to further positive changes in staff. In turn, this gave staff increased confidence to engage with each other, and patients and their carers, thus enhancing the opportunity for experiential learning. This was most strongly noted in the nursing staff; findings related to this occurrence are discussed in the next section.

6.4. Recognising and valuing the central role of the nurse in stroke

The third key finding to emerge from the data related to the recognition and valuing of the central role of the nurse in stroke. This section explores: the changing role of the nurse in the MDT from generalist to specialist; nurses growing in confidence; putting expertise into practice and improved interaction with patients and carers.

6.4.1. Changing the role of the nurse in the MDT: generalist to specialist

As nurses are the only professional group present 24 hours, 7 days a week on a SU, they are ideally positioned to act as a hub for the team's activity. Yet, they can only take up this role if they have the requisite expertise to do so. As previously demonstrated, the majority of nurses were not in a position to take up this central role at the start of the project. Even though some of the nurses had cared for stroke patients as part of their role in elderly care they did not have specialist stroke skills.

> *I think we look more to their [the patient] individual needs and what they can achieve ...before we just used to do the caring...wouldn't have plans or goals to achieve...we just nursed them to make them better...(N 7)*

Furthermore, this lack of depth in understanding stroke as a cardiovascular disease and the number of different syndromes that lead to stroke, along with variable presentations, meant they viewed all the strokes patients as the same.

> *I think when the stroke unit opened first; we all thought one stroke was like another stroke. But, you know, they've had a stroke, they're a stroke, but actually each patient has been an individual and we have learnt an awful lot...(N 2)*

As a first step, the nurses needed to develop a base in stroke related knowledge and practical skills. This was undertaken in a variety of ways (e.g. as described in previous section 6.3) and for the nurses, it also included working under the guidance of the stroke coordinator who was an experienced stroke nurse. The acquisition of specialist nursing skills was essential with the advent of an acute stroke unit (ASU), which required additional key skills such as intensive monitoring with manipulation of physiological parameters; this is in addition to the rehabilitation role more commonly associated with stroke (Hyde & Dowell 2002; Sulter et al. 2003).

> *There were lots of things in the beginning that we weren't doing right, now we do them automatically like TED stockings, positioning...(N 3)*

When the nurses had gained a good foundation in the fundamentals of stroke care, education became more specialist and covered subjects like dysphagia management, thus building upon the nursing role in the area of patient nutrition.

> *We do clinical benchmarking for nutrition, dysphagia screening and it is very motivating...that's where the nurses again are gaining more knowledge and insight into different disciplines (N 2)*

Swallowing problems (dysphagia) are common following stroke, and if not assessed promptly may lead to nutritional problems and an increased risk of chest infections that can be fatal (Perry & Love 2001). Training in the assessment of dysphagia for the more experienced stroke nurses by the SLTs meant the swallow mechanism of patients with stroke could be formally tested without delay. Previously, patients may have had to wait over a weekend or holiday period as SLTs only work from Monday to Friday. If the swallow mechanism was intact, the nurse could start the patient on oral food but if the patient's swallow was impaired an alternative means such as feeding via a naso-gastric tube[18] could be commenced forthwith. From the data it was evident that nurses found this area of work rewarding, and enjoyed the extra responsibility that impacted on the quality of patient care.

> *I have just assessed a patient's swallow and took him off tube feeding. He was my first on my own...it feels so good to be able to make that decision and really affect his care...it is so satisfying. (N 3)*

---

[18] Naso-gastric feeding means that patients receive nutritional support via a tube passed through the nasopharynx into their stomach.

> *The nurses are more aware of nutritional issues and they now screen the patients. They think for themselves and try things out, before they would have just waited for me to tell them what to do. They also instigate the tube feeding where necessary. (T 9)*

Whilst there were exceptions, the nurses largely appeared to be enjoying their new career pathway from generalist nurses to stroke specialists. They seemed to like the focus of one condition as opposed to the varied medical diagnoses previously presented in the work situation.

> *It is nice to be specialising in a topic rather than general care of the elderly, which covers such a wide umbrella of problems. (N 4)*
>
> *You put all of your resources and your manpower into one place, and people get more expertise, more knowledge, more insight into the stroke care, then you know it's going to be better...it is good. (N 1)*

I noted that the nurses who expressed less interest in the specialist area of stroke spent more time with the five continuing care patients that were still resident on the ward, an arrangement that appeared to be a *win win* for all involved (FN Sept 2001).

Furthermore, the nurses found that by concentrating on stroke they were able to grow in knowledge and expertise.

> *By having a stroke unit...we like focusing on one condition, one thing stroke...investing all our energies into that... it builds expertise...we become knowledgeable. (N 5)*

The next section looks at how this growing expertise led to more confidence in their own abilities and how this positively affected their interaction with the MDT.

6.4.2. Nurses growing in confidence

Gaining confidence in their own abilities was another theme to arise from the data that contributed to the nurses expanding their role in the stroke team. A correlation between knowledge and attitudes has been demonstrated in the literature, showing the greater the nurse's understanding, the more positive the nurse is towards nursing involvement in rehabilitation (Gibbon & Little 1995). This behaviour was echoed in the project findings, with the nurses being seen to voice their professional opinion within the MDT as their level of expertise in the management of stroke increased.

> *The nurses are now confident to say what the plans are for the patients and how to deal with a problem. (N 4)*

The nurses began to show a positive attitude to change, perhaps as a result of feeling more confident in their ability to contribute to the SU activities and the recognition of their learning needs.

> *The nurses are changing in their ability to question, growing in confidence and knowledge. The most overwhelming change is the open-minded positive attitude to change. They have become more vocal, more positive and knowing what they want to happen. (N 2)*

> *Empowerment comes through that they are able to identify their own needs and I think that's the best thing, they are now able to identify their own education needs or deficits. That's half the problem that they are able to identify them, because then that means they will go about resolving them. (N 11)*

As seen next, the nurses were not alone in recognising their developing expertise in stroke care and this was reflected in comments made by others.

6.4.3. Putting expertise into practice

Specific skills have to be visible to others in the team; recognition can then be given for the contribution made towards overall patient care. Before the expansion of the SU, not all people with stroke could be treated on the SU for the duration of their inpatient stay. As the nurses' skills on the SU developed, the contrast with nursing input on wards with outlying stroke patients was noticeably different to both hospital staff and to the patients themselves.

> *The stroke unit nurses are considered to be the experts in looking after strokes by nurses on other wards, they have told me so and I agree with them. (T 14)*

> *The nurses on the stroke unit were are absolutely wonderful...the atmosphere was so very very warm and loving... (Patient quote: FN Jan 2002)*

Therapists on the SU made positive comments on a number of improvements in nursing practice, including how patients were positioned and how their hemiplegic limbs were handled.

> *They [nurses] are actually thinking about how to handle patients – we have less problems now with painful shoulders. (N 4)*

> *The positioning of patients on the ward is so much better and it is not just down to the physios but the nurses know more and they have a clearer understanding of why. (T 4)*

The therapists described the nurses as having changed and being more receptive and understanding of the needs of the stroke patients.

> *The nurses have gone through an incredible change and they are so much more open, so much more aware of what we do in therapy and what the needs of stroke patients are. (T 10)*

This development of the nurses was integral to meeting the rehabilitation needs of the patients. Often, due to time constraints, members of the MDT are dependent on nursing colleagues to incorporate treatment plans into ongoing activities on the unit, and to provide feedback on progress achieved (Long et al. 2002). For instance, the nurses would encourage patients to practice their walking during functional activities and walk with them to the bathroom. Previously they would have used commodes by the bedside or wheeled them to the bathroom.

> *Nurse are now walking patients to the toilets instead of getting them commodes, they are growing in confidence. (N 2)*

Thus, the nurses were helping patients to consolidate learning from sessions with other members of the team. Active involvement of nurses in rehabilitation is one of the identifying markers of stroke nurses denoted in the literature. For instance, stroke nurses were seen to be more likely to position patients correctly as they understood the importance of it, whereas on other wards they did not correct patients' posture even when they had time to do so (Lincoln et al. 1996). Patients spent less time lying down on a SU in comparison to patients on the general medical ward, thereby demonstrating a more active and specialist rehabilitation approach taken by the nurses on the stroke ward (Lincoln et al. 1996). This was mirrored in the project findings, with patients reporting that nurses in the SU encouraged patients to do more for themselves. One patient commented the nurses from a medical ward he had been temporarily admitted to kept telling him to stay still "they were petrified to let me move!" (FN Feb 2002).

6.4.4. Improved interaction with patients, families and carers

This section looks at how improved interaction with patients, families and carers contributed to the recognition of the central role of the nurse in stroke. Nurses are the only members of the health care team who have a presence around the clock, making them the ideal team member to provide information and emotional support for patients and families (Warner 2000). However, in the beginning the nurses were observed telling patients that they would have to wait to ask the doctor or stroke coordinator, as it was not their place to answer questions about the management of their stroke. As the nurses grew in knowledge and experience they slowly stopped deferring patient queries to the doctor, and took on this role themselves and the level of interaction with patients and families noticeably increased.

> *Another change is the staff and their professional stance...they are confident and competent. I can remember very well when I started it was difficult getting staff to talk to relatives. They would say you need to talk to a doctor and now they can do it themselves. (N 9)*
>
> *I think we are more knowledgeable and that we can offer patients more reassurance and explain things better to them...(N 3)*
>
> *The staff are quite informed now and able to sit and talk to patients, they used to shy away from it. You don't have to wait for the doctor now. (N 4)*

Again, this finding is supported in the literature, where it has been found that nurses on a specialist SU were less likely to call upon a doctor in comparison to nurses in a general medical setting (Lincoln et al. 1996).

In summary, this section looked at how nurses developed from generalists in elderly care to stroke specialist nurses. Through a combination of increased skills and knowledge in stroke care and improved team working, the SU nurses in this action research study began to claim a pivotal role in the team whilst developing a distinct identity as specialist stroke nurses. The importance of a specialist identity in the development of stroke nurses has not been explored previously in this domain of healthcare. The next section examines what organisational factors supported or impeded the improvement in delivery of stroke care at the Trust.

6.5. Building an organisational climate to support improvement

Individuals and teams are inherently influenced by the organisational context in which they work (Pettigrew et al. 2004). A supportive organisational culture that values and integrates service improvement is vital to the improvement of health care (Bell et al. 2006). Making change happen in practice does not occur in isolation, and factors within an organisational domain can help or hinder the process. This section looks at process findings from this case study that were related to the implementation and development of the stroke unit and covers the following key areas: the organisational landscape; importance of management support; aligning clinical and managerial agendas; widening participation in decision making; utilising external assistance; raising the profile of stroke; dealing with resistance; managing opposition and the need to involve staff in the change process.

6.5.1. The organisational landscape

At the commencement of the project, the milieu of the setting was characterised by a culture of *command and control* with a marked hierarchical, top down approach to change. This has been echoed in recent research, which found that middle managers in the NHS showed a reliance on confrontation, and the command and control style of management (Farnham et al. 2003). Examination of Trust documents showed the management structure was constructed around a number of committees that fed into the executive decision-making Trust board.

Membership of the committees was strongly dominated by senior managers, consultant doctors and high-ranking nurses, and there was no direct representation of therapy at this level despite being an important clinical staff group. A new manager to the Trust remarked that the management structure was very formal and traditional and described it as being like:

> *A fortress with a colonial type organisation driven by committee structures based on an absentee landlord philosophy. (GM 1)*

Another employee commented on the degree of control that the board exercised over the hospital proceedings.

> *This place is stuck in the 70's...nothing happens here without a rubber stamp from the board... (GM 2)*

Yet there were signs that the opportunity for change in this conventional teaching hospital setting could be emerging. Initially I felt this study was not viewed as *real research* by a number of medical consultants, a feeling fuelled by comments such as *"how is that little project going on team documentation?"* which did little to boost my own floundering confidence at this stage (FN Mar 2001). However, this project was ground-breaking in that it was the first non-medical research proposal to receive internal funding from the Trust. Secondly, the project employed action research, an approach with democratic involvement of staff at its core, in marked contrast to the approach of randomised controlled trials (RCTs) which senior clinicians were familiar with. However the involvement of senior management in the SU project was recognised as prudent and subsequently sought.

6.5.2. Importance of managerial support

Management assistance for clinical projects that involve major service redesign is necessary for enhancing the success and sustainability of change. Two recent appointees to the Trust, a divisional general manager (DGM) and head of therapy services, were seen to be early advocates of establishing a SU and were invaluable in helping practitioners drive the stroke agenda forward. This was in stark contrast to previous attempts to gain high-level management backing. The DGM had recently observed the effects of stroke on a close family member prior to joining the Trust.

> *As a general manager, I took a personal interest in stroke...it touched our family...it became personally important to me...and my motivation...(GM 1)*

His inaugural presentation to the Trust Executive focussed on the urgent need for a SU and was spoken with the poignancy of personal experience. The head of therapy was instrumental in securing funding for the action research proposal, which helped to raise the profile of the new unit.

> *The unit has got research money going into it which helps...the profile is raised and people want to be involved...(T 7)*

This financial backing gave the project a dedicated resource to help the change process for two days a week over a period of two years.

It has been documented in the literature that middle managers must develop more of a facilitatory role in supporting junior staff to take on greater responsibility within the NHS (Farnham et al. 2003). This study has aptly shown the benefits of this notion being extended to senior managers, as those involved in the SU were key in aligning clinical and management agendas, and maximised the opportunity for collaboration between the two staff groups for mutual success of the service redesign.

6.5.3. Aligning clinical and managerial agendas

As stated in the previous section, the alignment of clinical and managerial agendas is an important aspect of building an organisational climate to support improvement. For many years clinicians had wanted to develop stroke care, but stroke care had not been a government target for improvement and hence did not rise to the top of the Trust management agenda. Helpfully, when the project commenced, the NSF for OP (DH 2001) was on the horizon, and improvement of stroke care in the Trust was of reciprocal benefit to both the organisation and practitioners.

> *The multidisciplinary stroke working party has helped to get this going; it was like a groundswell, which laid the foundation for change to occur. (T4)*

> *I said that stroke would be an NSF and that whilst we haven't taken a decision in the past to establish a stroke unit...there were all sorts of constraining factors but despite that it would be an NSF and we need to be proactive not reactive. (GM 1)*

> *Now everyone thinks of the NSF and it's a must and a requirement and that's a big area of impact and driving this change. (N 9)*

Besides the NSF for OP (DH 2001), additional weight to the argument for a stroke unit was supplied by the results of the NSSAs (CEEu 1998,1999), which were said to be

> *...an absolute disgrace for a teaching hospital.(GM 1).*

Results of the stroke audit are published nationally and sent to the Department of Health. Consequently, the audit acted as an external driver by putting the spotlight on the Trust's performance, which was seen to be an index of Trust Board management; this helped keep development of the SU as an item on the management agenda. Whilst clinical and managerial targets remained shared, support from senior managers was more likely to continue, and indeed the unit had management backing throughout the development stage. For example, figures from a local audit showed 65% of stroke patients (Mason et al. 2001) were admitted directly to the SU from the Accident and Emergency (A&E) department, whereas others had an interim stay on a non-specialist ward, or were not admitted at all. As immediate management of acute stroke is a vital part of the overall intervention (ISWP 2004), the issue of inadequate capacity needed to be addressed. This was raised as an urgent issue with the DGM and with his agreement the capacity of the ASU increased by four beds to 12, and the RSU from 11 beds to 15. At a political level it was essential to have the full backing of senior management as the enlargement of the SU required that more beds that had been assigned to care for older people would be allocated to stroke; as documented in section 6. 2.1, this had been a point of unrest at the start of the year. As before, it was dealt with by explaining that the change represented a reconfiguration of beds rather than a loss and would help ensure the needs of both people with stroke and older people admitted with acute medical problems could be met in the most appropriate setting (FN Oct 2001). There was however still unrest noted about this arrangement amongst the medical consultant staff and this point is revisited in sections 6.5.7 and 6.5.8.

It was evident at that time, that the stroke team enjoyed the support of a few key managers in the Trust, but continued backing was dependent upon the political agenda and could not be guaranteed. Even this DGM later said:

> *There is a real danger that we become overly biased towards the stroke team...we have all got soft spots for the team...but I am now looking for the next thing to support... (GM 1)*

Therefore it was important that the team looked at ways of sustaining links between management and clinicians; this is described next.

6.5.4. Widening participation in decision-making

Widespread involvement in decision-making is an important feature in building an organisational climate to support improvement. Reduction in hierarchies and devolvement of power to teams at local level is reflected in government policy (DH 2002b). When the SU first became operational, the avenue for dialogue between most practitioners and senior management was limited. For example, the Stroke Oversight Committee consisted solely of doctors and senior management. Whilst it is acknowledged that medical and non-medical agendas can be different for legitimate reasons, there nevertheless needed to be a forum for listening to all staff groups to promote a unified vision of best stroke care. For instance, therapists and nurses wanted the SU to manage the whole patient pathway, whereas the majority of medical staff saw the ASU remit as delivering immediate assessment and intervention only, which aligned with plans for future drug related research. This mismatch of service direction troubled the nurses and therapists as it felt like the SU was at risk of being task focussed around the delivery of pharmacological agents and not the person centred care advocated in the literature (SUTC 2001; ISWP 2004).

> *Do they [the doctors] not realise that drugs are not the be all and end all of stroke care? Do they not read the evidence, stroke unit care i.e. good solid intervention, preventing secondary complications etc is the foundation of best care. I know there is a place for this acute pharmacology intervention but not at the expense of the less "sexy stuff"... it feels sometimes like it is one more thing to squabble about...we must keep being the voice for the patients... (FN Feb 2001)*

Hence, not being included in decision-making forums lessened the opportunity of non-medical professionals to influence the direction of development. This concern was addressed by members of the STEP team raising it for discussion during the comprehensive stakeholder engagement in the exploratory phase of project work, which culminated in the medical director giving a directive to the Stroke Oversight Committee to widen its membership to include other health care professionals. The team were delighted to have achieved what they saw as a major move forwards, only later discovering that their meeting had coincided with the medical director having been appointed to a senior position at the Royal College of Physicians, the base of the National Sentinel Stroke Audit, and this perhaps partially explained the keen interest shown in the new SU (FN Apr 2001). The combination of senior management and clinicians together in one committee became an effective forum for influencing the strategic development of the service and provided a link between clinicians and the Trust board. The multi-disciplinary membership led to the appointment of a non-medical professional as Chair of the committee; only the second time such a post had been held in this Trust by someone who was not a doctor.

The STEP team came to appreciate they could exert greater influence on decision makers through the interplay of individual and joint networks and by drawing support from each other.

> *...the strength of the team can make things happen, regardless of any problems that come our way... (T 9)*

This team spirit was typified when the STEP team went to a meeting with a board level senior manager to discuss service development. When we arrived, he declared he would only see the doctor and the next most senior person in the team " and the rest of you may go away" (FN

Oct 2002). This was met with firm solidarity; we had come together as pre-arranged and all had something to contribute to the meeting. We explained our team philosophy was based on valuing participation of all levels of staff, so we would all stay or all go. We were all invited into his office and the meeting went well. The team saw this success as a small but positive step in challenging the dominant culture at the Trust, felt it reflected the democratic impulse inherent in action research (Meyer 2006b), and demonstrated the strength of character amongst the team that had arisen from this new way of working.

6.5.5. Utilising external assistance

As with the NSSA (CEEu 1998,1999, 2002, 2004), involvement in activities that opened Trust performance to the external community seemed useful and helped build an organisational climate to support improvement. Whilst this was not the reason for participating in the Clinical Governance Development Programme (CGDP), it was a welcome benefit. For example, a prerequisite for involvement in the series of seminars was a signed formal agreement and pledge of support from the Chief Executive, which effectively helped access senior management, including the Chief Executive. This was something that had previously been virtually impossible.

> *Because the level of it [clinical governance programme] being external and the impact of the organisation they cannot turn a blind eye- they have to listen to us. That has been a key thing. The RCP guidelines were there but were they noticed? (N 9)*

Nevertheless, before meeting the Chief Executive, members of the team had to agree issues to be raised with the acting DGM[19] and it not to move away from the planned schedule. This seemed a very autocratic way of operating to the team, contrasting starkly with our own way of doing things but we had come to recognise that *sometimes you had to loose a battle to win the war* (FN July 2001). The eventual discussion with the Chief Executive was open and productive and ended with being

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[19] The usual general manager for the stroke service was on long term sick leave

asked to present to the Trust board on the progress of the SU and we were pleased with the outcome of the meeting.

Further external links were made with the Stroke Association and Different Strokes[20]; indeed a member of the Stroke Association sat on the project steering group. The Chairperson of the Stroke Association later performed the official opening of the SU.

6.5.6. Raising the profile of stroke and the stroke unit

Findings indicated that building a climate of organisational support for improvement was positively influenced by the growing profile of the SU and staff both within the hospital and externally. All opportunities to promote the SU work were actively sought, and as one team member summed up:

> *It's a scary thing to do, but if you are not vocal, if you are not shouting about what you are doing, then you won't get anywhere at all! (N 2)*

Activities outlined in the first action cycle (Chapter 4 section 4.4.2.1.) had raising the profile of stroke as the primary aim, and unit staff purposively built on this growing internal profile and started to look at ways of developing a reputation beyond the Trust. For example, a programme of education was established including organising and hosting regional stroke study days and an annual National Stroke Conference at which eminent speakers were invited to participate and attended by delegates from across the UK.

> *There is a lot of regard for the stroke unit ... other Trusts are interested and we are starting to be known throughout London. (N 2)*

During 2002, members of the STEP team were asked to participate in a regional workshop called "*Audit, Implementation & Innovation* " as part of the dissemination process of results from the 3rd round of the NSSA, and later in the year were invited to speak on *"Multi-disciplinary teamwork in*

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[20] The Stroke Association and Different Strokes are national voluntary agencies set up to campaign for better care for stroke patients. Different Strokes is specifically for younger stroke survivors.

Stroke" at a national conference convened by the NHS Modernisation Agency. As the unit established its profile, it began to be seen as a distinct specialism within the Trust.

> *The stroke unit is the best place for strokes – that is where the expertise is... (FG 7)*
>
> *Stroke is certainly a lot sexier than it was 12 months ago! The profile has been raised...people want to be involved and are really buzzing about the unit. (T 7)*

Subsequently, as the profile of the SU grew, like the nurses other staff (therapists and doctors) also developed a distinct stroke specialist identity. Staff became known in the Trust from being associated with SU:

> *...it may sound silly but people recognise you going around the hospital now... they've seen you on the stroke unit, or at different stroke unit presentations... you are now known as a therapist who's worked on the stroke unit. Before you were anonymous, I am no longer anonymous. (T 7)*

It seemed for some that having a distinct identity, which was new for them, was a source of job satisfaction and gave a specialist focus to a job role.

> *It's more satisfying...I like to have a definite niche, a role, quite exciting and now I am the lead person in the department for stroke (T 8)*

Thus, the development of specialist practitioners and the identity of a specialism occurred in tandem. A year after the SU opened, the service was officially recognised for its success and hard work and was declared winner of the Trust's "Achievement of the Year" team award for excellence and positive contribution to patient care (Freestyle 2002a). Yet even the spotlight of success can bring its own unexpected problem, albeit one of a different kind.

> *It feels great to be given this award, but it is such a shame that only six people could come on behalf of the team...I suppose you are bound to get jealousy erupting somewhere, perhaps we should have pulled names from a hat but they [senior management] invited the people who have been attending the Clinical Governance programme in Leicester, I suppose we were the most obvious...(FN Mar 2002)*

However, the overall development and recognition as a specialism, helped give the service credibility within a Trust that had specialist work scripted as a key aim in the corporate mission statement; and this in turn helped reinforce the growing identity of the SU and the individuals within it.

As the SU developed this clear profile in the organisation, staff found they could harness this new identity to improve the care for patients with stroke in different ways. For example, they could now submit bids to local charities and Friends of the Trust for much needed equipment, as there was a service and a distinct group of patients that could be recognised by others. Previously it had been hard to make the case for stroke patients scattered throughout the hospital as their needs were diluted by being so dispersed. For instance, if specialist wheelchairs had been available for patients, they would have been difficult to use as staff would have required specific training, and as stroke patients were spread across 18 wards, this was not a realistic option. The need for equipment was a common theme amongst staff.

> *We need more equipment on the ward; some chairs are shared between two or three people and then they are inadequate. Tell me how do you make people comfortable in uncomfortable chairs? (N 4)*
>
> *Some patients aren't got out of bed as there are not enough chairs to sit people in. (N 3)*

A number of items of equipment, such as wheelchairs, wheelchair cushions, a standing frame, televisions, and furniture for the dining room, amongst many other things, were obtained from bids or donations. These were *visible wins* for both staff and patients to enjoy as markers of improvement. Yet, whilst support for the SU at the Trust was growing it was not universal, and pockets of resistance were encountered and these are explored next.

6.5.7. Dealing with resistance

During the span of the project, resistance to changing the organisation of stroke care was encountered from two main sources: the consultant geriatricians and some senior elderly care nurses. The strongest dissent to the new SU was from the consultant geriatricians who thought the current service for patients with stroke was satisfactory and would not refer patients to the SU.

> *...the other wards are very possessive of their stroke patients (T 10)*

These doctors were aware of previous NSSA results (CEEu 1998, 1999) that clearly showed stroke care at the Trust was poor, yet maintained the general elderly multi-disciplinary service addressed the needs of this patient group. For example, a therapist from the SU reported:

> *...I have actually had a doctor say to me ' Oh you don't need to be referred to the stroke unit, I've a good enough team here'. ...it's a hot political potato. (T13)*

The stroke unit consultant would not discuss with medical colleagues why they refused to send stroke patients to the unit. Conflicting loyalties may have influenced his behaviour; for years he had been part of that team. Furthermore, he had been heard to openly declared that SUs had no benefits above those of an elderly rehabilitation unit. A field note entry made during a stroke committee meeting read:

> *Why has he been appointed the consultant stroke physician? He doesn't even believe in the value of stroke units...it's the down point within the whole stroke service at the moment... (Stroke committee observation FN May 01)*

This resistance to transfer patients to the SU from adjacent elderly care wards meant if a patient was not directly admitted to the SU from A & E, it was almost impossible to get the patient transferred there.

> *...the other elderly wards... ...they think they can do it themselves, even though it is in all the evidence. They fail to realise you need specialist input...(N 9).*

One of the reasons given for this unwillingness to transfer patients was that staff said they wanted to remain familiar with treating stroke patients.

> *Some people on other wards say they want to keep a few stroke patients just to keep their "hand in" on how to treat stroke...you wouldn't find that acceptable for heart attacks so why is stroke any different? (T 6)*

To address this concern, experience in treating patients with stroke could be gained through staff rotational schemes or requesting a secondment to a ward to gain specific experience. Yet in contrast some staff groups did not seem to recognise or acknowledge there was any expertise on the SU. It was not uncommon, much to the exasperation of staff, to have two patients, one with a stroke and another with a hip replacement, arriving for a period of inpatient rehabilitation, only to find the stroke patient being placed on the non-specialist ward and the patient with the hip replacement on the SU (FN June 2002); in effect ignoring the unequivocal research evidence for the benefits of SU care, which had serious implications for clinical governance in the Trust. This is discussed further in the following section.

Furthermore, opposition from the elderly care wards mounted as the SU raised its profile within the Trust. Members of the MDT heard that staff on these wards were jealous of the attention that the SU was receiving.

> *I think there maybe some jealousy about the role of the stroke unit and it being seen as the flagship... it gets lots of the attention and publicity... (T 4)*

There was also support for the behaviour of the consultants from a senior member of the nursing staff who also felt it was wrong to transfer patients between doctors.

> *No I don't agree with it ...once a patient comes under a consultant that's it. They should be looked after by that consultant all the way through... The consultants had already said they didn't want it (a patient transferred from the care of one consultant to another) ...I see it as being very insulting to the staff looking after the patient... (N 11)*

Moreover, a sister from one of the general rehabilitation wards, who had hoped that her ward would be chosen to be the RSU, and so was understandably disappointed, asked one of the therapists:

> *Why is it that yesterday we were good enough to treat stroke patients but today we are not and they all have to go to the stroke unit? It is like we have become a dumping ground for elderly people awaiting placement...(T 15)*

These points serve to illustrate that due consideration needs to be given to the wider hospital community about the effects of a specific service development as it may lead to perceived negative effects elsewhere.

Some sympathy for staff on other wards was evident, as one of the SU nurses reflected on the situation and commented:

> *A gentleman somehow ended up on one of the other rehab wards and the staff didn't want him moved...it must be disappointing to them not seeing people with such good rehab potential that they may well have done otherwise...they have more grotty ones. (N 7)*

However, even though staff tried to understand how others were feeling about the SU development, they knew they had to address the resistance to achieve the vision that underpinned the philosophy of the service depicted in its acronym STEP; *Stroke Treatment for Every Person.*

6.5.8. Managing opposition

As part of the drive to build a climate of organisational support for improvement, the MDT team continued to address the matter of stroke patients on non-specialist wards. A transfer working party was set up to look at ways to tackle the problem but this only had a limited effect; the power of the consultant group was difficult to deal with. As one therapist commented:

> *The transfer issue is a massive problem, it's bigger than the patients themselves or staff ...you've some really established staff here who have been here a long time, who don't like change. (T 10)*

Even when the team took the issue to a meeting with the DGM they were told:

> *It is a politically sensitive issue that had to be addressed in the right way at the right time...and so you have to trust me that it will be when the time is right (GM 1)*

In the interim the team hoped the bigger bed base would help solve the problem. The transfer working party took a different approach by revisiting the stroke policy, thinking that if a structural change was established in policy at the highest level in the Trust it would be easier to apply in practice. Furthermore, results from the third round of the NSSA were presented to the Trust multiprofessional audit group, which had senior members of the organisation within its membership. Whilst results illustrated gains had been made in the stroke service (see Chapter 5), they also showed approximately 10% of stroke patients (CEEu 2002) were not accessing the SU, even with the increased bed capacity. The following extract from field notes (FN Sept 2002) outlines a key aspect of the presentation that took place between a group member (Q) and myself (A):

Q: What is the reason for the 10% outlying stroke cases? Do we still not have the capacity right?

A: No, the capacity is adequate, but not all patients are referred to the stroke unit?

Q: Do you not accept all stroke patients referred?

A: We have a non-selective stroke policy and accept all patients referred, some are not referred

Q: Why? Was there a particular problem area identified?

A: [taking a deep breath] Yes...the 7th floor...

It was universally agreed this was not acceptable because it was a serious concern for clinical governance, and would be indefensible should a clinical incident arise with a stroke patient who had not been admitted to the SU when a bed was available. Following high-level intervention, a noticeable change took place in the following weeks, with stroke patients beginning to be referred from all ward areas to the SU.

6.5.9. Need to involve staff in the change process

The involvement of staff in building an organisational climate to support change is key to sustainability (Greenhalgh et al. 2004). Action research as a methodology has involvement of staff in the change process as a central tenet. Staff found the development of the SU a very rewarding and empowering experience, which in turn enhanced their professional life.

> *It's nice to be actively involved in setting up and starting a proper unit, a specialist stroke unit. I do enjoy it; otherwise I don't think I would be here. (N 4)*
>
> *Development work seems like such a great way to empower the staff. (N 2)*

Furthermore this approach to research with its iterative cycles of action and reflection and ongoing feedback of findings to staff also played a part in maintaining motivation.

> *It's so good when you remind us of all the things we have achieved and what we have done, where we have come from and how we have done it in such a relatively short time. We sometimes get so busy that we don't have time to think or remember! (T 12)*

The enthusiasm generated from being part of a service improvement plan seemed key in driving initial plans into action.

> *The energy around the unit is so evident...everyone is full of it. (T 3)*
>
> *There is so much enthusiasm and motivation for the stroke unit. (T 8)*

People were generally very positive and motivated about being involved in the development of the SU.

> *I want to stay as part of this development. I don't want to leave this positive change. (N 2)*
>
> *I have never been part of a team like this...being asked to come up with ideas and then being allowed to run with them. I have had a great opportunity to influence things...I am grabbing the opportunity by the horns...it is so motivating. (T 13)*

As to be expected, some staff did not want to be directly involved in service improvement projects preferring instead to concentrate on clinical duties. Others wanted to be more involved but encountered conflicting time pressures. This was particularly so for nursing staff for whom it was hardest to take time away from the ward, and the SLTs who had long-term staff shortages.

> *We need time for development work, goal planning etc, it's hard for the nurses to get away from the ward and if you do your brain is left behind wondering what is happening to your patients...(N 8)*

To help keep staff involved, a *"buddy system"* was developed, where two members of staff linked together and fed back to each other in the event of one not being able to attend. Minutes of meetings were also made widely available within the stroke service. In addition, a participatory approach like action research, which focuses on the practical solution of problems identified by practitioners helped keep staff engaged in the process through the direct relevance of the work. Even so, instigating change requires vigour, which naturally goes through periods of high and lows.

> *With any long-term change you're going to go through some little dips where you think you're exhausted and everything like that...then there is always something that spurs you on and motivates you to keep going...(N 2)*

Energy and motivation levels for participating in change were kept high through the celebration of achievements and success.

> *Change and development takes energy...now we seem really busy and it is harder...but then I think of what we have done, the national conference, the launch with the stroke association... its a lot...helps to keep you going! (N 4)*

However, there was some concern amongst staff about the wider effects of the development work and how it may be impacting other services.

> *I have concerns about time taken from other areas...some minimal increase in staffing and I think some other time has been taken to cater for stroke, something has to give from elsewhere...(T 7)*

In reality, as the service arose from a reconfiguration of current services including the re-opening of closed wards, there was no actual increase in patient numbers, plus most of the administration related development work was carried out by myself as a funded project worker. Indeed, in practice clinical areas outside of the SU benefited from the development work. Examples of good practice spreading elsewhere included the exercise programme and goal setting being taken up by other rehabilitation wards.

In summary, this section looked at project findings indicating components influential to the construction of a supportive environment for service improvement. Overall a number of factors were seen to require consideration, some of which are more widely recognised, such as management support, the involvement of staff and the need to align clinical and management agendas. However, the need to create a profile or identity, utilising external assistance and widening participation in decision-making are factors less recognised in the stroke literature.

6.6. Chapter summary

This chapter looked inside the black box of stroke care, gave an in-depth depiction of the implementation and development of a new inpatient SU, and in doing so has contributed to practice based knowledge, *the knowing how.* It has also provided a detailed case study of successful service innovation including personal and organisation challenges that were posed and overcome. Whilst findings of this study indicating the importance of teamwork and education in the provision of good stroke care are generally supported in the literature (SUTC 2001), this study enhances the body of knowledge by providing depth and detail on ways in which these can be achieved in practice. Importantly, it discussed multiple facets involved in building a team, and highlighted the worth of learning informally from working alongside team members within a positive democratic work environment. The chapter also indicated the significance of recognising and valuing the central role of the nurse in stroke care; findings demonstrated the creation of a stroke specialism in turn facilitated nurses to claim a pivotal role within the MDT. The final theme to emerge out of the process highlighted the need to build an organisational climate to support change; this area is yet to be explored in the stroke literature. Findings included working to engage key managers, aligning managerial and clinical agendas, widening participation in decision-making and the importance of creating a profile for the service, which in turn builds individual and collective identities.

The next chapter discusses findings from this and the previous chapter in their wider theoretical and empirical context.

Chapter 7

Discussion

This study aimed to explore lessons learnt from the implementation of a new inpatient stroke unit (SU) in an inner London teaching hospital. This chapter discusses the main findings arising from this case study of success: the importance of a) building a multidisciplinary stroke team; b) developing practice based specialist knowledge and skills in stroke; c) recognising and valuing the central role of the nurse in stroke care and d) establishing an organisational climate for supporting improvement. These findings relate to the study's second and third objectives, to describe the process of implementing a new SU, and identify key factors that influenced outcomes achieved.

This study looked inside the *black box* of stroke care, as while the evidence about benefits of SUs is unequivocal, little is known about how this is achieved. As highlighted in the literature review (Chapter 3), no empirical studies were identified which explored the processes and outcomes of implementing and delivering stroke care in mainstream practice; this action research study has unpacked and illuminated factors that led to success in this clinical setting. Indeed, results from the National Sentinel Stroke Audits (NSSAs) (CEEu 2002, 2004) demonstrated the outcomes were second to none. Although this study did not intentionally set out to create a Community of Practice (CoP), this chapter will demonstrate that integration of findings with the theoretical perspective of a CoP provides support for the central argument of the thesis, that excellence in stroke care was achieved through the creation of a multi-disciplinary CoP. This is important because even though CoPs have recently been identified in the literature as one way to implement evidence based health care (EBHC), more research is needed on how to bring this about in practice (Dopson & Fitzgerald 2006). Prior to examining the theoretical concept of a CoP and the discussion of findings, the methodological approach and study limitations are briefly revisited.

7.1. Reflections on the methodological approach

Action research as a study design was discussed in Chapter 4 (section 4.1). This section reviews the key strengths and weaknesses in light of findings that emerged so the reader can judge the relevance of claims.

A number of strengths in the design of this study give weight to the findings and conclusions drawn. The action research approach enabled an in-depth view of how stroke care was implemented in a real life clinical setting, therefore further research into stroke should incorporate more studies using this approach to inquiry. The democratic impulse in this participatory form of inquiry (Meyer 2006a, 2006b) is consistent with team working, and outcomes suggest action research provides an ideal way to engage staff in the shared need for change. Furthermore, my role as "insider" within this study meant I was in a good position to be accepted as a collaborative researcher. Indeed this gave me access to knowledge and information that may not have been available through formal data collection methods or to an external researcher new to the organisation. This arguably adds credibility to study findings, although one cannot ignore the issue of insider bias and being too close to the data. To this end, critical skills in self-awareness, sensitivity and reflexivity are important (Coghlan & Brannick 2005). In addition, as the study was undertaken to fulfil the requirements of a PhD, reflexivity was further strengthened through the university supervision process. A further methodological strength was the wide range of methods used during the process of inquiry and action, which allowed the development of the SU to be examined from a number of different angles, thus giving richness to the account of the study.

The design used in this research was a single case study taking place in a specific local context, which is argued to limit direct generalisation of findings to other settings (Bowling 2002). Conversely, it is also said that the systematic nature of an in-depth case study may generate contextual findings that resonate with others undertaking similar developments, and the potential for generalisation should therefore not be ignored (Lewis & Ritchie 2003). Knowledge generated from this study has been noted to have clear applications to other similar settings (Somekh *in press.*) and members of the stroke team have given national presentations to share learning from this study, including the Department of Health National Stroke Strategy Conference in 2006. Claims for general relevance of findings from this thesis are based on the following. Firstly, the single case study design enabled one setting to be studied in detail, and the rich account of practice that emerged allows the reader to gauge and assess the relevance of the account to their own clinical experience (Lincoln & Guba 2000b). Secondly, theories constructed and tested through the process of data collection and analysis are deemed to be more widely applicable beyond this particular setting; conclusions drawn from features developed in a single case study can enhance current understanding and development of wider theory (Lewis & Ritchie 2003). This study builds directly on the existing research literature in stroke care, contributing to knowledge about how best stroke care might be delivered in the UK. The claims made in the remainder of this chapter are particularly representative of this second form of generalisation.

7.2. A community of practice: a social theory of learning

The term *Community of Practice* was first coined by Lave and Wenger in 1991, based upon data drawn from five anthropological case studies of apprenticeship: meat-cutters in US supermarkets, non-drinking alcoholics, US Navy quartermasters, traditional midwives in Mexico and Liberian tailors. This conceptual framework of learning fundamentally placed the acquisition of knowledge into a social process with the focus on participation they called *"legitimate peripheral participation"(p.14).* This was in marked contrast to the dominant view of the time where learning was largely considered to be an individual cognitive process (Lave & Wenger 1991). The published literature on CoPs has since grown, illustrating the wider adoption of CoPs into a number of settings including the United States Navy (Department of the United States Navy n.d.), the field of education (Abrandt Dahlgren et al. 2004), and of late most prolifically in the corporate field of knowledge management, where CoPs are viewed as management tools (Allee 2000; Brown & Duguid 2001; Swan et al. 2002). The latter can be seen to indicate a shift away from the original basis centred on a social theory of learning, and hence users should make it clear how they are applying the concept in practice settings (Cox 2005).

This thesis purposively draws upon the classical understanding of a CoP, based on a social theory of learning, which explores how, through learning, people acquire a sense of meaningful belonging, become part of a community, and through the development of their practice create an identity; as such, learning is a process of transformation embedded within relationships and social participation (Wenger 1998). Outcomes reported in this action research study suggest use of this particular CoP model helped bring about successful change that had a direct impact on the achievement of the National Service Framework for Older People (NSF for OP) (DH 2001) at a local level. An earlier NHS change initiative included in the ten year NHS Plan called *Breakthrough Collaboratives* (DH 2000) explored issues related to transfer of knowledge into practice to change practice, drawing on the private sector knowledge management model of CoP. Evaluated in a two-year study by Bate and Robert (2002) it was concluded that:

> *"...this raises many questions about what the NHS must do to encourage the growth and development of communities of practice and ... informal processes that create energy for a successful change effort "* (p.653).

They suggested that the three Collaboratives, Cancer Services, Mental Health and Orthopaedics, had become time limited project teams rather than CoPs, and the deep-seated culture of project management in the NHS should be given more consideration regarding its effect on the sustainability of change. They recommended that the collective change effort needed to be more equal, spontaneous, naturalistic, and less routine, hierarchical and orchestrated, and that the creation of CoPs, and not managed project teams would present one way of doing this. Whilst no specific details on how this could be done were given, findings from this thesis support this claim, but further research into this area is required. Reports on CoPs have also begun to emerge over recent years in the healthcare literature including those by Gabbay et al. (2003), Endsley et al. (2005), Dewar and Sharp (2006) and Dopson and Fitzgerald (2006). However, it is suggested that the understanding of the CoP concept is limited in some cases, which may reduce the opportunity for sustainable change taking place. For example, Gabbay et al. (2003) reports on the facilitation and evaluation of two multi-agency CoPs set up to work on improving health and social services for older people. The CoPs ceased to exist beyond seven meetings, suggesting that it was a project group that had been developed. Dewar and Sharp (2006 p.230), who also used an action research approach, claim that CoPs, are a good tool to foster collaborative working and promoting good practice,

> *"...the explicit development of communities of inquiry*[21] *within communities of practice is needed for the re-invention and local customisation of protocols and practice guidelines."*

This thesis demonstrates that this may not always be required, as the CoP created in this study was able to interpret and enact national stroke guidelines at a local level. In addition, Dopson and Fitzgerald (2006), reporting on empirical evidence from a combined analysis of findings from seven UK studies that looked at how evidence based practice was implemented, state that multidisciplinary aspects of a CoP have yet to be fully developed, with comment in the literature largely restricted to unidisciplinary CoPs. Their findings indicated these CoPs were strongly influenced by professional affiliations, had marked group identities and tended to seal themselves off from neighbouring work groups, noting that "*... great effort is required to create a functioning multidisciplinary community of practice"* (Ferlie & Dopson 2006 p.10). This thesis provides the first theorised account of how a CoP, which was also multidisciplinary, was created and delivered excellence in stroke care. Thus, learning drawn from this thesis, which seeks to understand the process of change as well as outcomes, may help others wishing to undertake service developments.

7.3. CoP: three key elements, 14 indicators

A CoP combines three inter-related and co-dependent elements: a domain, a community and a practice (Wenger et al. 2002). Furthermore, Wenger states a well-formed CoP should over time display the following 14 indicators (Wenger 1998 p.125-126):

1. Sustained mutual relationships – harmonious or conflictual
2. Shared ways of engaging in doing things together
3. The rapid flow of information and propagation of innovation

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[21] "A community of inquiry is a special kind of community of practice whose central activity is the creation of knowledge" - Argyris et al. (1985 p.29).

4. Absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process
5. Very quick setup of a problem to be discussed
6. Substantial overlap in participants' descriptions of who belongs
7. Knowing what others know, what they can do, and how they can contribute to an enterprise
8. Mutually defining identities
9. The ability to assess the appropriateness of actions and products
10. Specific tools, representations and other artefacts
11. Local lore, shared stories, inside jokes, knowing laughter
12. Jargon and shortcuts to communication as well as ease of producing new ones
13. Certain styles are recognised as displaying membership
14. A shared discourse reflecting a certain perspective on the world

How success was achieved in this study is presented in the following sections using the framework of the three elements of a CoP: domain, community and practice, and in doing so will also illustrate how findings met Wenger's 14 indicators. The data drawn upon in this discussion chapter are associated with the second objective of the study, which relate to describing the process of implementing a new SU, and findings that illuminate the third objective, the identification of key factors which influenced outcomes achieved. The findings related to the domain are covered first.

7.4. Domain

A *domain* represents the topic of focus within the community, which in turn guides learning and provides meaning and value to actions, whilst helping to establish a common identity for the CoP (Wenger 1998). This section discusses how the establishment of a stroke domain was pivotal to the creation of a CoP in order to deliver best care in stroke.

7.4.1. Common ground for a shared vision

The founding of a distinct geographical stroke unit, the domain, was central to the creation of the multidisciplinary CoP. These findings make an important empirical contribution to the knowledge base in stroke because whilst the National Clinical Guidelines for Stroke (NCGS) recommend inpatient stroke care should take place within a defined unit (in preference to a specialist peripatetic stroke team), they have been unable to say why (ISWP 2004). As described in chapter 2, one reason why less people die, have fewer disabilities and are more likely to go home may be linked to how people work together to deliver good stroke care. Yet, despite the large body of published stroke literature, the continuing focus on outcomes means it has been unable to contribute the process related knowledge necessary to maximise the delivery of successful stroke care and reduce the current inequity in standards of care that remain across the UK (CEEu 2006).

The domain created the first designated space in the Trust to bring together stroke patients, and provided a focus for shared staff practice (*6.2.1 Making space for stroke)*. This direction was essential because as findings show (*6.2.2 Different starting positions* and *6.2.3 Understanding individual roles*) the staff had been brought together from an array of locations across the Trust, and there was not a natural foundation upon which staff could start to build a CoP to deliver stroke care. However, geographical proximity alone is not sufficient to develop practice (Ferlie 2006), and requires mutual engagement of staff via participatory interaction (Wenger 1998). The newly established stroke domain helped this process by defining the core purpose and value of actions to be undertaken by staff, and providing common ground for shaping a shared understanding as a base for collaborative working (Wenger et al. 2002). Hence bringing staff together in the domain gave a starting point for building the CoP with the mutual goal of improving inpatient stroke care.

Creating a shared vision for service development provides clarity of purpose and has been identified in the literature as a key step in achieving effective change (Kotter 1995), being more effective than a vision imposed from the top of an organisation (West & Anderson 1996).

The inclusion of stroke in the NSF for OP (DH 2001) meant it became the focus for Trust managers for the first time. Whilst the new SU could be seen as a change imposed on staff, data in *Aligning managerial and clinical agendas* (section 6.5.3) show the unit was a long awaited development for staff, and thus considered a joint enterprise between management and practitioners and achievement of a mutual goal. Hence, the domain helped the stroke agenda to cross organisational boundaries, was the first tangible evidence of combined responsibility for improving the management of stroke patients in the Trust and provided a foundation for the inclusion of management in the CoP, a key point returned to later in the chapter.

7.4.2. Overcoming professional difficulties

At the outset, analyses of *Building a multidisciplinary stroke team* (section 6.2), showed SU staff had professional difficulties to overcome before they could work effectively together. Similarly, this is described in the literature where it is reported that members of health care teams can experience divided allegiance as being a part of multidisciplinary team can create tensions with individual professional loyalties (Firth-Cozens 2001). In addition, this is compounded by traditional professional boundaries becoming less distinct with roles being extended and developed (Bharj 2003). Nonetheless sharing a focus on stroke meant in this case that issues related to ties of professional jurisdiction (Abbott 1988), such as those described in *Understanding individual roles* (section 6.2.3) about individuals' responsibility for specific tasks and roles, could be addressed. This is important as boundaries related to professional jurisdiction affect the transfer of knowledge between members and thus impact future learning in the team (Ferlie 2006). However, early development work described in *Creating opportunities for joint working* (Section 6.2.5), presented possibilities for members to be together in non-clinical settings and get to know each other through project work that did not involve direct patient care, yet focused on the shared goal of improving stroke care. In turn, this indirectly helped people understand other professional roles as a basis for future working. This is supported by West (2003) who recommends that teams should be given opportunities to be together, to work on tasks as part of the process of learning, to be a team.

7.4.3. A peg for building a stroke profile

Chapter 2 described that it has only been in recent years that stroke has started to be considered as a specialist area of healthcare. Prior to the new SU being set up in the Trust, stroke had been largely invisible amongst the many regional, national and international specialities, and even considered to be a "Cinderella speciality" (Wolfe 2000 p.275). Indeed, this micro hospital culture seemed reflective of the macro view in society where stroke is seen as a hopeless condition for which little can be done (NAO 2005). It is suggested that the profile of stroke in healthcare and society is important because if stroke has a low profile in comparison to healthcare areas like intensive care or accident and emergency, working with stroke could be considered of less importance. Therefore raising the profile of stroke was central to giving value and meaning to work undertaken in the unit.

Study findings *(6.5.6 Raising the profile of stroke and the stroke unit)* indicate the creation of the domain helped raise the stroke profile in the organisation for the first time. As in this study, SUs are often based within elderly care services; an area also associated with a low profile. Findings showed having designated space helped to promote the emerging specialist profile of the SU from the surrounding generalist elderly care setting. Importantly, stroke care as a specialism was becoming evident within the organisation for the first time, and this gain in visibility was purposively strengthened by activities in the first action cycle with the aim of valuing stroke and raising its profile. Part of this work was specifically focused at establishing the SU as a specialty in the Trust. This included a formal opening ceremony of the new SU by the Chairperson of the Stroke Association, attended by Trust managers, past patients, staff and the local press; Wenger et al. (2002) suggests that a formal launch with high level endorsement reinforces domain importance to managers and strengthens their support. Other activities included events such as the previously mentioned Charity Ball and the annual national stroke conferences, plus smaller events that were equally important in raising the profile and visibility of stroke. Results suggest this and similar work was central to making a high impact, visible start for the new SU.

Important to the overall development of the CoP, this high profile work not only highlighted the presence of the unit within the Trust and the specific health needs of stroke patients, staff began to enjoy being accredited with the success of the initiative such as winning the Trust achievement of the year team award. This study is different to other studies of innovation where change was reported as difficult to see happening with staff becoming cynical, unmotivated and suffering from change fatigue (Garside 2004; Iles & Sutherland 2001). Importantly, activities which helped to build the domain profile meant people felt they were part of something meaningful, and this contributed to the development both of the CoP and individual identities (Wenger et al. 2002).

7.4.4. Creating an identity

The domain provided space for people to come together for mutual engagement in stroke care, and in doing so acted as a catalyst for the creation of identity. Wenger (1998) states that in a CoP the definition of self, and thus identity is negotiated through what we participate in and that identity is key to having a voice. Having the stroke domain presented prospects of building a meaningful sense of shared identity that tied people beyond the specific exchanges encountered in the workplace (Wenger 1998; Wenger et al. 2002). Yet, with the exception of naming the SU (STEP), the establishment of a distinct identity was not something the team knowingly set out to do; how the concept of identity influenced the success of the unit was an unexpected finding. Whilst the notion of identity emerged from the data across the spread of staff, it was strongest for the nurses *(see 6.4. Recognising and valuing the central role of the nurse in stroke)* who had previously been generalists in the field of older people, but were now identified as specialist nurses in stroke. The significance of this finding on the process of stroke care is developed in a later section on *practice*. Moreover, staff that previously had been largely unknown in the Trust found they were now recognised as being from the SU *(see 6.5.6 Raising the profile of stroke and the stroke unit)* and consequently started to develop identities as stroke specialists. Indeed, one therapist expressed she no longer felt " a nobody" (T7) as others associated her with the stroke team, thereby indicating the collective identity of being part of the SU could help shape the identity of an individual. Other team members, such as the health care assistants, expressed they would never be recognised for their own individual endeavours but nevertheless enjoyed sharing the collective identity of the SU (FN Dec 2001).

Individual and group identities that emerged from being part of the specialist unit contributed to a sense of belonging to a specific community (Wenger 1998); staff felt they were an important facet of something that mattered to patients, managers and themselves. Nolan et al. (2001) describes this need for people to know their work is valued and worthwhile in the *Senses Framework*. This framework was originally developed for improving the value and status of work with older people. It defines six senses: significance; security; continuity; belonging; purpose and finally a sense of achievement. As both areas of clinical practice with older people and stroke have historically been seen as low in status, it is argued that extrapolating the concept of the Senses Framework to staff working in stroke is reasonable, as they too need to feel their work matters and their contribution to patient care is valued. Brown and Duguid (2001) further support this, claiming it is not enough to be who you are i.e. a stroke nurse or a stroke physician [22], but others have to recognise you as such. Analyses of findings, for example in *Learning from patients* (section 6.3.3) show the feeling of significance and indeed pride of staff in this study was reinforced in a variety of ways, which included receiving verbal positive patient and carer feedback, and receiving thank you cards along with small gifts of appreciation. Later, formal Trust recognition contributed to this growing sense of pride and identity when the CoP won the 2001 "Achievement of the Year Team Award". Furthermore, the reputation of the CoP grew beyond the Trust with the publication of articles in local newspapers, national journals, and

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[22] Brown & Duguid use a physicist or a carpenter as examples

following the success of the 2004 NSSA (CEEu 2004), coverage on national television news (British Broadcasting Corporation 14.03.05). The stroke team were also awarded the highly acclaimed Health Service Journal Award for 2005. Additionally, throughout this time, staff received a number of requests to speak about how success had been accomplished at local, regional and national stroke conferences, which in turn contributed to the sense of identity.

7.4.5. Focus to formal learning

The emergent theme *Developing practice based knowledge and skills in stroke* indicated learning was a key factor in the creation of this CoP, and whilst the transformational effect of learning will be explored later in the chapter, it is relevant to highlight at this stage the role played by the stroke domain in guiding formal learning of the community. This section looks at how the creation of the domain helped channel the direction of staff learning (Wenger 1998); in essence the designated stroke unit became a vehicle for learning and creation of new knowledge. As explained previously, participation and identity are interlinked and the ability to take part in practice is somewhat dependent upon having the pertinent information to draw upon. Analyses of findings in *Developing a common body of knowledge* (section 6.3.1) showed that the majority of staff at the start of the stroke service had limited, if any, experience in stroke. Wenger (1998) refers to learning as a characteristic of practice and states a CoP should hold a common body of knowledge that is shared amongst members and is the focal point of ongoing development. Initially the development of a shared body of knowledge was largely achieved through activities incorporated in the third action cycle (*Sharing skills and knowledge in stroke*), and included more traditional formal training such as the multi-professional seminar programme, large organised events like the Annual National Stroke Conference, plus in-house stroke study days led by more experienced members in the team. This growth of a common body of knowledge provided a key grounding for the ongoing and less formal ways of learning, working alongside each other in everyday practice as illustrated in a number of sub themes in *Developing practice based knowledge and skills in stroke.*

7.4.6. Maximising boundaries

Whilst the stroke domain provided a valuable forum for staff to learn from and with each other, the increasing complexity of patients invariably necessitates boundaries of different practice areas are crossed to share a wider body of knowledge and expertise (Hall & Weaver 2001). Wenger (1996) points out that these boundaries are not the same as the organisational boundaries created by processes and business units, but created by differences, for example in perspective or language; the tension or difficulties that can be faced in traversing these boundaries can be valuable learning experiences in themselves. Hence, it was important during the early stages and continuing development of the CoP that staff did not become inward looking and risk stagnation, but potential links outside the domain were sought as a basis for ongoing future learning. Indeed the literature on CoP recommends building external links for staff to attain new knowledge from exchanging information (Wenger et al. 2002). Furthermore, given the wide range of causative factors and symptoms related to stroke, best practice necessitates liaison with a variety of health and social care professionals. For example, intervention may be required from a vascular surgeon to deal with blocked arteries or a cardiologist to help tackle heart arrhythmias or a tissue viability nurse to deal with skin integrity problems.

Crossing boundaries was also integral to the development and future sustainability of the SU and thus required the innovation to be adopted by a wider group of people than the individuals of the immediate CoP. This was achieved through inviting new members or expert practitioners to participate in the activity of the unit, such as in the weekly STEP meetings or project groups, thus helping the environment remain open to outside perspectives (Endsley et al. 2005). In addition, the study's first action cycle saw a programme of widespread engagement with internal and external stakeholders of the Trust, which initially helped create a number of new links and future avenues for advancement of stroke.

Attendance at the Clinical Governance Development Programme (CGDP) in Stroke by members of the stroke team was an excellent medium for team building (*6.2.4 Managing enthusiasm for change; 6.5.5 Utilising external assistance)* whilst presenting plentiful opportunities for connecting with each other and the wider stroke community.

7.4.7. Summary of domain section

This section has shown how a defined space at the Trust provided the building block for creation of the stroke domain. Analyses of findings indicate the domain provided an initial base to bring staff together from across the Trust for the joint enterprise of improving stroke care. In turn, this common ground and shared vision helped overcome early difficulties in the team and gave a focus to learning and development of a common body of knowledge. Crucially, the defined domain and associated activities improved the profile and visibility of stroke within the organisation, which unexpectedly led to the creation of an identity for staff that in turn increased the meaning and value of their work. As such, the importance of dedicated space for a geographical SU has been demonstrated and should be taken into account when new services innovations for stroke and other health conditions requiring complex intervention, are being planned. The following section builds on this discussion of domain and explores how the second construct of a CoP, the community, was developed.

7.5. Community

The word *"community"* is not a synonym for the other well-known terms of group, team or network (Wenger 1998 p.74). A community is described as consisting of people who care about a specific domain and together, through the process of interaction during practice activity, they create the *"social fabric of learning"* (Wenger et al. 2002 p.28). This section considers factors that underpinned the creation of the community for mutual engagement in the practice of evidence-based stroke care.

7.5.1. Fostering relationships.

7.5.1.1. Creating social capital

The centralisation of inpatient stroke care to a specific domain played a vital role in bringing people together, and provided a base for development of the community. Wenger (1998) highlights individuals coming together in a community as fundamental, and describes it as both a form of action and belonging that influences not only what we do but also how we interpret ourselves; knowing, belonging and doing are not separable in a CoP. Analyses of study findings (i.e. *6.2.5 Creating opportunities for joint working and 6.2.6 Building an operational infrastructure for teamwork)* demonstrate that through participation in regular interactions like joint patient intervention activities and goal planning, people began to build relationships that led to a sense of community belonging and the eventual development of social capital (Whetten 2001; Gersick et al. 2000). Social capital is expressed as the wealth or benefit that exists within a network of individuals or social unit because of inherent relationships (Lesser 2000). Field (2003 p.1) sums the concept of social capital up in two words *"relationships matter"*, and states that through connecting with others and keeping the connections going over time, people achieve more through shared endeavour.

CoPs have been described as a vehicle for the generation of social capital by developing connections amongst practitioners and fostering relationships that help to build trust and mutual obligation (Lesser & Storck 2001). For instance, findings illustrate that whilst staff participation in CGDP for stroke helped implement the stroke evidence, it also provided opportunities for building social capital amongst individuals. In particular, a key turning point in the community dynamics occurred whilst attending the second in the series of five workshops. On one level what outwardly seemed to be a simple act of goodwill, two community members volunteering to share a hotel room to prevent a late arriving member having to stay in a different hotel, appeared on another level to act as a catalyst for behaviour change and subsequent promotion of social capital. This external expression of care towards this other member appeared linked to a perceptible alteration in the subsequent behaviour of this person, who previously had seemed largely indifferent to the SU, but who now interacted as part of the community (FN July 2001). Meetings were regularly attended, ascribed actions were carried out and emails acknowledged and replied to. Lesser and Storck (2001) describe this as *"mutual reciprocity"* defined as "*the willingness to return a favour with a favour*" (p.834), and it contributed to a constructive work environment and building of strong relationships. In turn, this positively helped energise and motivate people to continue working hard, with motivation being more likely to be maintained in a well functioning team (Eva 2002). This sense of togetherness is central to what has been cited as the most important aspect of teamwork, the responsibility of being in a team and considering the wider consequences of individual actions (Williams & Laungani 1999), therefore also significant in the formation of a community (Wenger 1998).

Additionally, the creation of social capital has been linked to the enhancement of performance within organisations in published literature in the management field. Whilst not an example of a healthcare setting, in a study of 88 non-profit making schools in the USA, Leana and Frits (2006) reported a positive association between social capital and student performance, with student performance showing improvement in the presence of social capital. Hence, the creation of social capital as part of the development of a CoP may have been an influential factor in the success of the SU illustrated in Chapter 5.

7.5.1.2. Building mutual support

Findings (e.g. *6.5.8 Managing opposition*) show the stroke team enjoyed a sense of belonging and appreciated that by supporting each other they could achieve more. By being a CoP, staff felt able to respond proactively to organisational issues, an important factor in the current healthcare milieu where change is commonplace. Stark (2001) refers to this as organisational adaptability, and remarks that the ability to respond proactively to environmental change is in part dependent upon the CoP. The strength this community gleaned from social capital and mutual support enabled them to tackle issues together that on an individual basis may have been more challenging. For instance, findings in the section 6.5.4 on *Widening participation in decision-making* showed how as a community of people they were able to address matters related to hierarchy, take confidence from each other and stand firm when facing organisational barriers in the Trust.

The weekly STEP meetings provided a forum for sharing ideas, and also space and time for staff to air any matters (e.g. *6.5.8 Managing opposition*), which otherwise may have adversely impacted upon practice. Knowing they had the mutual support of the community, staff could express individual perspectives but collectively plan how to address issues raised. This joint action also helped widen participation in decision-making by empowering junior staff to take part ownership of local problems. This is important in the current healthcare climate as shared responsibility has been identified with a positive outcome on the mental health of staff helping to protect the individual from the effects of organisational conflict (Borrill et al. 2000). For instance, as described in *Dealing with resistance* (section 6.5.7) following the opening of the unit, a small number of consultants continued not to refer patients with stroke to the specialist set up. This pocket of opposition to the new service presented a barrier to delivery of evidence based stroke care and confirms findings in the change literature where doctors are cited as most likely to offer powerful resistance (Gollop et al. 2004). Yet, the domain's operational infrastructure with horizontal links anchored by the weekly STEP meeting meant staff views had an avenue and could be taken vertically to the stroke oversight committee, and onto the highest level of management within the organisation. Hence, the non-referral of stroke patients was discussed at the stroke oversight committee, where senior managers were present and a resolution was negotiated. Thus, this illustration shows how community members within a CoP that has a system of linkages across boundaries can provide support for less experienced staff, thereby reducing the potential impact of stressful situations (Firth-Cozens 2001).

Whilst the SU was above all a positive development, it nevertheless did present some unexpected tests for staff. Findings indicate that through the formation of a CoP these were addressed as part of the mutual support within the community. For instance, staff expressed that whilst the work was rewarding, it was physically and emotionally demanding. However the mutual support that colleagues showed each other seemed to balance out more difficult times. The outward expression of social capital and mutual support is important, as a connection has been noted between high performing teams and the adoption of best practice; this is thought to be due to the collective commitment of the team protecting individuals from negative effect of change (Katzenbach & Smith 1992; Tyrer 2004); findings from this study may support this link.

7.5.1.3. Developing trust and respect

Social capital is linked to other behaviours like trust and respect, and was fostered in the CoP through mutually beneficial interactions between staff. Sharing experiences requires trust amongst community members and this takes time, but is worth cultivating as it is known that relationships built on trust are more likely to yield exchange of rich and valuable information (Adler & Kwon 2002). The establishment of trust within a group of individuals is important for participative safety, one of the key aspects of the four-factor theory of teamwork described by West (1994), which also comprises team vision, support for innovation and task orientation. Participative safety relates to the general feeling of trust and how people participate in the team; it is achieved when team members perceive they are able to contribute and challenge ideas without worry of being rebuked by others. The six senses framework also includes a sense of security and supports this notion (Nolan et al. 2001); factors such as mutual respect, effective team working, good communication and a flattened management system all contribute to the establishment of a sense of security. Indeed, the weekly STEP meeting presented one way for members to visibly show they had acted upon previously agreed actions, a key strand in the establishment of trust (Wenger et al. 2002). Findings also illustrate that, working together in joint intervention sessions with a problem solving approach, members learnt to consult each other and share knowledge, another important aspect of building trust and respect. Furthermore, relationships that foster interactions based on mutual trust and respect give people a sense of belonging and help bind members together within a social entity (Wenger 1998). The development of professional relationships and social ties like those developed in this CoP have been found to be important reasons why people stay with an organisation and can assist with the retention of valuable skilled staff (Cappelli 2000); an important consideration for NHS organisations trying to maintain a stable and effective workforce during times of change.

7.5.2. Democratic working and learning

7.5.2.1. Flatter team structure

Together, the combined factors of social capital, mutual support, trust and respect, plus the notion of identity described in the domain section, all contributed to a less hierarchical and more democratic way of working in the community. This is important, as having the ability to lower barriers and form relationships is a significant aspect of working and learning together (Race 2001), and differences in power and status amongst team members has been cited as a reason for poor teamwork and is thus an important issue to address (West & Poulton 1997). A key difference between CoPs and conventional teams lies in the structural format; CoPs are based on collegial relationships and not hierarchical reporting lines that are a common feature of conventional teams (Bate & Robert 2002). Findings in the previous chapter showed that the stroke community developed over time and functioned in a way that was different to many other teams in the hospital; it was described as an exemplar of team working by the chief executive of the Trust (Freestyle 2002a). Having the medical consultant on board as an equal team partner was even noted and commented upon during the visit by the Commission for Health Improvement (CHI) (FN Mar 2002) and quoted as an example of good practice in the Department of Health publication (2002a) "*What makes a good stroke service and how do we get there?*" In addition, the medical consultant made it clear that he did not lead but was part of the team, and that achievements, or indeed potential problems, belonged to everyone (FN Mar 2002). This was a key stance to take, as invariably others assume the medical consultant provides the leadership of multi-disciplinary health teams (Boaden & Leaviss 2000), which was the most common model in operation at the study site. Forthright statements such as this served to strengthen the reputation that the stroke community operated in a democratic manner.

As shown in the analyses of findings e.g. *6.2 Building an organisational climate to support improvement* the local reduction in the hierarchical structure which helped facilitate equality within the community could conversely be considered to be at odds with aspects of increasing levels of regulatory control in the NHS. However, it is important to pursue flattening of local networks of practitioners, as such configurations are more effective in generating and sharing knowledge, a necessary pre-requisite for evidence based healthcare (Bate 2000).

In this study, even the domain name "STEP" purposively reflected the vision of providing equity of care for all people with stroke, and represented how the community wished to achieve this goal through recognising that every member in their own way had a valuable contribution to make. Moreover, this PhD study was the first funded research project in the Trust not to be headed by a doctor and was indicative of democratic change occurring in an otherwise hierarchical teaching hospital. Later, the appointment of a therapist as Chair of the Stroke Committee (the strategic arm of the stroke service) was only the second time a non-medical professional had held a post at this level in the Trust, further indicating improving democratic working between clinicians and management, whilst providing a conduit for staff views to reach people with authority to make change happen.

Nevertheless, it is important not to confuse the flatter configuration of a CoP with homogeneity, as diversity is a much-valued aspect of a well functioning CoP (Wenger et al. 2002). It is recognised that people have and take on different roles, and that some staff through virtue of experience hold more knowledge than others and are viewed as being more expert (Lave & Wenger 1991). Furthermore it has been suggested that the most creative work can arise out of a combination of common ground and diversity (Leonard & Swap 1999), illustrated by the varied group of people that came together to form the multidisciplinary CoP in this case study. The next section looks in greater depth at the role of one of the community members of the CoP, the manager.

7.5.2.2. Role of management

The need for management skills, and therefore the role of the manager in securing change in practice, is often poorly recognised by those at a clinical level (Fitzgerald & Dopson 2006). This case study provides a good illustration of how the inclusion of management within the wider stroke community was valuable, with the emergent theme of *Building an organisational climate to support improvement* highlighting the key role of Trust managers in the success of the SU. Whilst this is an area still to be explored in the stroke literature, the manager as part of a CoP, albeit a peripheral member, is recognised in the CoP literature particularly for their help in aligning priorities and political issues (Wenger et al. 2002). The inclusion of managers into the wider stroke community served to further reduce the distance between management and clinicians, thus helping to lessen the hierarchal structure. For instance, if an important issue required discussion as part of the weekly STEP meeting, the DGM would come to the office in the SU to join in. This direct management involvement helped to improve the shared meaning of best care for stroke by providing links between levels within the organisation (Coghlan & Brannick 2005). In turn, this appeared to facilitate more meaningful delegation and empowered staff to try out changes, such as the implementation of the stroke guidelines within a supportive environment, and therefore increased the likelihood of change being adopted into practice (Spurgeon 1999; Bate & Robert 2002).

Having highlighted the potential role of the manager in a CoP it is important to reiterate that a CoP cannot be managed like a project, but can benefit from management helping a CoP to be self managing; for instance, offering assistance over financial matters (Bate & Robert 2002). The following section explores any impact of my position in the

Trust, which incorporated management duties alongside clinical responsibilities, on the outcomes of the study.

7.5.2.3. Linking levels

The dual managerial and clinical responsibilities of my post as Head of Physiotherapy, described in Chapter 1 (section 1.4.1), were a source of potential conflict but nevertheless provided opportunities to connect the community grass roots to the Trust senior management. In effect, this permitted me to work horizontally and vertically within the organisation, which could be likened to that of a *boundary spanner*, a term Rogers (1995) amongst others ascribes to people with significant ties across boundaries and organisations. Fitzgerald et al. (2002) describes the role of a *boundary spanning opinion leader* as someone who links the academic or expert world to the practitioner, helping to diffuse innovations and improve information flow. It is suggested that the successful outcomes in this study was in part due to my organisational position linking management and practitioners.

7.5.3. Summary of community section

This section has illustrated the importance of fostering relationships and mutual engagement through creating social capital, mutual support, trust and respect to develop a community that values diversity and equality. Findings also indicated the inclusion of management into the CoP, as a facilitator of activity and not a director, along with my role as a boundary spanner into the wider community, contributed to the flattening of the hierarchy and promoted more democratic ways of working. These study findings are important because learning is influenced by the way people behave towards each other, and the reshaping of social practices and relationships are key (Cobb & Bowers 1999; Lave & Wenger 1991). Moreover, this section has shown that more than just provision of the evidence is required when aiming to implement EBHC; attention needs to be paid to the quality of the underlying relationships of the people involved in the initiative. The next section builds on the preceding domain and community findings by exploring *practice*, which is the final element in a CoP.

7.6. Practice

Practice is the third inter-related characteristic of a CoP, and resides in the community through the mutual engagement of members in the activity of the domain. Therefore, practice can be described as being the result of collective learning and thus reflective of the social relations and shared endeavour of the community (Wenger 1998). Practice also includes the development and use of frameworks, tools, ideas, language and documents that together help guide and build upon the established base of core knowledge (Lave & Wenger 1991; Wenger et al. 2002). The discussion of the following findings are significant as they throw light on how the community members in this study developed practice, and their *knowing how* to deliver best care for patients with stroke as defined by the evidence and measured against national standards.

7.6.1. An infrastructure for practice

7.6.1.1. Structure for networking

Stroke practice is a complex system of in-patient care delivered by a MDT and therefore largely dependent upon how staff interact and communicate to produce that care (Langhorne 1995; Harrison 2001; Langhorne & Pollock 2002). Practice is seen as the embodiment of knowledge, inseparable from the community that uses, creates or transforms it (Allee 2000) and co-dependent on personal connections to provide the social fabric of a learning environment as a base to share knowledge (Bresman et al. 1999; Bate & Robert 2002). Findings suggest that linkages made through activities in the practice infrastructure *(6.2.6. Building an operational infrastructure to support teamwork*) were core to providing opportunities for mutual engagement and hence were beneficial to the ongoing development of the CoP. The framework brought fundamental actions like goal planning, MDT meetings and joint working into a defined structure and helped to channel staff together in practice activities. Suddick and De Souza (2006) suggest the challenge for rehabilitation staff is to cognitively view activities like goal planning and MDT meetings differently, and see them as part of the bigger picture to consolidate team action for the benefit of patient intervention. In addition, the practice infrastructure provided a blueprint to pace the domain's activity (Endsley et al. 2005); staff knew within the limits of an acute health service what to expect, where and when.

Reflecting on findings from this thesis, practice activities presented various ways to connect community members in pursuit of their common vision, the delivery of best stroke care for patients. For example, development of the MDT patient documentation, which was one of the early project groups, was highlighted in study findings (see *6.3.4.3 Multi-disciplinary team documentation)* as being more than a place for recording patient information and acknowledged for assisting advancement of practice based knowledge and skills in stroke. Staff reported reading other entries from team members stimulated them to ask questions about a particular intervention or observation, thereby creating an opportunity for learning from each other. The notes also provided a communication channel, for example staff returning from time off could access timely information on patient progress, thus helping the process of rehabilitation. Data indicated the note system similarly contributed to the growing sense of identity, as staff commented the joint notes were a reminder of being part of a shared stroke community.

Moreover, mutual engagement supported by the practice infrastructure and joint actions that ensued, in turn directly fed into the development of new patterns of practice. As clinicians learnt to work together, they gained an understanding of the "perceived relevance" of their work to others in the team and responded accordingly by adopting or discarding practices depending whether they were valued by peers (Rogoff 1995 p85). These interactions contributed to learning, not only in the early stages of professional development, but also when practitioners were experienced in their speciality areas and had moved beyond standard processes and thus used their CoP as a primary source of knowledge (Allee 2000). As *"knowledge runs on the rails laid by practice"* (Brown & Duguid 2001 p.204), the creation of practice opportunities becomes ever more important as a CoP matures, and the next section describes an integral part of the organisational infrastructure that supported this growth.

7.6.1.2. Creating space

Perhaps, the most significant of the all the infrastructure activities was the one-hour weekly STEP meeting, which became central to the ongoing development and success of the SU. Making space in a busy healthcare environment meant attention and reflection on experience was possible; a key aspect in the development of practice-based knowledge and learning (Coghlan & Brannick 2005). Failure to set aside time for regular meetings to encourage participation in structured decision making and managing change was among a number of factors found to negatively impact team working and communication (Field & West 1995). Furthermore, in the analysis of an empirical investigation into 30 inner city NHS community trust teams in the UK, it was noted that teams which actively dedicated time to team building and practice development were more forward thinking than teams that did not (Williams & Laungani 1999).

Findings described in the sub theme *Need to involve staff in the change process* (section 6.5.9) illustrated staff found being involved in the development of stroke practice through action research a rewarding and empowering process. Indeed, the action research approach has been identified as key to service development projects (Greenhalgh et al. 2004). The cyclical process of collecting, feeding back and reflecting on data provided a source of motivation, crucial within a turbulent organisational environment such as the NHS, where change fatigue is a symptom of years of quality improvement initiatives (Garside 2004). Another recent action research study (Elsey & Lathlean 2006) examined organisational change within the UK health service, and found the creation of space was an important factor in supporting staff to "internalise and shape processes of change" (p.171). The authors linked this to Lewin's seminal change theory of having to unfreeze behaviour prior to refreezing once the desired behaviour alteration had occurred (Lewin 1947). Thus space, which is at a premium in many health care settings, is essential for patient care and the ongoing development of staff and should be acknowledged and reflected in planning of work areas.

7.6.2. Shared language

In keeping with the literature on key characteristics of a CoP, findings in this thesis indicate the practice activity of stroke care was assisted by the development of a shared language (Wenger 1998; Wenger et al. 2002); being able to effectively communicate is essential within the inherent complexities of stroke care. This thesis supports the view that knowledge and learning are social in nature, travelling through written, verbal and non-verbal language. Therefore familiar words are essential to exchange both tacit knowledge, which is the experiential understanding and learning rooted in practice that resides within people, and explicit knowledge, which can be codified in documents and shared (Allee 2000). Study data showed that as people connected and acquired mutual interests, they developed a shared way of communicating to counter individual professional jargon, which could otherwise have presented a barrier to effective working. For example, the MDT education seminars were seen as useful in developing a shared vocabulary from a common knowledge base. Similarly practice activities like MDT documentation, protocols for prevention and treatment of identified stroke impairments like dysphagia, or the prevention of hemiplegic shoulder pain and the use of joint assessments, promoted a shared understanding of commonly used terms. Indeed as the CoP became established, community members were even able to short cut discussions as they had a clear understanding of what each other was saying *(6.3.2 Creating a positive work environment).* Again, this helped people work more effectively through fostering relationships, and as staff shared practice knowledge as part of one community this further bolstered the creation of social capital (Lesser & Storck 2001). The acquisition of knowledge through a common language enhanced the community's participation in practice and as identity is linked to *doing* (Wenger 1998; Wenger et al. 2002), it helped strengthen emergent identities that in turn positively reinforced the shared commitment of delivering best practice in stroke.

7.6.3. Social learning

A collective baseline of knowledge is a defining indicator of an established CoP, which the community continues to develop, share and maintain (Wenger 1998). Thesis findings indicated levels of stroke knowledge *(6.2.2 Different starting positions)* in unit staff were initially variable, and stroke specific knowledge was required as a foundation for building the CoP. This finding supports those from an earlier survey of nursing and therapy staff working with stroke patients in seven hospitals in a UK city, where 50% of staff reported to have not received specific training in stroke. OTs, PTs and SLTs reported receiving most specific training in stroke, whereas nurses and nursing assistants said they had received little or no training (Webb et al. 2002).

However, knowledge is not an object or commodity, but *"exists subjectively and inter-subjectively through people's interactions, through working together, sharing knowledge, respect and trust"* (Bate & Robert 2002 p.649). Earlier discussions of study findings showed development of concepts like social capital and trust were central to the formation of the stroke community, and helped promote mutual engagement between staff to develop knowledge in practice. In this way, Wenger et al. (2002) describes a CoP as a "living repository for knowledge" (p.9), where members through participation make knowledge an integral part of their actions. For example, activities carried out in the third action cycle, *Sharing skills and knowledge*, helped to address initial staff needs as a basis for the ongoing learning from the development of specialist practice. As illustrated in the STEP Team Growth Cycle (Fig. 6.2 in Chapter 6) as levels of self-belief grew across the team, staff gained confidence to interact with others, and by engaging in more activities they increased their capacity for experiential learning and in doing so it became a cycle of positive reinforcement. This finding is supported in the literature in a study by Benson and Dundis (2003) which explored the needs of healthcare workers in the context of a changing environment, and noted training was a crucial aspect for staff to feel confident and secure in what they were required to do and thus more able to meet the demands of the modern day workplace.

As such, this study can be seen to correspond to Maslow's Hierarchy of Needs[23], which describes human need as moving sequentially through five levels (Maslow 1954 cited in Benson & Dundis 2003). Findings illustrate that as a consequence of the developing stroke domain and community, the first three levels of basic biological needs, security, and social belonging were met. This in turn facilitated the acquisition of knowledge, and individuals were able to seek the next level in the hierarchy, status and self-esteem. This transformative process is explored next.

7.6.4. Becoming specialist – knowing how

Analyses of findings in the theme *Developing practice based knowledge and skills in stroke* showed the accumulation of stroke knowledge to be instrumental in developing a sense of practice expertise in staff.

However, knowledge is more than just knowing facts and theory, it also involves practical knowledge; it is what we know, what we do, and how we act (Gustavsson 2004.) Ryle, (1949 cited in Gustavsson 2004) made a distinction between propositional knowledge or *knowing that*, which is knowledge developed through formal routes of research and concerned with generalisability, and non-propositional knowledge or the *knowing how*, which is knowledge derived through experience in the field of practice and usually not concerned with transferability beyond the specific setting. Yet, if non-propositional knowledge is articulated by practitioners, then contested, debated and verified through the wider community, it has the potential to become propositional knowledge (Titchen & Ersser 2001). Furthermore, this sense of *knowing* about practice can be developed, refined and defined in CoPs; where the shared understanding about what matters at its centre provides an ideal setting (Abrandt Dahlgren et al. 2004). In addition, action research through the systematic and rigorous documentation of processes and outcomes provides an ideal approach to capture the depth of detail for practitioners to make a full explication of their practice and thus

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[23] Maslow's hierarchy of needs has five levels (1-5); the lower levels must be fulfilled before the next level can be achieved. 1= physiological/biological needs, 2=safety, 3= belonging/love, 4= status (esteem, respect), 5= actualisation (fulfilling one's potential).

contribute to the knowledge base of *knowing how* for developing clinical expertise (Richardson et al. 2004). Higgs and Jones (2000) describe this acquisition of clinical expertise as being like a journey, seeing it as a multi-dimensional continuum that includes a sound knowledge base, technical clinical skills, communication and interpersonal skills; this thesis shows how staff moved along this continuum from generalists to become specialists in stroke.

7.6.4.1. The specialist nurse: being the "glue"

As previously described, the creation of identity from having the stroke domain contributed to the growing sense of practice expertise for all staff. Yet, as documented in the theme *Recognising and valuing the central role of the nurse in stroke*, this was particularly evident for nurses. Findings in the sub section *Nurses growing in confidence* suggest that nurses could not play a full role in the community until they felt they had sufficient skills and knowledge and could therefore make a positive contribution to the rehabilitation process. Whilst this *"missing sense of expertise"* has not been explored in stroke nursing, its significance has been examined in the area of continuing care for older people (Anstey 2003), which arguably shares a label of low status work with stroke. Findings from Anstey's doctoral research concluded that for nurses to acquire a sense of expertise, they required appropriate education with regular opportunities to update knowledge and skills, but fundamentally they needed other people to see them as having professional expertise. Data from this action research study supports this notion, for example *Putting expertise into practice* (section 6.4.3) shows that staff were starting to receive acknowledgement in the Trust for their skills, which served to strengthen their developing identity as stroke specialists. As competency levels improved with the growth of expertise, it contributed to learning within the CoP, as colleagues needed to have confidence in each other's capability for the continuation of shared learning experiences (Scholtes 1998).

Nevertheless, the role of the nurse in stroke rehabilitation continues to be the subject of ongoing debate with common recurrent themes including issues related to complexity, lack of focus and even the apparent invisibility of the nurse (Perry et al. 2004). Spilsbury and Meyer (2001) claim the contribution of nursing is hard to measure as many outcome measures are related to physical results, which emphasis the doing of the role but fail to capture the wider holistic and complex nature of nursing. Furthermore, the role of the nurse in stroke is said to be less clear than that of the therapist, with nurses seeing the therapist as the expert and themselves as implementing therapy plans (O' Connor 1993). A study in 1996 by Waters and Luker reported that nursing staff felt rehabilitation was not inherent, but additional to their role and they had difficulty elucidating their contribution in this area. Yet, it has been noted that members of the MDT are often dependent on nursing colleagues for the integration of treatment plans into rehabilitation activities throughout the day, and that nurses are pivotal in communicating this progress (Long et al. 2002). Moreover, as nurses are the only professional group with 24 hours a day, seven days a week presence, they are potentially well positioned to be the hub for activity and provide *the glue* for other healthcare professionals, so it is crucial they feel able to take up this central role. Nonetheless, it has been noted that if a specific profession within a team lacks the necessary expertise, it can adversely affect their ability to participate in practice and others in the team have to fill the gaps (Anstey 2003), findings from this study support this hypothesis. For example, until the nurses felt more proficient in stroke care they were not confident enough to discuss stroke related issues with patients and carers and deferred questions to doctors or the stroke coordinator (see *Improved interactions with patients, carers and families*). However, as levels of stroke knowledge grew, the nurses became more confident and competent, leading to additional engagement with patients and thus increased opportunities for experiential learning (*e.g. 6.3.2 Creating a positive work environment*). Findings such as those in the subsection *6.4.4 Improved interaction with patients, families and carers* support the view that the nurses were developing expertise in stroke care.

As a consequence of the developing expertise, the nurses were more able to take up a central role within the community and in doing so further strengthened their professional identity as stroke specialist nurses. This thesis therefore makes the claim that learning had a transformational effect on this group of health professionals, particularly the nurses, where it had an effect that went beyond just improving the individual knowledge base. Wenger (1998 p.215) describes this experience as "*... learning transforms who we are and what we can do, it is an experience of identity...a process of becoming.*" The next section looks at how through this process of transformation knowledge became embedded in the practice of the community.

7.6.5. Bringing knowledge to life

7.6.5.1. Practice as reification

As discussed in Chapter 2, the adoption of evidence into practice is not a linear process, often requiring effective strategies to improve the uptake into the clinical setting. For example, when the SU first opened, staff were encouraged to implement the National Clinical Guidelines for Stroke (NCGS) (ISWP 2000), but found translation into a complex clinical situation difficult and therefore compliance was initially low. This theory practice gap was addressed in the action cycles carried out during the innovation phase where shared resources such as joint assessment tools, MDT documentation and guidance documents for common problems following stroke, i.e. the management of incontinence and the prevention of hemiplegic shoulder pain were created. As a result, this practical incorporation of the stroke evidence gave direct relevance to patient care and was integrated into practice; no longer being viewed as disconnected information in a national guidance document. Wenger (1998 p.57) calls this process "*reification*", which is where perceived abstract information or theory like the NCGS (ISWP 2000, 2004) can come to life through community members participating in practice. In effect this meant that behaviours recommended in the guidelines were starting to be embedded into everyday practice. For example, as findings in *Changing role of the nurse in the MDT: generalist to specialist* (section 6.4.1) showed, the application of the evidence related to the use of anti-embolic stockings and positioning were integral to clinical intervention.

As such, these findings support the argument made in this thesis that optimum adoption of evidence into practice is best achieved as part of the dual process of reification and participation within a multi-disciplinary CoP and the provision of guidelines alone is insufficient. Notable examples of knowledge codification strategies adopted by the NHS include NSFs and NICE guidelines but, as an ethnographic study by Gabbay and le May (2004) found, clinicians rarely accessed and used evidence in this format. Instead knowledge transfer was mediated through a series of informal interactions in groups of people, such as the CoP in this thesis. They concluded that professionals might attempt to briefly read some formal documented evidence but they mostly relied on "mindlines", which they describe as "*collectively reinforced, internalised, tacit guidelines*" (p.1015). These mindlines were reinforced through interactions from trusted sources like fellow professionals and opinion leaders, and as such represent a form of socially constructed knowledge in practice; this contrasts with the linear rational model of EBHC (Bury 1998). These findings are supported by the work of Thompson et al. (2001) who recommended that the clinical specialist nurse network should be utilised as an avenue for disseminating research evidence amongst nurses as they were seen as an accessible and trustworthy source of up to date information. Hence, this further supports the construct that social interaction and collaboration, together with individual cognitive processes, are important for the creation and transfer of knowledge (Sulivan Palincsar 1998), both of which can be facilitated through mutual engagement and informal learning processes that are the hallmark of a well established CoP.

7.6.5.2. Interacting with patients and family

Study outcomes demonstrated that through the creation of a CoP, the implementation of EBHC became embedded in everyday practice in the unit. For example, as specialist knowledge and skills in stroke improved within the community, and staff understood the varied manifestations of stroke such as communication difficulties or cognitive impairments, findings showed a concomitant increase in staff interaction and involvement with patients and carers; this is a recommended key component of service provision following stroke (ISWP 2004). Initially the nurses, with their non-stroke background had understandably found it difficult to discuss the prognosis and plans for rehabilitation with patients and carers. Research demonstrates the difficult process of giving information effectively and how failure to provide sufficient information is consequently one of the most common causes of patient complaints (ISWP 2004). Provision of information after stroke is important to help patients and families adjust to the effects of stroke, including practical and emotional needs (Forster et al. 2004). Results from a Cochrane review (Forster et al. 2004) suggested that information provided in an educational context was more effective than simply providing patients with a booklet or leaflet. National guidelines state that patients and carers should be offered education programmes to assist in adapting to their new role (ISWP 2004). In this action research study, patient and carer support and education sessions became an integral part of the infrastructure of best practice in stroke care.

7.6.6. Summary of practice section

This section builds on the earlier discussions related to domain and community and illustrates how practice, the final element of a CoP, was successfully developed at the Trust. Key findings include the development of a practice infrastructure and a common language, both of which served to strengthen the concept of learning as a social process. As such, these findings are likely to be of interest for further research to those involved in education and professional development. Learning as an integral part of transformation was examined from the specific perspective of becoming a nurse with expertise in stroke, which reinforced their growing specialist identity. In turn, this facilitated the nurse to take up a pivotal role within the practice of the community. As practice is in essence the enactment of stroke knowledge, the evidence base for stroke care at the Trust became embedded in practice through the mutual engagement of community members in pursuit of the domain.

Before the discussion of study findings is drawn together in the final chapter summary and the empirical and theoretical contributions highlighted, the role of action research as a methodology to promote the creation of a CoP for the delivery of EBHC is considered.

7.7. Action research, CoP and EBHC

This study did not knowingly set out to create a CoP. However, the action research elements of systematic data collection, rigorous analysis and locating the findings within a body of knowledge enabled the learning from setting up this new SU to be elucidated in a way that may be useful to others planning similar work. The case for generalisation of findings from this case study has already been made (see Chapter 4 section 4.6.1.3 and Chapter 7 section 7.1). Furthermore, study findings demonstrate that two of the key characteristics of action research, partnership working and democratic impulse, are congruent with the participatory ethos required to develop a CoP. It is therefore suggested that action research, in particular the cyclical process of feeding back and reflecting on findings, the democratic impulse and principle of participatory partnerships with less emphasis on research and evaluation (the simultaneous contribution to social change and social science), can help to create a CoP for implementing EBHC. In highlighting these two aspects of action research in this way, the similarity with practice development is noted.

Practice development is a term used to describe particular approaches to supporting change in healthcare, albeit predominantly nursing (McCormack et al. 2006). Indeed, it involves many of the same processes as action research, and much of the language used to describe practice development is borrowed from action research literature (Meyer 2006a). During the last decade, the Royal College of Nursing Institute (RCNI) Practice Development Unit, recognising the inherent complexity of successful implementation of evidence into practice, has developed a multi-dimensional framework *Promoting Action on Research Implementation in Health Services* (PARIHS) to assist the translation of evidence into practice (Kitson et al. 1998; Rycroft-Malone et al. 2002; Rycroft-Malone et al. 2004; McCormack et al. 2006). This conceptual framework combines three core elements of evidence, context and facilitation along with *"low to high"* conditions for each construct to provide guidance to staff assessing what needs to be done to implement research evidence into practice (Kitson et al. 1998 p.151). The framework indicates that implementation would be most successful in cases where evidence is high i.e. derived from randomised controlled trials (RCTs) or systematic reviews, the context is receptive to change and there is appropriate facilitation to enable that change (Harvey et al. 2002). However, skilled facilitation i.e. helping and enabling rather than telling or persuading, can modify and eventually overcome the effects of a low scoring context (Harvey et al. 2002). For example, if conditions at the start of this action research had been mapped to the PARIHS framework, a position of high evidence, low context and middle to high facilitation would have been revealed, demonstrating findings of this study congruent with the PARIHS framework. However, PARIHS does not explicitly take into account wider organisational, managerial, and political influences that may impact upon local situations; an acknowledged limitation of the framework (Kitson et al. 1998). Findings in this thesis demonstrate factors such as these were important at the project site in the implementation of the SU and had to be managed within the action research process. Moreover, as action research has been specifically recommended, along with realistic evaluation, as an approach to be used in future research of innovation in health service delivery and organisation (Greenhalgh et al. 2004), it is important that broader contextual features such as these are taken into account. It is worth noting at this point that a decade earlier Wenger (1996) outlined the potential benefits of a CoP to healthcare, and cautioned managers not to destroy established networks, and thus the learning embodied within them, when implementing strategic plans.

Findings from this thesis are timely, as CoPs have recently been identified in the EBHC literature as having a central role within the local interpretation and implementation of evidence (Fitzgerald et al. 2006). As such it has been recommended that the social perspective of EBHC should be given wider recognition, as it is thought to be through the development of these social processes that global evidence is converted, accepted and used as local knowledge (Fitzgerald et al.

2006). The need for more research into how to facilitate cross - professional working in practice has also been highlighted by Ferlie & Dopson (2006). Therefore this case study not only provides the first empirical data to support the link between CoPs and EBHC, it also helps address the gap related to the facilitation of multiprofessional working. However, before critical commentary can be made on the strength of findings from this thesis and whether CoPs can successfully be established elsewhere within stroke care and for people with other health conditions, further empirical testing is required. Nonetheless, reflection suggests particular factors identified in this study may function as indices of anticipated challenge to implementation of the framework in other healthcare contexts. For instance development of this CoP was underpinned by unequivocal research (SUTC 1997, 2001) that clearly demonstrated better outcomes for patients treated in good SUs and thus helped provide a strong vision for service improvement. The *insider* action research process ensured the CoP was based on issues that arose *bottom up* from practice and helped to create community ownership. The external drivers of the NSF for OP (DH 2001) and National Sentinel Stroke Audit findings (CEEu 1998, 1999, 2002, 2004) gave impetus to *top down* management support, and my position as a *boundary spanner* (Rogers 1995) within the organisation provided an additional conduit between clinicians and managers. Moreover, the academic rigour and processes attendant on higher degree registration and supervision supplied additional support structures. Without such clear operational frameworks it is not yet known whether the social theory of learning which underpins CoPs would lead to direct service improvement to meet patient needs in other organisational environments and indeed whether or not the context is conducive to the implementation of a CoP.

7.8. Chapter summary

A number of important contributions have emerged from the theorised discussion of this in-depth study that looked inside the *black box* of stroke care; because although it is established that SUs work, what makes some SUs more successful than others has remained elusive.

This study illustrates positive outcomes on two levels, firstly it shows marked improvement in the quality of stroke care for patients as demonstrated by results in the NSSA (CEEu 2002, 2004) and secondly through the examination and elucidation of processes it provides knowledge about what was involved in setting up a successful SU. In keeping with the complexity of implementation, it was not possible to highlight one single aspect that made a difference as four key inter-related factors came from the action research cycles which contributed to the local success were identified. They were the importance of: a) building a multidisciplinary stroke team; b) developing practice based specialist knowledge and skills in stroke; c) recognising and valuing the central role of the nurse in stroke care and d) establishing an organisational climate for supporting improvement. Together, these findings combined to illustrate that through the creation of a CoP, where learning is embedded within relationships and social participation, along with the subsequent development of a specialist identity, and directed action to raise the profile of stroke, people acquired a sense of meaningful belonging, with everyone having a part to play in the community. As such, learning can be seen as a process of transformation, and this was most striking for the nurses who emerged as being central to the SU activity; in essence they had become *the glue*.

Furthermore, it has been shown that the action research approach taken to monitor and evaluate this service innovation fits with the ethos of creating a CoP, and together these factors provide an environment where the learning from practice can be maximised and therefore contributes not only to the *knowing that* but the *knowing how* of best stroke care. Thus, findings support the central argument put forward in this thesis, that excellence in stroke care was created through the development of a CoP, which subsequently achieved improvements in service delivery for users of the NHS, and met policy and practice standards. In addition, support is given to the view that a broader methodological approach to stroke research is required to further the understanding about how and why this intervention works. Therefore process orientated studies which are action focused and take into account wider socio-economic and contextual factors are to be encouraged.

The chapter concludes by summarising the empirical and theoretical contributions of this study to the body of knowledge and highlights where gaps have been addressed, support provided and additions made to existing theory. These insights are likely to be of broader interest to those working and researching in the field of health and social care concerned with practice quality development and implementing EBHC, in addition to practitioners, educationalists, researchers and policy makers with responsibility for advancing stroke services in the UK.

7.8.1. Empirical contributions

Whilst this study directly builds on the existing research literature in stroke, insights generated by this in-depth case study contribute to knowledge about implementation of evidence-based stroke care and provides the first empirical account of processes involved in setting up and developing a new and ultimately very successful inpatient SU within a clinical setting. Even so, findings related to the widespread involvement of organisational engagement, have as yet not been explored in the stroke literature. Furthermore, findings related to the central role of the nurse in stroke care add empirical support to the growing recognition of their specialist contribution throughout the acute and rehabilitation stages of inpatient stroke care. Thus this thesis adds to the practice based knowledge, the *knowing how*, of the implementation and delivery of best care in stroke, and addresses a gap in the literature by presenting new knowledge about one way to implement best practice in stroke care. In addition findings from this thesis are significant as they provide the first empirical account of how a multidisciplinary CoP was created for the delivery of EBHC. This thesis supports the recent recognition that CoPs present one way to implement EBHC and provides empirical data not only of a CoP having been established in practice but also evidence of a successful EBHC initiative, i.e. the implementation of the stroke evidence into practice. Whilst it is argued that success was achieved in this thesis through the creation of a CoP this does not mean it will be achieved elsewhere, and further research is required to see if results can be replicated in different settings and to conditions other than stroke. Nonetheless, this case study provides an exemplar for organisations or work groups interested in EBHC who may wish to consider some of the ways of working shown in this thesis.

This thesis likewise supports the recommendation that action research provides a good way to achieve improvement in the NHS (Greenhalgh et al. 2004). In particular, findings suggest the democratic and participatory ways of action research are congruent with the development of a CoP, a concept recently identified as one way to modify generalised knowledge of EBHC into knowledge that can more easily be used at a local level. As such, it is proposed that action research and CoPs should be carefully considered by those who design and teach EBHC programmes.

7.8.2. Theoretical contributions

Whilst this action research study did not start out with the intention of creating a CoP, this chapter has demonstrated strong theoretical links between the findings and the creation of a CoP, and thus suggests this provides an explanatory framework to understand why success was achieved in this case study. As such, this thesis provides an original contribution to the body of knowledge. What is more, findings also add to the theoretical understanding of how to develop a multidisciplinary CoP and overcome reported issues related to the transfer of knowledge between different professional groups that hinder adoption of innovation into practice. Findings suggest that emphasis on the formal acquisition of knowledge in EBHC is insufficient, and that attention should also be paid to the development of relationships to help traverse professional boundaries of jurisdiction and thus create more opportunities for sharing knowledge. Furthermore, findings challenge the view that strong professional roles and identities make it less likely that knowledge will flow across boundaries. Indeed, this study demonstrates the creation of a specialist identity, most notably with the nurses, was integral to the formation of a multidisciplinary CoP to achieve the goal of delivering excellence in stroke care. This supports Wenger's (1998) claim that learning changes our ability to participate in the world. As insights generated by this study are also the first to show how a multidisciplinary CoP was successfully developed they make an original contribution to the body of knowledge.

Issues for future consideration

Whilst it is said that strong recommendations cannot be made from case study data, nonetheless some important issues have been raised by this study which are worthy of future consideration. The issues raised are related to future practice and research and likely to be of specific interest to health and social care practitioners, researchers, educationalists, managers and policy makers in the field of stroke and more generally to those concerned with the implementation of evidence based health care (EBHC).

Future Practice

1. The specialist stroke nurse is essential in the rehabilitation of people with stroke. As such the role of the stroke nurse needs to be acknowledged, supported and articulated more strongly within the multidisciplinary team. This has implications for both undergraduate and postgraduate training of all healthcare professionals and relevant to educationalists and practitioners responsible for developing stroke practice.

2. Greater recognition should be given to the need to build a team as a prerequisite for team working and the provision of common space for people to gather to create opportunities for ongoing shared learning. This includes the allocation of regular protected time for staff to plan and reflect on practice based issues.

3. If the stroke community wants to implement evidence-based practice, combined attention to the creation of CoPs and the use of action research is one way to achieve this aim. As such, how to create CoPs using the action research approach should be considered by those who design and teach EBHC programmes.

4. Whilst it is not always possible to evaluate practice and service initiatives, it is suggested that at a minimum, consideration should be given to how the participatory and democratic elements of action research can be encouraged. This has implications for those involved in teaching and delivering EBHC and service evaluation and development in Trusts.

5. This study has shown that together CoP and action research facilitated learning and the *knowing how* from practice. Given the increased levels of accountability in the NHS, those involved in quality practice developments and continuing professional development should give this issue considered thought.

6. There is a need for Trust managers to recognise and value knowledge developed in practice. This knowledge is held within individuals and multidisciplinary teams and consideration should be afforded to how this knowledge is safeguarded in service reorganisations.

7. More attention should be paid to the role of the manager as a facilitator using more democratic ways of working and less emphasis on project management. This is relevant to those responsible for the development and delivery of management training initiatives.

8. More emphasis should be placed on how CoPs can foster relationships to support health and social care staff. Given the continuing drive to modernise the NHS and subsequent levels of change people are encountering, CoPs may be one way of providing support to staff. Human resource departments, managers and practitioners should consider this issue.

Future Research

1. Methodological pluralism is required for evaluation of complex interventions like stroke care. Consideration to increased use of practice based, action orientated approaches that take into account processes and the wider socio-economic and contextual factors, such as action research should be given. Undergraduate curriculum and continuing professional development programmes, including postgraduate studies, should reflect the need for this plurality in research methodology.

2. This study has indicated the positive nature of fostering a research culture within clinical practice and the collaboration with academic institutions to maximise learning from practice based research. Consideration should be given to creating more formal links with Higher Education Institutes.

3. Positive change achieved in this thesis suggests that Trusts may wish to consider providing secondment opportunities to explore the *insider action researcher* role in service innovation. Due to the potential complexity involved in these roles, consideration to the prior experience of the individual should be given.

4. Further research is required to explore how knowledge can be shared across members of a multidisciplinary CoP.

5. Increased funding opportunities to encourage more healthcare professionals to undertake practice based research should be considered. This would support the establishment of consultant roles for allied health professionals and nurses in the NHS.

6. This research has highlighted the importance of a group rather than an individual champion in achievement of change. Further investigation into key processes involved and contextual influences that shape outcome is required. Action research would provide a suitable way to explore this issue.

7. Research is needed on the impact of a service profile and professional identity on the delivery of clinical care.

8. There is a need for further research to explore whether results achieved in this case study through the use of action research to create a CoP can be replicated in different settings and with conditions other than stroke.

Appendix 1

Table A1.1:
National and local staffing levels per ten stroke beds in 2004. Arrows indicate staffing levels on ASU or RSU compared to national median.

Team member	Acute Stroke Unit	National Median (IQR)	Rehabilitation Stroke Unit	National Median (IQR)
Qualified nurses	1.9 ↑	1.7 (1.4 - 2.5)	1.9 ↑	1.4 (1.0 -1.7)
Health care assistants	0.8 ↓	1.9 (1.7 - 2.7)	1.5 ↓	1.7 (1.5 - 2.2)
Clinical Psychology	0.0 –	0 (0.00)	0.13 ↑	0 (0 - 0.1)
Dietetics	0.17 ↓	0.2 (0.1 - 0.3)	0.06 ↓	0.1 (0.0 - 0.3)
Occupational Therapy	0.7 –	0.7 (0.3 - 1.3)	1.1 –	1.1 (0.8 -1.6)
Physiotherapy	1 ↓	1.3 (0.6 -1.7)	1.1 ↓	1.3 (1.0 -1.8)
Speech & Language Therapy	0.42 ↓	1.3 (0.6 - 1.7)	0.31 ↓	0.4 (0.2 - 0.6)
Junior Doctor	11.7 ↑	7.8 (3.9 -12.5)	6.3 ↑	3.3 (1.9 - 5.8)

Grade of senior doctor	National	ASU & RSU combined
Consultant	3 (2-5)	8 ↑
Staff grade	0 (0-2)	0 –
Clinical assistant	0 (0-0)	9 ↑

Table A1.2:
Number of national and local formal sessions dedicated by senior doctors to management of stroke (including outpatient clinics) in 2004

Appendix 2: Literature review search strategies

Key words used:
cerebrovascular accident; stroke; stroke unit; intervention; process; health facility; health planning; rehabilitation; rehabilitation centres; delivery of health care; reviews; RCT; randomised or randomized; guidelines; patient care team; teamwork.

1	Stroke NEAR unit OR stroke NEAR intervention
2	Health ADJ facility ADJ planning
3	Health-facility-planning# OR delivery-of- Health-care-integrated# OR service- delivery-organisation OR service-delivery-organization
4	Rehabilitation ADJ centres
5	Rehabilitation-centres#
6	Hospital ADJ unit
7	Hospital-units# OR patient-care-team# OR teamwork ADJ stroke
8	7 OR 6 OR 5 OR 3 OR 2
9	1 AND 8

1	Cerebrovascular Accident/
2	Stroke.af.
3	1 or 2
4	(Stroke ADJ unit). Ti, ab.
5	Treatment OR conventional NEAR care OR treatment.ti, ab.
6	4 or 5
7	3 AND 6
8	(Process ADJ care). Ti,ab.
	7 AND 8
9	(Review or rct or guideline$ or randomised or randomized or meta-anal$ or meta anal$ or metaanal$).ti,ab,pt.
10	7 AND 9

Appendix 3: Literature review tables

Table A3.1:
Studies in Stroke Unit Trialists' Collaboration Systematic Review (2001).

Author/ year/ country	Study design/ methods/ participants	Intervention & outcome measures	Comments
Feldman et al. 1962 USA	RCT N= 82 Patients suitable for rehabilitation up to 2 months post stroke.	MARU (n=42) v GMW (n=40) Functional status and place of residence.	• RCT allocation possibly insecure. • No deaths reported. • Specialist nurse input on GMW. *British Library-unable to obtain original.*
Gordon & Kohn 1966 USA	RCT N= 91 Patients suitable for rehabilitation up to 1 year post stroke.	MARU (n=56) v GMW (n=35) Functional status and place of residence.	• RCT allocation possibly insecure. 3:2 allocation to intervention: control. • No deaths reported. • Poor definition of services. Intervention and control not clearly defined. • Some specialist nurse input on GMW. *British Library-unable to obtain original.*
Peacock et al. 1972 USA	RCT N=52 Patients within 2 weeks of stroke suitable for rehabilitation.	MARU (n=29) v GMW (n=23) Death and dependency.	• RCT allocation possibly insecure. • Intervention not clearly defined. • Timings of outcomes not clear. • 3 control patients lost to follow up. *British Library-unable to obtain original.*
Garraway et al. 1980 UK	RCT N=307 Patients within 7 days of stroke. Strokes of moderate severity only.	SU (n=155) v GMW (n=152) Death, dependency, place of residence, length of stay.	• RCT allocation secure • 6 intervention and 10 control patients lost to follow up. • Amount of PT, OT, SLT and provision of aids described

Author/ year/ country	Study design/ methods/ participants	Intervention & outcome measures	Comments
von Arbin et al. 1980 Sweden	QUASI RCT N = 494 Patients within 7 days of stroke, plus some patients with TIA.	SU (n=269) v GMW (n=225) Death, place of residence, length of stay, treatment and investigations carried out.	• RCT allocation not adequately concealed. Treatment allocated according to bed availability. • 2 control patients lost to follow up. • No long term follow up. • Weekly stroke education for staff. • Close co-operation between staff developed. • Early mobilisation encouraged.
Hamrin 1982 Sweden	QUASI RCT N= 112 Patients admitted to GMWs within 3 days of stroke.	MARU (n=60) v GMW (n=52) Death, disability score, place of residence, length of stay.	• RCT allocation not adequately concealed. Treatment allocation according to admission rota. • Team approach. • Details of activation programmes in nursing given. • Stroke education for staff.
Stevens et al. 1984 UK	RCT N = 233 Patients up to 9 weeks after stroke, suitable for rehabilitation.	RSW (n=116) v ECW (n=28) v GMW (n=89) Death, Rankin score, place of residence, length of stay.	• RCT allocation possibly insecure. • Minor randomisation imbalance, slightly more patients with poor prognosis in control group. • 73.4% of patients screened failed to meet inclusion criteria. • 2 control patients lost to follow up. • Treatment was "a co-operative endeavour" (p.66). • Daily conference between charge nurse and therapists to review patient needs. • Social worker was an integral part of the MDT.

Author/ year/ country	**Study design/ methods/ participants**	**Intervention & outcome measures**	**Comments**
Wood-Dauphinee et al. 1984 Canada	RCT N= 130 Unselected patients within 7 days of stroke.	MST (n=65) v GMW (n=65) Death, Barthel index, place of residence, length of stay.	• RCT allocation secure. • 61% patients failed to meet inclusion criteria. • Study ended 6 weeks post stroke. • 1 intervention and 3 control patients lost to follow up • Comprehensive team care delivered by newly appointed Stroke co-ordinator worked with 12 nurses, 2 physicians, 2 PTs, 1 OT, 1 SLT, 1 SW to provide individualised stroke care throughout hospital. • Defined objective for patient care. • Primary nursing model. • Weekly team meetings to discuss goals and treatment plans. • Stroke education for staff. • Families encouraged to participate in treatment.
Sivenius et al. 1985 Finland	RCT N = 95 Patients 1 week post stroke suitable for intensive rehabilitation.	SU (n=50) v GMW (n=45) Death, disability score, place of residence, length of stay.	• RCT allocation secure. • 75% patients failed to meet the inclusion criteria. • Compared intensity of physiotherapy between intensive treatment group and normal treatment group. • Intensified physiotherapy seemed to improve outcome.
Strand et al. 1985 Sweden	QUASI RCT N= 293 Unselected patients within 7 days of stroke.	SU (n=110) v GMW (n=183) Death, function, place of residence, length of stay.	• RCT allocation not adequately concealed. Treatment allocation according to bed availability. • Team approach with regular meetings. • Programme of stroke education for staff • Active participation of family encouraged • Education of patient and family members

Author/ year/ country	Study design/ methods/ participants	Intervention & outcome measures	Comments
Indredavik et al. 1991 Norway	RCT N= 220 Patients within 7 days of stroke.	SU (n=110) v GMW (n=110) Death, Barthel index place of residence, length of stay.	• RCT allocation secure. • Excluded deeply unconscious patients and those previously resident in a nursing home. • SU care for maximum of 6 weeks. • Team approach, staff trained in rehabilitation of stroke patients. • Provision of information emphasised (designated nurse allocated to this). • Highlights possible bias in study from lack of blinding. *Used descriptive data to inform characteristics of SU.*
Kalra et al. 1993 UK	RCT N= 252 Patients 2 weeks post stroke suitable for rehabilitation.	SU (n=126) v GMW (n=126) Death, Barthel index, place of residence, length of stay.	• RCT allocation secure. • Variable duration of follow up. • MDT approach. • Weekly assessments. • MDT meetings to monitor goals. and discharge plans. • Patients received more physiotherapy on GMW but therapy on SU had greater emphasis on individual needs. *Used descriptive data to inform characteristics of SU.*
Aitken et al. 1993 UK	RCT N = 66 Patients within 3 days of stroke suitable for rehabilitation.	MARU (n=33) v GMW n=33) Death, Barthel index, Rankin score, place of residence, length of stay.	• RCT allocation secure. • 76% of patients screened (398) failed to meet inclusion criteria. *Reported only as a conference proceeding.*

Author/ year/ country	**Study design/ methods/ participants**	**Intervention & outcome measures**	**Comments**
Ilmavirta et al. 1994 Finland	RCT N= 211 Patients within 7 days of stroke.	SU (n=98) v MARU (n=113) Death, function, place of residence, length of stay.	• RCT allocation secure • Short duration, only 1 week in SU before transfer to conventional setting. *Unable to obtain dissertation. Tried contacting University in Finland direct & via British Library.*
Hankey et al. 1995 Australia	RCT N = 58 Patients within 7 days of stroke	SU (n=28) v GMW (n=30) Death, Barthel index, place of residence, length of stay.	• *RCT allocation possibly insecure.* • *Most patients failed to meet inclusion criteria.* • *Team approach, ongoing MDT assessments.* • *Twice weekly consultant ward rounds.* • *Weekly team meetings to assess achievement of goals.* • *Goals set by staff and patients.* • *Involvement and education of patient and family.* *Used descriptive data to inform characteristics of stroke care*
Kalra & Eade 1995 UK	RCT N= 71 Patients with poor prognosis at 2 weeks post stroke	SU (n=36) v GMW (n=37) Death, Barthel index, place of residence, length of hospital stay.	• RCT allocation secure • 2 control patients lost to follow up • MDT approach with well establishes philosophy of rehabilitation. • Short and long term goals agreed in consultation with patient and relatives. • Individualised rehabilitation programme reviewed daily and weekly, communicated to patient and family by relevant MDT member • Emphasis on identifying problems affecting functional abilities. • Nurses trained to reinforce therapy on the ward under guidance of therapists. • Relatives encouraged to participate in nursing and therapy sessions.

Author/ year/ country	Study design/ methods/ participants	Intervention & outcome measures	Comments
Kaste et al. 1995 Finland	RCT N= 243 Unselected patients (over 65 years) within 7 days of stroke.	MARU (n=121) v GMW (n=122) Death, Barthel index, Rankin score, length of stay.	• RCT allocation secure. • MDT assessment and monitoring of potential complications. • Systematic programme to enhance recovery instigated. • Patient and family included in rehabilitation. • Weekly team meetings to tailor rehabilitation programme. • Early home visits.
Laursen et al. 1995 Denmark	RCT N = 65 Patients within 8days of stroke	SU (n=31) v GMW (n=34) Death, Rankin score, place of residence, length of stay.	• RCT allocation secure. • SU discharged fewer to NH **Paper not available in English**
Juby et al. 1996 UK	RCT N=315 Patients within 2 weeks of stroke, suitable for rehabilitation	SU (n=176) v GMW /ECW (n=139) Death, Barthel index, place of residence, Nottingham Health Profile, length of stay.	• RCT allocation secure with 5:4 allocation of intervention: control. • 82% patients screened failed to meet inclusion criteria. • 3 intervention and 4 control patients lost to follow up. • Team approach, MDT assessment. • Ward based rehabilitation combined with careful discharge procedures. • Close involvement of carers in rehabilitation. • Patient and relatives • encouraged to join support groups. *Used descriptive data to inform characteristics of SU.*

Author/ year/ country	**Study design/ methods/ participants**	**Intervention & outcome measures**	**Comments**
Ronning & Guldvog 1998 Norway	QUASI RCT N = 550 Patients over 60 years within 24 hours of stroke.	SU (n=271) v GMW (n=279) Death, dependency, place of residence, length of stay.	• RCT allocation not adequately concealed. Allocated by date of birth (day of the month). • SU care for up to 4 weeks. • Team approach, weekly meetings. • Nurses had specialist training to detect and avoid complications. • Special forms constructed to detect early changes. • Physiotherapists used the Bobath technique (movement re-education) and instructed staff to follow 24-hour approach. • Team met weekly with relatives.
Fagerberg et al. 2000 Sweden	RCT N = 249 Patients over 70 years within 7 days of stroke.	SU (n=166) v GMW (83) Death, Barthel index, place of residence, satisfaction, length of stay.	• RCT allocation possibly insecure with 2:1 allocation of intervention: control. • Team approach, regular meetings. • Stroke education programme for staff. • Family participation encouraged. • Provision of information emphasised.

Author/ year/ country	Study design/ methods/ participants	Intervention & outcome measures	Comments
Kalra et al. 2000 UK	RCT N=457 Acute stroke patients, intermediate severity.	SU (n=152) v mobile ST on GMW (n=152) v domiciliary management (n=153) Death, Barthel index, place of residence, resource use, length of stay.	• RCT allocation secure. • Domiciliary arm not relevant to review. • 47% patients screened met inclusion criteria. • Care provided by stroke physician supported by a MDT with specialist experience in stroke. • Guidelines for acute care, rehabilitation and prevention of complications. • Joint assessments, goal planning, co-ordinated treatment and planned discharges. • Patients on SU received more therapy.
Svennsson et al. Sweden	RCT N= 417 Patients within 7 days of stroke.	SU (n=215) v GMW (n=202) Death, Barthel index, place of residence, length of stay.	• RCT allocation possibly insecure. *Unpublished trial.*

Appendix 3

Table A3.2:
Systematic Review of Postacute stroke care (Langhorne & Duncan 2001)

Author/ year/ country	Study design/ methods/ participants	Intervention & outcome measures	Comments
Feldman et al. 1962 USA	RCT N= 82 Patients suitable for rehabilitation up to 2 months post stroke.	MARU (n=42) v GMW (n=40) Functional status and place of residence.	• Included in SUTC 2001. See review table A3.1.
Gordon & Kohn 1966 USA	RCT N= 91 Patients suitable for rehabilitation up to 1 year post stroke.	MARU (n=56) v GMW (n=35) Functional status and place of residence.	• Included in SUTC 2001. See review table A3.1.
Peacock et al. 1972 USA	RCT N=52 Patients within 2 weeks of stroke suitable for rehabilitation.	MARU (n=29) v GMW (n=23) Death and dependency.	• Included in SUTC 2001. See review table A3.1.
Stevens et al. 1984 UK	RCT N = 233 Patients up to 9 weeks after stroke, suitable for rehabilitation.	RSW (n=116) v ECW (n=28) v GMW (n=89) Death, Rankin score, place of residence, length of stay.	• Included in SUTC 2001. See review table A3.1.
Sivenius et al. 1985 Finland	RCT N = 95 Patients 1 week post stroke suitable for intensive rehabilitation.	SU (n=50) v GMW (n=45) Death, disability score, place of residence, length of stay.	• Included in SUTC 2001. See review table A3.1.

Author/ year/ country	**Study design/ methods/ participants**	**Intervention & outcome measures**	**Comments**
Kalra et al. 1993 UK	RCT N= 252 Patients 2 weeks post stroke suitable for rehabilitation.	SU (n=126) v GMW (n=126) Death, Barthel index, place of residence, length of stay.	• Included in SUTC 2001. See review table A3.1.
Kalra & Eade 1995 UK	RCT N= 71 Patients with poor prognosis at 2 weeks post stroke.	SU (n=36) v GMW (n=37) Death, Barthel index, place of residence, length of hospital stay.	• Included in SUTC 2001. See review in table A3.1.
Juby et al. 1996 UK	RCT N=315 Patients within 2 weeks of stroke, suitable for rehabilitation.	SU (n=176) v GMW /ECW (n=139) Death, Barthel index, place of residence, Nottingham Health Profile, length of stay.	• Included in SUTC 2001. See review in table A3.1.
Ronning & Guldvog 1998 (b) Norway	RCT N = 251 Patients over 60 years with acute stroke, suitable for rehabilitation.	GRU (n=127) v Community rehabilitation (n=124) Death, Barthel index, place of residence, quality of life measure (Short Form 36), length of stay.	• Coordinated MDT with specialist experience in stroke for patients in GRU • Stroke education for staff • Long and short term goals set • Key worker to coordinate treatment • Spouse involved in meetings • 12 intervention and 7 control patients lost to follow up at 7 months.

Appendix 3

Table A3.3: Systematic review of mobile stroke teams (Langhorne et al. 2005).

Author/ year/ country	Study design/ methods/ participants	Intervention & outcome measures	Comments
Feldman et al. 1962 USA	RCT N= 82 Patients suitable for rehabilitation up to 2 months post stroke.	MARU (n=42) v GMW (n=40) Functional status and place of residence.	- Included in SUTC 2001. See review table A3.1.
Hamrin 1982 Sweden	QUASI RCT N= 112 Patients admitted to GMWs within 3 days of stroke.	MARU (n=60) v GMW (n=52) Death, disability score, place of residence, length of stay.	- Included in SUTC 2001. See review table A3.1.
Wood-Dauphinee et al. 1984 Canada	RCT N= 130 Unselected patients within 7 days of stroke.	MST (n=65) v GMW (n=65) Death, Barthel index, place of residence, length of stay.	- Included in SUTC 2001. See review table A3.1.
Kalra et al. 2000 UK	RCT N=457 Acute stroke patients, intermediate severity.	SU (n=152) v mobile ST on GMW (n=152) v domiciliary management (n=153) Death, Barthel index, place of residence, resource use, length of stay.	- Included in SUTC 2001. See review table A3.1.

Author/ year/ country	**Study design/ methods/ participants**	**Intervention & outcome measures**	**Comments**
Patel 2000 South Africa	CCT N=149 Patients with clinical diagnosis of stroke	GMW v GMW + guidelines card Death, Barthel index, place of residence, input given, length of stay.	• Team approach to care (stroke physician, nurse, therapists) • Regular team meetings. *Unable to obtain MPhil thesis.*
Dey et al. 2005 UK	RCT N=308 Patients within 5 days of stroke.	MST (n=157) v GMW (151) Death, Barthel index, place of residence, input given, length of stay.	• 74% of patients admitted with stroke were not recruited. • Care co-ordinated by MST (consultant physician, senior therapist), advised clinical and nursing staff on acute stroke management. • Regular team meetings. • MST only available Monday to Friday *during normal working hours* (p.336).

Appendix 3

Table A3.4: Author description studies.

Author/year/ country	Study details	Comments
Blower & Ali 1979	Descriptive account of setting up a stroke unit in a district general hospital in London.	• SU provide an effective way of collecting patients together to improve their care, staff could then develop their skills in stroke. • Highlights need for acute care as well as rehabilitation. • Describes SU advantages e.g. better service for difficult problems and disadvantages e.g. reduced training opportunities for those outside the SU. • "Consultant leadership is the most important single element in setting up and running a stroke unit, but there are no hard rules about the medical disciplines" p.645. • "Next key appointment is the ward sister…therapists will never flourish without the right sister..." p.645.
Langton Hewer & Holbrook 1983	Descriptive account of a SU set up in 1975 in Bristol to treat 388 patients with stroke and carry out research.	• Backlog of patients with stroke admitted when SU opened, and were "waiting for a miracle" p.15. • Concentration on one disability led to development of expertise in staff & highlighted specific needs of patients and their families. • 12 principles of management developed. • Relatives' and stroke support groups started. • Psychologist appointed to unit in 1979. • Various research studies into stroke carried out. • Difficulty of evaluating the Unit was raised.

Author/year/ country	Study details	Comments
Wood & Wade 1995	*Descriptive account of a SU (including a neurovascular service) set up in a district general hospital in Southern England.*	• Describes setting up of a SU (8 beds on a medical ward) took 2 years to develop properly. • MDT approach to stroke care. • Integrated care pathway for avoidance of common complications e.g. chest infection. • Weekly meetings. • Stroke specialist nurse meets regularly with patients and relatives to discuss progress. • SU provides a teaching environment, stroke education programme set up.
Berry et al 1996	*Descriptive account of new ASU in a teaching hospital in London. Evaluation of first year, notes audit SU (n=116) & medical ward (n=128).* *Linked to Bath et al. 1996b paper.*	• Key advantage of having patients with stroke in one place is that nursing staff can have increased role in rehabilitation process. • Stroke education programme set up prior to opening SU. • Highlights what can be achieved by MDT with support from senior management • Hypothesised improved outcomes from improved access to specialist services e.g. brain scans, early referral to therapists, staff expertise and efficiency from having patients together.
Wood & Langton Hewer 1996	Descriptive account of setting up of new stroke and neurological rehabilitation unit in Bristol.	• Developed with help of funding from The Stroke Association, including 2-year project manager. • A senior education officer appointed prior to opening unit, and developed a new philosophy based on biopsychosocial model with the MDT. Concentrated on teamwork and improving patient and family participation. • Homely environment created, initiatives included leisure activities, ward based computer therapy, group exercises and discussions, involvement of ex-patients. • Recommends the appointment of a clinical manager for the MDT.

Author/year/ country	Study details	Comments
Bath et al. 1996b	Descriptive account of setting up of ASU in a teaching hospital in London. *Linked to Berry et al. 1996 paper.*	• Describes process of setting up ASU as "relatively easy" p.13, redesignated medical beds for ASU. ASU opened 4 months after initial suggestion. • Set up steering committee: nursing, therapy, and medical input. Committee met 5 times to plane lay out of ASU and to develop operational policy. • Daily MDT ward round, weekly meetings for planning treatment. • ASU offers potential to develop expertise in acute stroke care.
Dick et al. 1998	Descriptive account of setting up a stroke service in district general hospital in Scotland.	• Developed service in line with guidelines. • Local initiatives included: MDT notes, clerking proforma for junior medical staff, investigation and discharge checklist, named nurse system, MDT education, goal setting, quarterly MDT staff meetings to discuss plans, problems, research etc. • Nurse stroke coordinator appointed with help of funding from Chest, Heart and Stroke (Scotland). • MDT with staff interested and knowledgeable about stroke improves service. • All staff involved in planning services.

Appendix 4:

Example of the National Sentinel Stroke Audit (CEEu 2004)

Organisation Domains (9)

1. Organisation of care

a. Presentation at hospital
   i. Arrangements with local ambulance service for emergency/rapid transfer to hospital for stroke patients with acute stroke were over and above the regular system
   ii. The ward a patient with acute stroke was most likely to be admitted to:
   iii. Medial assessment unit /admission ward
   iv. General Medical Ward/Care of the Elderly
   v. Stroke Unit
   vi. Other

b. Inpatient Imaging services – CAT scan, MRI, Carotid Doppler assessed individually
   i. Emergency scanning within 24hours
   ii. Routine scanning < 48 hours (<14 days for Doppler) but no emergency scanning within 24hours
   iii. Available, but not meeting criteria of A or B
   iv. None available

c. Outpatient Imaging Services - CAT scan, MRI, Carotid Doppler assessed individually
   i. Emergency scanning within 24hours
   ii. Routine scanning < 48 hours (<14 days for Doppler) but no emergency scanning within 24hours
   iii. Available, but not meeting criteria of A or B
   iv. None available

d. There is a stroke unit in the Trust (Yes)
   - A needs assessment was done to identify the appropriate number of beds for the population served before the stroke unit opened

e. Type of Stroke Unit and Quality of Stroke Unit care
   Acute Stroke Unit (ASU)
   Rehabilitation Stroke Unit (RSU)
   Both Acute and Rehabilitation Stroke Units
   - *Both on the same ward*

   Combined Stroke Unit (CSU)

f. Characteristics of Acute Stroke Units
   i. Continuous physiological monitoring (ECG, oximetry, BP)
   ii. Access to scanning within 3 hours of admission
   iii. Policy for direct admission from A&E
   iv. Specialist ward rounds at least 5 times per week
   v. Acute stroke protocols/guidelines
   vi. Access to 24 hour brain imaging
   vii. 5 or all 6 Acute Stroke Unit characteristics

g. Characteristics of all stroke Units
   i. Consultant physician with responsibility for stroke with specialist knowledge of stroke who is formally recognised for having responsibility for stroke services?
   ii. Formal links with patient and carer organisations for communication on service provision, audit and future plans
   iii. MDT meetings at least weekly to plan patient care
   iv. Provision of information to patients about stroke
   v. Continuing education programmes for stroke

* *The DH National Performance Indicator on the percentage of patients admitted to a stroke unit uses a minimum of 4/5 of these criteria to define a stroke unit.*

h. Stroke patients and stroke beds
   i. Number of stroke inpatients on site on the day the audit form was completed
   ii. Number of stroke inpatients on the stroke unit/s on the day the audit form was completed
   iii. Number of beds designated for
      (i) Acute stroke unit
      (ii) Rehabilitation stroke unit
      (iii) Combined stroke unit

iv. Ratio: Number of stroke unit beds per stroke inpatient (on the day the audit form was completed)

i) Admission Criteria for Stroke Units

Stroke Unit/s operate admission criteria

Admission criteria

- No criteria
- Age related
- Stroke severity
- Pre-existing dementia
- Other

2. *Interdisciplinary Services (overall service)*

Specialist medical staff

- Consultant physician with specialist knowledge of stroke formally recognised for having responsibility for stroke patients
- Number of formal sessions per week of senior doctor time for stroke management (including outpatient clinics)
  v. Consultant
  vi. Staff grade
  vii. Clinical Assistant

Other stroke specialist roles

- Stroke co-ordinator
- Stroke specialist nurse
- Consultant nurse with specialist knowledge of stroke
- Consultant therapist with specialist knowledge of stroke

Other Models of Stroke Care

- Mobile stroke team
- Specialist Early Supported Discharge Stroke Team
- Specialist Stroke Community Team in an area for continuing longer-term management
- Mixed rehabilitation unit

TIA/ Neurovascular Clinic

- Neurovascular clinic
- Clinics within 4-week period
- Current average wait time for an appointment for clinic
- Service which enables patients to be seen & investigated within 14 days of minor stroke or TIA

Carotid Endarterectomy

- Carotid endarterectomy surgery performed within the trust or site

Routine Specialist Nursing Support

Is access to specialist nursing support routine for:

i. Continence advice
ii. Pressure sore prevention
iii. Stroke care

3. Interdisciplinary Services (for sites with a Stroke Unit)

Staffing on stroke units presented as ratios of staff per ten beds (by type of stroke beds)

i. Qualified nurses on duty at 10am (on a weekday)
ii. Care Assistants on duty at 10am (on a weekday)
iii. Clinical Psychology
iv. Dietetics
v. Occupational Therapy
vi. Speech and language Therapy
viii. Physiotherapy
ix. Junior doctor sessions
x. Named social worker to MDT of stroke unit(s)

4. Continuing Education in stroke

i. In house programme for qualified staff
ii. In house programme for non-qualified staff

5. Multidisciplinary records

I. All professions contribute to a single set of notes
i. Trust has an interdisciplinary care pathway for stroke

6. Team working – team meetings

a. Team meetings once weekly
b. Which of the following disciplines regularly attend?
    i. Clinical Psychology
    ii. Dietetics
    iii. Medicine (Senior Doctor)
    iv. Nursing
    v. Occupational Therapy
    vi. Physiotherapy
    vii. Social Work
    viii. Speech and Language Therapy
    ix. Other

7. Agreed assessment measures

Protocols in secondary care

Locally agreed assessment protocol for stroke indicating the appropriate use of agreed measures for:

i. Conscious levels
ii. Motor impairment
iii. Cognitive Function
iv. Activities Daily Living

Protocols between primary and secondary care

- Agreed TIA protocols between primary and secondary care
- Agreed stroke protocols between primary and secondary care

8. Availability of information to inform practice

- Reference information on functional tools used locally
- Practice Guidelines on:
    - Clinical management of stroke
    - Continence management
    - Swallowing difficulties
    - Pressure Area Care
- Up to date information on local and national patients/carers support organisations
- Records of all patients' management in acute phase

9. Communication with patient and carers

Patient access to management plan

Patient information literature displayed in unit/ward on:

- x. Condition specific literature on stroke
- xi. Patient versions of national or local guidelines/standards
- xii. Social Services local Community Care arrangements
- xiii. The Benefits Agency
- xiv. Local Voluntary Agencies
- xv. How to complain

Does stroke service have formal links with patients and carers organisations for communication on service provision, audit and future plans?

Is there a community user group for stroke?

Is there a policy to give patients a named contact on transfer from community to hospital?

** Additional aspects were introduced in 2004 in particular services for acute stroke care, TIA management, types of scanning services and descriptors of other models of stroke care.*

Process Domains (7)

1. *Initial Patient Assessment*

- Were these specifically recorded in the first 24 hours:
  - i. Conscious level
  - ii. Eye movements
  - iii. Screen swallow disorders
  - iv. Visual fields
  - v. Sensory testing

2. *Clinical Diagnosis*

i) Clear diagnostic description of likely site of cerebral lesion

ii) Brain scan carried out within 24 hours

3. *Multidisciplinary Assessment*

i) Swallow assessed by SLT within 72 hours of admission

ii) Initial assessment of communication by SLT within 7 days

iii) Physiotherapy assessment within 72 hours

iv) OT assessment within 7 days

v) Social work assessment within 7 days of referral

4. ***Screening and Functional Assessment***
    - i) Patient weighed at least once during admission
    - ii) Assessment of nutritional needs
    - iii) Pre-stroke function recorded (e.g. Barthel score)
    - iv) Function at discharge recorded (e.g. Barthel score)
    - v) Evidence that patient's mood have been assessed
    - vi) Cognitive status assessed

5. ***Management/Care planning***
    - Written evidence that rehabilitation goals agreed by the MDT
    - Individualised goals include reference to areas of higher level functioning
    - Plan to promote urinary continence
    - Is there evidence of a plan to prevent post stroke complications:
        - i. Positioning and handling
        - ii. Prevention of deep vein thrombosis

6. ***Communication with Patients and Carers***
    - Discussion with patient about diagnosis
    - Discussion with patient about prognosis
    - Discussion with patient about therapy goals
    - Discussion with carer about diagnosis
    - Discussion with carer about prognosis
    - Discussion with carer about therapy goals
    - Evidence patient/carer knows follow up plans after discharge
    - Carer needs for support assessed separately
    - Skills taught to care for patient at home
    - Other risk factors discussed with patient or carer

7. ***Primary Secondary interface***
    - Home visit performed
    - GP informed of patient's discharge/death by day of discharge/death
    - Discharge summary to GP includes functional ability at discharge
    - Carotid imaging performed within 3 months to check for carotid stenosis

Appendix 5:

Memo of emerging crystallizations

Pre stroke unit

- Hassle
- Time consuming
- "On your own – no team, staff, patients, family on their own
- Stroke has no profile, it's the Cinderella of conditions and often at the back of the ward
- Felt like a "battleground"
- Higher mortality rate, poor outcomes
- Stroke = NO voice
- Stroke was a condition NOT a person
- Care fragmented & uncoordinated
- Stroke has to compete against more acute illnesses
- Work was repetitious/energy absorbing
- No focussed education
- No consultant with interest in stroke, all other conditions (often "organ based")
- No rehabilitation for under 65's

Post stroke unit

"Just having one base"

- ONE location, focus, team/family, identity, voice, language, vision
- Creates a space/base to build a team, architecture affects function and structure
- Creates opportunistic communications as well as formal for staff, patients and families
- Staff, patients and families can support each other
- Opportunistic and formal joint working
- "Strokes" have become people
- People want to be part of the action
- A base gives opportunity for creating a profile/identity & creating an interest
- Provides an environment for recovery and gives strong message of hope to the patient in the face of adversity
- People feel part of something and have a feeling of belonging
- The unit has a built in "early warning system" for risk of complications

Having a base allows the sharing of:

- The patient
- Focus
- Knowledge
- Energy
- Strength
- Confidence
- Ideas
- Goals
- Teaching/education
- Language: patients and staff
- Work
- Public relations role
- Notes
- Trust
- Shared opportunities
- Communication
- Vision
- Grow a specialism
- Emotions
- Pride/sense of achievement and satisfaction

What is the glue?

Nurses
Education

When general nurse may have had lower profile. The stroke nurse is like the hub for the spokes of all the team members. The key to this is via education & what else?

Positive effects

- No place to hide in a team
- Change is multifaceted
- Sharing experience
- Energy for change
- My role as a researcher includes reminding staff of achievements, they don't have time to sit and reflect
- Enthusiasm, motivation
- Knowledge allows participation
- Knowledge = knowing the rules of the game, if you don't know the rules you can't play and may become a resistor?
- Easier to change knowledge than attitude
- Education – transformation of the nurses, confidence improved, empowered
- MDT team = "the rudder" – flexible not rigid in structure, like a family sharing ups and downs, feeling of belonging
- Team confidence
- Stroke coordinator
- Stroke physician
- Specialism created
- Created opportunities
- Clinical Governance training – learning to shout, be visible, team building invaluable
- Management support (this is a silent role to many)
- MDT notes
- Organisational structures scaffold clinical practice
- The many guises of education/knowledge

Less positive

- Consultant behaviour – ignoring the evidence, adding to fragmentation, creating outliers, friction
- Power base versus government policy
- "Doctor" in charge = poor fit with MDT working
- Staff shortages
- Lack of equipment
- Low profile of stroke
- Communication blockages

Appendix 6:

Memo of emerging themes

- ***Building team / creating the team (building blocks)***
    - Forming (do you have to do any storming before forming?)
        - Different starting points
        - Team building prerequisites
    - Storming
        - Over keen therapists/ the vultures descending
        - Trigger points
        - Cold war /stale mate
        - Warming up / coming together
    - Norming
        - Shaping up
        - Respect
        - Emergence of positive change
    - Performing
        - Reshaped
        - Shared care
        - Shared language
        - Satisfaction

- ***Creating Supporting infrastructure*** *(to team building) All the below create opportunities for networking/connection building/relationships etc.*
    - ***MDT documentation (are a microcosm of team work)***
        - Implementation without engagement
        - Uni-professional issues
        - Negotiating change
        - Taking ownership
        - Positives
        - Logistical issues
    - Miscellaneous –e.g. positional charts on the walls
    - Goal planning
    - Case co-ordinator
    - Timetables
    - Patient information group
    - Whiteboards
    - Joint sessions
    - Structured assessments
    - Staff meetings/joint meetings
    - MDT education seminars
    - Staff appraisal
    - Ward rounds
    - Staff rotations

These all gave opportunities for building connections, relationships. It is more than a "how to do list"

The STEP weekly meeting = KEY!!

- *Nurse in stroke care – link with identity*
    - Reclaiming place in the MDT
    - Nurses only members of the MDT to be there 24/7 but that is only an advantage if they have developed receptors (are the receptors stroke specific? If not there are **no connections** to be made with other) for others to "stick" to, the "glue" for the rest of the team to stick on/ imparts aspects of care. If nurse are non-receptive then the rest doesn't work.
    - Improving care / defining the nursing role
        - Task related
        - "Non- task" related i.e. "thinking nurse"
    - Remaining issues of the nursing role
        - Still emerging from the shadows
        - Developing leadership

    - Participation/experiential/empowerment from shared learning

    - Informal learning –**key & became a central plank of the SU**
    - Formal learning – **but need this initially to bring everyone to baseline**
    - Positive environment to learn
    - Challenges to learning: Resource related / Logistics related

Drivers in change

Contextual factors

- Fusion of energy
- Motivation/positive attitude
- Development work
- Pattern of change
- Management support / related issues
    - External drivers
    - Transformational leadership
- Barriers to creating change
    - State of readiness
    - Communication
    - Keeping going
    - Staffing levels
        - Effect on development work
        - Effect on rehabilitation / treatment
    - Leadership / organisational styles
        - Command and control
        - Finance fortress

Focus on stroke gave/ led to the following:

- Improved" staff satisfaction / recruitment / retention
    - Satisfaction from progress / variety
    - "A rewarding challenge"
- Created a profile / identity
- "Peg for growth" (seed)
- A "space" for connections
- Improvements in stroke practice
- Spread of good stroke practice
- Recognition of the stroke patient & "stroke family"
    - Trying to listen / gaining a voice
    - Reclaiming their self
    - The family as an extended patient

Issues from creating a stroke specialism

Challenges for staff

- Working with strokes can be stressful
    - Emotional toil
    - In depth focus
    - Scary / Lots of death (ASU)
    - Lack of speech / cognitive change hard
    - Depressing
    - Heavy work
    - Poor prognosis / telling the family (RSU > ASU)
    - Difficult to give up hope
    - Perseverance
- Other
    - Referral problems
        - General
            - Reluctance to refer
            - Capacity issue (now resolved)
            - Bed pressures /bed management (mostly resolved)
        - Doctor related referral problems
            - Lack of team consultation
            - Ignoring the evidence
    - Limited Resources
    - Affect on job satisfaction
    - Disquiet amongst non SU staff /jealousy
    - Logistics /others
    - Competition / marginalization of non stroke
    - Stroke specialism highlights service needs
        - Nutritional issues
        - Poor stroke profile /knowledge
        - Volunteer service

Appendix 7:

NVivo codes

NVivo revision 1.3.146 Licensee: user

Project: MMSC User: Len Cowling Date: 19/04/2007 - 22:18:42
NODE LISTING

Nodes in Set: All Tree Nodes
Created: 02/07/2002 - 16:52:21
Modified: 19/04/2007 - 22:16:31
Number of Nodes: 42

1	(1) /Key Changes
2	(1 1) /Key Changes/goal setting
3	(1 2) /Key Changes/Joint sessions~meetings
4	(1 3) /Key Changes/ward~staff change
5	(1 3 1) /Key Changes/ward~staff change/teamwork
6	(1 3 1 1) /Key Changes/ward~staff change/teamwork/roles
7	(1 3 2) /Key Changes/ward~staff change/Specialisation 2
8	(1 4) /Key Changes/profile
9	(1 5) /Key Changes/intervention for stroke
10	(1 6) /Key Changes/knowledge~ed
11	(1 7) /Key Changes/Policies~EBP
12	(1 8) /Key Changes/Physical~environment
13	(1 9) /Key Changes/Mx ~Organ~
14	(1 10) /Key Changes/Pt~carer inv
15	(1 11) /Key Changes/Outcomes
16	(1 12) /Key Changes/keyworker~discharge
17	(2) /problems still~changes like to see
18	(2 1) /problems still~changes like to see/teamwork
19	(2 1 1) /problems still~changes like tsee/teamwork/communication
20	(2 1 2) /problems still~changes like to see/teamwork/roles
21	(2 1 3) /problems still~changes like to see/teamwork/barriers
22	(2 2) /problems still~changes like to see/outliers~capacity
23	(2 3) /problems still~changes like to see/Referals~referers
24	(2 4) /problems still~changes like to see/intervention
25	(2 5) /problems still~changes like to see/lack of resources
26	(2 6) /problems still~changes like to see/profile~momentum
27	(2 7) /problems still~changes like to see/Knowledge
28	(2 8) /problems still~changes like to see/resistance
29	(3) /MDT notes
30	(3 1) /MDT notes/advantages
31	(3 2) /MDT notes/disadvantages
32	(4) /You & stroke
33	(4 1) /You & stroke/positive
34	(4 2) /You & stroke/negative
35	(5) /Advantages of SU

36 (5 1) /Advantages of SU/communication
37 (5 2) /Advantages of SU/teamwork
38 (5 3) /Advantages of SU/spread gd practice
39 (5 4) /Advantages of SU/specialism
40 (6) /Disadvantages of SU
41 (7) /Management
42 (1001) /Extracts

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