Delivering Evidence-Based Rural Community Stroke Services: A Realist Evaluation

Jo Howe
MSc, PG Cert, BSc

School of Medicine
University of Nottingham

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Abstract

Background

Strong evidence exists relating to the efficacy of Early Supported Discharge (ESD) which has been synthesised in several Cochrane systematic reviews. National clinical guidelines recommend that ESD be offered to all eligible stroke survivors, however service models vary significantly and there are still areas of England where ESD has not been commissioned. Additionally, some services, particularly in rural areas, report challenges in delivering evidence-based services. The organisational core components necessary for evidence-based service implementation have been identified, informed by international consensus and randomised controlled trials. It is unknown if or how these organisational components facilitate the delivery of evidence-based community stroke services in rural areas.

Methods

A theory building realist evaluation case study of community stroke services delivering ESD in rural areas of England was conducted. Three exemplar rural services were identified from the post-acute phase 2 stroke sentinel national audit programme as fulfilling key evidence-based criteria as identified in the national clinical guidelines for stroke. Incorporating evidence from the randomised controlled trials and a panel of expert advisors, five initial candidate programme theories were developed to explain how the core components underpin evidence-based service delivery in rural services. These programme theories were iteratively tested and refined during a 12-month data collection period taking place from June 2017 to May 2018. Evidence from realist interviews, observations, and several informal conversations, and documents were interrogated to identify hidden causal mechanisms and corresponding contextual features influencing evidence-based service delivery in line with national clinical guidelines. Data analysis incorporated inductive, deductive, abductive and retroductive inferencing to generate context-mechanism-outcome configurations for each programme theory under evaluation.

Findings

Programme Theory One: The multidisciplinary team and interdisciplinary working identified the importance of a comprehensive team composition including service leads, rehabilitation assistants and administrators with staffing levels adjusted for rurality. A supportive interdisciplinary team culture alongside service leads who empower skill development were also identified as important factors of teamworking. Working in an inter and transdisciplinary manner was identified as a key mechanism to facilitate the delivery on evidence-based services resulting in improved service efficiency and delivery of holistic inter and transdisciplinary care. The lack of psychologists within the stroke services was thought to impede the level of interdisciplinary working and resulting in unmet needs for patients. This negatively impacted upon the self-confidence of staff who did not possess sufficient knowledge or skills to appropriately treat patients with psychological needs.

Programme Theory Two: Inter and transdisciplinary training was inextricably linked with programme theory one and identified the importance of providing formal and informal opportunities for all staff, including administrators, to develop inter and transdisciplinary skills. Training was provided in house and delivered by staff within the service. Comprehensive competency-based training for rehabilitation assistants equipped these members of staff with appropriate knowledge, skills and confidence to engage in transdisciplinary working. Training also facilitated interprofessional trust associated with the delegation of specialised rehabilitation tasks.

Programme Theory Three: Multidisciplinary Meetings found that weekly MDMs facilitated shared decision-making, inter and transdisciplinary working and increased the likelihood of adhering to key Stroke Sentinel National Audit Programme governance criteria and national clinical guidelines. For services with high caseloads, meeting effectiveness was facilitated through effectively chaired and formally structured meetings. Given that rural community stroke services have reduced opportunities for communication, meetings provided a forum for interdisciplinary discussions which occurred in supportive team climates and enabled staff to develop a shared understanding of patient and service objectives.

Programme Theory Four: Care Transitions identified that functional proximity between services, collaborative working and good interpersonal relationships between service leads facilitated smooth, timely and appropriate care transitions between services. Cross-service collaboration encouraged the development of trust, role clarity and shared understanding of patient and service needs. Conversely, hard organisational boundaries created barriers to cross-service collaborations and negatively impacted upon care transitions.

Programme Theory Five: Visit Scheduling was identified during data collection and suggested that implementing structured visit scheduling facilitated the delivery of equitable and efficient services. This was particularly true for the services with high caseloads operating over large geographical areas.

Conclusion

This realist evaluation has provided a valuable insight into how stroke service organisation, coordination and teamworking facilitates the delivery of evidence-based services in line with national clinical guidelines in rural areas of England. The revised programme theories highlight the importance of supportive service leads, collaborative inter and transdisciplinary working from all staff including administrators, the use of highly trained transdisciplinary rehabilitation assistants to deliver rehabilitation and structured visit scheduling as essential components to the successful delivery of services with large caseloads. Given that some services in rural areas have found it difficult to deliver evidence-based services, it is hoped that these findings provide some meaningful detail for service leads and healthcare providers to adapt and implement within their own stroke services both in rural and urban areas.

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List of Abbreviations

AHP	Allied Health Professional
ASU	Acute Stroke Unit
CARES	Centre for Realist Evaluation and Synthesis
C	Context
CCG	Clinical Commissioning Group
CMOC	Context- Mechanism-Outcome Configuration
CFIR	Consolidated Framework for Implementation Research
CRT	Community Rehabilitation Team
DALY	Disability-Adjusted Life Year
ESD	Early Supported Discharge
FTE	Full Time Equivalent
HASU	Hyper acute Stroke Unit
HCA	Health Care Assistant
HHC	Home Health Care
HRA	Health Research Authority
ICD	International Classification of Diseases
ICSS	Integrated Community Stroke Services
KPI	Key Performance Indicator
M	Mechanism
MOCA	Montreal Cognitive Assessment
MDM	Multidisciplinary Meeting
MRC	Medical Research Council
MDT	Multidisciplinary Team
NSSA	National Sentinel Stroke Audit
NICE	National Institute for Clinical Excellence
NHS	National Health Service
O	Outcome
PADL	Personal Activity of Daily Living
PhD	Doctor of Philosophy

RA	Rehabilitation Assistant
RAMESES	Realist And Meta-narrative Evidence Syntheses: Evolving Standards
RCSS	Rural Community Stroke Service
RCP	Royal College of Physicians
RCT	Randomised Controlled Trial
RSU	Rehabilitation Stroke Unit
SCoT	Stroke Competency Toolkit
SSNAP	Sentinel Stroke National Audit Programme
SSEF	Stroke-Specific Education Framework
STARs	Stroke Training and Awareness Resources
UK	United Kingdom
UKSTF	United Kingdom Forum for Stroke Training
WHO	World Health Organisation
WSO	World Stroke Association
WTE	Whole Time Equivalent

Chapter One
Background Literature

Introduction

This thesis presents PhD research that has investigated the delivery of community stroke services in rural areas of England. Focussing on organisational attributes of service models, the primary aim of the research was to develop theories explaining how community stroke services in rural areas deliver evidence-based services. The term evidence-based was used to describe services that have adopted service models informed by national clinical guidelines and whose organisation is therefore guided by underpinning research evidence. Although this research evidence is focussed on Early Supported Discharge (ESD), two of the services included within this research delivered ESD alongside a broader model of community stroke service operating over a longer period of time. This model of service delivery is traditionally referred to as a Community Rehabilitation Teams (CRTs). Services which offer a hybrid approach to rehabilitation are now referred to as integrated ESD and CRT services. Services in this study were selected for inclusion primarily because the ESD element of their service met evidence-based criteria.

The community rehabilitation part of the stroke care pathway has been neglected for a considerable length of time as academic research, successive health policies and stroke registries have all primarily focussed efforts on improving stroke patient care and outcomes during the acute and sub-acute phases following stroke. Nonetheless, community stroke services have been developed and implemented across England, but very little is known about how the organisational attributes of these services facilitate the delivery of evidence-based services and adherence to clinical guideline recommendations, particularly in rural areas. To date, much of the evidence relating to the organisation, structure and implementation of stroke services has been conducted in urban settings and with in-patient stroke units. Therefore, much of the evidence presented within this thesis is from in-patient stroke units

as it is this evidence that has influenced the evidence-based criteria for community stroke services, particularly those delivering Early Supported Discharge (ESD).

Background

This chapter presents the background literature which has informed this PhD. In line with the overall focus of this PhD, this background focuses on the organisation of community stroke services and how this adheres to evidence-based standards and clinical guidelines. Congruent with a realist approach, this background draws upon academic research evidence, grey literature such as national health policies, guidelines, and stroke registries to offer a greater understanding of the wider research evidence and political drivers which have influenced the organisation of community stroke services.

To fully understand how community stroke services are organised it is first necessary to gain an understanding of some key areas. Firstly, an explanation of the burden of stroke, the need for stroke services and stroke care pathways are provided. These outline reasons why community stroke services are required.

Secondly, to appreciate how the various forms of evidence inform service delivery of community stroke services it is important to consider the organisation of in-patient stroke care. This set a precedent regarding how randomised controlled trials, systematic reviews, clinical guidelines, large scale implementation studies and policy influenced how services were delivered in real-world settings.

Thirdly, the evidence underpinning the organisation of community stroke services will then be discussed. The fourth section will discuss the role of national stroke registries in monitoring routine stroke care, and the impact they have on driving and enforcing national clinical guideline standards and evidence-based standards. Finally, the research question, aim and objectives will be outlined.

It should be noted that in accordance with the realist evaluation methodology adopted for this PhD, additional, focussed and more detailed literature, pertaining to components of evidence-based community stroke services, are presented in chapters 5 through to 9.

Stroke

This section introduces and defines stroke. It outlines the global burden of the disease and briefly outlines the stroke care pathway within England.

Definition of Stroke

A stroke occurs when the blood supply to the brain is disrupted usually because a blood vessel bursts (haemorrhagic stroke) or is blocked by a clot (ischaemic stroke). When this happens the supply of oxygen and nutrients to the brain is prevented, causing damage to the brain tissue. In 1978 the World Health Organisation (WHO) defined stroke as: *"a clinical syndrome consisting of rapidly developing clinical signs of focal (at times global) disturbance of cerebral function, lasting more than 24 hours or leading to death with no apparent cause other than that of vascular origin"* (World Health Organization, 1978).

The WHO is responsible for the International Classification of Diseases (ICD), which is the international diagnostic classification standard for defining and reporting diseases and health conditions. Currently, 194 member countries report health statistics to the WHO, allowing for global monitoring of disease. First introduced in 1893, the ICD is periodically revised to reflect advances in health and disease management. The 11th revision (ICD-11), published in 2018, officially comes into effect in January 2022 and contains an update to the classification and definition of stroke which has remained unchanged for 40 years. Under the ICD-11 stroke will be classified as a cerebrovascular disease and located under the larger classification of diseases of the nervous system, the previous classification was that of a circulatory disease. Although the 1978 working clinical definition still applies; the ICD-11 now incorporates a tissue-based definition of stroke made possible by the development of neuroimaging techniques.

Stroke Incidence

Although global stroke mortality rates are decreasing, stroke is the second worldwide leading cause of death (Feigin et al., 2017). Almost 14 million people suffer a stroke annually and 5.5 million people die on an annual basis (Johnson et al., 2019). In the UK, advances in both stroke care and health prevention strategies have been credited with reducing mortality rates by 50% over the last twenty years meaning stroke is now the fourth leading cause of death (Stroke Association, 2018). While globally fewer women die from stroke than men (Gorelick, 2019), this is not the case in the UK where women more likely to have a stroke than men; 7.5% of all female deaths are attributed to stroke as opposed to 5.6% of male deaths (Public Health England, 2018). More than half of the 1.2 million stroke survivors living in the UK are left with ongoing disabilities directly attributable to their stroke and stroke is listed as the single largest cause of complex disability in the UK (Stroke Association, 2018).

Stroke Burden

Whilst population growth, an ageing population and an increase in the incidence of risk factors associated with stroke such as hypertension or atrial fibrillation will contribute to global increases in stroke incidence, advancements in medical care, resulting in fewer deaths will contribute to the increase in the number of people surviving with long-term disabilities (Feigin et al., 2017). Nationally the number of stroke survivors living with disabilities is set to increase by a third by 2035 (Patel et al., 2017) with the world on a similar trajectory as the global prevalence set to increase from 62 million to 77 million by 2030 (Strong et al., 2007). Although strokes are more likely to affect the older population, up to 25% of stroke survivors are adults of working age in the UK alone (Stroke Association, 2017). This trend is also mirrored across the world as 60% of all global strokes occur in people under 70, with increased incidence found in adults and children (Feigin and Brainin, 2019).

As most stroke patients now survive, the biggest impact is associated with the residual and long-term disabling consequences. Impairments post-stroke encompass motor, speech, and language, swallowing, vision, psychology, and cognition. In England, stroke is currently the 4th

leading cause of Disability-adjusted life years (DALYs) (Public Health England, 2015). A DALY represents the loss of one year's full health and incorporates years of life lost to premature mortality as well as years lived with disability. Stroke is the second most common cause of global DALYs at 116 million per annum, which is a 21 million increase since 1990 (Johnson et al., 2019). The estimated costs from stroke to the UK economy incorporating unpaid carers lost productivity, health and social care costs are currently estimated to be £25.6 billion, set to rise to £75 billion in 2035 (Patel et al., 2020). It has been suggested that increasing access to thrombolysis (a clot-busting drug) (Xu et al., 2018), thrombectomy services (a highly specialised manual clot removing procedure), (Heggie et al., 2020), ESD (Xu et al., 2018) and centralising stroke services could realise significant savings for the economy (Morris et al., 2019) as these have all been proven to either reduce mortality or improve stroke patient outcomes.

Stroke Care Pathways

The concept of a stroke care pathway has been recommended within the NHS since the 1990s to promote well-organised and evidence-based care (Deneckere et al., 2012). National clinical guidelines make recommendations about how stroke services should be organised and set evidence-based standards for services to adhere to. From an organisational perspective, it is recommended that all suspected or clinically confirmed cases of acute stroke patients be admitted directly to specialist acute stroke units following initial assessment and within four hours of presentation. (Intercollegiate Stroke Working Party, 2016, National Institute of Clinical Excellence, 2019). Following the acute phase of stroke, the stroke care pathway then includes the delivery of in-patient rehabilitation in dedicated stroke rehabilitation units. The World Health Organization has defined rehabilitation as *"a set of interventions designed to optimise functioning and reduce disability in individuals with health conditions in interaction with their environment"(World Health Organization, 2021)*. ESD is also included within the pathway and involves the coordinated transfer of care from hospital to home and delivery of rehabilitation to stroke patients in their own homes. National clinical guidelines and the National Institute for Clinical Excellence (NICE) recommend that the intensity of rehabilitation

delivered as part of an ESD intervention should be equivalent to rehabilitation delivered in hospital settings (National Institute of Clinical Excellence, 2013, Intercollegiate Stroke Working Party, 2016).

In terms of how services are delivered in practice, a recent analysis was conducted using national audit data and found 874 distinct routes through the UK stroke care pathway (Gittins et al., 2020). Overall, three overarching pathways were identified with 44% of stroke patients being discharged directly home, 19% transferred to in-patient care and 47% discharged to community rehabilitation, inclusive of ESD and other community services. This in part reflects the heterogeneity of stroke but also the variability of services across the country and demonstrates that the organisation and delivery of stroke services is complex with many factors likely to be influencing how or if national recommendations and evidence-based standards and national clinical guidelines are adhered to.

The Organisation Of Stroke Services

This section focuses on the organisation of in-patient stroke services as the evidence underpinning in-patient stroke services has provided the foundations for the organisation of community stroke services, particularly in respect to those delivering ESD, and has influenced the significant transformation of the acute stroke pathway. As already indicated there has been a distinct lack of emphasis on the post-hospital discharge part of the stroke pathway and, of importance to this PhD, there has also been a lack of focus on stroke services commissioned in rural areas, therefore most of the evidence presented is from research conducted in acute settings and in urban areas.

In-patient Stroke Units

Stroke units can be thought of as complex organisational interventions and have been defined as *'organised discrete multidisciplinary in-patient services, providing a complex package of stroke care'* (Stroke Unit Trialists' Collaboration 2007). Stroke units have been categorised as follows: 1) Hyperacute stroke units (HASU) which provide specialist care for all suspected

strokes during the first 72 hours following stroke (discussed in more detail below); 2) acute stroke units (ASU) which provide initial stroke care for stroke patients (usually seven days) before discharging home or to other services; 3) comprehensive stroke units which can provide care for the initial period after stroke and also provide stroke rehabilitation; and 4) rehabilitation-only stroke units, which accept stroke patients after the initial period and focus on rehabilitation (Intercollegiate Stroke Working Party, 2016).

By the mid-1990s, strong evidence existed which indicated stroke unit care resulted in a small but significant reduction in death and dependency and institutionalisation across all stroke patients inclusive of sex or stroke severity (Stroke Unit Trialists' Collaboration, 1997). In addition to improved patient outcomes, length of stay in hospital or institution also decreased, indicating that at least no additional financial resources were required to deliver dedicated stroke unit care. However, it was acknowledged that results varied considerably between the randomised controlled trials (RCT) (Stroke Unit Trialists' Collaboration, 1997).

Despite the research evidence, the picture emerging in the UK at the end of the 1990s from services on the ground was rather bleak. The National Sentinel Stroke Audit (NSSA) launched in 1998, highlighted that only 18% of stroke patients received 50% or more of their care in a stroke unit (Rudd et al., 1999). Compared with European countries, UK stroke services were deemed poorly organised; stroke patient mortality and dependency rates were higher and this was partly attributed to the fact that the level of care offered to stroke patients within the first seven days after stroke was less than reported in Europe (Grieve et al., 2001).

This evidence which highlighted the UK's poor stroke care performance within Europe was instrumental in driving forward successive health policies at the turn of the century which placed great emphasis on reducing UK stroke incidence (Department of Health, 1999, 2001, 2005). The 2005 report entitled *"Reducing brain damage: faster access to better stroke care"* has been credited as the catalyst for the nationwide transformation of services and improvements in quality of care (National Audit Office, 2014). The report estimated that the cost to the economy from stroke was £7 billion annually with £2.8 billion borne by the

National Health Service (NHS) alone (Department of Health, 2005). Although stroke services in England had improved, developments were not universally implemented and considerable variations in efficiency and effectiveness of treatments existed. It was believed universally implemented improvements, resulting in less variation in both organisational structure and treatment pathways would reduce death, disability, and recurrent strokes as well as lead to significant financial savings.

The subsequent 2007 National Stroke Strategy (Department of Health, 2007) which was implemented over a ten year period, had a profound impact upon the organisation of stroke services. Drawing upon a variety of evidence including research trials, experts, charity groups and stroke patients and carers, the strategy outlined key priorities for improvement of stroke services with funding allocated to facilitate its implementation. In total, seven out of ten actionable points related to the organisation, structure, resources, and performance of stroke services and encompassed the entire pathway, although the emphasis was predominately placed within the acute sector. Regional strategies were subsequently specifically aimed at local populations and needs (Hunter et al., 2013).

Following these policy initiatives and the increased evidence relating to the efficacy of stroke units, commissioning of new stroke units delivering both acute care and post-acute rehabilitation increased. However, there were concerns associated over whether it was possible to replicate the results of the RCTs in clinical practice (Seenan et al., 2007, Meretoja et al., 2010). Stroke unit care is a complex intervention. Definitively defining the crucial components thought to facilitate successful implementation of complex interventions into complex systems, such as that involved in stroke unit care, can be difficult. The lack of clarity on how or why stroke units were beneficial, coupled with the different service models implemented into different healthcare systems made it challenging for healthcare organisations to determine what organised stroke unit care should look like in order to realise the same levels of benefits observed in the trials. This also resulted in widely different service models being adopted with varying levels of facilities and care being provided and was

believed to be in part a reason for discrepancies reported in stroke patient outcomes both in the UK but also across Europe (Leys et al., 2007, Royal College of Physicians, 2008b).

Determining how the crucial components actually work to facilitate successful implementation can be challenging as these aspects are not explored within RCTs. This is because RCTs are concerned with determining intervention efficacy, they do not seek to understand '*how*' interventions work. The stroke unit RCTs have been criticised for conducting research in artificial environments which may not easily transfer to real-life settings and meaning the improved stroke patient outcomes observed within the RCTs may not be realised in clinical practice (Seenan et al., 2007). Additionally, some of the RCTs were criticised for excluding patients with more severe stroke which is not reflective of clinical practice and could dilute the effect of the stroke unit efficacy (Di Carlo et al., 2011). The original RCTs were conducted in various countries and although collectively the systematic review evidence indicated the effectiveness of dedicated stroke units to treat stroke patients, the stroke units in practice were implemented using different service models within different healthcare systems. Encouragingly, several observational studies have also demonstrated benefits of stroke unit care which have been captured in systematic reviews (Stegmayr et al., 1999, Rudd et al., 2005, Seenan et al., 2007, Meretoja et al., 2010, Di Carlo et al., 2011). Like the RCTs, these observational studies have included different types of stroke units implemented into different healthcare systems and were primarily concerned with determining intervention efficacy in real-life settings. These studies did not seek how the components of stroke units worked to facilitate successful implementation.

Core Components Facilitating Stroke Unit Success

The main organisational core components thought to be associated with improvements in stroke patient outcomes have not changed since they were first outlined at the turn of the century (Langhorne and Pollock, 2002), although recent evidence suggests that the more '*organised*' a stroke unit is, the better the patient outcomes are (Langhorne et al., 2020). The core organisational components of an '*organised*' stroke unit are characterised as 1) discrete units delivering multidisciplinary team (MDT) care by 2) a stroke specialist workforce with 3)

access to stroke-specific education and training, 4) regular team meetings and 5) routine involvement of carers in rehabilitation (Stroke Unit Trialists' Collaboration, 1997, Langhorne et al., 2020, Langhorne and Pollock, 2002). From a medical perspective, access to and procedures to enable diagnostic diagnoses, acute monitoring and treatment, early mobilisation and a strong emphasis on rehabilitation were included as core components of care (Langhorne and Pollock, 2002).

Identifying other contributory components was more challenging. The level of heterogeneity in the original trials and the differences between healthcare systems made it difficult to provide guidance on recommended staffing ratios, which may have contributed to variations observed in UK stroke units in real-life settings (Royal College of Physicians, 2008b). Interdisciplinary teamworking was noted as occurring in the RCTs but the practices varied (Langhorne and Pollock, 2002) making it difficult to work out how this approach to teamworking impacted stroke patient outcomes.

Essentially, the five core components outlined above are on the face of it quite simple criteria and the clarity provided by identifying them was attributed with facilitating their uptake into clinical practice in the UK. However, despite the perceived simplicity associated with them, it was acknowledged that large scale implementation of stroke units across the world had been slow (Indredavik, 2009). Although uptake in the UK had increased it lagged behind Scandinavian countries where more than 80% of stroke patients were offered stroke unit care (Indredavik, 2009).

The challenges associated with the large-scale implementation of stroke units were thought to be that despite the identification of the core components, the specific mechanisms by which stroke unit care improves patient outcomes were unknown (Tamm et al., 2014). To date, no research has specifically investigated how or why the core organisational components of stroke units facilitated stroke patient outcomes. As mentioned above, this kind of information is not usually researched during RCTs and is often obtained via expert opinion, which is subject to a reporting bias amongst other things. Nonetheless, the authors

of the original stroke unit RCTs have postulated why some aspects of stroke unit organisation may facilitate its success and in the absence of research evidence, these opinions do provide some insight into why and how stroke units may actually work to improve stroke patient outcomes. These include:

1. The treatment of stroke patients in discrete stroke units was thought to result in a concentration of resources facilitating earlier and more intensive rehabilitation (Garraway et al., 1980, Stevens et al., 1984, Wood-Dauphinee et al., 1984, Indredavik et al., 1991) though this finding was not always replicated (Kalra et al., 1993, Indredavik et al., 1999). It was suggested that stroke unit care provides greater opportunities for stroke patient monitoring to occur (Stevens et al., 1984, Stroke Unit Trialists' Collaboration, 1997) and may reduce the risk of further strokes and disease progression by preventing complications arising from the initial infarct (Indredavik et al., 1991, Kalra et al., 1993, Cavallini et al., 2003, Sulter et al., 2003, Govan et al., 2007) although it is also accepted that early intervention in a stroke unit alone reduces the possibility of complications arising in the first place (Govan et al., 2007).
2. Collaborative interdisciplinary (Garraway et al., 1980, Stevens et al., 1984, Wood-Dauphinee et al., 1984, Kalra et al., 1993, Indredavik et al., 1999) and transdisciplinary working (Indredavik et al., 1999) were also thought to facilitate outcomes, though detail required to understand how this facilitated stroke patient outcomes was lacking.
3. A highly skilled stroke specialist workforce (Kalra et al., 2000, Indredavik et al., 1999) were thought to be able to provide appropriate specialist care, monitoring and therapy.
4. Tailored therapy for individual stroke patients (Kalra et al., 1993, Indredavik et al., 1999) was also thought to improve outcomes.
5. Positive team culture and levels of staff enthusiasm were also thought to be important (Kalra et al., 2000) but it was acknowledged that this was a difficult element to capture within the context of an RCT.

Accepting the limitations in the evidence base, stroke units have become the dominant model of in-patient care in large parts of the world, particularly in high income countries. This model of stroke care has influenced the restructuring and centralisation of stroke services.

Stroke Unit Centralisation

Centralised stroke services comprise a network of HASUs and stroke units which provide follow on care. At a strategic level, they work in a hub and spoke configuration. Usually, smaller stroke units are closed with resources and appropriately qualified staff redeployed and more efficiently reallocated, increasing stroke patient access to organised high-quality stroke care.

The centralisation of stroke services which took place in London and Manchester in 2008 was the first type of large-scale reconfiguration of stroke services conducted in the world (Fulop et al., 2013). It was rapidly implemented and influenced by three main number factors: 1) research evidence and clinical guidelines emphasising the importance of the hyperacute period following stroke, e.g., gaining access to life-saving thrombolytic drugs which is a time-sensitive intervention (Royal College of Physicians, 2008a); 2) the 2008 national audit of all stroke units in England which reported that with respect to improvements in stroke care, London had not kept pace with the rest of the country (Royal College of Physicians, 2008b); 3) recommendations from the National Stroke Strategy and the London Stroke Strategy (Department of Health, 2007, Healthcare for London, 2008) which advised the centralisation of services as a way of reducing variation in service provision in London. In Manchester, centralisation was suggested and led by local stakeholders which included health professionals, commissioners and service provider leads (Turner et al., 2016).

Although conducted retrospectively, the mixed methods implementation research combined qualitative research methods such as interviews with stakeholders and documentary analysis with statistical analyses of patient level data from the hospital episode statistics database. The findings provided some interesting and informative insight into the contextual factors which influenced the implementation of stroke service centralisation in these areas (Fulop et

al., 2013, Morris et al., 2014, Fulop et al., 2015, Ramsay et al., 2015, Turner et al., 2016, Fulop et al., 2019, Morris et al., 2019).

Successful implementation of major system change, such as that associated with the centralisation of stroke services is challenging. Although implementation research of large-scale system change across healthcare is limited, it is accepted that it is challenging (Fulop et al., 2013, Imison et al., 2014). However, this type of research can provide interesting insights into the processes and outcomes involved in the large-scale implementation of complex interventions into real-life settings. Unlike traditional forms of research, this kind of implementation research seeks to understand how interventions are initially implemented and sustained whilst also seeking to determine what works, what doesn't and why. Multiple variables at multiple levels influence how successfully complex interventions are implemented into complex organisations. These variables include: 1) the settings in which interventions are to be embedded, which can include multiple hospital organisations and ambulance services, 2) the individuals involved in the intervention which could comprise many stakeholders in different organisations as well as the general public, 3) the characteristics of the intervention itself, in this case, the service models, and 4) the process of implementation, which includes the drivers behind the decisions to implement system change, strategic decision making and the process by which the implementation is conceived and managed (Damschroder et al., 2009).

Although there were similarities between the two service models implemented, there were also key differences that impacted their success (Turner et al., 2016). The service models implemented in both regions were informed by examples of specialist stroke units in other countries (Turner et al., 2016). At the time however, it was unknown whether these models would be effective, as insufficient research existed to determine if high volume stroke units would provide better stroke patient outcomes. The lack of conclusive research evidence, however, partly influenced the differences between the two service models, which alongside differing approaches to how the centralisations were managed, led and coordinated in each region, led to very different outcomes. Although both regions established a small number of

HASUs to provide initial hyperacute care via the hub and spoke approach outlined above, London closed five stroke units as part of the reconfiguration whereas Manchester did not.

From an implementation perspective, there were differences in leadership style and management as to how the two regions managed the centralisation. Senior stakeholders in Manchester did not have the same degrees of authority to implement change as London and as a result, the London service model was more inclusive. In Manchester key decisions were made via stakeholder consensus and challenges associated with this were experienced throughout the process (Turner et al., 2016). The original plan in Manchester was that all stroke patients were to be treated in HASUs. This was met with resistance and changed to only patients presenting with suspected stroke within the first four hours were eligible for HASU care, the remainder of stroke patients received acute care from one of ten district stroke centres in the Greater Manchester area. The London service model which treated all stroke patients initially in a HASU increased the chances of receiving life-saving treatments in appropriate timeframes (Hunter et al., 2013) and resulted in 93% of London stroke patients receiving HASU care compared with 39% of Manchester stroke patients, which was also associated with reductions in mortality (Morris et al., 2019).

In 2015, Manchester dropped the four-hour window and adopted a model more closely aligned to London. The pathway initially adopted in Manchester provided an additional layer of complexity and caused confusion for the ambulance crews and hospital staff who needed to determine which stroke patients were eligible for HASU care. The London model was simpler and therefore easier to follow and implement (Fulop et al., 2015). Additionally, and of importance to the complexity of implementation was that London 'went live' on a set date, whereas Manchester chose to stagger the implementation over a period of time. This staggering meant that the pathway continually changed causing confusion for the ambulance crews in determining which stroke patients were eligible for HASU care (Fulop et al., 2015). In Manchester, the recommendations from the ambulance crews over the timing of the intervention were not followed due to the need to obtain consensus on decision-making (Turner et al., 2016).

Concerning the delivery of evidence-based services, in both regions, service specifications were developed to include evidence-based staffing, infrastructure, education, training and audit processes (Fulop et al., 2015). However, London implemented a formal accreditation process; HASU status was awarded based on successful adherence to key criteria. Additionally, a performance-related financial incentive was introduced which could be returned if standards dropped below minimum levels. This was attributed with incentivising healthcare organisations to ensure the delivery of services in line with the evidence-based clinical guidelines and national audit criteria. In contrast, in Manchester, payments were received per stroke patient treated; performance-related payment systems were considered punitive (Turner et al., 2016), as a result, services were operational regardless of whether evidence-based standards had been achieved.

Although centralised stroke service models have been implemented in large cities in England, currently, there is no evidence to suggest similar improvements in stroke patient outcomes could be observed in rural areas. Stroke patients living in these areas may have to endure significantly longer transfer times to HASU's, and consequently may not receive appropriate treatment or diagnosis promptly, thus potentially negating the effect of being treated in a HASU. Despite this, however, some rural areas of the country are reconfiguring their stroke services (Morris et al., 2019), though as yet no research has been published detailing what centralisation in rural areas may look like.

There is no doubt that the in-patient sector has seen a significant transformation over the last thirty years. The RCTs of stroke unit care have demonstrated the efficacy of stroke units in improving stroke patient outcomes and encouragingly, the observational studies have proven that stroke units can successfully be implemented into real-life settings and still realise improvements in stroke patient outcomes. The recent implementation research conducted into stroke centralisation has provided some insight into the organisational challenges associated with implementing complex interventions into real-life settings which can provide lessons and valuable insights to inform the delivery of stroke services in community settings.

However, there is still a poor understanding of how the core components of stroke unit care actually work to improve stroke patient outcomes. Despite this lack of conclusive research evidence, the core components believed to underpin good stroke unit care have influenced the organisation and structure of community-based ESD services.

Early Supported Discharge Services

As dedicated stroke unit care increased in the 1990s, questions were raised in the UK, about their suitability to deliver all aspects of stroke care. It was felt the long-term nature of stroke rehabilitation was incongruent with stroke units that focussed on discharge and not on the long-term physical and psychosocial consequences of stroke, or caregiver burden (Young, 1994, Anderson et al., 1995). Hospital discharge was viewed as the end of rehabilitation for most stroke patients, stroke units could rehabilitate patients to a certain degree, and were criticised for not being able to prepare stroke patients for living at home (Young, 1994). However, the lack of coordinated specialist multidisciplinary community rehabilitation services in existence at the time lead some to argue that patients were best cared for in dedicated stroke units with skilled staff (Lincoln, 1994) as care delivered by non-specialist community services would be detrimental to stroke patient outcomes. It was therefore deemed important that any community service providing rehabilitation for stroke patients needed to capitalise upon gains made with dedicated stroke units and amongst other things, they needed to be well resourced, multidisciplinary, organised and meet regularly to discuss stroke patients in their care (Langhorne et al., 1993).

New services models for the delivery of post-acute stroke care in community settings were developed and researched. These services models differed from traditional CRTs and therefore new nomenclature was also brought into use. Although the terms to define these services varied from (ESD), early home discharge services, accelerated discharge schemes, and post-discharge services, they all had similar objectives; to accelerate discharge from stroke units and deliver rehabilitation in the stroke patient's own homes. These services will all be referred to as ESD services as this is now the accepted terminology. An ESD service has

been categorised as a service that expedites discharge from hospital for stroke patients predominately presenting with mild to moderate impairments. Other types of community stroke

Rehabilitation is delivered by multidisciplinary stroke specialist teams in stroke patients' own homes at an intensity similar to what they would have received had they remained in hospital.

The first known RCT of an ESD service was conducted in London in 1997 and compared ESD with conventional care in a stroke unit (Rudd et al., 1997). Stroke patients receiving ESD had specialist rehabilitation at home for up to three months. Whilst no significant differences in clinical outcomes were detected, the ESD group reported increased satisfaction in community services compared to the control group. Length of stay in hospital was 12 days for ESD compared with 18 in the control, leading the authors to conclude ESD was as effective as stroke unit care, acceptable to stroke patients with considerable financial savings to be realised through reductions in hospital beds (Rudd et al., 1997).

Subsequent RCTs concluded ESD services were cost-effective, resulting in fewer in-patient days, with some indicating they were equivalent to usual care (Rodgers et al., 1997, Holmqvist et al., 1998, Bautz-Holter et al., 2002) and others finding ESD superior (Anderson et al., 2000, Indredavik et al., 2000). The results of these and further RCTs have been synthesised in several Cochrane systematic reviews (Early Supported Discharge Trialists and Langhorne, 2001, 2005, Fearon et al., 2012, Langhorne et al., 2017). The most recent review concluded that appropriately resourced and multidisciplinary coordinated ESD services can lead to reductions in long term dependency, admission to institutional care and in-patient bed days for a selected group (mild to moderate) stroke patients (Langhorne et al., 2017).

Implementation Challenges

The commissioning of ESD services within England steadily increased as the evidence indicating their effectiveness accumulated. Just as observed with the RCTs into stroke unit care, the ESD service models reported in the RCTs also varied, reflecting different healthcare systems into which these services were inserted. Consequently, service models in clinical

practice also varied considerably in part due to the lack of clarity and guidance surrounding ideal service model specifications.

Some services reported challenges in realising benefits found within the RCTs and confusion existed within the medical community surrounding issues such as patient eligibility, team composition and appropriate service model (Haussen and Yavagal, 2011). In an attempt to provide some clarity and guidance to the sector an international consensus document was produced. Ten authors of the original RCTs included in the first ESD Cochrane Review (Early Supported Discharge Trialists, 2005) were invited to collaborate on an international consensus document outlining core components thought to influence the implementation of ESD services (Fisher et al., 2011). Using a modified Delphi approach, panellists were presented with series of statements from the original Cochrane review relating to the implementation of ESD and asked whether they agreed or disagreed with them. Consensus was achieved when ≥75% of the panellists chose “agree” or “strongly agree” or conversely “disagree” or “strongly disagree” for particular statements. Consensus was reached for 47 of the 56 statements.

The core components identified by the trialists were similar to those reported in stroke unit trials and included multidisciplinary working with physiotherapy, occupational therapy, speech and language therapy as the core team with access available to nursing and medical care. Additionally, the experts concluded staff should possess stroke specialist knowledge, have regular meetings to discuss stroke patients and services be organised by coordinators and good links between ESD services and in-patient stroke units should exist. It was hoped the identification of these core components would facilitate successful implementation both within the UK and at an international level (Fearon et al., 2012). Despite this clarification, a huge variation of service models still exists (Royal College of Physicians, 2015, Fisher et al., 2020), the most recent national clinical guidelines for stroke have documented that uncertainties still remain surrounding the configuration of ESD services (Intercollegiate Stroke Working Party, 2016).

A recent research study called the WISE study has investigated the effectiveness of six ESD services across urban and rural areas of England (Fisher et al., 2021b). This mixed methods realist evaluation researched services delivering ESD in real-world settings. The service models adopted by the six ESD services were heterogenous, and this coupled with the study design allowed the WISE team to understand the importance of how local contexts and individual contextual features influenced effectiveness of service delivery. The quantitative analysis used data obtained from the Stroke Sentinel National Audit Programme (SSNAP). The results of this demonstrated that the more ESD services adopted the core components recommended in the consensus document, the greater the likelihood of them providing responsive and intensive services, regardless of whether they were classified as urban or rural services. This suggests that adherence to evidence-based criteria is likely to produce more effective ESD services (Fisher et al., 2020). Considering rurality, the most rural services were found to incur the greatest costs, with factors such as increases in travelling time or service capacity posing challenges associated with the provision of intensive rehabilitation and the ability to flexibly respond patient needs for those services (Fisher et al., 2021b). Interdisciplinary working and rehabilitation assistants were found to facilitate intensive delivery of ESD and regular multidisciplinary meetings, a coordinated multi-disciplinary team and clear eligibility criteria for inclusion within the service were deemed by staff to be crucial to the effective delivery of services (Fisher et al., 2021b).

Although the evidence from the Cochrane reviews in favour of ESD services is strong and supports the implementation of ESD in terms of improved stroke patient outcomes and financial savings for the healthcare system, questions still remain as to how these services actually do work, making it difficult for organisations to try and determine what ESD services should look like. Not only is there significant heterogeneity between the service models included in the trials, but the vast majority of RCTs incorporated since the early 2000s have also investigated service models which differ considerably from the ones observed in the original RCTs. For example, in contrast to the traditional service models where stroke patient discharges were facilitated and rehabilitation delivered at home by a multidisciplinary team some of the trials have investigated using caregivers to deliver or augment rehabilitation

(Pandian et al., 2015, Van Den Berg et al., 2016) or taking in-patients home for rehabilitation and then back to hospital for continued care (Rasmussen et al., 2016). Therefore, except for an RCT conducted in Bergen in Norway (Hofstad et al., 2013), the majority of the RCTs investigating ESD against usual care are approximately twenty years old. RCTs investigating ESD in modern healthcare systems are lacking.

Relevance of Research Evidence

It is questionable whether contemporary trials investigating ESD services against stroke units would yield the same results both in terms of cost savings from reductions in bed days and improved stroke patient outcomes, particularly in high-income countries given the level of medical advancements and transformation that has occurred with the acute sector. In some of the early ESD trials, stroke patients receiving usual care were not always cared for in dedicated stroke units which are commonplace now. Furthermore, the average in-patient stay in hospital has consistently fallen from 40 days in 2001 to 20 days in 2013 (Sentinel Stroke National Audit Programme, 2019). Recent research supports the idea that in the context of modern healthcare services, ESD may not realise the same benefits as were demonstrated by the early trials, especially concerning cost savings (Hofstad et al., 2013, Fisher et al., 2021a).

Rural ESD

Another factor that is important to consider is whether ESD can be universally implemented across the whole country. Even though significant efforts have been made to implement ESD in England there are still areas that have yet to commission services (Royal College of Physicians, 2015), particularly in rural areas. There is a concern that some of these more remote and rural areas of the country have commissioned generic services, where the stroke specialist expertise of staff is limited and a strong focus on admission avoidance is prevalent (NHS Improvement, 2012). These generic service models are unlikely to adhere to the core components which are known to make ESD services effective, potentially resulting in care which falls short of what is recommended in the national clinical guidelines. This ultimately means that stroke patients residing in these remote and rural areas are more likely to

experience poor outcomes than those living in urban areas and receiving rehabilitation from services adhering to the evidence-based core components.

Furthermore, rural services that have been commissioned report struggling to deliver evidence-based ESD in line with the national guidelines (NHS Improvement, 2012). In 2020, the estimated number of people living in rural areas in England was 9.7 million. This figure has risen from 9.1 million in 2011 and accounts for 17% of the total population (Department for Environnment Food & Rural Affairs, 2021). Rural locations present different challenges to healthcare services delivering care which are not encountered in the more densely populated urban areas. From a geographic perspective, travelling times to and from patient homes can be significantly increased compared to urban settings which has implications for service capacity as well as financial and staffing resources as it may not be possible in rural areas to deliver as much rehabilitation within the same staffing configuration and resourcing (NHS Improvement, 2012). Rural areas have higher proportions of elderly residents residing in them (Department for Environnment Food & Rural Affairs, 2021), and can also experience higher proportions of stroke incidence than cities, where the population tends to be younger and the incidence of stroke is less (West Midlands Clinical Network; NHS England and NHS Improvement 2019). Recruiting sufficient stroke specialist staffing in rural areas is also known to be a challenge, which can leave services understaffed and insufficiently skilled to deliver rehabilitation in line with the clinical guidelines (West Midlands Clinical Network; NHS England and NHS Improvement 2019).

The original ESD RCTs were predominately conducted in urban settings, questions have been raised many times as to whether ESD services could be successfully implemented in remote and rural areas (Fisher et al., 2011, Fearon et al., 2012, Langhorne et al., 2017, Fisher et al., 2019, Fisher et al., 2020). This question has never been fully addressed nor has any research to date investigated how a rural community stroke service delivering ESD might be configured or how they would be organised to deliver an evidence-based service in line with national clinical guidelines.

Delivering Evidence-Based Services

This section offers an insight into how stroke registries can influence the delivery of evidence-based stroke services. The premise being that well-performing services are delivering services in line with the evidence. Registers tend to focus on acute stroke care, leaving stroke care delivered in the community undocumented. Given the lack of focus of these registers into the post-acute part of the stroke pathway, there is little known about the organisation and structure of ESD and general community services.

Stroke Registries

National stroke registries enable the systematic collection of stroke-related data and provide real-world insights into stroke care (Bornstein, 2015). The UK, Sweden, Germany, the Republic of Ireland, the Netherlands, Norway and Finland are the only European countries to implement stroke registries (Norrving et al., 2018). Registries that are mandated, with data openly reported and based upon adherence to national clinical guidelines produce the best results as some organisations seek to improve their score (Asplund et al., 2011, Cadilhac et al., 2016), with intensive feedback provided to services in a process referred to as an audit loop (Jamtvedt et al., 2004). Registries collate data and benchmark performance; although performance indicators are based on clinical guidelines, they relate to processes of care, for instance being admitted to a stroke unit is a process, it would be up to the individual clinician to determine the appropriate course of treatment once admitted. Not being admitted to a dedicated stroke unit would imply that stroke patients did not receive optimal care.

Quality of care has been linked to three distinct components: processes of care, patient outcomes and structure of services. Achieving good organisational structure is thought to facilitate good processes of care which in turn are thought to lead to better patient outcomes (Donabedian, 1988). Stroke registries are a powerful tool in ensuring this data is collated; though the structure of services is often collected less frequently than the other two aspects (Asplund et al., 2011). Concerning stroke services, the linkages between these elements have not been fully explored; organised stroke care has been linked to improvements in patient

outcomes but the factors responsible for this are not fully understood partly due to the lack of information available relating to the coordination of stroke care in different countries (Norrving et al., 2018, Aguiar de Sousa et al., 2019).

Stroke Sentinel National Audit Programme

In England, the registry is the Stroke Sentinel Audit Programme (SSNAP), it is coordinated and administered by the Intercollegiate Stroke Working Party on behalf of the Royal College of Physicians (RCP). Information relating to stroke patient outcomes, processes of care and organisational features of stroke services are collated. Continuous and prospective data collection measuring processes of care from hospital admission to six months post-stroke are collated. The UK (excluding Scotland) and Sweden are the only two European stroke registries that continue to collect stroke patient data following hospital discharge. The SSNAP comprises two elements; it collects clinical data quarterly and organisational data biannually. Although the SSNAP does collect data following hospital discharge, the volume of information from community settings is limited when compared with in-patient settings.

Acute Organisational Audit

The acute organisational audit is conducted bi-annually, and the audit collates data relating to all aspects associated with the organisation of in-patient stroke services, including staffing, processes of care, TIA services, access to specialist support and communication with stroke patients and carers (Sentinel Stroke National Audit Programme, 2019). Services are benchmarked against the national average and are given scores ranging from A through E. Scores of A and B are representative of first-class quality care and are deemed good or excellent services (delivering evidence-based services). Services scoring D or E require significant improvement, and the implication is that they are not delivering evidence-based services. The SSNAP has been credited with improving the quality of care for stroke patients and increasing the number of stroke units delivering evidence-based services as the number of services performing well has steadily increased over the life of the SSNAP. In the first round, no services scored an A rating, but this rose to 22% in 2019. Conversely, 43% of services scored E during the first quarterly reporting period which reduced to 1% in 2019 (Sentinel Stroke

National Audit Programme, 2019).

Post-acute Organisational Audit

Until the publication of the post-acute organisational audit in 2015 very little information was known about the organisation or structure of services providing care to stroke patients following hospital discharge. This is in stark contrast to the acute sector where organisational information had been routinely collected since 1998. Conducted in two phases, the post-acute audit aimed to establish a baseline about the national state of post-hospital discharge service provision, to monitor processes of care and changes over time and to allow services to be nationally and regionally benchmarked. It was hoped information relating to the organisation of stroke services would inform commissioning bodies as to the quality of care being delivered by community stroke teams as well as identifying stroke-specific services as opposed to general rehabilitation services (Royal College of Physicians, 2015).

The organisational and structural data collated was based on the national clinical guidelines for stroke and the core components of ESD services identified in the literature associated with high-quality stroke care and believed to improve stroke patient outcomes (Fearon et al., 2012, Intercollegiate Stroke Working Party, 2012). The premise being community stroke services adhering to the criteria were delivering an evidence-based service. The results from the post-acute audit were not benchmarked in the same way as in-patient stroke units, adherence to criteria was documented but services were not subject to performance monitoring.

Participation in the post-acute audit was high at 80%, with 778 services included. All services delivering care outside of the acute phase were represented and encompassed hospital-based services, domiciliary services, single disciplines services and other post-acute service providers. Domiciliary services comprise ESD, community rehabilitation teams (CRT) and domiciliary services that were not ESD or CRT and represented 321 out of the total 778 services. Across the board, it was noted that there was not only huge variation concerning the structure and organisation of community stroke services but that service provision was very patchy across the country (Royal College of Physicians, 2015).

Concentrating on ESD and CRT services which totalled 308 services nationally, the results were mixed. On a positive note, waiting times for ESD services were short, between 1 and 2 days. The provision of stroke-specific training opportunities for therapists, nurses and RAs was also high for ESD and CRT services. However, the report highlighted several organisational areas where services were not meeting evidence-based standards. Multidisciplinary care is central to stroke care, but access to a full MDT was limited. ESD services were singled out as having particularly poor access to nursing, RAs, social workers and psychological services. The national agenda when the audit data was collected in 2015 advocated 7-day working for hospitals and this was highlighted as an area requiring significant improvement for ESD services. One of the guiding principles of ESD services is the provision of rehabilitation at a similar intensity to hospital treatment, 70% of services were not meeting that objective. Participation within the clinical audit was also encouraged for both ESD and CRT services as it was viewed as a driver for service improvement and is associated with the delivery of evidence-based services.

It was hoped the audit would continue and stimulate national change; regular feedback loops provided by audits are drivers for quality improvements as services often improve on subsequent rounds. The second post-acute organisational audit was conducted within the first half of 2021, therefore the resulting data is not yet available. Due to the delay between the first and second rounds of the post-acute organisational audit, and the resulting delay between the feedback loops, the impact that the audit may have had at a national level is largely unknown. Additionally, the quality markers relating to community services contained within the acute clinical and organisational audits are not as detailed as those for in-patient stroke services, therefore there is little evidence for services to use within which to determine how they can implement service improvement. These factors have contributed to in-patient stroke units organisationally and structurally appearing more homogenous than community services, which by contrast vary substantially. The results from the clinical audits have also demonstrated that more stroke survivors are discharged from hospitals with moderate to severe disabilities, which has resulted in a steady increase in referrals to ESD services (Stroke

Sentinel National Audit Programme, 2019). ESD is often a time-limited intervention of between 6 and 8 weeks and is recommended for mild to moderate stroke survivors (Fearon et al., 2012). If ESD teams are accepting referrals from stroke patients with more complex needs, further research is required to understand how modern ESD services may be configured and whether they can provide good outcomes for stroke patients with more severe needs (Sentinel Stroke National Audit Programme, 2019).

Thus far, the main focal point of the national audit has been on the acute sector leaving some to suggest that the long-term needs of stroke survivors and their families have been neglected (de Sousa, 2016). Determining whether community stroke services delivering ESD and non ESD rehabilitation are delivering evidence-based services has been more difficult to ascertain due to the focus of quality markers on the acute settings. This is unlikely to change unless regular benchmarking of community services occurs to drive forward the quality of care delivered and stimulate the reorganisation of services.

Research Aims/Question

This section briefly summarises the rationale which has informed the PhD research. The research aim and objectives are outlined.

Rationale

The evidence base relating to the efficacy of community stroke services delivering ESD is strong (Early Supported Discharge Trialists and Langhorne, 2001, 2005, Fearon et al., 2012, Langhorne et al., 2017). However, the recommendations relating to the organisation and structure of these services have been influenced by international consensus and the RCTs conducted in-patient settings. It is unknown if or how these organisational and structural attributes facilitate the evidence-based delivery of community services. As previously stated, and perhaps unsurprisingly given the international focus on the acute and sub-acute phases following stroke, there is a paucity of research that has investigated the service delivery of community stroke services delivering ESD or CRT. Although the SSNAP does collect data post-discharge from hospital, its focus is on in-patient settings, and it has been instrumental in

driving forward the quality of stroke services within in-patient settings. This lack of attention, however, on the post-hospital discharge part of the stroke care pathway has resulted in a great variation of service models, patchy service provision, and a lack of understanding as to how or if the evidence-based core components identified through international consensus facilitate the evidence-based delivery of services in real-world settings. Additionally, due to the concentration of research conducted in urban settings, it has been difficult to conclusively determine how or if it is possible to deliver evidence-based services in line with the national clinical guidelines in rural areas. Rural areas face significant challenges associated with delivering ESD both in terms of geographical terrain and from an increase in stroke incidence associated with the higher proportion of elderly people residing in rural areas. Where services delivering ESD have been commissioned in rural areas, they report struggling to deliver ESD in line with the evidence base (NHS Improvement, 2012). Despite repeated calls for research investigating the delivery of ESD in rural areas (Fisher et al., 2011, Fearon et al., 2012, Langhorne et al., 2017, Fisher et al., 2019, Fisher et al., 2020) very little has been conducted. It is currently unknown how or if it is possible to deliver an evidence-based ESD service in rural areas.

However, given ESD is a complex organisational intervention and the wide variation of service models in existence, any investigation needs to be able to address important elements of complexity and context as these are likely to influence service delivery in real-life settings. Questions such as these cannot be answered by an RCT or by quasi-experimental methodology as these methods do not allow for sufficient consideration of the role of context or of complex organisational interventions such as community stroke services.

To understand how to deliver evidence-based services, a greater understanding of service models, healthcare contexts, service configuration, deployment of staff, roles and responsibilities needs to occur. Further understanding of these areas could provide information to inform how and why the core components of ESD contribute to evidence-based service delivery. This understanding could inform recommendations for future service

models and provide additional meaningful data for service managers and clinicians to adapt and tailor to the contexts of their own services.

Research Question

How can community stroke services in rural areas deliver evidence-based services in line with national clinical guidelines? What works, for whom and under what circumstances and to what extent?

Research Aim

To build theory-based explanations for the delivery of evidence-based community stroke services in rural areas of England.

Research Objectives

- How does team composition influence the delivery of evidence-based community stroke services in rural areas?
- How does access to stroke-specific training opportunities influence the delivery of evidence-based community stroke services in rural areas?
- How do in service multi-disciplinary meetings influence the delivery of evidence-based community stroke services in rural areas?
- How do links with in-patient stroke units facilitate care transitions in line with the evidence base for community stroke services located in rural areas?

This chapter has presented the background literature which has informed the overarching research question used within this PhD research. The next chapter presents the methodology and outlines why realist evaluation is an appropriate method to use to answer the research question, aims and objectives outlined above.

Chapter Two
Realist Research

This chapter introduces realist evaluation and justifies why the approach is appropriate within this PhD research. The chapter is split into four sections. The first section briefly introduces the philosophy of science underpinning realist research, then it discusses the limitations of the traditional randomised control trial approach to healthcare research and outlines some of the key differences between realist and interpretative approaches. The second section introduces realist evaluation and justifies its use within the present research. The third section defines and explains key terms and processes necessary to conduct realist research and outlines how realist evaluation can be used to understand the theories underpinning the evidence-based delivery of rural community stroke services. The fourth section outlines and explains the data collection tools commonly used in realist projects.

Research Paradigms

Realist Philosophy Of Science

Critique Of Positivism

Realist approaches are underpinned by a realist philosophy of science (Pawson, 2013) and situated between positivist and interpretivist paradigms. One of the central tenets of a realist approach is the criticism of positivist philosophy underlying the scientific method of experimental research design. From an ontological perspective, positivists believe that a single observable independent reality exists which is best studied through scientific methods, such as those employed within RCTs. Reality is governed by universal laws and is independent of people's interactions with it. From an epistemological perspective, positivists argue for the objective collation of data, which is usually quantitative, and researchers should remain objective so as not to influence the data gained from research participants.

The successionist view of causation, rooted in positivism, whereby cause (X) gives rise to effect (Y), is problematic from a realist perspective as the laws observed in the natural

sciences do not easily transfer to the social world. The belief that there is a singular observable reality is problematic for realist philosophers who purport that both the material and social worlds are real and have real effects regardless of whether we perceive them or not. Mechanisms influencing outcomes cannot be directly observed. Interventions are embedded into pre-existing social systems, human processes such as thinking, or feeling are not observable nor easy to identify or predict and are not accounted for in traditional experimental research. This is an important factor to consider when conducting healthcare research as healthcare systems are complex (Best et al., 2012, Clark, 2012), and inherently social in nature (Marchal et al., 2018). It is the people within those systems, not interventions per se, which generate change (Pawson and Tilley, 1997).

A Stratified Layer Of Reality

Given that observable outcomes alone cannot fully explain causality between variables, realists argue that causality is explained via an understanding of the relationship between the variables of context, mechanism, and outcome. Central to this understanding is the ontological notion of a stratified reality comprising three distinct layers that interact as one to produce observable effects. Originally proposed by the critical realist philosopher Roy Bhaskhar, this stratified reality can be comprehended by understanding that natural mechanisms are responsible for producing laws. In the natural sciences, these mechanisms are real and assumed to exist independently outside of any experimental conditions, and the same is true for social science. Likewise, events are also real and occur independently of people's experiences of them (Elder-Vass, 2007). Therefore mechanisms, events and experiences constitute the three distinct layers of reality which Bhaskar referred to as the empirical, the actual and the real (Bhaskar, 2008). The 'empirical' level is the layer of reality where events take place and changes can be observed. It exists independently of our knowledge of it. The 'actual' layer is related to our experiences and has been described as the layer of reality where the intervention is (Wilson and McCormack, 2006). This layer exists regardless of whether it is observable or not (Westhorp, 2018). The 'real' layer of reality encompasses the former two and is where causal mechanisms in the realist sense are located (Pawson and Tilley, 1997, Westhorp, 2018). Hidden causal mechanisms occurring in the real

layer of reality are the generative cause of whether changes in the empirical level are observed.

Critique Of Randomised Controlled Trials

RCTs are advocated in healthcare as the gold standard for research (Marchal et al., 2013b). This gold standard is based upon the assumption that RCTs produce more reliable results than other empirical study designs (Deaton and Cartwright, 2018), and within healthcare they are primarily used to determine intervention efficacy. The key strengths of the RCT study design are the randomisation of participants and the elimination of bias. Randomisation ensures an equal chance of being assigned to the experimental or control condition and blinding of conditions both to the participant and researchers, reduces the chances of biased results. This method allows any differences between the two groups to be attributed to the intervention. However, the degree to which participant sampling is truly random and effective blinding occurs within RCTs has been questioned (Marchal et al., 2013b, Deaton and Cartwright, 2018).

RCTs are said to operate within closed systems. A closed system is one in which only one force exists, RCTs by their nature try and artificially create closed systems to obtain conclusive proof that the intervention can explain all the differences observed between the experimental and the control conditions. Outside of the realm of pharmaceutical interventions, RCTs have been criticised for their lack of ability to account for complexity or for their lack of being able to produce results which can be successfully implemented into clinical practice (Blackwood et al., 2010). Healthcare organisations have been described as open systems with multiple additional factors influencing if, how or whether interventions are successfully implemented. Successful implementation of interventions in healthcare can be dependent upon a variety of factors including organisational attributes, individual characteristics of participants, interpersonal relationships between patients and researcher, social, cultural, and institutional norms alongside the method of implementation (Blackwood et al., 2010, Porter and O'Halloran, 2012). One of the biggest criticisms of RCTs is that they are not able to account for human reasoning and action (Porter and O'Halloran, 2012).

Complex interventions such as those associated with service delivery, which is the case for this PhD, involve a complex interplay of structure and human agency (interpersonal interactions). Pawson et al., (2004) advocate that whilst it is entirely possible to conduct RCTs of service delivery interventions, the results of such trials are rendered meaningless. Service delivery interventions are inserted into different prevailing complex contexts (healthcare organisations), the people within these organisations will respond to the intervention creating a complex interplay of different interactions and a multitude of different causal forces, which will vary depending upon the individual context (Blackwood et al., 2010). The research design of RCTs does not adequately capture the complexity of these kinds of interventions nor can it explain implementation effectiveness as important contextual details and generative causal mechanisms are stripped away by the trial design.

Critique Of Interpretivism

Realists do not wholly align with interpretivist philosophies. The biggest difference between interpretivism and Pawson and Tilley's scientific realism is that Bhaskar's view of reality poses a challenge for interpretivists. Unlike positivist approaches which advocate a single observable reality, interpretivists believe that reality is provisional, contestable and reflects the constructions of individuals (Mukumbang et al., 2020). Interpretivists argue that reality is socially constructed and fluid giving rise to the existence of multiple realities. Reality reflects individual constructions and incorporates beliefs and understandings that individuals may hold. From an epistemological perspective, knowledge is co-constructed between the researcher and the individual participant, and it is likely to be collated using qualitative data collection methods such as interviews and observations and are likely to be collected using ethnographic or grounded theory approaches. There are similarities in realist and interpretivist approaches such as the quest to seek and understand individual perspectives and their views of the world, as such the voice of the stakeholder is central to both paradigms. However, some of the key proponents of realist approaches such as the search for underlying causal mechanisms influencing outcomes or the production of theoretical explanations of

outcomes are not necessarily associated with interpretivists paradigms (Mukumbang et al., 2020).

Within this present research, which has adopted a case study design, the data collection methods and tools can be thought of as at residing towards interpretive approaches. Although drawing on the principles of ethnographic research, in that the research has sought to observe individuals within their own environment it falls short of the intensive systematic nature of ethnographic research. Given the pragmatic constraints associated with PhDs it would not be feasible to conduct several ethnographic studies where the researcher would spend significant periods of time immersed in the field. Although there are similarities between case study and ethnographic approaches, they differ in their focus. Ethnographers typically seek to describe the phenomena they are studying where as case study researchers typically test theoretical prepositions. Case study as a research method is considered in more detail in chapter 3.

Realist Evaluation In Healthcare

Realist evaluation is a methodological theory-driven approach that uses primary data to confirm, refute or refine pre-determined theories and was originally developed by Ray Pawson and Nick Tilley to evaluate social programmes (Pawson and Tilley, 1997). Dissatisfied with the shortcomings and lack of conclusive cumulative findings in evaluations as well as frustration with the focus on intervention efficacy and effectiveness, realist evaluation offered the ability to understand *how* interventions work when they are embedded into social systems and not simply conclude whether they work or not.

Realist evaluation is considered an appropriate method to use when researching complex healthcare systems, (Marchal et al., 2013a, Rycroft-Malone et al., 2015). It seeks to understand how or why interventions work, for whom and in which circumstances by delving deeper into the layers of reality and capturing additional information that is not easily observed. Gaining an understanding of how interventions generate change is one of the key proponents of realist inquiry. In the context of the present research, it is not sufficient to

prove that community stroke services can deliver evidence-based services the reasons (or hidden causal mechanisms) underpinning evidence-based service delivery need to be understood.

Theory driven approaches to healthcare research have grown in popularity. The recently published Medical Research Council (MRC) guidance for the intervention of complex interventions has highlighted the importance of an iterative approach to the testing and refinement of programme theories as well as the importance of understanding the influence of context in producing outcomes (Skivington et al., 2021a).

Realist Evaluation In Stroke Service Delivery Research

Realist Evaluation as a method is gaining traction in healthcare, although its application in service delivery is limited. One study conducted by Greenhalgh et al., (2009) utilised an organisational case study design drawing on realist principles to understand large-scale implementation of whole service transformation. Stroke services were one of three services that were undergoing the transformation, the other two being kidney and sexual health services. Unlike the present study however, the research evaluated the transformation in a pre-post design. Additionally, research conducted within in-patient stroke units in England again drew upon realist principles in a mixed methods study to uncover mechanisms facilitating or inhibiting the evidence-based delivery of rehabilitation (Chouliara et al., 2016).

Finally, a mixed methods study using realist evaluation to investigate the effectiveness of ESD services in clinical settings across six sites in England (the WISE study) was conducted between 2017-2020 (Fisher et al., 2019). The study used quantitative and qualitative approaches to investigate effectiveness of ESD services. This PhD was conducted independently from the WISE study and was a qualitative realist evaluation of three community stroke services delivering ESD in 3 rural areas of England (the sites chosen were different from those included within the WISE study).

Realist Evaluation In The Present Research

A typical healthcare realist evaluation seeks to understand *how* interventions work when they are embedded within healthcare organisations in a pre-post fashion, with the intervention typically being a clinical treatment. The present research is a theory-building evaluation and is concerned with evidence-based service delivery in real-life settings and differs from traditional realist inquiry in that there is no embedded intervention to evaluate. Theory building research tends to be conducted via realist reviews and focuses on 'problems' E.g. decision-making in healthcare (Duddy and Wong, 2021) to gain a thorough understanding of the problem and how it is manifested before any interventions and their effectiveness are tested. This evaluation is different, it is not focussing on a 'problem' per se. Rather, its focus is on exemplar services with the aim of understanding and explaining *how* the delivery of evidence-based services in rural areas can occur.

Key Realist Terms

The following section will outline the key terms necessary to understand and conduct realist research. Much of the guidance available is explained theory testing of interventions (or programmes). Although this is a theory-building evaluation the information and lessons learnt are still useful.

Programme Theory

In all forms of realist inquiry, the road to understanding how interventions work begins and ends with theory (Wong et al., 2016, Wong et al., 2013). The primary job of the realist evaluator is the articulation of candidate programme theories which are essentially hypotheses explicitly conveying how interventions bring about change (Wong et al., 2013). It is the programme theories, not the interventions which are evaluated (Pawson and Tilley, 1997). Initial articulation of programme theories can be challenging, especially in scenarios where underlying assumptions related to intervention efficacy are not explicitly stated (Pawson, 2013). Evaluators are urged to prioritise and focus research areas by selectively choosing a number of candidate programme theories, developing specific lines of inquiry,

concentrating on policy discord or using conceptual frameworks to focus the area of research (Pawson, 2013, Shearn et al., 2017).

Programme theory outcomes are understood in terms of the relationship between contexts and mechanisms and outcomes and programme theories include descriptions of all three elements. The process of identifying and explaining the link between hidden causal mechanisms and their corresponding contexts which influence whether outcomes are realised is often depicted using the heuristic: context + mechanism = outcome (Pawson and Tilley, 1997, Wong, 2018a). An important consideration to note with realist inquiries is that no programme theory can ever explain or predict every possible outcome in every possible context (Pawson, 2003). Rival theories may emerge, and different contexts may arise leading to different outcomes. Evaluators are urged to search for outcome patterns, referred to as demi-regularities, and cumulatively acquire partial knowledge to gain deeper understandings.

For theory testing to be useful in healthcare, the transferability of theories beyond the local setting is important (Wong, 2018b). Although it is accepted that implementing interventions in different settings will yield different outcomes, the understanding gained from theory development and testing about what works for whom and in what circumstances is transferable (Wong et al., 2016). Programme theories, therefore, need to be specific enough to develop empirically testable theories but also abstract enough to possess transferable properties which can be applied to similar settings.

Context

Context is considered a difficult concept to grasp but a crucial component in understanding how effectively interventions can be implemented in different settings. Across social science, multiple definitions for context exist. For realists this is part of what has been described as a ‘wicked problem’; contexts are unique, each one varying, therefore making it impossible to conclusively define context as a concept. Context has not received as much attention in the academic realist literature as mechanisms. The way in which it is articulated varies considerably as it is often stipulated but rarely defined (Greenhalgh and Manzano, 2021).

This heterogeneity and lack of consistent application of context within studies, adds to the confusion for researchers new to realist methods.

Context Within Realist Inquiry

Within positivist paradigms, such as those which inform RCTs, context is often considered as part of the periphery, of little importance to the intervention under test and is something that must be controlled to generate replicable findings. Within realist inquiry, context is not a static concept, rather it is a relational multidimensional dynamic force and the relationship between generative causal mechanisms and outcomes is contingent upon context (Pawson, 2006, Skivington et al., 2021b). The way in which context and mechanism interact is what generates outcomes, as such context 'does' something to effect an outcome and is not something to be controlled (Pawson, 2013). Realist evaluators should endeavour to uncover how context shapes mechanisms and therefore be able to explain how interventions may produce different outcomes when embedded into different settings (Greenhalgh and Manzano, 2021) with different pre-existing social settings with prevailing contexts. The contexts surrounding these settings are important, as features within each setting influence the activation of mechanisms and offers explanations as to why interventions implemented in different settings yield different results. Context, therefore, relates to so much more than the geographical location or characteristics of institutions within which interventions are embedded. Context can include individuals, interpersonal relationships, institutional settings, infrastructure, cultural and social norms (Pawson, 2013, Skivington et al., 2021b).

A recent review of how context has been articulated within realist research found that context was often depicted in a variety of ways as: 1) static entities and 'observable features or things' with an assumption that context could be controlled; 2) a list of contextual features which facilitated or impeded intervention effectiveness; 3) a concept which triggered a mechanism which subsequently triggered an outcome. (Greenhalgh and Manzano, 2021). What is frequently lacking in the realist literature is a sufficient explanation which clearly outlines how context is linked with mechanisms and outcomes (Greenhalgh and Manzano, 2021). It is given that outcomes vary across settings, when context is viewed as a dynamic force that cannot

be controlled it gives rise to a notion that for interventions to be successfully implemented in different settings, which vary in their contexts, it may be necessary to adapt some of the features of the intervention so that it can be successfully implemented into different settings (Greenhalgh and Manzano, 2021).

Context Within The Present Research

In community stroke services, contextual features may include individual characteristics of staff; professional and non-professional interpersonal relationships between staff; geographical location; physical features of the service; service delivery model; financial resources; national guidelines; governance procedures; culture; national political drivers associated with stroke care as well as the economic landscape surrounding the commissioning of stroke services within the NHS. Although some national contexts will impact similarly across stroke services, local cultures, norms, policies and interpersonal relationships between staff etc will be different in every community stroke service and will influence the delivery of evidence-based services.

Mechanism

The idea of identifying causal mechanisms influencing intervention outcomes is not new or exclusive to realist evaluation. Chen and Rossi (1987) have been credited with the first mention of mechanisms as providing a way of "opening up the black box" of evaluation and offering explanations as to how outcomes are generated (Astbury and Leeuw, 2010).

Realist Mechanisms

From a realist perspective, mechanisms are hidden generative forces that only 'fire' in the right contexts; it is the relationship between these two elements (mechanism and context) that influences whether outcomes are generated (Pawson, 2013, Lacouture et al., 2015). Mechanisms are not variables, they are theories offering explanations about resources offered by interventions and human reasoning to those resources which explain individual human behaviour change (Shaw et al., 2018). They operate at individual, social and structural levels and explain how individuals' choices (agency) and the "capacities they derive from

group membership" influence outcomes. (Pawson and Tilley, 1997) Although hidden, they can be identified through outcomes. Mechanisms have latent power, they remain dormant unless they are activated in the correct circumstances (Jagosh, 2019). Articulating latent mechanisms can be challenging, as they may only manifest as interventions are embedded into settings and may only be triggered by changes in context.

When trying to offer explanations about individual reasoning and responses to interventions within social systems, pre-existing contextual, social, institutional, and cultural structures influencing individual decision-making and behaviours need to be identified. These structures may be physical resources or ideational beliefs that serve to exert influence over individuals or groups of people and lead them to make one decision over another (Pawson and Tilley, 1997, De Souza, 2013). Over time, the influence exerted by these structures may also change as these too can be shaped by the decisions and behaviours of the people that operate within them. Observable behavioural change is a complex interplay of the social environment comprising its various structural components and the agency of the individuals within it. It is the job of the realist evaluator to attempt to map this complexity, accounting for the various structures, to understand the causal mechanisms influencing implementation. This is a difficult task as there are only so many avenues that can be pursued within evaluations. The challenge for the evaluator is in determining which areas will become focal points.

Challenges In Defining Mechanisms

Given the hidden nature of causal mechanisms and the difficulties associated with quantifying or articulating them, it is acknowledged that understanding mechanisms is challenging. Multiple definitions exist, some define them as components of interventions or variables (Astbury and Leeuw, 2010, Marchal et al., 2012). These definitions differ somewhat from the description originally offered by Pawson and Tilley whereby mechanisms are largely categorised as cognitive processes to stimuli offered by interventions.

A common problem faced by realist researchers is associated with the conflation of mechanisms with either context or outcomes (Astbury and Leeuw, 2010, Marchal et al., 2012,

Dalkin et al., 2015, Shaw et al., 2018). Contexts, mechanisms, and outcomes are not fixed entities, whether something is depicted as a context (C), a mechanism (M) or an outcome (O) largely depends on where the analytical focus is located. This is perhaps easier to understand if viewed as a sequential implementation chain in which the outcome from one context mechanism outcome configuration (CMOC) (C1 + M1 = O1) provides the context for the next part of the intervention (C2(O1) + M2 = O2). (Shearn et al., 2017). Some researchers argue that due to the sequential multi-layered process, the distinction between the concepts is arbitrary (Shaw et al., 2018); a natural overlap exists and the focus should be on ensuring all of the elements describing intervention success or failure have been identified (Jagosh et al., 2014).

Although Pawson and Tilley's original work articulated that mechanisms comprised both resources and reasoning, researchers have often failed to explicitly articulate these aspects (Dalkin et al., 2015). Dalkin et al. found that disaggregating mechanisms into resources and reasoning helped with the difficulty associated with differentiating between context and mechanism. They proposed a modification to the original CMOC heuristic and suggest that the following formula be used:

$$M(\text{Resources}) + C \longrightarrow M(\text{Reasoning}) = O$$

Mechanisms Within The Present Study

The concept of mechanisms within the present study follows the logic proposed by Dalkin et al. , (2015) mechanisms are explicitly split into separate resources and reasoning. Resources include staffing, meeting structure or a designated person to chair the meetings, training, processes etc. Reasoning can be thought of as the responses of the people to those resources and include but are not limited to trust, understanding or confidence.

Outcome

Outcomes in realist evaluations can be thought of as changes occurring as a direct result of being involved with interventions. Changes may be short, medium, or long term and intentional or unintentional. Outcomes are often easier to identify as they occur in the empirical layer of reality, which is observable, therefore outcomes are tangible.

Demi-regularities

To understand how interventions work, the identification of outcome patterns is required (Pawson, 2006). Outcome patterns in realist inquiries vary due to contextual differences between settings (Pawson and Tilley, 1997). These semi-predictable patterns are referred to as 'Demi-regularities' and offer a way of explaining how human agency produces differences in individual behavioural outcomes which can be attributed at least in part to contextual differences between settings (Jagosh et al., 2012). The knowledge gained from understanding demi-regularities can be useful for determining how successful future implementation efforts may be. Additionally, depending upon the field of study outcomes may be viewed as a continuum, in that the likelihood of observing outcomes may depend upon the degree to which context and mechanisms fire to produce the outcome.

Outcomes Within The Present Study

Outcomes in the present study are the observable events which facilitate the delivery of evidence-based services in line with the national clinical guidelines for stroke. These include, interdisciplinary working, adherence to quality standards, increases in service capacity and the delivery of intensive rehabilitation, provision of holistic care, shared decision making, and the extent to which care transitions are considered smooth, timely and appropriate. The degree to which these outcomes are achieved is dependent upon the way in which the unique contextual conditions of each service interacts with hidden generative causal mechanisms and can be thought of as a continuum as opposed to occurring or not.

Retroduction

Realist inquiry primarily involves the application of retroduction as an explanatory tool to identify and test generative causal mechanisms thought to influence outcomes (Gilmore, 2019, Jagosh, 2020, Kabongo et al., 2020, Mukumbang et al., 2020, Mukumbang et al., 2021). The realist and meta-narrative evidence syntheses: evolving standards (RAMESES) for realist evaluations recommend that data analysis take a retroductive approach (Wong et al., 2017). It has been suggested that retroduction is an approach to theorising that incorporates

deductive, inductive, and abductive inferencing (King et al., 2016, Wong et al., 2017, Gilmore et al., 2019, Mukumbang et al., 2021)

Inference Making In Realist Inquiry

Four types of inference making have been identified in realist studies and they include: deduction; induction; abduction; and retroduction. Deductive inferencing involves testing theory against evidence and inductive inferencing involves generating theory from evidence. Deductive and inductive inferencing are limited in their ability to identify and explain generative causal mechanisms, which is a central tenet to realist approaches (Greenhalgh and Manzano, 2021) and have been described as having a static ontological viewpoint (Jagosh, 2020).

In realist inquiry abduction and retroduction inferencing is concerned with the identification of mechanisms and are often used synonymously in realist research (Mukumbang et al., 2021). However, subtle differences do exist between the two. Abduction has been described a form of 'inventive thinking', often referred to as 'researcher hunches' in realist studies, and has been described as the kind of thinking required to imagine the existence of mechanisms (Jagosh, 2020). As such, this form of inferencing involves taking an incomplete data set or explanation of events and attempting to determine the most likely explanation for the missing information or outcome (Mukumbang et al., 2021). On the other hand, retroduction aims to '*theorise and test these hidden mechanisms'* (Jagosh, 2020) and has been labelled as a form of retrospective theorising, working backwards from program outcomes to ascertain the conditions (mechanisms and contexts) that are required for outcomes to be realised (Mukumbang et al., 2021). As a logic of inquiry it is used to determine causal inference through the identification and testing of hidden causal mechanisms occurring at one layer of reality (Bhaskar's 'real' reality) which are thought to influence intervention outcomes at a different and observable layer of reality (Bhaskar's empirical reality) (Jagosh, 2020, Mukumbang et al., 2021). Within the context-mechanism-outcome explanatory triad, retroductive theorising involves hypothesising about how hidden causal generative mechanisms interact with different contextual conditions to produce outcomes. Initially

abductive theorising, is employed to imagine the existence of such mechanisms which are then theorised and tested through a retroductive approach (Jagosh, 2020, Mukumbang et al., 2021).

In a recent review of the realist informed literature, which incorporates scienfitic realism as identified by Pawson and Tilley but also other forms of realist inquiry, including critical realism, Mukumbang et al., found that inductive and deductive forms of inferencing were consistently applied and articulated in studies, abductive and retroductive inferencing were rarely reported (Mukumbang et al., 2021). However, it is accepted that retroduction is a challenging concept to grasp, apply and articulate (Gilmore, 2019, Jagosh, 2020, Mukumbang et al., 2021). Whilst employing a retroductive approach within realist inquiry has been attributed with improving the quality of evaluations and increasing the chances of producing more accurate complex assessments (Jagosh, 2020), researchers are urged to ensure they describe how the process was applied within studies which will improve the transparency and trustworthiness of any findings produced (Wong et al., 2017, Jagosh, 2020, Mukumbang et al., 2021).

Retroduction Within The Present Study

Retroductive theorising was used throughout the present study. In line with recent guidance (Mukumbang, 2021), it was first applied during the formulation of the programme theories whereby potential mechanisms were abductively generated (i.e. an educated guess was articulated). These were then discussed with the expert advisors who helped develop the candidate programme theories. It was extensively applied during data collection, observations were likely to result in incomplete data, often providing information about context and outcomes but not mechanisms. Sometimes mechanisms were clearly articulated by stakeholders, sometimes they were not, this is not surprising given the hidden nature of mechanisms. In these scenarios, mechanisms were again abductively generated and retroductively tested and refined during the realist interviews. Retroductive theorising continued again throughout data analysis and synthesis and is articulated in more depth in Chapter Three.

Data Collection Tools In Realist Evaluations

Realist evaluations are considered method neutral and researchers are encouraged to use multiple data collection methods to gather the necessary nuggets of evidence to refine programme theories (Pawson, 2006, Wong et al., 2016).

Realist Reviews

Realist evaluation projects often commence with a realist review of relevant literature to inform candidate programme theory development. The theories are then tested during the evaluation period.

Introduction To Realist Review

Realist reviews can be thought of as an interpretative approach to evidence synthesis and they aim to identify and explain how context and mechanism, combine to produce outcomes (Pawson et al., 2005). Traditional systematic reviews which are primarily concerned with programme effectiveness, have been criticised for stripping away important information (context and mechanisms) relating to how or why programmes work (or not). With their emphasis on understanding and explaining how interventions work, realist reviews uncover underlying theories by examining how mechanisms and contexts interact to produce outcomes. Realist reviews can be conceptualised as theory-building or theory-testing, although the search strategies and approaches taken with the latter should be more systematic and transparent (Wong et al., 2013).

Selection And Search Strategies In Realist Reviews

In contrast to systematic reviews where searches are strictly controlled, explicitly stated and reproducible, realist searches are acknowledged to be iterative and intuitive and time-consuming (Booth et al., 2020). Realist researchers are advised to employ a wide range of strategies and access sources of grey literature such as policy documents, service specifications, guidance reports for commissioners etc which can all prove beneficial in

providing information useful for programme theory generation (Pawson and Tilley, 1997, Wong et al., 2016). There is no definitive guidance to follow when conducting searches in realist projects, and as a consequence huge variation exists in the field (Booth et al., 2020, Duddy and Roberts, 2021). Traditional academic databases have been criticised for producing a lack of information (Coleman et al., 2020). Researchers are advised to be transparent in their search criteria, adopt iterative approaches to literature searching. The use of web-based searches via Google Scholar and purposive sampling via snowball searching, citation tracking (incorporating Google Scholar forward tracking), contacting authors and expert stakeholders and CLUSTER methods are all of the diverse toolkit available for realist researchers (Wong et al., 2013, Booth et al., 2018, Booth et al., 2020). Six components of realist searches have been advised and they are: *"1) formulating the question; 2) conducting the background search; 3) searching for programme theories; 4) searching for empirical evidence; 5) searching to refine programme theories; 6) documenting the search process"* (Booth et al., 2018). Realist reviews typically involve a team of researchers and content experts alongside specialists in information synthesis such as librarians.

Rapid Realist Reviews

Realist reviews are time consuming challenging endeavours; rapid realist reviews have been suggested as a way of balancing the need to generate realist findings within the time constraints of realist research (Saul et al., 2013). As with realist reviews, there is no set methodology to follow, researchers are urged to focus the review in light of time, resources and the research questions that need to be answered (Wong et al., 2013). Five iterative stages have been have been suggested to be completed when undertaking rapid realist reviews and these incorporate 1) development and refinement of research question; 2) searching and retrieving information 3) screening information; 4) appraising information; 5) synthesising and interpreting the information (Ní Shé et al., 2018, Davies et al., 2019). Rapid realist reviews often use stakeholders at the initial stages to focus and narrow down the research question. Rapid realist reviews are thought to be useful for projects with time limited resources but where a need to provide contextually rich explanations as to how programmes

can produce different outcomes when embedded into different settings (Saul et al., 2013) but often still take several months to complete.

Non-participant Observations

Non-participant observations are commonly used within healthcare realist evaluations as a source of evidence gathering (Greenhalgh et al., 2009, Gordon et al., 2018, Maben et al., 2018) and are useful in understanding contextual features and identifying outcomes. Due to the hidden nature of realist mechanisms, they are not as useful in determining mechanisms.

Documents

Documentary analysis is often used in realist evaluation. The kinds of documents vary according to the type of evaluation undertaken but include minutes and agendas of meetings, service specifications or policy documents, patient notes, audit results and service reports amongst others (Rycroft-Malone et al., 2008, Gilmore et al., 2019). Documents can identify tangible processes and provide insights into the underlying assumptions of interventions. Existing administrative records can be useful in articulating outcomes. However, as with observations, articulating mechanisms is more difficult.

Realist Interviews

Objectives Of A Realist Interview

The objective of realist interviews is to *'inspire/validate/falsify/modify'* hypotheses about how or why interventions work (Pawson and Tilley, 1997). The goal is to gain knowledge, understanding and insights into relevant contexts and causal processes (mechanisms) generating outcomes. Realist interviews are theory-driven; questions centre around the programme theories. Interview questions evolve to reflect newly acquired knowledge, tentative generation of CMOCs can be explored in subsequent interviews and assist with theory refining.

Sampling In Realist Interviews

Sampling should be purposive, with participants identified based on their ability to contribute to programme theory (Emmel, 2013). Different stakeholders experience interventions in different ways, the goal is to capture these differing perspectives, examine demi-regularities and unintended outcomes. To complement the iterative nature of realist research it is advised to conduct subsequent interviews with key participants at a later point in the study to enable deeper questioning of and exploration of programme theories since significant knowledge will have been accrued since the first interview. In evaluations where this strategy is not feasible theory building can occur by asking different questions as knowledge of the programme under evaluation is gathered (Manzano, 2016).

Stages Of Realist Interviews

Manzano purports that there are three stages to realist interviews: theory gleaning, theory refinement and theory consolidation, although it is acknowledged that it may not always be possible to achieve all three phases in one evaluation (Manzano, 2016). Theory gleaning is the first step of theory refinement and helps explore first-order theories which focus on how context influences behaviour and outcomes. These exploratory interviews seek to ascertain how interventions work (or not) and for whom and are useful in providing initial explanations. Theory refinement is where second-order theories are explored. Questions are tailored to specific contexts and outcomes and stakeholders are encouraged to articulate underlying mechanisms in which outcomes may or may not be triggered. Inconsistencies within and between different settings are investigated. Theory consolidation and the articulation of third-order theories is the final stage of theory refinement and continues beyond data collection into data analysis. This stage determines how groups of people are differentially affected by the programme theories under evaluation (Manzano, 2016).

The Scope Of Realist Research

It is accepted within realist inquiry that knowledge will always be partial, fallible and subjective, it is not possible to gain a complete understanding of an intervention (Pawson and Tilley, 1997). Qualitative data sources such as interviews can be limited in their

generalisability to wider populations whereas large datasets used in quantitative analysis lack relevant contextual and causal information underlying the implementation of interventions (Jagosh et al., 2014). The realist quest, therefore, is to cumulatively acquire knowledge to gain a deeper understanding (Pawson, 2013). This knowledge may arise from multiple data sources or multiple evaluations but will never be complete.

This chapter has provided an understanding of the philosophical underpinnings of realist inquiry and has explained and justified the use of a realist evaluation within the present research. Additionally, it has explained key realist terms so that the reader has a greater understanding of the data collection methods and presentation of findings which can be found in subsequent chapters.

Chapter Three
Methods

This chapter presents the methods associated with the research. The content has been written in accordance with the RAMESES II reporting guidelines for realist evaluations (Wong et al., 2016). This chapter begins by diagrammatically outlining the phases involved in the evaluation, which can be viewed in Figure 1. The figure was designed to maximise the transparency associated with the evaluation design. The evaluation was less linear, more complex, and messier than is indicated by the figure. There were overlaps between most of the phases and some phases were conducted simultaneously. The colours used in the figure are replicated in the headings throughout this document to aid with navigation. Realist evaluators are urged to be transparent in their reporting processes and the detail provided within this chapter in relation to data analysis and synthesis have been articulated with transparency in mind. It is hoped that this information provides an insight into the analysis process though it has to be acknowledged that the reality of this task was inherently more complex and less linear than is suggested in the chapter.

Phase One: Candidate Programme Theory Development

As outlined in Figure 1 phase one was concerned with candidate programme theory development which was informed by an implementation framework, conversations with expert advisors, published literature in stroke, national clinical guidelines for stroke and the results from the phase 2 post-acute SSNAP.

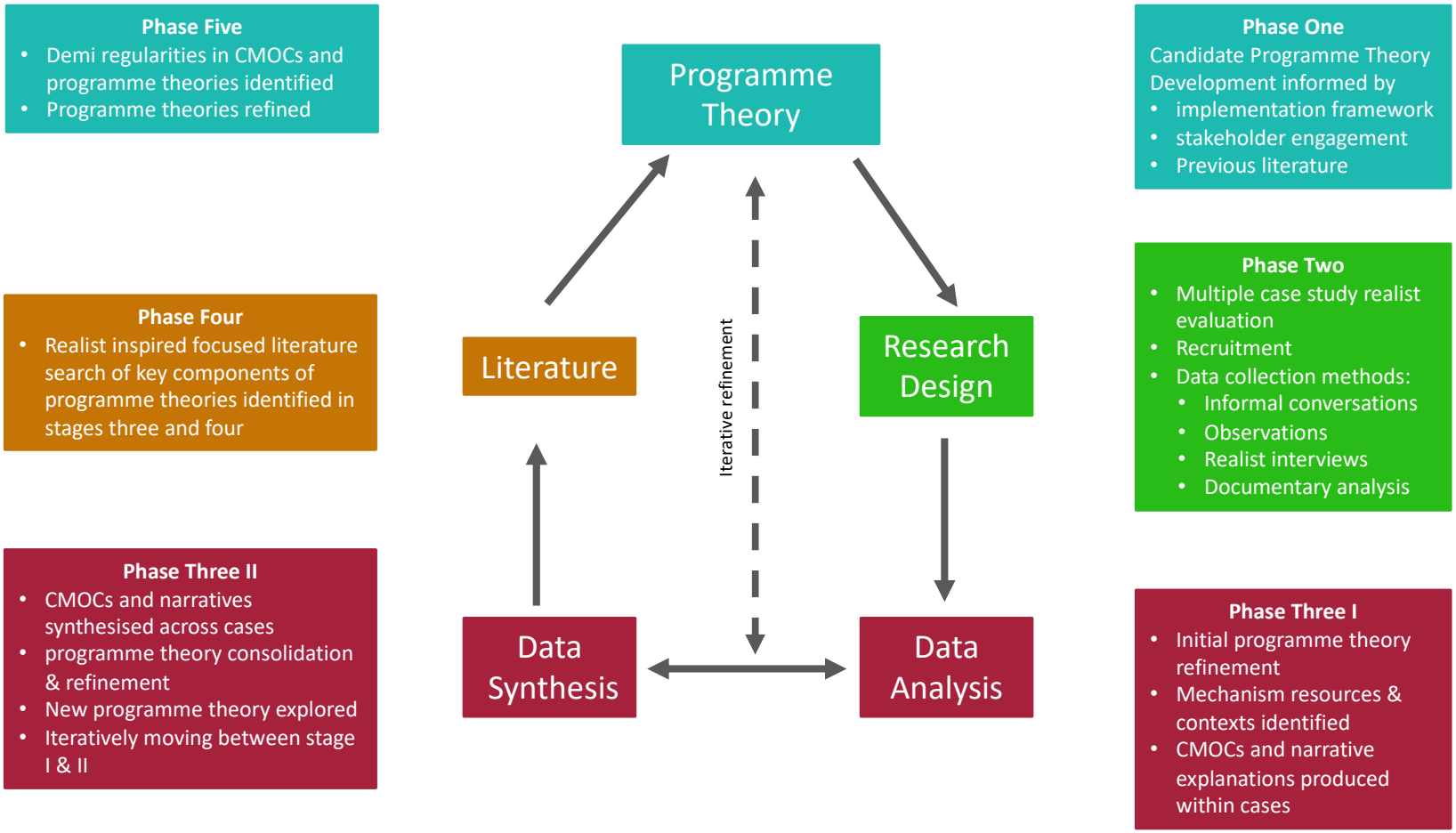


Figure 1. Research Design And Analysis Pathway (adapted from Gilmore et al., 2019)

Determining The Focus

The Consolidated Framework for Implementation Research (CFIR)

The purpose of this theory-building evaluation was exploratory and therefore the initial area of focus was broad, it was, therefore, important to focus the scope of the evaluation. The CFIR was used as a framework to focus the development of five candidate programme theories, one for each of the domains featured within the CFIR. This is consistent with recommendations from Pawson (2013) to avoid producing extensive lists of programme theories, and Shearn et al., (2017) to use conceptual frameworks to provide structure and aid with the identification of key features thought to be integral to programme theories. The CFIR is normally used to evaluate discrete complex interventions implemented within healthcare services. However, its emphasis and similarities with realist inquiry on theory development, the role of context and the quest to uncover how and why interventions work (Damschroder et al., 2009) was felt to be suited within the present research.

Academic And Grey Literature Sources

Limited academic literature exists relating to the implementation of community stroke services, and nothing at all focussing on community stroke services in rural areas. The initial literature and documents examined in phase 1 were used to provide insights into possible areas for creating 'rough and ready' programme theories which could offer some insights into service delivery. The literature was purposively sampled and included the original ESD RCTs, including supplementary material, and papers researching service delivery of stroke services. Grey literature yielded service specifications, policy documents alongside the National Clinical Guidelines for Stroke (Intercollegiate Stroke Working Party, 2016). The latter was used to determine which elements of stroke service delivery were considered evidence-based and helped with focussing and identifying elements (namely mechanisms) of programme theories that were extracted and mapped onto the CFIR domains.

Expert Advisory Panel

In line with the standards for realist evaluation, expert advisors were used in this research to aid with the articulation, development and refinement of programme theories. The terminology commonly attributed to people performing this function in realist studies is 'stakeholder'. However, the term stakeholder is used in this research to refer to the participants, therefore, to avoid confusion between the two groups, the term expert advisors will be adopted. The panel comprised: 1) PhD supervisors who were all experts in stroke rehabilitation; 2) three healthcare professionals working in stroke rehabilitation services; 3) four healthcare researchers with experience of researching stroke rehabilitation services; 4) two healthcare professionals who were identified for their dual expertise in realist methods and healthcare, though these individuals did not work in stroke services and 5) one expert in realist methodology.

The experts were identified for their ability to facilitate the development of candidate programme theories, as indicated some were included because of their dual expertise in healthcare and realist research. Except for the supervisory team, all interactions with the expert advisors were conducted on a one-to-one basis. As this researcher is not a registered healthcare professional, working knowledge of NHS services was limited, these experts were initially consulted to provide background information on working in healthcare, working in stroke services or community stroke services delivering ESD and helped to determine and shape the final five programme theories chosen to be investigated in the evaluation. For example, with respect to training, professionally registered healthcare staff were asked to consider how training had impacted their clinical work and how that might apply to rurally based community stroke services.

These conversations took place over a prolonged period of time commencing in October 2015 and continued throughout the whole PhD until submission in 2021. Field notes were made during the course of these conversations and in the case of the supervisory group, key aspects of the conversations were recorded in the supervision logs. In relation to the development of the candidate programme theories, it was an iterative process, some experts were consulted

multiple times and they provided feedback on all candidate programme theories, for example although all PhD supervisors provided feedback on the programme theories, the majority of the interactions were with the primary PhD supervisor.

Candidate Programme Theories

The five candidate programme theories, that were selected for inclusion are depicted in Table 1 on page 54. Explanations are provided below detailing the contribution of the various evidence sources. These programme theories are a representation of knowledge and understanding accumulated at a specific time point. A PhD is a learning journey, and in hindsight, with a greater understanding of realism, it is appreciated that some mechanisms and contexts have been conflated. Additionally, context has been superficially over related to geographical location. As outlined previously, this is a common problem, especially for researchers new to realist methods (Marchal et al., 2018). The decision has been taken not to rephrase the candidate programme theories in case the essence of the original programme theory is distorted.

Candidate Programme Theory One

Candidate programme theory one can be mapped onto the CFIR domain of the Intervention. It hypothesised that team culture emphasising innovation and shared responsibility within rural community stroke services (RCSS) would give staff members the confidence to adapt their service model and increase the likelihood of delivering evidence-based services.

The intervention was defined as the service model. Service models outline both the organisation and structure of services as well as detail information relating to the processes underpinning the delivery of care. The mechanism resource is informed by realist research investigating teamworking in stroke (Harris et al., 2013), whereas the reasoning component is a combination of expert advisory input and implementation theory which hypotheses interventions adapt to local contexts (Damschroder et al., 2009).

Candidate Programme Theory Two

This candidate programme theory can be mapped onto the CFIR domain of the Individuals. It hypothesised that having access to stroke-specific training opportunities would leave staff feeling more valued and motivated to deliver evidence-based services.

The intervention was stroke-specific training. The mechanism resource part of this programme theory is related to the recommendation that staff working in stroke services receive stroke-specific training (Intercollegiate Stroke Working Party, 2016). The mechanism reasoning part is wholly influenced by expert advisory engagement.

Candidate Programme Theory Three

Candidate programme theory three can be mapped onto the CFIR domain of the inner setting. It hypothesised that rurally based community stroke services meeting at least weekly to exchange information about patients would result in a shared sense of purpose and understanding of services, leading to a greater likelihood of delivering evidence-based services

The intervention was multidisciplinary meetings (MDM). This programme theory was influenced by the recommendation that stroke services discuss patients in meetings at least once a week (Intercollegiate Stroke Working Party, 2016). The mechanism resource part of this theory is influenced by the fact the guidelines outline that the purpose of these meetings is to exchange information about stroke patients (Intercollegiate Stroke Working Party, 2016). The mechanism reasoning is influenced by realist research into interprofessional teamworking in stroke services (Harris et al., 2013) as well as expert advisory input.

Table 1 Candidate Programme Theories

Candidate Programme Theory & CFIR Domain	Context	Mechanism Resource	Mechanism Reasoning	Outcome
1. Intervention	In RCSS services facing geographical challenges delivering rehabilitation, relative to their local context	teams possessing a culture that promotes innovation and shared responsibility	gives service members confidence to make adaptations to the recommended service model,	and increases the likelihood of delivering an evidence-based service
2. Individuals	In rurally based appropriately resourced community stroke services	where stroke-specific training is provided to keep up to date with continued professional development	staff feel valued and more motivated	to deliver an evidence-based service
3. Inner Setting	RCSSs meeting at least once a week	to exchange information about stroke patients,	results in staff developing a shared sense of purpose and understanding of service objectives	which leads to an increased likelihood of an evidence-based service
4. Outer Setting	RCSS who have developed close links with referring stroke units,	allows for the appropriate exchange of patient information,	which facilitates effective decision making	resulting in a more coordinated and smooth discharge from hospital
5. Implementation Process	Commissioners who possess an understanding of SSNAP and national clinical stroke guidelines for stroke	will commission services that are appropriately resourced services with stroke specialist staff	leading to teams feeling empowered/ valued/ motivated	To deliver an evidence-based service.

Candidate Programme Theory Four

The fourth candidate programme theory can be mapped onto the CFIR domain of the outer setting. It hypothesised that services that have developed close links with referring stroke units result in the appropriate exchange of patient information, facilitating effective decision making and resulting in a more coordinated and smooth transfer of care between services.

All components within this programme theory are influenced by literature on the implementation of ESD services (Chouliara et al., 2013) and the national clinical guidelines for stroke which advise ESD services to triage and start treating patients within 24 hours of discharge from referring units (Intercollegiate Stroke Working Party, 2016). The reasoning part is informed by expert advisory input.

Candidate Programme Theory Five

Candidate programme theory five can be mapped onto the CFIR domain of the process of implementation. It is hypothesised that commissioners with an understanding of the SSNAP audit and national clinical guidelines for stroke will commission appropriately resourced services with stroke specialist staff; leading to staff working within RCSSs feeling motivated to deliver an evidence-based service.

The evidence informing this programme theory relied heavily on expert advisory input as there is a paucity of literature investigating the commissioning of community stroke services. Nonetheless, recommendations for commissioners are contained within the 2016 national clinical guidelines for stroke (Intercollegiate Stroke Working Party, 2016) and these informed the articulation of this theory.

Phase Two: Research Design

As depicted in Figure 1, phase two involved determining the design of the evaluation, recruitment, and articulation of data collection methods. The justification for a realist evaluation approach has been outlined in chapter two.

Realist Evaluation Case Study

Case Study Design

The research design was a 'literal replication realist evaluation multiple case study'. To determine '*How*' community stroke services can deliver an evidence-based service, it was necessary to research exemplar services. The rationale behind this was that exemplar services will have adapted to overcome challenges associated with rural working and would provide meaningful guidance and transferrable findings for other rurally based community stroke services. Multiple definitions of case study exist, the one that has influenced the design of this study is: '*an empirical method that investigates a contemporary phenomenon (the "case") in depth and within its real-world context especially when the boundaries between phenomenon and context may not be clearly evident '* (Yin, 2018).

Analogous with realist evaluation, case studies are an appropriate design choice when undertaking exploratory research aiming to investigate how or why questions (Yin, 2018) and are often used within healthcare realist evaluations. The naturalistic environment of real-life settings provides contextually rich detail about how or why interventions work (or don't) with each setting participating in the research. They are appropriate to research complex systems, build theory and investigate naturally occurring organisational behaviours (Marchal et al., 2010, Yin, 2018) whilst allowing for a greater appreciation of the role that context has in influencing outcomes.

Case studies can either be single or multiple case study design. Single case studies may be chosen when researching extreme or unusual cases, the focus of the research is revelatory or longitudinal (Yin, 2018). Although multiple case study design is generally considered to be a more robust design as the ability to generalise findings is increased it can be significantly more resource intensive than a single case study. The grounds for selecting cases is based upon whether literal or theoretical replication is being investigated. Literal replication case study hypothesises that findings will be similar between cases and is often used when there are only a few cases (2-3). Theoretical replication may be conducted with a greater number of cases where it is hypothesised that there will be contrasting findings (Yin, 2018). A literal replication case study design is an ideal method to use when researching exemplar cases (Yin,

2018), which is the case with this research. However, it should be noted that this method of selecting cases has been criticised for its lack of reflexivity and may not be wholly suited to evaluate complex organisations such as health services (Crowe et al., 2011).

Case study research is a challenging undertaking and requires careful planning, with research questions, theoretical propositions, data collection methods and analysis plans clearly articulated in advance. Researchers are advised to interrogate existing literature and speak to others knowledgeable about the topic of interest to develop theories to test during data collection. Aligned with realist evaluation, theory building in case studies occurs through collating fragments of evidence obtained via multiple sources (Hartley, 2004). This approach to data triangulation has been attributed with increasing the internal validity of the research and provide a more holistic understanding of the phenomena under evaluation (Stake, 1995). Employing a case study design can result in the production of volumes of data, therefore utilising theoretical frameworks to focus data collection activities is also advised (Hartley, 2004). Additionally, data analysis should be influenced by a logic of inquiry which is concurrent with the pre-developed theories (Yin, 2018). In the context of this research candidate programme theories were developed in line with the realist logic of inquiry prior to data collection.

Researchers are advised to be open to emerging theories throughout the data collection period (Yin, 2018) whilst embracing theoretical development. The teacher-learner method of the realist interview (explained below) assists with this process by allowing stakeholders to correct the interviewer on their beliefs. Additionally, undertaking observations in the natural environment ensures that researchers are exposed to situations which may generate development of new theories.

Realist evaluation case studies often use mixed methods approaches in that they aim to gather quantitative and qualitative data to explain findings. However, these types of realist evaluations are usually investigating some form of programme effectiveness in a pre-post fashion. This theory building evaluation is not seeking to answer that sort of question as there

is no pre-post scenario to evaluate. Therefore, the primary approach utilised will be qualitative.

Case Selection

Case selection within case study design needs to be carefully considered. Theory driven approaches to selecting cases are recommended as it is thought this will increase the transferability of findings to other settings. Additionally it also gives rise to a greater understanding as to how and why interventions prove successful (or not) when implemented into different settings (Improved Clinical Effectiveness through Behavioural Research Group, 2006). Within the context of this research, the candidate programme theories were the drivers for cases to be included within the research. To be able to answer the research question of "How can community stroke services in rural areas deliver evidence-based services in line with national clinical guidelines? What works, for whom and under what circumstances and to what extent?" it was important to identify and research 'exemplar services' i.e., services located in rural areas of England already meeting the evidence-based criteria. The SSNAP phase 2 post-acute organisational audit provided a database within which to identify suitable cases.

Identifying Evidence-Based Rural Services

The SSNAP phase 2 post-acute organisational audit collected data relating to the structure and organisation of all post-acute stroke services as of April 1st 2015 in England, Wales and Northern Ireland and is publicly available (Royal College of Physicians, 2015). The data relates directly to recommendations about the organisation of stroke services contained within the national clinical guidelines for stroke, with the underlying premise being, services adhering to audit criteria were providing evidence-based services. This data set was used to identify evidence-based services for inclusion within this research.

The flow diagram depicted in Figure 2 on page 63 diagrammatically displays the processes involved in selecting the sites. Of the 756 post-acute stroke services identified within the audit, 321 were classified as domiciliary services, providing rehabilitation to patients in their own homes and included ESD, CRT as well as other domiciliary services.

A series of selection criteria filters detailed below were applied to the dataset to identify any services adhering to key evidence-based criteria. One filter was applied for each candidate programme theory to ensure selected services could provide sufficient evidence to inform theory development. Subsequent filters to identify rural services within the commuting range were applied.

Team Composition

The first selection filter mapped onto candidate programme theory one and was concerned with team composition. It is recommended that ESD and community stroke services comprise the following disciplines: nursing, physiotherapy, occupational therapy, speech and language therapy as well as RAs (Fisher et al., 2011, Intercollegiate Stroke Working Party, 2016). This filter removed 180 services that did not meet the above criteria. Although it is also recommended that clinical psychologists and social workers should be included within the core team, nationally the provision of these disciplines within stroke services is inadequate (Intercollegiate Stroke Working Party, 2016), therefore the decision was taken not to include them to ensure sufficient services remained once all filters had been applied.

Stroke Specific Training

The second selection filter mapped onto candidate programme theory two and was concerned with the provision of stroke-specific training. It is recommended that stroke services provide stroke-specific training for healthcare staff within the service (Intercollegiate Stroke Working Party, 2016), therefore this filter removed 16 services that did not provide stroke-specific training.

Multidisciplinary Meetings

The third selection filter mapped onto candidate programme theory three and was concerned with MDMs. It is recommended that ESD teams should discuss and exchange information about stroke patients in their care in meetings occurring at least once a week (Intercollegiate Stroke Working Party, 2016). The third filter removed 14 services not meeting these criteria.

Timeliness Of Care Transitions

The fourth selection filter mapped onto candidate programme theory four and was concerned with the timeliness of care transitions. ESD teams are advised to triage and start treating patients within 24 hours of discharge (Intercollegiate Stroke Working Party, 2016). This filter removed a further 33 services which did not undertake initial triage of stroke patients within two days of discharge from the referring unit. The limit of two days was chosen to allow for services not operating 7 days a week to be able to meet the criteria as the SSNAP phase two organisational audit of post-acute stroke service providers reported only 29% of services operating 7 days a week (Royal College of Physicians, 2015).

Participation In The Stroke Sentinel National Audit Programme

The fifth selection filter mapped onto programme theory five. This was more difficult to determine from the data set. However, audit data is routinely used to benchmark services against national indicators which can be used to ascertain whether services are meeting objectives determined by commissioning bodies. This filter was chosen as it identifies services participating in the routine clinical audit and thus would provide this type of information. It is recommended that ESD teams participate in the national clinical audit (Intercollegiate Stroke Working Party, 2016). The fifth filter removed an additional 10 services not participating in the clinical audit.

Rurality

The sixth selection filter identified services operating in rural areas. The post-acute domiciliary dataset did not classify stroke services by rurality, but it did contain information relating to the Clinical Commissioning Groups (CCGs) responsible for commissioning services. A separate index of rurality exists for all 211 CCGs In England (Office for National Statistics, 2016), each CCG is scored between 1 and 6 depending on the level of rurality within which they are located. The sixth filter removed 44 services commissioned by CCGs classified as urban services (scoring 4, 5 and 6), leaving 24 rural community stroke services.

Finally, a seventh selection filter was applied to identify services residing within a 60-mile radius from the researcher's home; 19 services were removed at this stage as they were

located outside of this radius. Of the five remaining services, one service had been decommissioned and another had two entries. Initial contact with this service revealed it was commissioned as an integrated service delivering both ESD and CRT which were entered separately on the SSNAP database, leaving three distinct services. Due to the lack of choice, all remaining services were approached to participate in the research; the identity of the services has been protected and forthwith will be referred to as sites 1, 2 and 3.

Ethical Approval

This research was sponsored by the University of Nottingham. Ethical approval from the University of Nottingham was obtained on 26 April 2017 (Appendix 1). As the research was conducted within the NHS, Health Research Authority (HRA) ethical approval was required in addition to university approval, and this was obtained on 31 March 2017 (appendix 2). Each participating NHS Trust participating was also required to confirm capacity and capability to participate in the research before data collection could commence. These were received on 12 June 2017, 11 August 2017, and 30 June 2017 for sites 1, 2 and 3 respectively. Research activities commenced in site 1, with sites 2 and 3 following once letters of access were issued.

As part of the process involved in gaining sponsorship from the University of Nottingham, approved pre-designed participant information and consent forms were used. Two copies of the consent form were signed by both the researcher and the stakeholder participating in the research. Each stakeholder kept one copy with the other being stored in the trial folder. All data were managed according to the Data Protection Act, 1998. Computer data was held securely, and password protected. Access was restricted to the researcher.

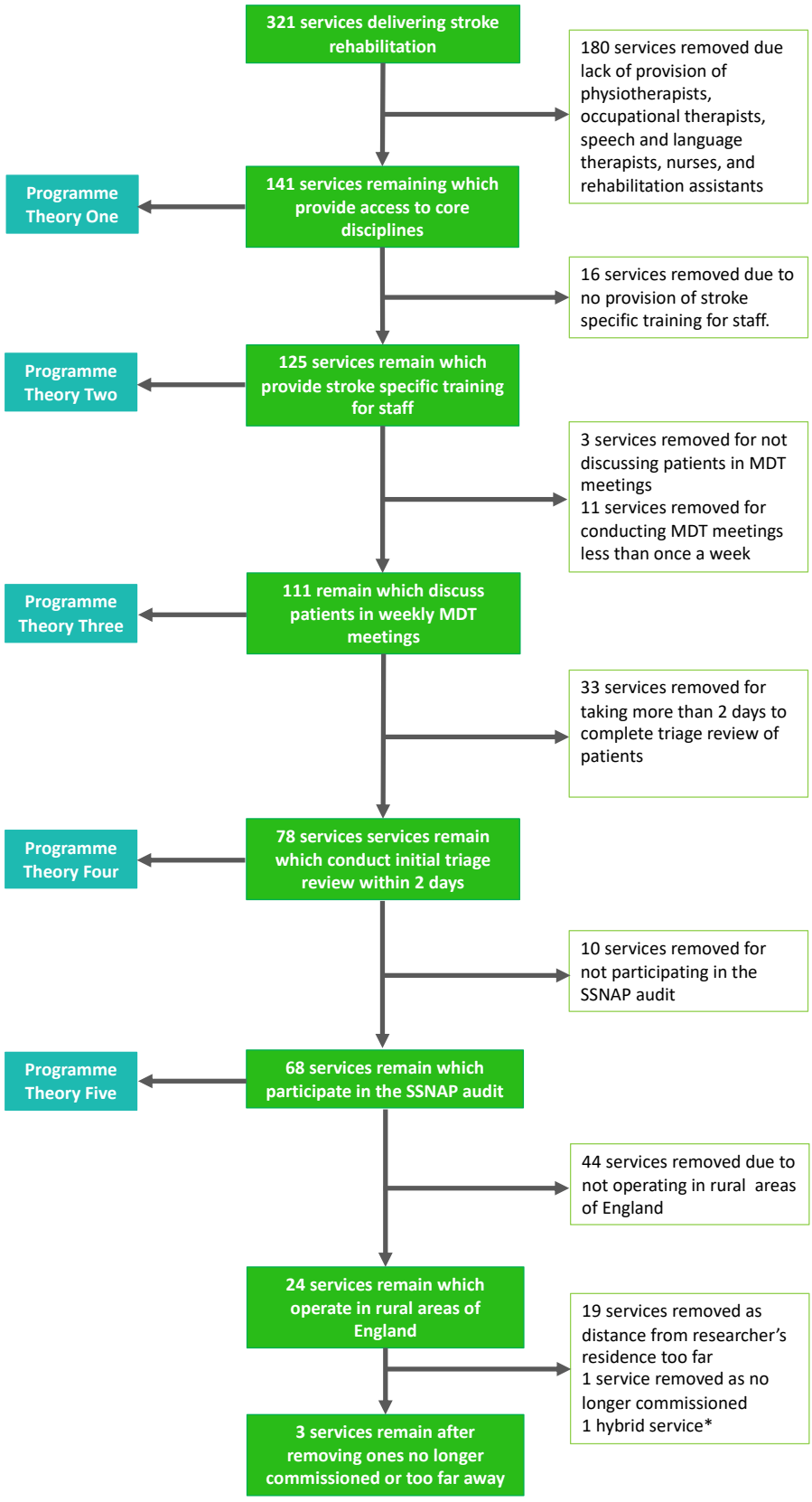


Figure 2: Site Selection Flow Diagram

Study Recruitment

Recruitment Of Services

The recruitment of services took place before data collection as details of all participating services needed to be approved as part of the HRA ethical approvals process. All sites were approached via telephone and asked if they wished to participate in the research. These conversations were with the service lead in sites 1 and 2 and the stroke unit matron in site 3. They were followed up by email explaining the study rationale and expectations throughout the research. There were no difficulties in recruiting services, all three services were very eager and excited to participate in the research. Additionally, site 1 agreed to be the Lead NHS Trust. The service lead facilitated introductions with the research and design department and facilitated the timeliness of the paperwork associated with the research. A significant time delay was experienced in securing capability and capacity in site 2. Again, the service lead there proved instrumental in ensuring that this occurred and made use of internal networks to speed up the process.

Recruitment Of Staff

Site visits and presentations outlining the scope of the research and individual staff commitments were given at all sites. The presentations coincided with staff meetings maximising the number of personnel present. With respect to NHS staff no difficulties with recruitment were experienced. Following study presentations, several staff volunteered to be interviewed, expressing a wish to be involved. Service leads and administrators facilitated the identification of additional staff over the course of the data collection period. Additionally, the intense nature of data collection meant that a researcher presence was often observed in team meetings or in the team office space as interviews were held in the community stroke service premises. This meant that over the course of the evaluation, interpersonal relationships between the researcher and some members of staff were developed. These interpersonal relationships may have facilitated not only recruitment but also the ease with which staff communicated during the interviews. Although it should be noted there were some minor challenges associated with securing interviews with the commissioners in sites 1 and 3, introductions to these people were facilitated by the stroke unit consultant for site 1 and one of the PhD supervisors for site 3.

Informed consent was obtained from all stakeholders whether they were attendees at meetings or participated in interviews. All stakeholders were supplied with a study information sheet (appendix 3) and consent form (appendix 4). Several stakeholders participated in more than one activity, e.g., an interview and/or observation(s) of meetings. Continued consent to remain within the study was ascertained for subsequent interactions and stored within the study files.

Data Collection Methods

The data collection methods in this research are commonly used in case study and realist evaluation approaches and comprised: informal discussions, non-participant observations, realist interviews, documentary analysis and field notes.

Informal Conversations

Informal conversations with key informants were the starting point for data collection in all three services. These occurred primarily with service leads and administrators in all services. The service leads were very keen to participate in the research and were generous with their time, recognising the lack of research conducted into community stroke services. These conversations were the starting point for the development of interpersonal relationships over the course of the evaluation. Unstructured field notes were completed during the conversations and were vital in gaining information surrounding the contextual features of each service. This researcher does not have a clinical background and would be considered a naïve researcher. From a methodological point, these informal conversations were important for theory gleaning and provided important information relating to processes of service delivery, individual contexts and identifying potential mechanisms to be explored during the evaluation. These conversations were instrumental in learning service-specific terms and acronyms and provided contextual information to aid understanding of subsequent observations of meetings.

Non-participant Observations

Observational data of meetings and the general office space were collected before commencing interviewing in all sites and continued throughout data collection. Most of the observations were meetings and comprised weekly MDMs, daily handovers or huddles, service development and meetings involving commissioners. With the exception of meetings involving commissioners, the observations occurred within the stroke service premises. The meetings involving commissioners were located within the grounds of the acute NHS Trusts.

Where possible, advance notice of researcher presence at meetings was given and stakeholders were asked to read an electronic copy of the participant information sheet and sign a hard copy of the consent form before the meeting. In practice, only a few people performed this task, therefore stakeholders were approached individually before the meeting, and hard copies of both the information sheet and consent form were given and all individuals signed before the meeting commenced. For the stroke service staff this was not difficult as they were familiar with the research. However, for the wider commissioning meetings, individual introductions and explanations over the nature of the research were required. At the beginning of these meetings, where everyone sat round tables, including the researcher, the chair briefly introduced the researcher, explained they were conducting research with the community stroke service and indicated that they would be a silent presence within the meeting. Over the course of data collection one or two individuals attended late to the meetings. For these people retrospective consent was obtained at the end of the meeting.

Evidence was recorded in real-time as unstructured researcher field notes and post-hoc in diary reflections. They were used to identify outcomes and circumstances when clinical practice differed from what was reported by stakeholders, providing information that was explored further in realist interviews. They were also useful in providing wider contextual information about each service as the naturalistic environment allowed observations of behaviours, structures and settings. Initial meetings contained unfamiliar acronyms and terminology requiring clarification. As local knowledge and understanding improved

subsequent observations provided a deeper understanding of processes underpinning daily practice whilst allowing for more meaningful cross-site comparisons to occur.

Service leads and senior stakeholders identified meetings based on their perceived importance to assist with theory refinement. To ensure equity in multi-base sites, efforts were made to ensure equal numbers were observed in both bases, however, sometimes this was not possible as non-patient focussed meetings were sometimes cancelled at short notice for service reasons. Meetings also varied across services, for instance, service development meetings only occurred in sites 1 and 3, with the latter initiating them towards the end of data collection.

Stakeholders did not appear to be concerned about the researcher presence and freely discussed all aspects of service delivery, challenges with delivering rehabilitation to patients etc. Over the course of data collection, as interpersonal relationships were strengthened, stakeholders often provided additional information and clarity to meeting proceedings, either before or after the meeting. This tended to occur either with service leads or with people who had already participated in interviews. The meetings involving commissioners were equally as candid, as this was the first and only time that these people had been involved with the research, the ease within which people felt comfortable to discuss topics was not related to the presence of interpersonal relationships between the researcher and the attendees. There were times when sensitive information was discussed during meetings, where this occurred and it was not relevant to the overall research question, note taking desisted as it was considered inappropriate to record the information. The information was obviously heard but kept confidential. Additionally, there were occasions in which significant tensions between attendees were observed. If appropriate and relevant to the research, factual note taking continued and the perceived tensions and thoughts surrounding them were captured in post-hoc diary reflections.

Realist Interviews

The interviews were articulated in a teacher-learner fashion (Manzano, 2016, Pawson and Tilley, 1997). Components of the programme theories were presented to stakeholders and

they were asked how to provide working knowledge about what they know about what works, for whom etc (Pawson and Tilley, 1997). Examples of the style of questions include: *"one of my ideas is that [explicit explanation of programme theory], what do you think about that?"* or "*in one of my other sites they do X which assists with delivering more rehabilitation, would that work here?"* In the latter statement, stakeholders were asked to directly comment on working practices from one of the other stroke services and explain why this approach may or may not work within their own service.

Interviews were approximately 60 minutes long. A purposive sampling technique was adopted; service leads facilitated the identification of staff from each discipline and band within the service (including administrative) as well as with referring unit staff and commissioners. Equitable representation from each base was desired, however, due to staff shortages and absences this was not possible in every case.

To reflect the iterative and emerging nature of theory refinement, individual guides were generated for each interview, with questions reflecting newly acquired knowledge. This process differs from traditional qualitative research where topic guides are designed to ensure standardisation and consistency across interviews (Boyce and Neale, 2006). However, it helped provide a good audit trail of programme theory refinement throughout data collection and ensured the researcher did not rely on memory alone to convey the complexities of the programme theories under evaluation. Two sample interview guides can be found in appendix 5.

Refining Programme Theories

In line with the three stages of realist interviews as advised by Manzano (2016), the first theory gleaning interviews were conducted with service leads, senior staff and administrators. These stakeholders provided insights into the influence of individual contexts on outcomes whilst providing explanations as to which resource components facilitated evidence-based service delivery. Theory refinement occurred throughout the interviews, stakeholders were invited to discuss alternate patterns and outcomes, often offering deeper explanations as to why certain strategies worked (or not) within their services regularly

outlining important but unique elements of context. Due to the practicalities associated with PhD research, it was not practical to re-interview several participants therefore the decision was made to conduct a second interview with service leads in site 1 and the nurse in site 3 who had assumed an overseeing role. In site 2 the two service leads were interviewed at the beginning and end of the data collection period respectively.

Documentary Analysis

In this research documents were the least utilised data collection tool and the type and volume of documents gathered varied across the sites. Some of these documents provided insights into specific processes, elements of context and outcomes which were very useful in theory refinement. Documents were usually identified by members of staff and permission was sought from service leads to access them if required. Some records were accessed but due to their nature it was not possible to obtain physical copies. Examples of this include, excel spreadsheets and google calendars detailing some ways that services organised themselves. Due to limitations of ethical approval, it was not possible to access patient related documents. All services provided blank copies of patient files and shared their bespoke meeting paperwork. The meeting agenda and minutes provided in advance of commissioning meetings in sites 1 and 2 were insightful as they provided attendee information as well as an insight into the topic which was being discussed (e.g., reshaping of the stroke pathway). In site 1, a service development project investigating the issue of business miles' repayment had been synthesised into a report and this was shared. Site 3 also provided useful documentation relating to the number and types of key performance indicators they were required to submit to commissioners on a monthly basis.

Phase Three: Data Analysis & Synthesis

Data analysis and synthesis was conducted in line with the quality and reporting standards for realist evaluations which recommends using data to interrogate programme theory(ies) to understand any demi-regularities (semi observable patterns) in order to determine what works for whom in what contexts etc (Wong et al., 2016). It is recommended that analysis be conducted with the aim of identifying generative causation, be iterative and retroductive in nature, using both inductive and deductive thinking alongside abductive and retroductive

thinking incorporating researcher "hunches" to produce explanations which are only partial explanations as it is understood that the data will be incomplete. It is recommended that the data used to refine programme theories be clearly described and justified (Wong et al., 2016).

As outlined in Figure 1, phase three was conducted in two stages. The first stage involved identifying the mechanism resources component of mechanisms and producing CMOCs and narrative explanations within cases. The second phase involved synthesising the data across cases, refining candidate programme theories and exploring the new programme theory. This was where the bulk of the theory consolidation occurred. The phases were not conducted linearly, phases I and II occurred iteratively and simultaneously.

Initial Programme Theory Refinement

The candidate programme theories were explored with stakeholders during the evaluation, and based on their responses, greater insights in the workings of the services and how the services worked to deliver evidence-based services were acquired. Tentative thoughts on how these theories could be refined were then subsequently explored. By the end of data collection, the main "focal points" of the programme theories had altered, some more so than others. Table 2 highlights how the emerging findings from the evaluation (which at that point had not undergone formal analysis) influenced the change in focus for the programme theories.

Table 2: Emerging Findings From Programme Theories

	Candidate Programme Theory "focal point"	Thought processes underlying the candidate programme theories	Emerging Findings influencing initial change in focus
1	**Team culture**	If an innovative team environment is present, then this is likely to promote shared responsibility and result in members adapting recommended service model because staff have confidence to make changes	**Interdisciplinary working** appears to be driving evidence-based service delivery. Stakeholders identified **service leads, RAs and administrators** as crucial team members. **Absence of psych** impeded interdisciplinary working – mainly affects nurses leaving them underconfident with rehab
2	**Stroke-specific training**	If stroke specific training is provided, then staff are more to deliver an evidence-based service because training makes them feel likely to feel valued and motivated	Heavily linked to PG1 QU – **How do they acquire interdisciplinary skills and knowledge?** - RA's in sites 1 and 2 **– comprehensive competency training**. Other staff – inductions initially. All staff in-house training, supervision, joint working. **Administrators have a lot of stroke knowledge** – don't receive training, largely acquire it on the job.
3	**Multidisciplinary meetings**	If RCSS hold weekly MDMs then patient information is exchanged across the team and leads to increased likelihood of delivering an evidence-based services because staff gather a shared understanding and sense of purpose of service objectives.	**Several different meetings** take place, and they have different functions. MDMs are about more than just exchange of patient info. Used for **governance and service level planning. Interdisciplinary discussions** seem important to make sure everyone is on "same page". The meetings in the two larger services **are well controlled by service leads** – lots of patients on caseloads – meetings are very fast paced
4	**Links with referring stroke units**	If good links between the RCSS and SU exist, then discharges are likely to be smooth because appropriate exchange of patient information is more likely to occur, and this facilitates effective decision making	**Location of services** seems to affect how smooth care transitions are. Closer is better. **Hard organisational boundaries** cause problems for staff trying to facilitate transitions. **Cross-service interpersonal relationships** seem important in care transitions, especially between service leads. **Giving services opportunities to work alongside each other** seems to help smooth transitions
5	**Commissioning**	If commissioners possess a good understanding of SSNAP and national clinical guidelines then they are likely to commission appropriately resourced services, teams are more likely to deliver an evidence-based service because they feel empowered/motivated	All commissioners had a **working knowledge of top-level guidelines**. They were more interested in **SSNAP criteria – especially the acute** as it was benchmarked. Commissioning of services is complex. They **worked with key personnel** from acute trusts to **develop bids,** but they were always in competition with other health areas.
6	**Visit scheduling**	New programme theory identified during data collection	Coordinating and planning patient visits in advance appears to make a difference to how efficient services with large caseloads are. They can save money and see more patients by clustering. The NHS business mileage policy has a huge effect across all services

Stage I: Data Analysis

Data Storage

Each interview was transcribed verbatim, via a University of Nottingham approved transcription service. Each transcript was imported into QSR NVivo (version 12) for Mac. This process facilitated data immersion whilst ensuring transcripts were accurate. Each interview transcript was considered an individual data source within NVivo. Analysis was conducted by case and site in numerical order e.g. site 1 interview 001, then site 1 interview 002, until all interviews had been analysed. The interviews were the primary source of CMOC elicitation as they were the only data source to contain whole CMOCs. Data from observations and documents were useful in providing contextual information and observing how key decisions were made in the service.

Data Preparation

Prior to importing into NVivo each interview transcript was read in conjunction with the audio recording. Field notes and relevant documents were also read in full to refresh the researcher as data collection occurred over a 12-month period. This process allowed an opportunity for mistakes in the transcription process to be rectified but also enabled familiarisation with each data set.

Data Analysis

The development of candidate programme theories was conducted a priori, and data collection and preliminary analysis was driven by this deductive framework. However, in realist inquiry it is important to be aware of emerging and contrasting theories and as such a combination of deductive, inductive, abductive and retroductive approaches were utilised during data analysis.

An a priori top-level coding framework was deductively developed and in line with advice from Dalkin and colleagues, parent nodes were allocated for each programme theory under evaluation (Dalkin et al., 2020). One additional programme theory, relating to visit scheduling was identified during data collection, this inductive approach to the identification of new

theories resulted in six parent nodes relating to the six programme theories. The first stage of analysis involved attributing sections of text to each parent node. Although at this stage, there was no formal attempt to link the data with context, mechanism and outcomes, this overarching approach to coding provided deeper insights into potential contexts and mechanisms which were thought to influence outcomes. At this stage, memos charting thinking and key decisions were created.

The next level involved identifying child nodes; this was a more inductive process using the data to inform the nodes. A key feature of thinking at this stage was to determine which contexts and mechanism resources were driving outcomes as well as determining how they differed between sites; therefore, the child nodes predominately reflected context and the resource component of mechanisms. Sections of text were coded to child nodes, and if appropriate could be coded to several nodes simultaneously. The sections of text contained some or all of the elements of context, mechanism and outcome. These two stages largely incorporated deductive and inductive approaches to coding, at this stage no formal attempt was made to abductively identify potential mechanism reasoning components within the data though in reality researcher hunches were being considered at a cognitive level.

Coding was completed by case, all transcripts from site 1 were coded first and the child nodes created initially reflected the data collected in site 1. Due to the contextual differences between the sites, new codes were made whilst analysing the transcripts from sites 2 and 3. It was an iterative process, insights obtained from one transcript, often necessitated revisiting earlier transcripts to ensure consistent coding. The final coding framework can be found in Appendix 6. It should be noted that this framework represents a snapshot in time of the data analysis and synthesis process. Some of the elements listed as context were subsequently moved to mechanism and vice versa as part of the iterative approach to data analysis. This occurred mainly through the writing of each chapter.

This stage of analysis also incorporated the information from documents and field notes. These sources of evidence were re-read, and although they were not specifically coded within NVivo they were used to complement existing knowledge and provide additional information

about specific issues. For example, the business mileage report from site 1 was particularly useful in providing very relevant contextual information about the NHS policy and in providing quantitative outcome data detailing how this policy had differentially affected the staff in the service. Field notes were useful in identifying process, structures and functions of MDMs. These notes were also valuable in highlighting some of the socially constructed aspects of meetings and it was possible to note down feelings such as frustration, concern, worry. One of the commissioning meetings occurred in a very tense atmosphere and this aspect was reflected in the field notes. These notes, as they were conducted in real time were helpful in supplementing memories and provided clear thoughts as to what was occurring at the time. An excerpt of one of the field note entries is contained within appendix 7.

Once site 1 had been fully coded in NVivo, data analysis continued in MS Word for Mac. Tentative CMOC tables were constructed with corresponding evidence in the form of quotes attached, mechanism reasoning was sometimes clearly articulated within quotes, though not always. This process provided a holistic view and was useful in determining where similar CMOCs could be merged and highlighted how subgroups were differentially affected by certain situations. An example of one of the CMOC tables relating to programme theory three: multidisciplinary meetings can be found in Table 3 on page 75. The mechanism reasoning component is highlighted in red font. As can be seen these components are not always overtly articulated in the quotes. This is an example of how abductive reasoning was conducted within the data set. Retroduction involved interrogating the remaining data set, both within and across cases to test and subsequently refine these abductively generated mechanisms.

These CMOC tables provided the foundations for detailed narrative explanations which were subsequently produced. They incorporated evidence gained from observations, quotes from interviews, general knowledge gained throughout data collection and relevant documents. These early documents were useful for understanding what factors influenced service delivery in site 1 and the process helped with streamlining and refining the final child nodes used for the subsequent coding of transcripts in NVivo.

Table 3: Tentative CMOC Table For Programme Theory Three: Multidisciplinary Meetings

	Programme Theory Three: Multidisciplinary Meetings				Quotes
Context	**Mechanism Resource**	**Mechanism Reasoning**	**Outcome**	**Unintended Outcomes**	
RCSS with large caseloads and limited communication opportunities who conduct weekly MDMs	patient information is exchanged (across disciplines)	**All staff understand what to do and are reassured about patient treatment plans**	Patient receives appropriate therapy		*"[X] or one of the nurses might be a specialist so at that time you'll get everyone's input. And also it means as well, if you say you had a – quite a complex kind of patient it would be a chance for everyone to say, "You need to just do it in one stage or two stage commands, everyone." So at that point everyone then knows no matter what therapy you have to do it, deliver it in a certain way…"* ***Site 1_004 Rehabilitation Practitioner Band 4*** *"It's usually the team members that do highlight there's a mood problem, yeah. It's something we pick up at MDT, I think I need to see this patient."* ***Site 1_014 Nurse Band 6*** *"It gives me the opportunity to share […] what SLT have been doing with a patient and the progress, or not, that's been made. It's also good to hear the views of other people when you're giving that feedback. You go, "Oh, that's interesting. I hadn't picked up on that." Or, "He didn't show that in my session." Or, "That's really good. I'll take that to my sessions going forward."* ***Site 1_016 SLT Band 7*** *"…going to the MDT having a clear plan of what we're doing, but then also if other things crop up from other members of staff it's being able to add that to our plans as well. But also patients that we may not have had contact with* initially, now they've got an equipment need or something like that and then it's being able to take that on." ***Site 1_020 OT Band 5***
RCSS with large caseloads where staff do not attend the weekly MDM	patient information is NOT exchanged across staff	**Staff feel unsure about therapy adjustments & confused about visits**		Patient does not receive appropriate therapy	"…if you miss an MDT, you can be a little bit lost as to what are they doing? And, you know, we do find that, if somebody's had a visit put in and they're like, "What was going on?" and because they haven't been party to the discussion at the clinical MDT, then yeah, it is vital." ***Site 1_003 Service Lead Band 8***

	Programme Theory Three: Multidisciplinary Meetings				Quotes
Context	**Mechanism Resource**	**Mechanism Reasoning**	**Outcome**	**Unintended Outcomes**	
RCSS with large caseloads who conduct weekly MDMs and centralised diary planning	Visit requests are recorded on bespoke paperwork	**What is the response here? — reassurance?**	Information is collated to facilitate efficient timetabling		"…it does help with organisation and especially for the timetabling, to know what they're meant to be doing as well. And it – I think it gives more discussion as well as to actually like what visits they do need, why you're doing that visit. That you can actually give that reasoning… ***Site 1_021 OT Band 5***
RCSS with large caseloads who conduct weekly MDMs		**Where staff feel uncomfortable/ confident to speak at the MDM**		Vital patient info is not communicated to the rest of the team Patient does not receive appropriate therapy	"We've had issues with that and we don't feel they are still doing it enough. We're continually trying to encourage them to speak up more. Often the qualified staff that are talking, if somebody hasn't seen them or hasn't seen them for a week then the 3 will talk, whereas they're not always the first ones in. **Some of our 3's are more confident** and if they've got a particular personal relationship with the patient or the family for a particular reason they'll speak, but they're not speaking enough still. I'm very aware of that." ***Site 1_003 Service Lead Band 8*** "...but if you've been seeing that patient, you know that patient, and I think that – you have that voice again. (laughs) Do you know what I mean? Like even **– I'm not the most confident of people but I still feel like it's my sort of right to speak up** and say, "What actually has been going on?" ***Site 1_021 OT Band 5***

Programme theory refinement had commenced during data collection, but the process was informal and was reflected through the diary reflections and changing interview schedules which were generated for each interview (appendix 5). Programme theory refinement at this stage involved synthesising all appropriate information and understanding what had changed in thinking over the course of the evaluation. For example, looking specifically at programme theory two: Interdisciplinary training. Candidate programme theory two was concerned with discipline specific stroke training. However, the evaluation had highlighted interdisciplinary working as a key component of evidence-based service delivery. Therefore, programme theory two evolved into focussing on interdisciplinary training as stakeholders had indicated that this method of teamworking facilitated evidence-based service delivery.

Stage II: Data Synthesis

Cross-case Synthesis

The second stage of analysis was conducted across cases. Observational field notes, reflective diaries and documents were interrogated with pertinent information extracted in corresponding memos and narrative Microsoft Word documents. Once all coding had been completed in NVivo, the CMOC tables and the narratives were edited to incorporate information from sites 2 and 3. The refinement of programme theories and the underlying CMOCs continued during this phase but continued throughout theory consolidation as well. Information relating to the new programme theory identified during data collection was collated and synthesised across the cases. This process was iterative, and a greater understanding of the data was obtained. Table 4 on page 79 demonstrates one of the tables that was generated for cross-case synthesis for Programme Theory Two: Inter and transdisciplinary training. This table was constructed to give an overview of the programme theory and the underlying CMOCs which were being generated as part of the data synthesis. The red font highlights the mechanism reasoning components, where this was missing from the quotes, abductive theorising enabled tentative generation of causal mechanisms which were retroductively tested and refined against the whole data set. This process involved revisiting all of the material coded to each programme theory several times in a very iterative fashion.

Early findings and thoughts relating to the refinement of CMOCs and programme theories were discussed in regular supervision sessions. Microsoft PowerPoint presentations were created for all programme theories; CMOCs and refined programme theories were presented to supervisors with evidence in the form of quotes attached. Additionally, presentations of emerging findings and approaches to coding, analysis and synthesis were also conducted within the Notts Realist Group, which is a peer led realist methods group based at the University of Nottingham. The detailed discussions that occurred as a result of these presentations were instrumental in deepening the understanding and clarifying the important aspects to contain with the developing CMOC statements and programme theories.

Programme Theory Consolidation

The writing of the findings chapters was where most of the programme theory consolidation process occurred. As part of this process, the refined programme theories and corresponding CMOCs were discussed with the supervisory team and one of the allied healthcare professionals with realist experience who was one of the initial expert advisors. Insights from these individuals were instrumental in reshaping both the focus and the wording of the refined programme theories. The art of systematically writing the findings chapters allowed deeper understandings and connections to form due to the overlap between different programme theories. Written and verbal feedback as well as general discussions furthered the refining process.

At this stage and for pragmatic reasons it was decided to consolidate the programme theories. As identified, visit scheduling emerged during data collection as an additional programme theory thought to influence evidence-based service delivery. The programme theory relating to commissioning was less focussed on evidence-based service delivery; therefore, the decision was made to remove this programme theory in favour of visit scheduling, allowing a deeper focus on the programme theories directly influencing evidence-based service delivery.

Table 4: Cross-case Synthesis For Programme Theory Two: Inter And Transdisciplinary Training

<table>
<tr><th>Context</th><th>Mechanism
Resource</th><th colspan="2">Outcomes</th></tr>
<tr><td>RAs</td><td rowspan="4">Generic RA training
Inductions
Joint visits
Ongoing In-service training
Supervision
External courses</td><td colspan="2">“generic” competency-based training helps RAs develop knowledge and skills to deliver rehab as per treatment plans</td></tr>
<tr><td>Professionally registered staff (PRS)</td><td colspan="2">Interdisciplinary skills and knowledge are acquired through inductions. This facilitates interdisciplinary working</td></tr>
<tr><td>Administrators</td><td colspan="2">Training admin staff to perform some additional duties alleviates burden from clinical staff</td></tr>
<tr><td>Unmet needs</td><td colspan="2">unmet psych needs limits interdiscip skills being acquired. Also, unmet rehab needs for patients</td></tr>
<tr><td></td><td>Ongoing In-service training</td><td colspan="2">Ongoing training results in continued development of interdisciplinary skills</td></tr>
<tr><th colspan="2">Thought Processes</th><th>Sources of Supporting Evidence:</th><th>Implying Quotes</th></tr>
<tr><td colspan="2">RAs often have no experience of working in stroke and need comprehensive training to do the job.
Additional skills are acquired through joint working and in-service training

<u>Mech Reasoning</u>: RAs get <u>confidence</u> from training, <u>feel supported</u> PRS staff <u>trust</u> them to do the role

(RA’s are labelled as generic workers and deliver all aspects of rehab – directed by PRS – need to be highly trained to be trusted to work independently)</td><td>Site 1: 002, 003, 004, 006, 007, 008, 009, 010, 012, 013, 014, 015, 016,0 19 & Observation of training following staff meeting

Site 2: 002, 003, 005, 007, 010

Site 3: 001, 002, 003, 014</td><td>“It gives them the linking it all together, […] they learn a lot from shadowing of individual patients, individual plans, but you need the training to bring it together, […] it’s bringing it into a reality that they can equate to, so normally it’s related to an activity plan, a set of exercises that are clear, understandable and ideally been demonstrated so they see them in action because you could have this thing, it’s complicated, but actually a lot of the exercises are things that aren’t that complicated.”
Site 1_011 Speech and Language Therapist</td></tr>
<tr><td colspan="2">PRS are often unused to working in an interdisciplinary manner and need time to develop skills. They learn interdisciplinary skills on the job mainly through joint working and in-service training

<u>Mech Reasoning</u>: Starting in services can be <u>daunting,</u> joint sessions/training etc <u>give confidence</u> in applying skills and knowledge. Training helps <u>with role clarity</u></td><td>Site1: 002, 003, 004, 006, 007, 010, 011, 013, 014, 015, 016, 019, 020, 021

Site 2: 004, 007, 010, 012, 016

Site 3: 001, 003, 004, 005, 013, 015 Observations from MDMs in all services – joint working encouraged & organised.</td><td>“I think it’s essential to get an understanding of what each other’s roles are and what issues they may come up against because again, we – our MDTs, we work together and then we need to be able to relay information.”
Site 1_010 Physiotherapist
“If we go out as a joint session, you glean different things from each other, so I make the most of another professional to make sure I’m not missing anything”
Site 3_005 Physiotherapist
“we do have in-service training as well where the different disciplines present some aspect of our care so that’s good, so you get up to date with what everyone else is doing. And, yeah. I think I’ve benefitted. I really do enjoy this inter-disciplinary team approach.”
Site 2_009 Speech and Language Therapist</td></tr>
</table>

Thought Processes	Sources of Supporting Evidence:	Implying Quotes
Administrators don't get much training, have sometimes worked elsewhere in the hospital but they do develop stroke knowledge over time and can be trained to support PRS with admin duties. Admin in site 1 are given comprehensive inductions and have been trained to undertake management duties **Mech Reasoning:** Need to **be trusted** to do the role, they want to help – **shared sense of purpose** – understand the services pressures and can help alleviate them (related to PG1 – administrators participate in interdisciplinary working)	**Site 1:** 001, 002, 003, 004, 005, 008, 009, 010, 012, 013, 015, 018, 019, 020 **Site 2**: 001, 002, 003, 006, 012, 016, **Site 3**: 002, 005, 006, 007, 010, 011, 015, 018 Observations of the office in all sites – heard administrators talking to and comforting patients – obvious they had stroke knowledge	"I've picked up so much. I mean when I first started on the stroke unit, I mean I was **absolutely petrified**. […] I thought oh, my God; I know nothing about stroke so I was going onto a ward I know nothing about. But, yeah. I mean I've been there for all these years now and you do, you pick up stuff. You pick up all about the thrombolysis, […] I've had no training […] So it's just watching what they do, picking up the terminology that they use and just knowing how stroke affects patients in so many different ways." **Site 3_011 Administrator** "normally as an administrator, you would come into the team and you would go out and you would shadow the different disciplines. So, you'd probably go once out with the nurse, once out with the physio, once out with an OT, speech and language" **Site 1_018 Administrator**
Unmet Psych needs affect the team – nurses in particular who are left to deal with mood management issues. **Mech Reasoning:** **Lack of confidence** in delivering more complex psych management. (related to PG1, lack of psychologist within the team composition limits the training that can be offered)	**Site 1:** 014, 017, **Site 2:** 007, 012, 015, 018 **Site 3**: 006, 015	*"it would be nice to have stronger links with the neuro team, people who can help support because I feel, yes you can do bits of it from your nursing background, but I'm not an expert in psychology or anything else like that, and some patients you go to, you* ***just think this is way out of my depth"*** **Site 2_018 Nurse** *"I think we'd all feel within our team either have some psychology input on the team or, yeah. Some training, so a bit more, you know, are we doing right by these patients? […] Yeah. It's a difficult one for mood and psychology but all like that, yeah. It's a massive area after stroke"* **Site 3_015 Nurse**
Overlap with other Programme Theories Linked heavily with programme theory one – Interdisciplinary working. How do staff work in an interdisciplinary way? How do they acquire their skills? Training is important to learn how to work in an interdisciplinary manner.		

Phase Four: Literature

As outlined in Figure 1, phase four involved conducting focussed 'realist informed' literature searches, the outputs of which are contained within chapters 5-9. The idea was to set the findings of the evaluation in the wider context of the available healthcare literature, and further build theoretical understanding and develop explanations of evidence-based service delivery of rural community stroke services in light of the both the literature and the findings from the evaluation. The literature presented does not meet the quality standards associated with realist reviews or realist rapid reviews (Wong et al., 2013).

In line with the realist reporting standards for realist evaluations (Wong et al., 2016) the existing literature was searched to 'compare, contrast and evaluate' the findings from the evaluation with the existing evidence within healthcare. The findings from the evaluation had resulted in a refinement of programme theories and had identified a series of mechanisms within each programme theory which warranted further exploration within the literature.

Theory Building Literature Reviews

Focussing The Reviews

Due to the paucity of literature available relating to community stroke services, and in line with recommendations for conducting realist research, initial searches focussed on stroke services, widening out to neurological rehabilitation and then again to healthcare if insufficient evidence was generated. The mechanisms identified through the evaluation informed the initial search terms. A glossary of search terms for each review can be found in appendix 8.

Search Strategies

A purposive and incremental sampling approach was conducted. Search methods incorporated snowball searching, citation tracking (forwards and backwards) and contacting authors, with the latter being employed to gain clarification on certain aspects or additional research papers. Google Scholar and Google were the primary search engines/databases used

to return results. Evidence sources also incorporated material and grey literature gathered over the duration of the PhD and deemed relevant by the researcher and the PhD supervisors. Search terms were initially influenced by the mechanisms identified in the evaluation. Key publications were read in depth if they were relevant to programme theories. Often these publications highlighted new terms and areas for investigation and the searches were subsequently expanded to include these new terms. Searching was organic and iterative; sources were revisited multiple times as knowledge and understanding of the topic accumulated. The evidence sources selected for inclusion were based on their relevance to the programme theories and their ability to identify specific elements of context and mechanisms thought to influence outcomes.

Collation Of Evidence

The analytical focus of the reviews was at the resource mechanism component of the underlying CMOCs identified within each programme theory, for example interdisciplinary working, interdisciplinary training, multidisciplinary meetings, care transitions and visit scheduling. Key components from the underlying CMOCs were included within the search terms, such as RA training, meeting structure, leadership etc… The evidence sources were closely read and pertinent information relating to contexts, mechanisms and outcomes were extracted and synthesised and mapped on to the pertinent findings found in the evaluation. Where this process highlighted new aspects not found within the evaluation, the inclusion of these was based on their relevance to inform the overall programme theory.

Phase 5: Refining the Programme Theories

As depicted in Figure 1, phase five was concerned with identifying demi-regularities in CMOCs and refining the programme theories.

Identifying Demi-regularities

The process of identifying demi-regularities had occurred from the outset of data collection. Appraising and discussing the evaluation findings in consideration of the literature facilitated

a greater understanding of these semi-predictable outcome patterns. The literature not only added depth and detail to the evaluation findings but also enabled the framing of the findings in a different light and was instrumental to the programme theory refinement process and as a result has strengthened the overall findings.

Refining Programme Theories

The final refinement of programme theories was an iterative process, involving revisiting the findings from the evaluation and considering how the evidence obtained from the literature further informed and refined the programme theories. At this final stage, some programme theories and underlying CMOCs were substantially refined, whereas others were more subtle.

To conclude, this chapter has presented the methods associated with the research. In line with recommendations for conducting realist research, the research design and analysis phases have been explicitly articulated to ensure transparency in the reporting process. The next set of chapters presents the research findings.

Chapter Four
Findings

The following 6 chapters introduce and present the findings from the realist evaluation. This chapter outlines key demographic details about each site and the stakeholders who participated within the research. Each of the five programme theories are presented within separate chapters following this one.

Overview Of Services

This section provides a brief overview of each service, providing some relevant contextual information. Additional and more detailed contextual information such as staffing, skill mix, organisational and geographical attributes can be found within chapters five to nine. Context plays a key role in realist research and the placement of this additional contextual information within the findings is to inform the reader as to the wider contextual features pertinent to each individual CMOC and provide information to help answer the "what works for whom" element of realist inquiry.

Service Demographic And Broader Contextual Information

The services recruited to participate in the research were all located in different rural regions of England. For ease of reference and to aid comparisons between services, individual characteristics each service can be found in Table 5 on page 86 and information summarising staffing can be found in Table 6 on page 90.

Site 1

Site 1 was an integrated community stroke service offering both ESD and CRT. Individual characteristics for this service can be found in Table 5 on page 86. The combined ESD and CRT annual caseload reported on the 2016 SSNAP post-acute organisational audit was 614 patients. The majority of referrals originated from three acute stroke units residing within the county and one stroke rehabilitation unit. However, over the data collection period, the acute stroke services were reorganised; all suspected stroke patients were taken to one hospital with a joint HASU and ASU, this became the main acute referring stroke unit. Additional referrals were accepted from out of area hospitals, e.g., following thrombectomy at a

specialist unit, or from an out of area hospital or GP if a patient incurred a stroke on holiday, but these referrals were rare.

The service was initially commissioned in 2013, following a pilot scheme and has evolved in the intervening years. One of these evolutions incorporated splitting the service over two bases, covering the north and south areas of the county. The total population as reported in the 2011 census was 615077 and the geographical area covered by the commissioning CCG was categorised as "Urban with Significant Rural" which incorporated hub towns; between 26-49% of the area was classified as rural. The service was commissioned to provide stroke rehabilitation to patients with GPs registered within the county. The service was split over 2 bases to better provide coverage and reduce travelling time across the county. Both bases were located within the same grounds as referring stroke units.

The service was managed by one Band 8 allied health professional (AHP) lead who split time between both bases. The service had a hierarchical structure to its staff. Professionally registered staff in the service were either at band 5, 6 or 7 with the latter assuming managerial positions. The RAs were band 3, with rehabilitation practitioners employed at grade 4. For ease of understanding in this thesis, all band 3 and band 4 staff are termed RA. The admin grades were band 2 and band 4, with the latter again assuming some managerial duties. The staffing disciplines, total number of staff employed within the service and whole time equivalent (WTE) staffing ratios per 100 patients as reported in the SSNAP post-acute audit for the CRT and the ESD parts of the service can be found in Table 6. When focussing on the ESD part of the service, where guidance does exist in relation to staff composition and recommended staff ratios (Fisher et al., 2011, Intercollegiate Stroke Working Party, 2016), the staffing-patient ratio per discipline met or exceeded recommendations for nursing, rehabilitation assistants and stroke doctors. Occupational therapy, physiotherapy and speech and language therapy failed to meet the recommended staffing ratios, though it must be noted that both physiotherapy and speech and language therapy only just failed to meet minimum recommendations, being only 0.1 WTE short. The international consensus and/or the clinical guidelines for stroke recommended that patients in receipt of ESD have easy access to clinical psychologists, social workers or dieticians alongside orthotics, orthoptics and

podiatry (Fisher et al., 2011, Intercollegiate Stroke Working Party, 2016). As can also be seen from Table 6, stroke patients within the service did not have any access to clinical psychologists, social workers, or dieticians, though they did have access to orthotics, orthoptics and podiatry throughout the NHS Trust. Staffing levels within the service fluctuated throughout data collection and did not completely reflect the numbers depicted in Table 6. This was particularly true for occupational therapy as there was a shortage of this discipline during data collection.

There was no fixed length of stay within the service, this was decided on individual patient need. Some patients remained with the service for several months if they were still making progress in rehabilitation, though the intensity of rehabilitation offered decreased the longer a patient was in the service. To extend the length of stay within the service, staff had to present a case for it within the MDM. This was discussed among the team and reviewed at regular intervals.

Table 5: Individual Characteristics Of Each Community Stroke Service

	Annual Caseload	Total Caseload	No of main referring stroke units	Year Service Commissioned	Total CGG population in 2011	Rural Urban Classification
Site 1 CRT	154	614	4	2013	615077	Urban with significant rural
Site 1 ESD	460					
Site 2 CRT (North)	237	657	2	2009	177851[1], 97975[2]	[1] Urban with city and town [2]Urban with significant rural
Site 2 ESD (North)	83					
Site 2 CRT (South)	243				290343	Largely rural
Site 2 ESD (South)	94					
Site 3 ESD only service	108	108	1	2015	271865	Urban with significant rural

Site 2

Site 2 was a split integrated community stroke service offering both ESD and community rehabilitation. Individual characteristics for this service can be found in Table 5 above. The combined ESD and CRT annual caseload reported on the 2016 SSNAP post-acute organisational audit was 657 patients. The main source of referrals was from one acute stroke

unit and one stroke rehabilitation unit both residing within the county. As in the case of site 1, additional referrals were accepted from out of area hospitals, though they were not as numerous as the main hospital.

The service was split over 2 bases to better provide coverage and reduce travelling time across the county. The north and south teams held separate registrations within the SSNAP. The service was identified for inclusion within this research based on the ESD entry for the south team. However, once data collection commenced it became apparent that the north and south base were inextricably linked. For example, geographical boundaries fluctuated, staff were flexed north and south to ease staffing pressures, service leads covered both teams during absences and higher-level service decisions were made about the services as a whole. As the teams were so intertwined and interdependent upon each other, a decision was made in conjunction with the supervisory team to include them within the research.

The service was initially commissioned in 2009. The total population for both north and south CCGs was 566169. The geographical area covered by the commissioning CCG for the north was a combination of “Urban with City and Town” and “Urban with Significant Rural” which incorporated hub towns; with between 26-49% of the latter area classified as rural. The geographical area covered by the commissioning CCG for the south team was “Predominately Rural” which also included hub towns, although 50-79% of the area was classified as rural.

Both north and south bases were remotely located from their referring stroke units. Each base was managed by a separate Band 7 AHP lead. The service mainly employed band 6 professionally registered staff though one band 5 speech and language therapist joined the service during data collection. The RAs were all band 3 and the administrators were band 2.

The service had evolved since it was originally commissioned. The most recent evolution involved a reconfiguration of the service resources which occurred in 2015. The service lead post was re-banded from a band 8 to a band 7 post. Band 7 clinical therapy posts were decommissioned. The staffing disciplines, total number of staff employed within the service and whole time equivalent (WTE) staffing ratios per 100 patients as reported in the SSNAP

post-acute audit for both the CRT and the ESD parts of the service can be found in Table 6. In relation to the ESD part of the service, the staffing-patient ratio per discipline met or exceeded recommendations for all therapy disciplines: occupational therapy, physiotherapy, nursing, speech and language therapy as well as nursing and rehabilitation assistants. They did not have any stroke doctors within the service, nor did they provide access to clinical psychologists, social workers, dieticians, or orthotics, orthoptics or podiatry. However, during data collection, the service did gain access to a clinical psychologist and this is covered in more detail in Chapter Five and Chapter Six.

There was a fixed length of stay within the service, which was listed in the SSNAP post-acute organisational audit as between 1 and 3 months. Data collection revealed that the length of stay for ESD stroke patients was 6 weeks and community rehabilitation patients was 4 weeks.

Site 3

Site 3 was configured differently to the other two services. Aside from the fact that it was an ESD only service with one base, it was embedded and considered an integral component of the main referring combined acute and rehabilitation stroke unit. Individual characteristics of this site are depicted in Table 5 on page 86. The annual caseload was 108 patients. Most of the referrals originated from the combined HASU/ASU/RSU which the service was embedded into. They did occasionally receive referrals from neighbouring counties. This is covered in more detail in Chapter Nine.

The service was commissioned in 2015, following a pilot scheme a year earlier. The total population of the CCG was recorded as 271865 in the 2011 census. The geographical area covered by the commissioning CCG was categorised as “Urban with Significant Rural”, including rural hub towns with 26-49% of the area classified as rural. There was no dedicated service lead; it was a much smaller service with approximately 5-6 members of staff, some of whom flexibly split their time between the community stroke service and the stroke unit. Staff were managed by individual therapy leads from the referring stroke unit. Most of the professionally registered staff were band 6, with one exception. At the beginning of data collection one band 7 occupational therapist split time between the acute ward and the

community stroke service. This therapist left the service within four weeks of commencing data collection and the replacement band 7 did not work within the community stroke service.

Staffing levels within the service fluctuated throughout data collection and did not completely reflect the numbers depicted in Table 6. This was particularly true for nursing, throughout data collection there was only one nurse within the service as there was a shortage of this discipline across the whole stroke service. The staffing disciplines, total number of staff employed within site 3 and whole time equivalent (WTE) staffing ratios per 100 patients as reported in the SSNAP post-acute audit for the service can be found in Table 6. The staffing-patient ratio per discipline met or exceeded recommendations for every clinical discipline including stroke doctor but they did not meet the recommendations for assistants. Additionally, they did not provide access to clinical psychologists, social workers, dieticians, orthotics, orthoptics or podiatry.

The service was commissioned to provide coverage across the county, but staff reported that they never received referrals from the most northern parts of their catchment area. There was a fixed length of stay within the service, which was listed in the SSNAP post-acute organisational audit as between 1 and 3 months. Data collection revelated that the length of stay was 6 weeks.

Table 6 Staffing Configuration Within Each Community Stroke Service As Reported In The 2015 Post-acute Organisational Audit

	Disciplines residing within the community stroke services, whole time equivalent (WTE) staffing ratio and WTE discipline ratio per 100 annual patient referrals																		Access to disciplines via the wider NHS Trust network			
	Occupational Therapy	WTE* Equivalent of Occupational Therapists	WTE Occupational Therapists per 100 patient referrals	Physiotherapy	WTE Equivalent of Physiotherapists	WTE Physiotherapists per 100 patient referrals	Nursing	WTE Equivalent of Nurses	WTE Nurses per 100 patient referrals	Speech & Language Therapy	WTE Equivalent of Speech and Language Therapists	WTE Speech and Language Therapists per 100 patient referrals	Rehabilitation Assistants	WTE Equivalent of Rehabilitation Assistants	WTE Rehabilitation Assistants per 100 patient referrals	Stroke Doctors	WTE Equivalent of Stroke Doctors	WTE Stroke Doctors per 100 patient referrals	Clinical Psychologists	Social Workers	Dietician	Orthotics/Orthoptics/Podiatry
Site 1 CRT	✓	4	0.6	✓	1.5	1	✓	2	1.9	✓	0.9	0.3	✓	0.1	1.5	✓	0.1	0.1	✗	✗	✗	✗
Site 1 ESD	✓	4	0.6	✓	1.5	0.9	✓	0.5	**0.3**	✓	0.3	0.3	✓	2.3	**1.5**	✓	0.1	0.1	✗	✗	✗	✓
Site 2 CRT (North)	✓	4	1.2	✓	4.1	0.8	✓	0.8	0.2	✓	0.3	0.3	✓	6.8	1.8	✓	0.1	0.1	✗	✗	✗	✓
Site 2 ESD (North)	✓	3	**3.4**	✓	2	**2.4**	✓	1	**0.4**	✓	0.3	**1.6**	✓	4.2	**5.1**	✗			✗	✗	✗	✗
Site 2 CRT (South)	✓	3	2	✓	2	0.8	✓	1	1.2	✓	1.6	0.7	✓	4.2	2.1	✗			✗	✗	✗	✗
Site 2 ESD (South)	✓	3	**2**	✓	2	**2.1**	✓	2.8	**1.2**	✓	0.7	**1.7**	✓	5.2	**5.5**	✗			✗	✗	✗	✗
Site 3 ESD only service	✓	3	**1.9**	✓	2	**1.4**	✓	2.8	**3**	✓	1.7	**0.9**	✓	5.2	0.1	✗			✗	✗	✗	✗

*Consensus recommendations per 100 annual patient referrals:
Occupational Therapy = 1.0 WTE
Physiotherapy = 1.0 WTE
Nursing = 0-1.2 WTE
Speech and Language Therapy = 0.4 WTE
Stroke Doctors = 0.1 WTE
(Rehabilitation) Assistants = 0.25 WTE

= Meets or exceeds consensus recommendations (ESD only)

Observations Of Meetings

Overall, 104 participants recruited to the study and 103 were present during at least one of the 29 observations of meetings. There was a great variation in meeting type occurring within the services. Table 7 depicts the type and number of meetings attended within the services, equity between split-site bases was desirable, but not always achievable due to service pressures and certain meetings only occurring in one site. Meeting duration varied from 15 minutes for daily handovers to more than three hours for a commissioning meeting. Except for a daily handover in site 2 (which was cancelled numerous times due to service reasons), blank boxes indicate no such meeting type occurring within the service or base.

Table 7: Meeting Type And Number Attended In Each Service

	Weekly Multidisciplinary Meeting	Daily Handover	Staff Meeting	Service Development	Office Observation	Visit Scheduling	Commissioning
Site 1 north base	2		2				
Site 1 south base	1			2	1	1	1
Site 2 north base	3		1				
Site 2 south base	3	1	2				1
Site 3	2	2		1	1		

Realist Interviews

52 individual stakeholders participated in 55 realist interviews lasting approximately 60 minutes. The service lead at site 1 and one of the service leads at site 2 were interviewed twice along with one of the members of the service in site 3 who had assumed an overseeing capacity. A breakdown of individual job roles and grades of stakeholders who participated in interviews can be viewed in Table 8. Blank boxes indicate no personnel employed within that band or role in the service.

Data Collection

Data collection activities commenced in each NHS Trust as soon as possible following local approvals, in site 1 this was the 30th June 2017; site 2 the 7th September 2017 and site 3 the 27th July 2017. Data collection ended in site 1 on the 23rd May 2018, in site 2 on the 24th May 2018 and in site 3 on the 18th May 2018.

Table 8: Job Title, Grade And Number Interviewed In Each Service

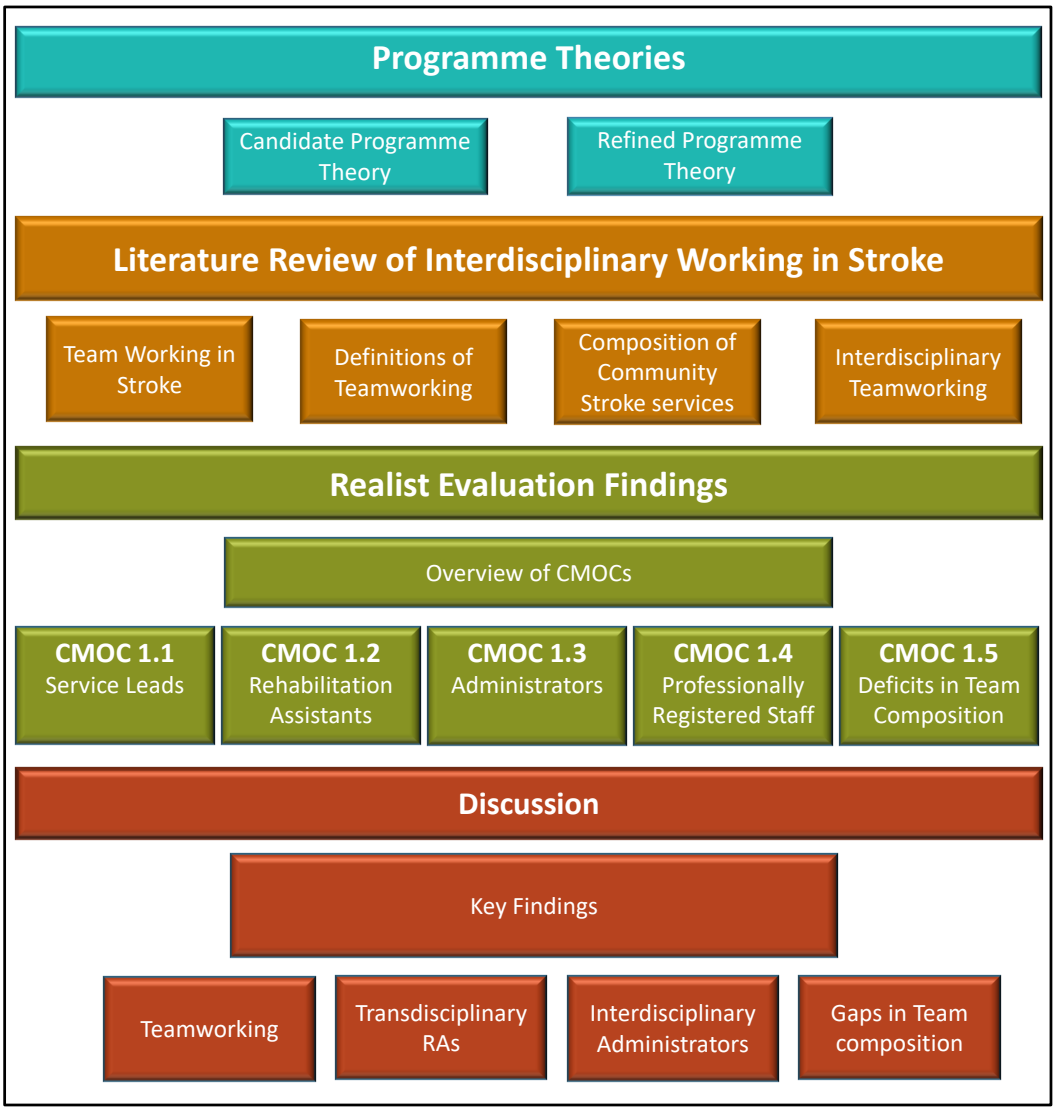
Job Title and Grade	Site 1	Site 2	Site 3
Administrator	2	1	1
Band 3	2	2	2
Band 4	2		
Band 5 Occupational Therapist	2		
Band 5 Speech and Language Therapist		1	
Band 6 Occupational Therapist	1	2	3
Band 6 Physiotherapist	2	2	2
Band 6 Speech and Language Therapist		2	1
Band 6 Nurse	2	2	1
Band 7 Physiotherapist	2		
Band 7 Occupational Therapist	1		1
Band 7 Speech and Language Therapist	2		
Service Lead	1	2	
Stroke unit stakeholder	1	1	2
Clinical Neuropsychologist		1	
Commissioner	1	1	1
Total	21	17	14

This chapter has presented key information relating to demographic and broader contextual information about the services and the staff within them. The next five chapters present the findings relating to each of the programme theories.

Chapter Five
Programme Theory One: The Multidisciplinary Team And Interdisciplinary Working

This chapter presents evidence to inform the development and refinement of Programme Theory One, which is concerned with the multidisciplinary team and interdisciplinary working. The chapter is organised into four sections which are depicted in Figure 3. For ease of navigation, the colours represented in the figure will be represented in each of the sections presented in both headings and tables.

Figure 3: Navigation Diagram For Programme Theory One: The Multidisciplinary Team and Interdisciplinary working



Programme Theories

This section presents an overview of the candidate and refined programme theories. The candidate programme theory can be found in Chapter 2. The refined programme theory presented below is based upon the culmination of the realist inspired literature review of interdisciplinary working in stroke, findings from the realist evaluation (both of which are presented below), as well as further discussions with individuals from the realist stakeholder group.

Candidate Programme Theory

The candidate programme theory initially hypothesised that adaptations to 'the recommended service model' (articulated in broad terms) would be necessary for rural services to negate geographical terrain. It hypothesised that RCSSs facing challenges delivering rehabilitation, relative to their local context **(context)**, with a team culture that promoted innovation and a shared responsibility **(mechanism resource)** would give staff confidence **(mechanism reasoning)** to adapt recommended service models to increase the likelihood of delivering evidence-based services **(outcome)**. Included in this was an underlying assumption that teamwork would be an important factor for a shared sense of purpose of service objectives **(mechanism reasoning)** and for team members to think innovatively to maximise the delivery of evidence-based services within challenging rural environments **(outcome)**. During data collection stakeholders discussed the importance of including RAs, administrators and service leads i.e., the team composition **(context)**, and how these facilitated the delivery of evidence-based services **(outcome)**. Hence, refinement of this programme theory and the term 'service model' involved focussing the evaluation on the contribution of team composition and teamwork to the delivery of evidence-based services.

Refined Programme Theory

The refined programme theory is presented below in Table 9. It highlights the importance of comprehensive multidisciplinary team composition, with staffing numbers adjusted to meet challenges of rural working, a supportive service lead, and interdisciplinary team culture **(context)**. It also emphasises the importance of staff with inter and transdisciplinary skills and knowledge who are further empowered to develop skillsets **(mechanism resource)**. These

elements result in staff feeling valued, supported, and confident **(mechanism reasoning)** to contribute to interdisciplinary decision making and promote a shared sense of purpose **(mechanism reasoning)** of patient and service level objectives all of which facilitate delivery of evidence-based services by improving service efficiency and delivering holistic inter and transdisciplinary patient care **(outcome)**.

Table 9: Refined Programme Theory One: The Multidisciplinary Team And Interdisciplinary Working

Context	Mechanism Resource	Mechanism Reasoning	Outcome
Comprehensive RCSSs with staffing adjusted for rurality and a supportive interdisciplinary team cultures and service leads who empower skill development	Where all staff (including RAs and administrators) possess necessary skills and knowledge to work in an inter and transdisciplinary manner	staff feel valued, supported, confident and trusted to contribute to interdisciplinary working and decision-making and promotes a shared sense of purpose of patient and service objectives	Facilitates delivery of evidence-based services by improving service efficiency and delivering holistic inter and transdisciplinary patient care

Literature: Interdisciplinary Teamworking In Stroke

Teamworking In Stroke

Interdisciplinary teamworking by a multidisciplinary skilled stroke specialist workforce has been hailed as the cornerstone of evidence-based stroke care and is associated with improved patient outcomes for stroke unit care (Stroke Unit Trialists' Collaboration, 1997, 2001, 2007, 2013, 2020) and ESD (Early Supported Discharge Trialists and Langhorne, 2001, Early Supported Discharge Trialists, 2005, Fearon et al., 2012, Langhorne et al., 2017). The provision of multidisciplinary stroke services is recommended in national guidelines (Intercollegiate Stroke Working Party, 2016) and health policy (Department of Health, 2007, NHS England, 2019). The degrees to which teamworking occurs varies, as sometimes the “team” is simply a collection of health professionals who collectively but individually treat patients (Wade,

2016). Healthcare research into teamworking has focussed on the impact of professional identity or team processes and not on the mechanisms by which teamworking facilitates patients outcomes (Harris et al., 2013). There is a lack of research indicating how teamworking can facilitate the delivery of evidence-based services.

Definitions Of Teamworking

Teamworking within stroke services has been described as multidisciplinary or interdisciplinary. This is not surprising; the terms multidisciplinary, interdisciplinary, and the lesser-used transdisciplinary are used interchangeably to describe the phenomenon of teamworking. Labelled as additive, integrative and holistic, respectively they describe approaches to teamworking that can be thought of as existing on a continuum (Choi and Pak, 2006). Multidisciplinary teamworking comprises professionals from different disciplines working alongside each other treating the same patients (Sheehan et al., 2007). Roles may be inter-related but professional discipline boundaries are retained. In clinical practice, patients are individually assessed and treated by different disciplines, with professions adding to patient treatment plans (Ellis and Sevdalis, 2019). Interdisciplinary teamworking involves staff working closely on shared goals in a more integrated approach. The blurring of discipline boundaries occurs, although professionals largely retain discipline-specific roles (Sheehan et al., 2007). In practice, patients are individually assessed, and shared treatment plans are developed. Transdisciplinary working is the most holistic approach; teams share objectives and core skills to achieve service goals. Described as a blended team, disciplines are shared; professionals acquire skills and knowledge allowing them to perform tasks from other disciplines (Sheehan et al., 2007, Ellis and Sevdalis, 2019). Wade (2016) has purported that a transdisciplinary approach to teamworking may be the most effective way to manage the complexity associated with rehabilitation.

For clarity in the rest of this section, multidisciplinary team (MDT) refers to the composition of staff within stroke services which comprise multiple disciplines, whereas interdisciplinary will be used when referring to the process of teamworking occurring as this reflects the integrated approach to teamworking reported in the literature.

Composition Of Community Stroke Services

Core Team Composition

It is recommended the core ESD MDT comprise the following allied health professional staff: physiotherapists, occupational therapists, speech and language therapists, nurses, clinical neuropsychologists/clinical psychologists, social workers and RAs (Fisher et al., 2011, Intercollegiate Stroke Working Party, 2016). Similar recommendations have been made for a national integrated community stroke service (ICSS) model which recommends the delivery of ESD and community stroke rehabilitation in a combined service (NHS England, 2021).

Assistants

Assistants are commonly used across healthcare and comprise the largest group of workers in the NHS (Moran et al., 2015), but the impact that they have on interdisciplinary working is not known. In stroke, rehabilitation assistant (RA) is a common job title in rehabilitation settings. Assistants do not require formal qualifications to be employed and the precise roles are poorly defined across healthcare, reflecting the heterogeneity of duties performed. Healthcare research has predominately concentrated on acute settings, leaving the impact that this particular part of the NHS workforce has upon community services relatively unexplored (Rycroft-Malone et al., 2016), although an estimated 80% of community rehabilitation services employ assistants (Moran et al., 2012).

It has been suggested these members of staff are often undervalued and underutilised (Kessler et al., 2010, Chouliara et al., 2019), with staff finding it difficult to delegate clinically focussed duties due to concerns associated with professional accountability (Storey, 2005). However, in their investigation into the older peoples' community rehabilitation Moran et al., (2015) found that where assistants were successfully integrated into community services, they were perceived as integral to interdisciplinary teamworking, facilitating service capacity through performing tasks from multiple disciplines. Interestingly, in an earlier study from the same research team, improved patient outcomes were reported where assistants delivered a large proportion of care (Nancarrow et al., 2010). Given that assistants are less costly to employ, some believe the provision of face-to-face patient care by professionally registered

staff is no longer an effective use of resources (Moran et al., 2012). Assistants typically follow prescribed treatment plans, freeing up professionally registered staff to concentrate on other duties such as caring for patients with more complex needs, case management, or completing assessments. Research investigating this aspect of service delivery is limited and suggests assistants may only be responsible for a third of face-to-face delivery of patient care in community settings (Moran et al., 2012).

Service Leads

The original RCTs conducted into ESD did not emphasise the need for a service lead. However, research suggests they are an integral component of effective acute and community-based stroke services (Gibbon et al., 2002, Burton et al., 2009, Fisher et al., 2013, Harris et al., 2013). Leadership has been studied extensively across the healthcare literature but has largely concentrated on in-patient settings and clinical nurse leadership (Sfantou et al., 2017). Across healthcare, effective leadership is associated with improved teamworking, patient outcomes, and staff satisfaction (Cummings et al., 2010, Squires et al., 2010, Choi and Pak, 2006). In contrast, the absence of leadership in acute care is associated with poor interdisciplinary working, reduced implementation of evidence-based practice, and unfavourable outcomes for patients (Zwarenstein and Reeves, 2006, Kilner and Sheppard, 2010). In community settings lack of clear leadership is also associated with a lack of shared sense of purpose, lower levels of commitment, and poorer mental health for staff (Borrill et al., 2000). Effective leadership is considered an essential component of coordinated delivery of care (Sfantou et al., 2017) and necessary whether care is delivered within in-patient or community-based services (Taylor et al., 2014).

A stroke service lead acts as an advocate, raising the profile of the service within the wider NHS Trust, CCG, or other external organisations and are integral to driving forward improvements in stroke care (Burton et al., 2009). In stroke services, effective leads facilitate staff wellbeing by ensuring individuals feel they are trusted and valued members of the team (Harris et al., 2013), and are instrumental in empowering and encouraging staff to develop skillsets (McCallin, 2003, McCray, 2003). They are essential to ensuring that the team climate is such that staff feel confident enough to contribute to decision-making activities. This is

important as service leads do not have extensive knowledge of all disciplines within the MDT, therefore they need to consciously engage in shared decision-making. This process contributes to the development of a team shared vision and sense of purpose (Gibbon et al., 2002, Harris et al., 2013).

Leadership in acute stroke services is a complex interaction of discipline-specific leads with responsibility for the management of each discipline as well as an interdisciplinary lead with overall responsibility for the service (Burton et al., 2009, Harris et al., 2013) who is often a stroke consultant physician. However, community stroke services have fewer layers of organisation, can be smaller in configuration than acute services and are often managed by allied health professionals.

The absence of a clear overall service leadership can negatively impact daily management and leave teams unclear about service level objectives (Harris et al., 2013, Wade, 2016). Due to the level of interdisciplinary working occurring within stroke services, securing approval from all discipline leads makes the decision-making process significantly more complicated and lengthy than when there is one clearly defined lead (Harris et al., 2013).

Administrators

The role of the administrator in interdisciplinary stroke services has not been researched, though it is acknowledged that sufficient administrative support is essential to remove the administrative burden from professionally registered staff and facilitate delivery of face-to-face rehabilitation in stroke services (Fisher et al., 2011, Intercollegiate Stroke Working Party, 2016). Research conducted in stroke units has recommended that a reduction in the amount of time staff spend on administrative duties could result in improved outcomes for patients (Clarke et al., 2018) but it is unclear whether any of those duties could be performed by administrators.

Psychologists

The gap in the provision of psychologists within stroke services is well documented (National Audit Office, 2010, Intercollegiate Stroke Working Party, 2016, Stroke Sentinel National Audit

Programme, 2019, NHS Improvement, 2011). Within stroke, gaps in team composition are felt to negatively impact service efficiency and are perceived by staff as contributing towards delays in discharge (Tyson et al., 2014). The impact of the lack of psychological input across the stroke pathway on patients has been discussed (Morris, 2016, Tang et al., 2017), but the impact on interdisciplinary teamworking has not been fully explored. The provision of psychological care is the responsibility of the whole MDT; addressing psychological needs post-stroke has been identified as an important cultural feature of stroke services (NHS Improvement, 2011). A stepped care approach to the provision of psychological support for patients is recommended where non psychologically trained staff deliver psychological interventions under the supervision of qualified clinical psychologists or neuropsychologists with specialist expertise in stroke (National Stroke Programme, 2021). A key component to the success of this approach is access to clinical psychologists with stroke expertise to guide the delivery of care. The national shortage of psychologists has resulted in staff reporting difficulties in delivering psychologically focussed rehabilitation, leaving them feeling unsupported (Morris, 2016, Tang et al., 2017). Service leads and senior staff can only provide limited support and teams are negatively affected by the lack of specialist support (Morris, 2016).

Interdisciplinary Teamworking

It has been argued that in stroke services, simply forming a team from different professional disciplines does not mean that effective teamworking will result (Hewitt et al., 2014). The individualistic training of healthcare professionals has been criticised as poorly preparing individuals for interdisciplinary working (Ellis and Sevdalis, 2019). Historically, in stroke services, professionally registered staff have had autonomy and independence within their respective professions (Baxter and Brumfitt, 2008b) and evidence suggests in stroke, that staff with no previous experience of interdisciplinary working can struggle (Harris et al., 2013). For effective teamworking to occur, stroke teams need to be developed, which takes time (Gibbon et al., 2002) and opportunities to work collaboratively and gain an understanding of roles and professional boundaries within the team should be provided (Kilbride et al., 2005, Cramm and Nieboer, 2011, Harris et al., 2013).

Collaborative Working

Research conducted within in-patient stroke settings suggests that working collaboratively facilitates interdisciplinary working (Clarke and Forster, 2015, Fisher et al., 2021b) and is more likely to occur in acute settings as co-location of staff increases opportunities for staff to communicate and participate in joint-working practices (Clarke, 2010, Harris et al., 2013, Paxino et al., 2020). The existence of equitable communication has been linked to good interdisciplinary teamworking in stroke services (Cramm and Nieboer, 2011). Opportunistic dialogue occurring through joint working in stroke units is thought to aid clinical reasoning skills and decision-making (Clarke, 2010). However, the extent to which this occurs is limited if staff feel unconfident in sharing opinions with senior members of staff (Harris et al., 2013).

Role Blurring

Interdisciplinary stroke services are thought to engage in more role blurring than other services. There is a natural overlap between the professions (Clarke, 2010), and the integrated nature in which stroke services work facilitates this. Role blurring is facilitated when professionals are co-located as opportunities for collaborative working and communication are increased. Engaging in role blurring helps staff in stroke services attain clarity surrounding the professional roles within the MDT and has been attributed with facilitating service delivery, alleviating service pressures, and providing a holistic package of care for patients all of which are thought to result in quicker and more appropriate discharges for stroke patients (Harris et al., 2013). Sometimes role blurring has been noted to create tensions and conflicts between staff groups especially if there are concerns associated with overstepping of boundaries which is more of an issue for staff who are used to working in discipline-specific groups (Harris et al., 2013). This may be less of a problem in community stroke settings than in acute stroke settings (Harris et al., 2013). Despite the perception that role blurring is common, documented evidence in stroke services of its occurrence are not common (Harris et al., 2013) and tend to be limited to acute settings where nurses are taught how to incorporate elements of therapeutic rehabilitation into their care.

To conclude, comprehensive multidisciplinary teams are deemed crucial for the delivery of evidence-based stroke rehabilitation in community settings. Stroke services in acute settings are believed to work in an interdisciplinary manner, engaging in more role blurring than other health disciplines, though the extent to which this occurs in clinical practice is unknown. Interdisciplinary working is facilitated when staff working closely are co-located. Although the national shortage of clinical psychologists in stroke teams is well documented, the impact this has upon interdisciplinary working is unknown. No known research has investigated interdisciplinary teamworking within community stroke services.

Realist Evaluation Findings

This section will outline the findings from the realist evaluation for programme theory one, the multidisciplinary team and interdisciplinary working. It will begin by presenting the CMOCs which underpin the refined programme theory before discussing each one in turn.

Overview Of CMOCs

The five CMOCs in Table 10 underly the refined the programme detailed in Table 9 on page 95. The first four, CMOCs 1.1, 1.2, 1.3, 1.4 were constructed to explain how components of team composition facilitated the delivery of evidence-based services in rural community stroke services. CMOC 1.5 explains how the delivery of evidence-based services is affected by deficits within the team composition.

CMOC 1.1 Service Leads

CMOC 1.1 detailed in Table 10 on page 104 explains how service leads facilitate the delivery of evidence-based services for RCSSs.

Relevant Contextual Information

Site 1 had one band 8 service lead covering both north and south bases. Site 2 had band 7 leads in both services. They all carried clinical caseloads alongside management responsibilities. The leadership style of the three service leads differed, but they all maintained a positive team climate by coordinating staff, listening to concerns, raising issues

with higher management, cascading pertinent information to staff from the NHS Trust, the national audit, or commissioners. They all openly discussed how much they valued their members of staff and were incredibly proud of the services they were leading. In services where leads were present, a hierarchy was evident; junior members of staff were aware of whom they could approach for support if leads were unavailable. Site 3 had no service lead; staff were managed by therapy acute stroke unit (ASU) leads, which as detailed below was a source of frustration. The staff in site 3 tended to defer to each other for peer support and advice as the service was more cooperatively managed through the team membership.

Interdisciplinary Decision-Making

Service leads were considered integral to the multidisciplinary team **(context)** and were identified as the person with the authority and ability to make difficult or overriding decisions **(mechanism resource)**. This alleviated unnecessary pressure from professionally registered members of staff **(mechanism reasoning)** whilst maintaining quality standards and flexibly responding to service needs and pressures **(outcome)**.

> *"It's the ultimate decision making, are we or aren't we going to take that patient. […] When you've got a full caseload, having that pressure on top is a bit of a challenge. […] I definitely think you need a defined manager.*
>
> Site 2_010 Physiotherapist

> *"So there's a lot of flexibility that's required and with [service lead] very good at identifying when things are starting to slip and kind of trying to knock everything back into place again and [service lead] is obviously the one that makes the final overriding decisions on things. So the flexibility of this team is really key and I think you can't be flexible if you don't have a leader."*
>
> Site 2_008 Speech and Language Therapist

Table 10: CMOCs Underpinning Programme Theory One: The Multidisciplinary Team And Interdisciplinary Working

	Context	Mechanism Resource	Mechanism Reasoning	Outcome
1.1 Service Leads	RCSSs with comprehensive multidisciplinary teams	Employing service leads to manage services who facilitate interdisciplinary decision-making, preserve healthy team climate, and empower staff to extend skillsets and make overriding decisions	Makes staff feel valued, confident, motivated, and supported to engage in inter and transdisciplinary teamworking	Facilitates delivery of holistic patient centred care Flexible service responsive to stroke unit needs by ensuring SSNAP quality standards & clinical guidelines are achieved
1.2 Rehabilitation Assistants (RAs)	RCSSs with supportive team climates, and service leads encouraging delegation	With sufficient RAs possessing appropriate knowledge and skills to engage in transdisciplinary teamworking	Are trusted by professionally registered staff to follow treatment plans and independently deliver rehabilitation	Facilitates delivery of equitable services through increasing service capacity and intensity of rehabilitation delivered to patients
1.3 Administrators	RCSSs with supportive team climates, and service leads encouraging delegation	With administrators possessing appropriate stroke-specific knowledge and skills to engage in interdisciplinary teamworking	Results in the development of inter-professional trust between colleagues	Allowing professionally registered staff time to concentrate on clinical duties which increases service capacity and intensity of rehabilitation delivered to patients
1.4 Professionally registered staff	MDT RCSSs with supportive team cultures and service leads encouraging inter and transdisciplinary working	where MDT roles are clearly defined, and professionally registered staff possess appropriate skills and knowledge to engage in inter and transdisciplinary teamworking	Inter-staff trust and confidence is developed	Facilitates delivery of evidence-based services through the delivery of holistic patient-centred care
1.5 Deficits in MDT composition	Interdisciplinary RCSSs	With deficits in team composition results in a lack of knowledge and appropriate skills	Results in staff feeling frustrated and underconfident	Limits the degree of interdisciplinary working which results in discharge delays and unmet rehabilitation needs for patients

The lack of service lead **(context)** impacted decision-making in site 3 as staff were unable to make decisions without approval from all therapy leads. The approval process was lengthy and time-consuming, staff felt frustrated **(mechanism reasoning)** and believed a dedicated service lead with the authority to make service-level decisions would be beneficial **(mechanism resource)**.

> *"-we can't make day-to-day running decisions, can we? Or changes to the service, without running it through a higher level."*
>
> Site 3_015 Nurse

> *"I think one of the things that does strike me as an outsider coming in has been the fact that there is no ESD lead post […] they can act as an advocate for the service, […] what you want to try and achieve as a service, […] I think that kind of thing is difficult to achieve when you have competing heads of different disciplines […] in quite a dynamic way I can see that it would be quite a positive force for the ESD team."*
>
> Site 3_004 Speech and Language Therapist

During data collection, monthly meetings in site 3 between the RCSS staff and therapy leads were instigated to facilitate the decision-making process **(mechanism resource)**. Although the meetings were seen as an improvement it was still considered to be less than ideal as waiting for a meeting caused unnecessary delays in decision making **(outcome)**.

> *"You've got six band 6s all trying to run this service without one single lead. The fact that we have to every month get four people in a room to make a decision on things that could be made on a day-to-day basis, it's a lot – it's time consuming, it's effortful for them. They're effectively managing two services as*

well. I definitely think it needs a lead but in the meantime with what we've got, it is a short-term sort of manageable solution for issues."

Site 3_014 Occupational Therapist

Positive Team Climate

Working in RCSSs was felt to be demanding and fast-paced, opportunities to engage with colleagues for additional support were limited **(context)**. Additionally, operating services over split bases (sites 1 and 2) in rural areas provided challenges in preserving team cohesion **(context)**. Service leads placed great value on social activities and non-patient focussed staff team meetings **(mechanism resource)** as ways of facilitating team cohesion and ensuring staff were appropriately supported **(mechanism reasoning)**.

"But yeah, it is the only time people see each other. Sometimes new staff one end of the team hasn't met half the ones from the other end of the team."

Site 1_019 Service Lead

"I think team morale is a huge one. It's a chance to sort out social activities as well for the team. Again, I think the way the team has evolved, there is much, much more lone working going on. So, it's just remembering that we're there for each other. Some people might be getting completely stressed out with their workload and are not having the opportunity to share that information."

Site 2_017 Service Lead

"We hardly ever see each other, especially north and south. […] so, it's a good way to keep in touch, and that's important. […] Just for the whole team dynamic. […] You need to have a relationship, […] We have a lunch that we do every quarter to kind of be together socially […] so we come together."

Site 1_002 Physiotherapist

Stakeholders in site 1, believed a service lead was essential to ensure a positive team climate. A few years before data collection, due to long-term sickness, management responsibilities were divided between the band 7 therapists **(context)**. Without clear leadership, staff felt frustrated, insecure, and confused **(mechanism reasoning)**. Subsequently, one of the band 7's was appointed interim service lead **(context)**. The challenges raised during this period were different to those facing site 3 and may reflect the change in management style from a single entity to a committee and the fact site 1 is large compared with site 3, indicating larger services require dedicated service leads **(context)**.

> *"It was like a ship with no rudder. […] there was no coordination. You need that." It's just accountability. You know what? For the staff, it's just that feeling of security and safety. And it's subconscious, but as soon as [service lead] wasn't there, it was kind of like, well, who's in charge? It was like a free for all. It's also direction of the service. You still need, even in times of crisis – especially in times of crisis, sorry – you do need that."*
>
> NGH_002 Physiotherapist

> *"Yeah, it was too many bosses, nobody really knew who they should be asking about anything […] Which one of the sevens – and one might say one thing, one might say another […] I found it completely disorganised. […] So yeah it doesn't work, you've got to have one person or you have one person and a clear deputy."*
>
> NGH_006 Nurse

Advocating For Services

Service leads also advocated for services with higher authorities **(mechanism resource)**, fighting for staff interests, which facilitated a shared team-level sense of purpose and helped staff feel supported **(mechanism reasoning)**. Observations of meetings with commissioners confirmed this as service leads actively fought for their services and ensured achievements and challenges experienced were communicated at strategic levels.

"I think having a manager drives a service forward and is visible if decisions are being made within the Trust. Visible for this service and can almost fight our corner."

Site 2_010 Physiotherapist

"I think it's important the staff keep informed of what's going on in the team, […] I try and be quite transparent about that and tell them what's going on, and, you know, when I get angry about things I will feed that on and say, "You know, I've tried to do my best but this is what I've come up against," […] I believe it's important that everybody knows what's going on, whether they like it or not. But that, I think, develops a team ethos, a shared team ethos really, a shared vision."

Site 1_003 Service Lead

Staff Empowerment

Service leads in sites 1 and 2 encouraged all staff to extend their skillsets **(context)** and in respect of professionally registered staff, they were provided opportunities **(mechanism resource)** to undertake management duties. Stakeholders felt that this promoted a sense of belonging, motivation, and a feeling of being valued **(mechanism reasoning)** which was important for job satisfaction **(outcome)**.

"Now I expect, in the NHS, Band 6s to be mini managers as well. […] It is expected that they do management and service development as well. […] Also for my Band 3s as well, […] they have a voice, that they have opinions, that they can contribute and that's really, really important in keeping them motivated and enjoying their jobs, as well, amongst the Band 6, […] it is an expected part of their work and actually they enjoy doing it because again, it gives – it makes them feel that they're contributing to making important decisions and it's upskilling them as well, in having other skills, other than clinical skills."

Site 2_002 Service Lead

"we do discharges and the Band 4s, so one step up from us do the initial assessments, which were originally supposed to be just very basic initial assessments but now they're doing quite complex initial assessments. It's certainly working above your band grade I would say on some occasions […] I love it. Makes you feel a bit wanted and a bit more involved. Because I'm not a qualified member of staff, but I do feel like it, it gives me a lot of confidence when I go in and see. […] I'll be honest, I think that's come right from the top, from [service lead] always been very pro, you can do it, just get on with it."

Site 1_012 RA

RAs in sites 1 and 2 held RA meetings **(mechanism resource)** which promoted a sense of belonging in the team **(mechanism reasoning)**. Suggestions from RAs to dealing with service level challenges were often implemented and resulted in improved ways of working for services **(outcome)**.

"We also encourage the Band 3s to organise their own Band 3 meetings […] They come up with good ideas of how they can make things better and then they'll come to me and say, you know, we think if we do A, B and C, it might work out as a better system. So they know I'm all open ears to anything like that."

Site 2_003 Service Lead

"[the] Band 3 meeting, because we have that between us and come up with ideas. So it would be about the double-up working we've got that changed slightly. […] The timetabling was a big one, that was completely changed by the Band 3s, that one. […] because it used to be run quite differently at the start, first two years, and it was Band 3s that developed it actually. And that's probably one of the biggest things that we do."

Site 1_012 RA

Administrators were also encouraged to extend their skillsets **(context)**. They were enthused **(mechanism reasoning)** by opportunities **(mechanism resource)** to demonstrate their potential, the trust developed **(mechanism reasoning)** facilitated interdisciplinary working. They were often able to streamline administrative processes to maximise service efficiencies, allowing staff more time to concentrate on clinical duties **(outcome)**.

> *"This is what I can do. Give me the chance, let me show you." And now our relationship is perfect because [service lead trusts me, [service lead] lets me do what I need to do."*
>
> Site 1_018 Administrator

> *"We're making it up as we go along really yeah. Because they never had – you know, anything, they just sorted it all out themselves so I'm sort of there in the middle saying […] so a lot of paperwork I took over. I was like getting all the patients' folders, the information ready before they'd go out on the visits so everything's there whereas it's took all that away from them. It gives them more time to concentrate on the visits."*
>
> Site 3_011 Administrator

The administrative role in site 1 had been extensively developed since the service was commissioned **(context)**. With the appropriate support, training **(mechanism resource)**, and trust **(mechanism reasoning)** significant administrative burden was alleviated from the service lead **(outcome)**.

> *"As we've extended we've upped our banding of admin staff. They've been able to support my role as a team lead as well, so they're also doing quite a lot of the HR stuff now. So we've got a Band 4 who should be capable of coping with some of the HR elements for staff, sorting out return to works and sickness. So yes, the role has grown and grown and grown and I certainly bet that's one of the biggest role growths within this team. I wouldn't have put that in the initial plan and I think people are missing a trick by not doing it, because good admin*

support makes a massive, massive difference […] it's trusting that they're capable of doing it and knowing that they're doing a good job and supporting them to do it."

Site 1_019 Service Lead

CMOC 1.2 Rehabilitation Assistants

CMOC 1.2 detailed in Table 10 on page 104 explains how transdisciplinary working RAs facilitate the delivery of equitable community stroke services through increasing service capacity and the intensity of rehabilitation delivered to patients.

Relevant Contextual Information

Sites 1 and 2 had larger teams employing approximately 10 full time equivalent (FTE) RAs each, split evenly over each base. The recommendation for RA provision based on annual patient caseload (approximately 600 annually) would be 1.5 (FTE) RAs for each service (Fisher et al., 2011). The RAs in sites 1 and 2 were trained to provide rehabilitation from every discipline within the service, RA training is covered in more detail within Chapter 6. Site 3, being a smaller service with a lower caseload than the other two services, had very limited access to discipline-specific (occupational therapy and physiotherapy) RAs from ASU. Although the RAs were deemed as being useful to the service they were not utilised in the same way.

Increased Service Capacity

The large numbers of RAs with transdisciplinary skills and knowledge employed within sites 1 and 2 **(mechanism resource)** facilitated the delivery of more intensive rehabilitation to a greater number of patients **(outcome)** and helped to negate the effect of rurality **(context)**. Stakeholders in site 3 articulated that increased access to RAs could be beneficial for the service and allow them to deliver more rehabilitation **(outcome)**.

"they are absolutely crucial to our team […] we also use them for time purposes and to cover more patients. Because you just wouldn't be able to see all those patients by ourselves"

Site 1_015 Physiotherapist

"that's why we can do as much as we can do. They are the machinery of this service. Our Band 3s are generic workers. So they have skills and really very good knowledge in all areas of stroke."

Site 2_002 Service Lead

"It would be nice to have them a little bit more, I think [colleague] and I could definitely, you know, involve them straight away with some of the patients that probably have more, more visits by themselves […] we could get them involved earlier I think with the patients and then they'd be involved more."

Site 3_005 Physiotherapist

Transdisciplinary trained RAs **(mechanism resource)** also maximised efficiency as one RA delivered rehabilitation from multiple disciplines in a single visit **(outcome)**.

"They might do a bit of physio, a bit of OT, a bit of speech all in one session. […] it's so useful that you can call upon any RA to do any job. So, if you are short of RAs one week, […] knowing that they can do a bit of everything obviously avoids that potentially patients not being seen because we don't have the staff"

Site 1_015 Physiotherapist

Team Culture

Several stakeholders spoke of RA's needing to understand that patient needs fluctuate, and planned rehabilitation sessions may need to be adapted, RAs were trusted to know **(mechanism reasoning)** when to administer mood measures, take blood pressures, or collect urine samples **(mechanism resource)** saving valuable time in getting correct treatment to patients and reducing the need for another visit to be organised by the service **(outcome)**. In

these scenarios, having a supportive working environment **(context)** for RA's to seek support was important.

> *"if that patient was a diabetic, they would say, do you know what your blood sugar is, and if it was low, they would understand that. You're not saying they would know exactly what to do, but they would understand that that wasn't right, and they'd be able to call someone. They would know if somebody was not well enough to actually do their therapy that day,"*
>
> Site 1_014 Nurse

> *"I do trust them, […] Sometimes you've got to be adaptable. I might have written this activity plan out but actually the patient's very upset about something and the focus changes, but if they are struggling, I would expect and I see it that people do ring up"*
>
> Site 1_011 Speech and Language Therapist

Although RAs worked independently, they did not work autonomously; they followed treatment plans designed by their professionally registered colleagues **(mechanism resource)**. Stakeholders felt it was important that trust existed between the staff groups **(mechanism reasoning)**; treatment plans reflected skillsets and RAs were trusted **(mechanism reasoning)** to follow them.

> *"So, we have specific activity plans for the rehab assistants. It can be a pictorial activity plan, or it can be written exercises […] you'd expect your rehab to deliver what you've set. […] We tend to see the patient at least once a week. So, we are constantly assessing and analysing and reviewing and updating."*
>
> Site 1_004 Occupational Therapist

"they have to trust us to provide an appropriate treatment plan, something that is clearly written, something that they can follow. We trust them to follow it appropriately"

Site 2_012 OT

CMOC 1.3 Administrators

CMOC 1.3 summarised in Table 10 on on page 104 explains how administrators facilitate service capacity and interdisciplinary working within RCSSs through allowing professionally registered staff more time to concentrate on clinical duties.

Relevant Contextual Information

All services employed administrators, but they were utilised differently. Site 1 had two administrators, a band 4 and band 3 with the former holding the title of administrative manager who was responsible for some managerial administrative duties previously performed by the service lead. Site 2 was commissioned with 2 administrators, one in each service. However, due to long-term sick leave, one administrator covered both bases during data collection. Site 3 had only introduced a part-time administrator shortly before data collection commenced.

Increasing Service Capacity

Stakeholders in all services articulated that administrators were vital and valued members of staff **(context)**, believing services would be unable to function without them **(outcome)**. As outlined in programme theory two contained within Chapter 6, the administrative role is complex **(context)** and administrators needed stroke-specific knowledge and an understanding of how the service operates within the NHS Trust **(mechanism resource)**. Good administrators were believed to allow professionally registered members of staff to concentrate on clinical duties **(outcome)**.

"I just cannot see how it could work without admin, […] we would just see far fewer patients; far fewer. […] if we all had to do our admin we'd be way less

clinical. […] [without admin] we would sink – without a doubt we just couldn't do it, we couldn't do it"

Site 1_008 Physiotherapist

The administrator in site 3 had extensive knowledge **(mechanism resource)** from working as an administrator in the stroke unit **(context).** Site 3 is embedded in the stroke unit and a good working relationship between the administrator and the team already existed **(context)**. Observations revealed this previous working relationship facilitated trust in the ability of the administrator **(mechanism reasoning)** and as a result significant administrative was quickly alleviated from the RCSS nurse **(outcome)** who had previously undertaken all administrative duties. Following the new appointment, the nurse was able to see more patients **(outcome)**.

"It's fantastic. I don't know how I ever did it before without admin. I couldn't even tell you how I did it, no. That's made a massive improvement. […] it was me setting all the paperwork up, coordinating all that; making sure the discharge bit, we're all sorted"

Site 3_015 Nurse

Administrators are less costly to employ and due to their professional skills, stakeholders believed they were more efficient in completing administrative tasks **(mechanism resource)**. In rural areas, where staff spend significant periods out of the office **(context)**, good administrative support **(mechanism resource)** was thought to be invaluable in reducing the administrative load on professionally registered staff **(outcome)**. Observations revealed service leads encouraged staff to work with, delegate to, and support administrators **(context)** to facilitate service efficiency **(outcome)**.

"Is it cost effective to have your band 7 speech therapist spending lots of time sitting by the printer, trying to make things print and stuffing things into envelopes? Or a lower banded admin assistant, and then [I] can see more patients in the end because you're doing less so, yes. It makes a massive

difference. I've been in teams with both, very good admin and very limited admin and you see the difference and really value here in our team."

Site1_011 Speech and Language Therapist

"I could go out to do two visits with [nurse] the other day […] [administrator] was there to just keep an eye on things, whereas otherwise it would've been, okay, well I need to sort this first, because otherwise nothing will happen."

Site 3_005 Physiotherapist

Due to the nature of rural working, administrators often worked alone, sometimes answering telephone calls from patients experiencing distress **(context)**. Service leads were confident **(mechanism reasoning)** in the skills and stroke knowledge **(mechanism resource)** of administrators and believed they were crucial in presenting a holistic service **(outcome)**. In all sites, they were known to compassionately communicate with patients **(mechanism reasoning)** even those presenting with cognitive difficulties or aphasia **(context)**.

"Sometimes when I listen to my admin staff empathising with families and patients, you know, they're that much better at being more understanding about the situations that stroke survivors and their families and their carers are in. So when they're getting these frantic phone calls from somebody who's struggling to manage, they are very, very compassionate..."

Site 1_003 Service Lead

"you get people with memory issues that forget appointments and you get people that have got speech and language difficulties on the phone or people that might just get really flustered and anxious on the phone, or we get relatives that are ringing frequently, that are very, very anxious. So yes, that's absolutely, absolutely important that the person dealing with those people understands the reasons behind why they might have forgotten or why they're in a fluster. […] it makes us come across as a really good service because there's no obstacles.

You know, there's no barriers and it makes people feel that they can access us whenever they need to, which is important."

Site 2_002 Service Lead

"we had a lady that she couldn't speak. […] I said, "Can you understand what I'm saying? If you can, cough." And she coughed. And I said, "Are you phoning up for your visits?" So she coughed again. And I just remembered who was really struggling, speech and language. […] And her daughter phoned me the following day and she says, "I don't know how Mum has got this but Mum's got her visits." And I explained to the daughter what I did and she started crying on the phone. Because it gave her Mum that independence, you know, to actually pick up the phone and be able – well she couldn't talk, all she could do was cough."

Site 1_018 Administrator

This kind of interdisciplinary teamworking helped to make the service more efficient **(outcome)**. The knowledge and understanding of stroke possessed by administrators **(mechanism resource)** gave them confidence **(mechanism reasoning)** with signposting or dealing with things directly, leaving their colleagues to concentrate on clinical duties **(outcome)**.

"We do get some ring up, not a great deal but we do get some, "Oh, what do I do? I've dropped the kettle all over the floor" because they've got weaknesses and, "Oh, I don't know what to do and I can't cope" and, "Well, yeah. You can cope." And it's just, "Calm down, it'll be all right. We can send the therapist. The therapist can come out and see you and just help you a bit more, that's fine." But it's just a scary world out there for some of them."

Site 3_011 Administrator

"it's just talking to them and putting their minds at rest. […] some of them are very lonely if they're on their own. You just want to get in the car, grab a cake

and go and have a cup of tea and a chat. […] I hope I put their mind at rest sometimes when they ring in and they're a bit agitated. And you go, "Oh, look; this is absolutely normal. And if it is anything, then look; ring your GP." You know, or, "I'll get somebody to call you ASAP""

Site 2_001 Administrator

"It's not a case of "Well there's nobody here, I'm really sorry, we'll get somebody to call you when we can" it's actually making them feel that we are there and we will listen. We may not have the answers but then sometimes we can signpost people. Sometimes they need to go to their GP they don't necessarily need to wait twenty-four hours to speak to a therapist who then tells them to go to their GP. We can bring that sooner for them. I think for them it's having that port of call that the team is there and that we are a team and they don't just see us as just admin."

Site 1_001 Administrator

CMOC 1.4 Professionally Registered Staff

CMOC 1.4 is outlined in Table 10 on page 104 and explains how professionally registered staff engaging in inter and transdisciplinary facilitates the delivery of holistic and equitable patient centred care.

Relevant Contextual Information

All three services employed a core team of occupational therapists, physiotherapists, speech and language therapists, and nurses. The composition of these relative to the recommended numbers (Fisher et al., 2011) can be viewed below in Table 11. These are the actual number of staff employed in the services during data collection and as a result differ slightly to the figures presented in Table 6 on page 90 which outline the information that was gathered as a result of the SSNAP post-acute audit.

Table 11: Team Composition Of Professionally Registered Staff

	Site 1 (annual caseload 614)		Site 2 (annual caseload 657)		Site 3 (annual caseload 108)	
Configuration	Recommended	Actual	Recommended	Actual	Recommended	Actual
Physiotherapist	6	6	6.5	4	1	2
Occupational Therapist	6	4	6.5	4	1	2
Speech and Language Therapist	2.4	2	2.6	2	0.4	0.9
Nurse	0-7.2	2	0-7.8	2	0-1.2	1

Interdisciplinary Working

Professionally registered stakeholders believed interdisciplinary working was unique to community stroke services remarking that discipline boundaries across healthcare are usually more rigid **(context)**. Most stakeholders had worked within in-patient stroke units **(context)** and believed their current level of interdisciplinary working was greater than in previous roles.

> *"it's the only team I've come across and I've worked in multi-disciplinary teams. I've worked in a neuro team before. [….] I think it's a unique team [...]. It's different from what I've done before but it's something I'd like to stay with because like I really do enjoy it. "*
>
> Site 2_009 Speech and Language Therapist

> *"We work so much more inter-professionally […]. Our boundaries cross over quite a lot in terms of what we do with patients, which is vital for stroke patients. In community we were very, […] You didn't really cross over till you might have a phone call to say, "These need OT.""*
>
> Site 3_003 Physiotherapist

> *"I've worked on wards before where the OT wouldn't dream of emptying a commode, even though they were working with that patient and they'd get a*

nurse to do it, and a nurse perhaps wouldn't do things that an OT would do. It's not like that here. We do sort of very much overlap."

Site 2_018 Nurse

Interdisciplinary working predominately occurred where professional boundaries naturally crossed and overlap in skills existed **(context)**. Stakeholders were conscious of their limitations **(context)** and confirmed they would not feel confident **(mechanism reasoning)** to deliver rehabilitation **(outcome)** if they did not possess the appropriate interdisciplinary skills or knowledge **(mechanism resource)**.

"I mean I do know my boundaries and I know I wouldn't go and do a washing and dressing assessment or something like that because it would just be out of my sort of zone if you like. […] I'm doing little roles."

Site 2_009 Speech and Language Therapist

"Inherently, there are shared skills. You don't own mobility and you don't own picking up a kettle as an OT or a physio. […] obviously there's the swallowing side of things that the speech do that OT or physio obviously wouldn't touch. The communication stuff, people might show us what they've been doing, but again, it's perhaps a little bit less. There's perhaps a little bit less of an obvious overlap with speech therapy."

Site 3_001 Occupational Therapist

It was acknowledged that interdisciplinary working required a mental shift in attitudes **(mechanism reasoning)** alongside a willingness to extend existing skill sets **(mechanism resource)**, especially for staff used to traditional MDT working **(context)**. Stakeholders reported time was needed to appreciate how interdisciplinary working can realise tangible benefits for patients **(outcome)** and improve service efficiency **(outcome)**. Stakeholders also indicated new staff could be anxious about delegating duties to individuals from other disciplines **(context)**. Providing clarity over MDT roles **(mechanism resource)** promoted the

development of trust **(mechanism reasoning)** between staff, helped to ease anxiety, and facilitated the delivery of evidence-based services **(outcome)**.

> *"When I first started doing interdisciplinary work I really, really struggled with it, it took me a long time to understand the benefits of it. I just felt like having to do a washing and dressing session with a patient was just, you know, it was a waste of physio time and because they weren't on a plinth in a gym, it couldn't be useful. Whereas it really, really changes your mind-set and you can absolutely then see the benefit of doing washing and dressing because it helps the balance and it helps their attention, you know, you can do loads of stuff."*
>
> *Site2_010 Physiotherapist*

> *I think some people can be very protective – professionals can be very protective of their things and do have some anxieties handing things over as well. So it's a trust thing, working together but that having the right breakdown of what tasks different people in different roles should be doing and getting that right makes the whole team more efficient.*
>
> Site 1_011 Speech and Language Therapist

Stakeholders believed possessing interdisciplinary skills and knowledge **(mechanism resource)** provided a more holistic approach to the delivery of stroke rehabilitation and facilitated the attainment of patient goals **(outcome)**, which were largely functional in nature and spanned multiple disciplines **(context)**. They discussed how insights gained from other disciplines **(mechanism resource)** informed the delivery of rehabilitation **(outcome)**.

> *"It has a massive impact on the sessions that we provide because they can get a bit of everything. […] I was trying to get out to […] a patient a couple times a week to help their mobility and that's a big goal for them; if an OT can go out and do it twice a week as well with them, you know, their confidence is going to rocket and they're going to achieve the goals quicker and the outcomes are going to be more significant for the patient than perhaps they would have been*

me just going out twice a week. So it's around goals really. I feel that we can achieve them more effectively and quicker because we work so inter-disciplinary."

Site 3_003 Physiotherapist

"I'm speaking purely from a physio perspective, you're looking at – my main focus is looking at how can they achieve their goals but what might be a barrier to them achieving their goals and might obviously be something that I can't deal with. So if it's related to their mood I can talk to them and find out like what their issues are."

Site 1_010 Physiotherapist

Transdisciplinary Working

Although the majority of the teamworking reported fits within the concept of interdisciplinary working, there were occasions where services worked in a transdisciplinary manner. Encouraged by service leads and primarily to alleviate service pressures **(context)**, transdisciplinary working allowed them to provide more holistic patient care **(outcome)**. All services trained staff to take blood pressures **(mechanism resource)**, a task normally conducted by nurses. Monitoring blood pressures is a main component of post-stroke rehabilitation and training other staff to perform this duty allowed services to more efficiently allocate resources **(outcome)**. Stakeholders confirmed this duty was not one previously experienced before working in the RCSS.

"I'm taking blood pressures which I hadn't got a clue what I was doing when I started but again, I went out with the nurses. […] we get trained on you must treat the whole patient"

Site 2_009 Speech and Language Therapist

Transdisciplinary working was encouraged by the service lead in site 1 to alleviate service pressures associated with a shortage of occupational therapists **(context)**. Due to the commonality of skills between professions, the physiotherapists were trained to undertake washing and dressing assessments, and the speech and language therapists were trained to

administer the Montreal Cognitive Assessment (MOCA) **(mechanism resource)**. This facilitated the delivery of an evidence-based service despite staff shortages **(outcome)**. The speech and language therapists appreciated their wider knowledge and skills **(mechanism resource)** and commented that they were able to have more informed discussions with their occupational therapist colleagues **(mechanism reasoning)**.

> *"we have physios be taught washing and dressing. They don't do a lot of it, but occasionally when it's necessary, they do."*
>
> Site 1_003 Service Lead

> *"The OTs have trained us to do the MOCA screen […] – I think it's helped me understand my patients better from doing the assessments. And I can go back and discuss –; […] talked to the OT again about that and we've decided currently that it – the patient receives speech therapy, doesn't need occupational therapy input. But without that additional skill set and that working together, either that patient would not have had that cognitive screen, that would have just been missed along the way; or you would have had another person going in."*
>
> Site 1_011 Speech and Language Therapist

CMOC 1.5 Deficits In Team Composition

CMOC 1.5 detailed in Table 10 on page 104 explains how gaps in team impact upon interdisciplinary working and lead to discharge delays and unmet rehabilitation needs for patients.

Relevant Contextual Information

All three services had deficits in team composition as none of them had embedded psychologists. The lack of available psychological support **(context)** was discussed in all three services. As outlined in Programme Theory Two, interdisciplinary skills and knowledge are acquired informally and in-house from colleagues **(mechanism resource)**. Gaps in team composition **(context)** prevented the acquisition of the appropriate skills **(mechanism**

resource) limiting interdisciplinary working, which impacted the delivery of evidence-based services as the services were unable to meet the psychological needs of patients **(outcome)**.

Unmet Needs

Due to the shortage of psychologists working across the wider stroke pathway, staff sometimes referred patients to generic psychological services **(context)**. However, service provision was patchy; where they did exist, they were often accompanied by lengthy waiting lists or complex referral criteria **(context)** rendering some patients ineligible for rehabilitation **(outcome)**. Stakeholders questioned the appropriateness of general mental health services, they felt rehabilitation of psychological needs was complex **(context)** and should be delivered by stroke specialist clinical psychologists **(mechanism resource)**. The lack of psychologists within services **(context)** coupled with the lack of appropriate services to refer patients on to **(context)** left stakeholders feeling frustrated **(mechanism reasoning)** with the system and under confident in their ability **(mechanism reasoning)**. Patients were left with unmet needs **(outcome)** which meant concerning psychology, services were not meeting evidence-based standards **(outcome)**.

> *"mental health don't help anyway because […] don't always understand the mentality around the stroke patients. So yeah, it would be difficult, I think, to pass that on and then you have problems later on."*
>
> Site 1_006 Nurse

> *"I'm not an expert in psychology or anything else like that, and some patients you go to, you just think this is way out of my depth and that's when you would refer on. Then there's the issue about who do you refer on to because the services here are so overstretched that, at the moment they're really only looking at patients who've got some sort of cognitive difficulties as well as depression and anxiety, and that leaves a lot of people out there who could do with some support".*
>
> Site 2_018 Nurse

The lack of psychological input within the MDT also influenced the acquisition of psychological skills and knowledge. This is covered in more detail in Programme Theory Two.

Discussion

This section discusses the findings from the realist evaluation in light of the literature presented in section 2.

Key Findings

1. Inter and transdisciplinary teamworking facilitates the delivery of evidence-based community stroke services in rural areas, particularly when extended to RAs and administrators. Appropriately supported and trained to extend skill sets; these staff maximise service efficiency, enabling the delivery of intensive rehabilitation to patients.
2. Within larger teams, a service lead is crucial for the delivery of evidence-based services. They perform several important roles through facilitating interdisciplinary decision-making, empowering staff to extend clinical and non-clinical skillsets and ensure the existence of a supportive team culture.
3. Gaps in team composition in relation to a psychologist impede the delivery of evidence-based services due to a lack of appropriate knowledge and skills within services. Staff feel under confident with delivering rehabilitation from missing disciplines, and unmet rehabilitation needs for patients.

Teamworking

The findings from this research indicate that both inter and transdisciplinary teamworking are important features of evidence-based community stroke services. Given the complex presentation of stroke, transdisciplinary skills and knowledge provided staff with the ability to deliver more holistic patient care which supports claims by Wade (2016).

Although transdisciplinary teamworking has not yet been explored within the stroke literature, previous in-patient stroke rehabilitation research has noted the importance of interdisciplinary teamworking (Clarke, 2010, Harris et al., 2013, Clarke and Forster, 2015). These findings suggest that inter and transdisciplinary teamworking is sewn through the fabric

of services. It is interesting and important to note that in rural areas where geographical terrain can significantly impact service delivery, transdisciplinary working facilitated service capacity as rehabilitation from multiple disciplines could be delivered by one member of staff in a single visit, reducing travelling time whilst increasing service capacity. For this kind of teamworking to be successful in larger teams, transdisciplinary RAs, interdisciplinary administrators, and a service lead were found to be essential components of the MDT.

Transdisciplinary Rehabilitation Assistants

Contrary to the acute healthcare literature which suggests RAs are often undervalued and underutilised members of staff (Kessler et al., 2010, Chouliara et al., 2019), these highly skilled members of staff were considered crucial members of the MDT. Without utilising them to deliver intensive rehabilitation, services would not have been able to meet nationally recognised evidence-based standards. Although empirical data to determine the allocation of rehabilitation visits was not collected, observations of visit scheduling (programme theory five, chapter nine) and MDT meetings (programme theory three, chapter seven) confirmed RAs delivered the bulk of rehabilitation in sites 1 and 2. These findings contrast with Moran (2012) who found RAs working in community rehabilitation services only delivered one-third of rehabilitation. Although the transdisciplinary working nature of services contributed to this finding, it is also likely explained by the way in which the services organise their visit scheduling, which is explored in programme theory five, and can be found in chapter nine.

For services to successfully use transdisciplinary RAs, inter staff trust and a supportive team environment needed to exist. Previous research has noted the reluctance of professionally registered staff to delegate duties to HCAs in acute settings (Storey, 2005). However, this finding was not found in the present study; delegation of duties to RAs is the norm for these services which reflects the level of inter and transdisciplinary teamworking occurring. It was acknowledged that new members of staff could be anxious about delegating duties echoing findings by (Harris et al., 2013). This anxiety was attributed to a lack of experience in inter and transdisciplinary working, which was believed to be unique to community stroke services. Services contemplating using transdisciplinary RAs may experience some initial hesitancy from professionally registered staff. However, findings from this evaluation suggest time to

adjust to inter and transdisciplinary teamworking, a supportive team culture, and the provision of role clarity helps with the development of inter staff trust which facilitates delegation of duties to RAs. These findings corroborate findings of previous research in teamworking (Gibbon et al., 2002, Kilbride et al., 2005, Cramm and Nieboer, 2011, Harris et al., 2013).

Interdisciplinary Administrators

In respect to administrators, the findings indicate that In all services, they were considered essential MDT members who possessed extensive stroke interdisciplinary knowledge and skills, supporting previous claims that administrative support is considered to be an essential component of stroke services (Fisher et al., 2011, Intercollegiate Stroke Working Party, 2016). Previous research within acute settings has indicated that patient outcomes could be improved if professionally registered staff reduced time spent on administrative duties (Clarke et al., 2018). No known studies have investigated how administrators can facilitate the delivery of evidence-based stroke services but encouragingly the findings from this study indicate that interdisciplinary administrators can alleviate significant administrative burden from all staff if they are supported, trained, and trusted to extend their skillsets. Administrative Managers can effectively support service leads if they are trained to take on managerial responsibilities, allowing service leads to concentrate on other aspects of service management or continue to keep a clinical caseload.

Additionally, these findings also highlight the role that the administrators possessed in providing emotional support for stroke survivors. Often, they were lone working in the community stroke offices; stroke survivors would phone for advice or assistance in times of crisis because of the high level of involvement from the stroke service in their lives. The administrators were required to be able to respond to the stroke survivors compassionately and appropriately and as evidenced by the administrator in site 1, they often had to think of innovate ways of communicating with patients with aphasia. There is no known literature which has investigated the role that administrators play with this aspect of service delivery.

Service Leads

Another important finding is that clear, defined leadership was instrumental to the delivery of evidence-based community stroke services in rural areas, which supports the work of other studies purporting leadership to be an important component of stroke services (Gibbon et al., 2002, Burton et al., 2009, Fisher et al., 2013, Harris et al., 2013). Unlike acute stroke services where service leads are often physicians, allied health professionals are ideally suited to the role and in all services, they possessed a clinical caseload alongside management responsibilities. Much of the leadership healthcare research has focussed on nurses and in acute settings; the findings from this research add an interesting perspective to the organisation and coordination of community stroke services in rural areas. In respect to inter and transdisciplinary working, service leads were fundamental to ensuring the existence of a supportive team climate and encouragement of staff to extend clinical and non-clinical skillsets as well as contribute to MDMs which support previous work conducted across healthcare (McCallin, 2003, McCray, 2003) and in stroke (Gibbon et al., 2002, Burton et al., 2009, Harris et al., 2013). Service leads played an essential role within interdisciplinary and service level decision-making, making overriding decisions where necessary. This was particularly notable in site 3 where the lack of service lead impeded day-to-day interdisciplinary decision-making, especially as approval from multiple therapy leads was required for daily decisions. This process left the staff feeling frustrated and was felt to stymie service development which reflects previous research by Harris et al., (2013) and thoughts by Wade (2016).

Gaps In Team Composition

Unsurprisingly, these findings confirm that gaps in team composition impeded the delivery of evidence-based services. Psychologically focussed rehabilitation as per the stepped care model (NHS Improvement, 2011, National Stroke Programme, 2021) was unable to occur as there were no stroke psychologists available to direct the provision of care. Although supported by their MDT colleagues, nurses, in particular, felt out of their depth and under-confident when treating patients with more complex psychological needs which is consistent with previous research (Morris, 2016, Tang et al., 2017). Additionally, stakeholders were frustrated by the lack of appropriate external psychological services which given the national

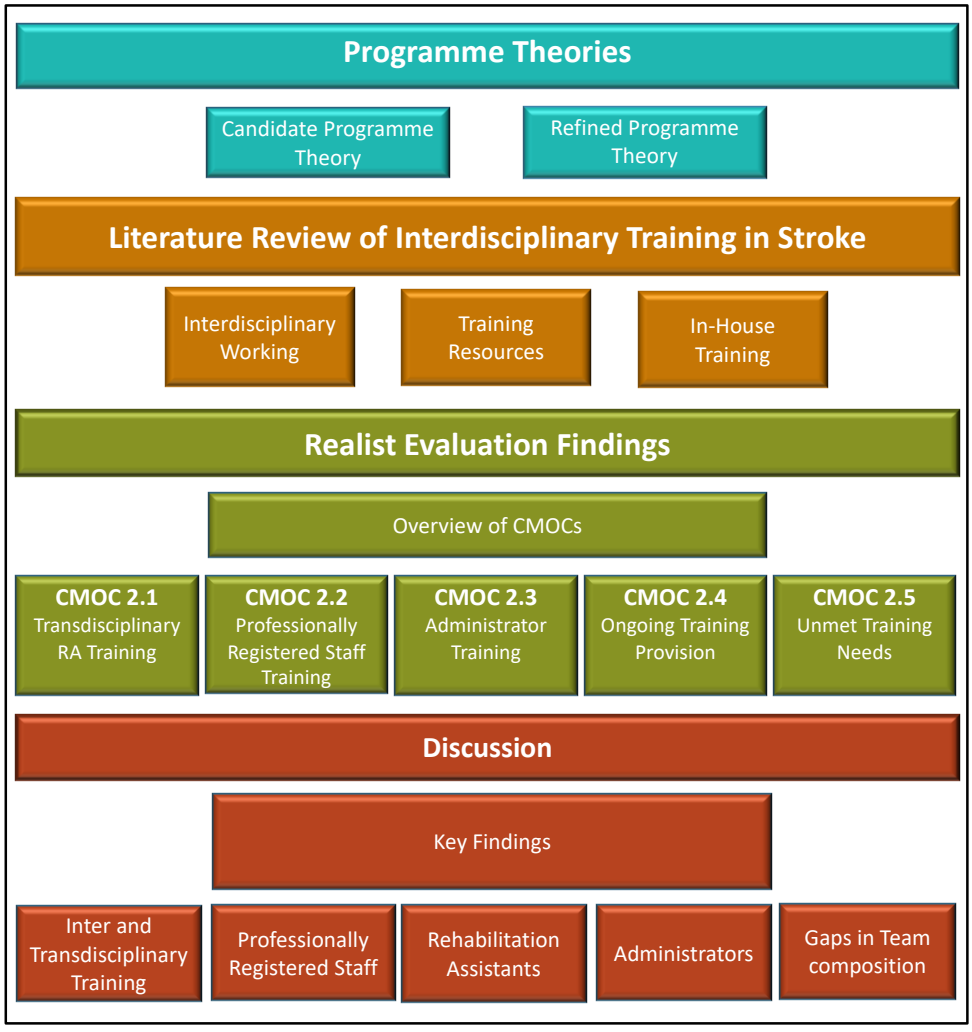
shortage of psychologists working in stroke services is to be expected (National Audit Office, 2010, Intercollegiate Stroke Working Party, 2016, Stroke Sentinel National Audit Programme, 2019, NHS Improvement, 2011).

To conclude, the refined programme theory detailed above in Table 9 and based upon the evidence provided and discussed within this chapter identifies the importance of inter and transdisciplinary teamworking in facilitating the delivery of evidence-based community stroke services in rural areas. The role of the service lead in managing interdisciplinary rural community stroke services is not to be underestimated and they should be considered an essential component of the MDT composition. Equally, RAs and administrators are exceptionally valuable members of staff and are potentially untapped resources for services struggling with meeting current national quality markers. When utilised effectively, these highly skilled members of the MDT have much to offer and with the appropriate training, support and supervision can alleviate significant burden from their professionally registered colleagues. Training to acquire the necessary skills to work in an interdisciplinary or transdisciplinary manner are presented in Programme Theory Two which is located in chapter six.

Chapter Six
Programme Theory Two: Inter And Transdisciplinary Training

The previous chapter was concerned with team composition and interdisciplinary working. This present chapter follows on from this and concentrates on inter and transdisciplinary training. These two programme theories are heavily interrelated, and although presented individually, they are not mutually exclusive as inter and transdisciplinary working facilitates training and vice versa. The chapter is organised into four sections which are depicted in Figure 4. For ease of navigation, the colours represented in the figure will be represented in each of the sections presented in both headings and tables.

Figure 4: Navigation Diagram For Programme Theory Two: Inter and Transdisciplinary Training



Programme Theories

This section presents an overview of the candidate and refined programme theories. The candidate programme theory can be found in chapter three. The refined programme theory presented below is based upon the culmination of the realist inspired literature review of interdisciplinary training in stroke, findings from the realist evaluation (both of which are detailed below) as well as further discussions with individuals from the realist stakeholder group.

Candidate Programme Theory

The candidate programme theory initially hypothesised that rurally based appropriately resourced community stroke services providing stroke-specific training for staff to keep up to date with continued professional development **(mechanism resource)** would result in staff feeling valued and motivated **(mechanism reasoning)** to deliver an evidence-based service **(outcome)**. However, this candidate theory was constructed on the implicit assumption that training would be associated with the development of discipline-specific skills for professionally registered staff. Data collection revealed inter and transdisciplinary working was crucial for RCSSs to deliver an evidence-based service (as detailed in programme theory one) and incorporated all staff. This necessitated a focus on the training of inter and transdisciplinary skills and knowledge and included all personnel working within services.

Refined Programme Theory

The refined programme two theory, presented in

Table 12 explains where staff are working in inter and transdisciplinary services **(context)**, it is important to provide formal and informal opportunities to develop inter and transdisciplinary skills and knowledge **(mechanism resource)**. This facilitates individual confidence **(mechanism reasoning)** in delivering rehabilitation as directed by other disciplines and interprofessional trust **(mechanism reasoning)** associated with delegation of specialised rehabilitation tasks. These facilitate the delivery of evidence-based services **(outcome)**.

Table 12: Refined Programme Theory Two: Inter And Transdisciplinary Training

Context	Mechanism Resource	Mechanism Reasoning	Outcome
Inter and transdisciplinary working RCSSs	Where formal and informal opportunities to develop inter and transdisciplinary skills are regularly provided for all staff	Facilitates the development of confidence in delivering rehab as directed by other disciplines and inter-professional trust associated with delegation of specialised rehabilitation tasks	facilitating the delivery of evidence-based services

Literature Review Of Interdisciplinary Training For Staff

Interdisciplinary Working

It is recommended that staff working in stroke services possess stroke expertise, operate in an interdisciplinary manner and be knowledgeable of other disciplines within the MDT (Department of Health, 2007, Intercollegiate Stroke Working Party, 2016). Accordingly, it is then advised that stroke-specific education opportunities be provided for staff working in stroke services (Fearon et al., 2012, Intercollegiate Stroke Working Party, 2016, Langhorne et al., 2020, Langhorne et al., 2017) and adherence by community stroke services to this was ascertained by the post-acute organisational audit (Royal College of Physicians, 2015).

Although collaborative interdisciplinary working has been deemed essential to the provision of evidence-based stroke care, the processes by which staff acquire specialist interdisciplinary skills and knowledge are not well documented. It is accepted staff should possess stroke specialist knowledge and skills from a wide range of disciplines (Catangui and Slark, 2012, Clarke, 2014), as developing staff competencies results in improvements in patient outcomes (Reynolds et al., 2016). However, a recent review concluded that it is unclear what impact that stroke education and training programmes for staff have on patient outcomes (Jones et

al., 2018). The literature available on stroke education and training programmes for staff is sparse and tends to focus on discipline-specific interventions aimed at one professional group, often nurses. Given the complex and heterogeneous nature of stroke, this singular focus is not representative of how care is delivered in stroke services.

National Training Resources

Stroke Specific Education Framework

The stroke specific education framework (SSEF) was funded via the National Stroke Strategy in 2007 and developed by the UK Forum for Stroke Training (UKSTF). Launched in 2009, the initial aim was to define stroke-specific knowledge and skills required to work within stroke services across the pathway. These were in addition to and distinct from knowledge and skills acquired in other means of working in healthcare social voluntary and independent services (Leathley et al., 2012).

THE SSEF is a freely available web-based resource and comprises 16 elements of care based on the quality markers identified in the National Stroke Strategy. Each element lists key competencies based on knowledge and skills staff should possess for working in stroke and signposts to UKSTF endorsed training resources (Watkins et al., 2012). The knowledge and skills required for each element of care were mapped onto job roles so staff could determine their knowledge and skill base against the SSEF and identify training needs. Of the 24 job role profiles listed, 9 have yet to be analysed and mapped against the SSEF framework.

The 68 courses listed within the SSEF vary from onsite face to face delivery through to online delivery (www.stroke-education.org.uk/courses/). There is very little published peer-reviewed or grey literature on the SSEF, so it is difficult to know if or how this resource is utilised by professionals working in stroke.

The Stroke Training And Awareness Resources

The Stroke Training and Awareness Resources (STARs) and the Stroke Competency Toolkit (SCoT) are currently funded by the Scottish Government and are based on the Scottish stroke

core competencies (Stroke Competency Toolkit, 2016, Stroke Core Competencies, 2016). STARs is a free stroke-specific interactive e-learning resource aimed at health and social care staff new to stroke or wishing to refresh or extend existing skills as well as those with limited access to stroke-specific training. STARs identifies competencies required to deliver stroke specialist care across the stroke pathway and offers online training at a basic and advanced level. The website was updated in July 2020 and now includes modules on hyperactute stroke treatments including thrombolysis and thrombectomy (Chest Heart and Stroke Scotland, 2020). Although this resource was designed with a Scottish audience in mind, it is applicable outside of Scotland, the World Stroke Organisation (WSO) has highlighted STARs as a useful educational resource for people working within stroke (World Stroke Organization, n.d.).

Both SSEF and STARs were primarily aimed at providing discipline-specific knowledge for healthcare workers, however, the resources are freely available, meaning professionals from any discipline could use them to improve their interdisciplinary knowledge. It is currently unknown if these resources have been used in this manner.

The Calderdale Framework

Although not specifically aimed at stroke services, the Calderdale framework was developed to provide a standardised approach to assistant training (referred to as support staff within the framework). It is a competency-based training programme that focuses on identifying components of care assistants are required to do in the course of their duties and can be contextualised to apply to any field within health or social care (Smith and Duffy, 2010). Initially developed to standardise the role of physiotherapy assistants, it was subsequently developed to include training for assistants in all core disciplines within services, meaning that the Calderdale Framework can be used to train inter and transdisciplinary personnel. Following training, assistants felt valued for gaining recognition of passing the competencies and delegation of duties by professionally registered staff to assistants increased (Smith and Duffy, 2010).

The framework has also been extended to include the development of the transdisciplinary practice of allied health professionals and applied in an acute setting in Australia. Although

no specific details were provided on elements of the training or how it was implemented; improved patient outcomes, increased service efficiencies and reductions in length of stay for patients were found alongside a reported increase in inter-professional communication and professional presence (Kaltner et al., 2017). The use of the Calderdale Framework in the implementation of a transdisciplinary service is currently being evaluated within an acute stroke unit in Australia (Ireland and Baker, 2017).

In-House Training

It is believed the majority of stroke training is delivered in-house (Craig and Smith, 2008). In-house training usually comprises a multitude of methods including face-to-face seminars, videos, practical workshops, protocols, (Jones et al., 2018) as well as elements of self-directed learning and competency-based approaches (Catangui and Slark, 2012). Much of the research has investigated the training experiences of nurses working in acute services (Jones et al., 2018), with the aim being to educate them about MDT disciplines. Research investigating interdisciplinary training of the whole MDT is absent from the literature.

Shared training opportunities, open to all staff at all grades from the same services can result in the acquisition of specialist interdisciplinary knowledge and facilitates opportunistic dialogue and joint working practices within stroke units (Clarke, 2010). The acquisition of interdisciplinary knowledge is thought to facilitate treatment plans for patients and enhance communication skills with patients and healthcare colleagues (Reid et al., 2006). Interdisciplinary knowledge is believed to influence how staff perceive the respective disciplines in the MDT both at an individual level and collectively within the service (Clarke, 2010, O'Carroll et al., 2018). Shared training opportunities can also occur as the result of joint working. Joint working on stroke units is thought to facilitate opportunistic dialogue and encourage interdisciplinary working as it provides opportunities for staff to gain interdisciplinary knowledge and skills whilst working together on particular cases (Clarke, 2010).

A study conducted in a London HASU following the reorganisation of stroke services reported delivery of a training programme linked to topics identified with the SSEF (Catangui and Slark, 2012). The 3-day programme aimed to improve, enhance, and develop staff competencies. The delivery of the training was a mix of classroom-based and practical training with a corresponding competency workbook to be completed within 6 months. The authors reported increases in team cohesiveness and a greater appreciation of the expertise of rehabilitation members and nurses, which was attributed to the design and delivery by the MDT. At an individual level, training was found to positively influence motivation and enthusiasm to apply new skills. A key benefit of the training noted by the authors were the interdisciplinary discussions that occurred, as training provided a safe environment away from the ward for discussions surrounding discipline approaches to stroke care could occur (Catangui and Slark, 2012).

Training Of Assistants

RAs and HCAs often have no medical or stroke training before starting work within stroke services. Training of assistants in healthcare largely occurs informally; skills and knowledge are acquired through joint working, in-house training and supervision (Moran et al., 2015). As found in programme theory one, professionally registered staff can find it difficult to delegate duties to assistants (Hancock et al., 2005, Storey, 2005). Previous research has suggested that staff possessing some control in the training of assistants positively impacts delegation of duties (Nancarrow et al., 2012b). Training assistants to work autonomously takes time and resources; teams with proportionally high numbers of assistants can find it challenging to provide the appropriate support and training required (Moran et al., 2015). Increased turnover of assistants has been linked to insufficient and interrupted training (Si et al., 2006).

Training experiences of assistants working in stroke services are virtually non-existent in the literature. One study was found that delivered training to HCAs on a stroke unit in Greater London (Carr, 2015). The training programme was led by an experienced HCA who developed a training booklet, designed to be used with self-directed study and supplemented with monthly training sessions to consolidate learning. Following training, HCA's had more confidence delivering stroke care, better knowledge of stroke rehabilitation and increased

confidence in communicating with patients experiencing speech and language difficulties (Carr, 2015).

Unmet Training Needs

Unmet training needs across the stroke pathway concerning psychological issues have been reported (Jarva et al., 2020). Psychologists are considered to be an essential part of the MDT within stroke services (Intercollegiate Stroke Working Party, 2016), however nationally, there are gaps in provision with this discipline (Stroke Sentinel National Audit Programme, 2019). The lack of psychological expertise within stroke services has been highlighted as a source of frustration for staff and has necessitated the need for other members of the MDT, namely occupational therapists and nurses, to provide psychological support for patients without the appropriate knowledge, skills or training (Harrison et al., 2017).

To conclude, currently, there is very little evidence relating to the provision of training to develop interdisciplinary stroke-specific skills and knowledge for staff working within the stroke pathway. Although it is assumed that training is beneficial for staff and its provision is recommended within the national clinical guidelines for stroke (Intercollegiate Stroke Working Party, 2016), the processes by which staff initially acquire inter and transdisciplinary skills and knowledge and then further develop them is not known. Although in-house training can be successful, it results in huge variability in both the quality and quantity delivered within stroke services as each service designs and delivers its own training packages. The lack of a standardised approach to stroke training has led some authors to suggest that stroke education should be competency-based, evaluated with formal recognition and linked to formal stroke career pathways (Craig and Smith, 2008); the WSO is considering worldwide competency standards (Saini et al., 2019). However, this still does not provide any meaningful detail on how regular training is delivered or the impact it might have upon service delivery or interdisciplinary working.

Realist Evaluation Findings

This section will present the findings from the realist evaluation for programme theory two, Inter and transdisciplinary training. It will begin by presenting CMOCs underpinning the refined programme theory before discussing each one in turn.

Overview Of CMOCs

The five CMOCs in Table 13 on page 139 unpin the refined programme theory depicted in Table 12 on page 132 were constructed to understand how staff acquired inter and transdisciplinary skills and knowledge. When these CMOCs are considered in conjunction with programme theory one, they offer a deeper understanding of how inter and transdisciplinary training influenced the delivery of evidence-based services in rural community stroke services. CMOCs 2.1, 2.2, and 2.3 were constructed to gain an understanding of the training opportunities available for newly appointed staff within services. CMOC 2.4 is concerned with the continued development of inter and transdisciplinary skills whereas CMOC 2.5 explains how gaps within the MDT impact training, this CMOC is heavily related to its counterpart CMOC within programme theory one, CMOC 1.5.

Data collection revealed that STARs was thought to be a useful resource for new RAs but its use was very limited. Stakeholders reported being unaware of the SSEF. Therefore, the training mentioned in this section is from other sources.

Table 13: CMOCs Underpinning Programme Theory Two: Interdisciplinary Training

CMOC	Context	Mechanism Resource	Mechanism Reasoning	Outcome
2.1 Transdisciplinary RA Training	Newly employed RAs with no previous experience of working in stroke	Where opportunities to acquire transdisciplinary skills and knowledge are provided in-house via comprehensive competency training packages delivered by MDT members	RA's develop confidence and inter-professional trust exists	Enabling RAs to autonomously work in a transdisciplinary manner as per prescribed treatment plans and facilitate service capacity and intensity of rehabilitation provided for patients
2.2 Professionally Registered Staff Training	Newly employed professionally registered staff	Where opportunities to informally acquire interdisciplinary knowledge via comprehensive interdisciplinary inductions are provided	Staff develop confidence, gain role clarity and a shared sense of purpose associated with interdisciplinary working	Facilitates interdisciplinary working and the provision of holistic care
2.3 Administrator Training	Newly employed administrators with no previous experience of working in RCSSs	Where opportunities to informally acquire interdisciplinary knowledge via informal inductions are provided	Ensures the development of a shared sense of purpose associated with interdisciplinary working from administrative and clinical perspectives	Facilitates interdisciplinary working, as administrators are equipped to support their colleagues
2.4 Ongoing Training Provision	RCSSs where inter and transdisciplinary skills development is encouraged, and a supportive team culture exists	Formal and informal opportunities to develop inter and transdisciplinary skills and knowledge are provided	Staff develop a shared understanding and sense of purpose of stroke rehabilitation from all disciplines within the MDT	Facilitates inter and transdisciplinary working and the delivery of holistic and equitable care
2.5 Unmet Training Needs	RCSSs with gaps in the MDT composition, especially concerning psychology	Result in a lack of knowledge and appropriate skills preventing the acquisition of inter and transdisciplinary skills	staff feel underconfident in delivering aspects of psychological rehabilitation	Impedes inter and transdisciplinary working resulting in unmet psychological rehabilitation needs for patients

CMOC 2.1 Interdisciplinary Training for Rehabilitation Assistants

CMOC 2.1 contained in Table 13 on page 139 explains how newly appointed RAs acquire appropriate skills to autonomously deliver transdisciplinary rehabilitation as per prescribed treatment plans which facilitates service capacity and the intensity of rehabilitation provided for patients.

Relevant Contextual Information

The RAs in sites 1 and 2 worked in a transdisciplinary manner delivering rehabilitation from all disciplines contained within the MDT. The RAs employed within the services often had no experience of working in healthcare or stroke; as there is no nationally accredited programme for stroke-specific RA training, services were responsible for training their staff. The training programmes in both sites were overhauled shortly before data collection commenced (within 6 months), all RAs interviewed within this research had undergone training under previous schemes. The training programme in site 1 had been developed by one of the band 7 physios and was based upon the Calderdale Framework (The Calderdale Framework, 2021). The term used by stakeholders to describe RA training was "generic"; it was never described as inter or transdisciplinary.

Competency-based Training

To effectively use RAs to deliver transdisciplinary rehabilitation **(context)**, the training programmes designed within the services equipped them with stroke-specific skills and knowledge from all disciplines within the MDT **(mechanism resource)**.

> *"It's a competencies, and it covers every single aspect of everything we do. So as rehab assistants we cover all of the therapies by following the plans that the qualified staff give. And we're trained in that. So we're highly trained in those specific areas, so speech and language, occupational therapy, physio, OT."*
>
> Site 1_012 RA

> *"we've obviously developed a very big competency package for our Band 3s and 4s, […] And I think obviously because we do use a lot of non-qualified staff that it is important that we feel they're competent."*
>
> Site 1_003 Service Lead

The training was delivered over a prolonged period, with competencies acquired in line with experience, meaning that RAs could progress through the training at different speeds, in line with any previous experience and their ability to pass the set competencies. Both services combined formal classroom-based learning with informal shadowing of colleagues **(mechanism resource)** ensuring consolidation of learning through contextually relevant practical applications **(outcome)**. RAs were assessed by their professionally registered colleagues and competencies were signed off as they progressed through the training.

> *"It gives them the linking it all together, […] they learn a lot from shadowing of individual patients, individual plans, but you need the training to bring it together, […] it's bringing it into a reality that they can equate to, so normally it's related to an activity plan, a set of exercises that are clear, understandable and ideally been demonstrated so they see them in action because you could have this thing, it's complicated, but actually a lot of the exercises are things that aren't that complicated."*
>
> Site 1_011 Speech and Language Therapist

> *"It's a mixture of perhaps core theory with sort of demonstrations at the end and throughout– and people have to sign a sort of booklet just to make sure they're competent. […] All of those things you have to demonstrate in front of a qualified practitioner or a physio, whoever, just to sign you off."*
>
> Site 1_007 RA

Stakeholders felt comprehensive competency training was instrumental to the development of confidence **(mechanism reasoning)** for RAs in their own ability to deliver rehabilitation, but

also for the development of interprofessional trust **(mechanism reasoning)** between RAs and professionally registered staff.

> *"I think it's trusting them that they're going to do a good job, but it's making sure that when they first start that they're trained well […] so they feel confident. But if they don't then we'll go out with them if it's a complicated situation, so we'll give them support, yeah."*
>
> Site 2_009 Speech and Language Therapist

Although generic competency training was provided for all disciplines, RAs were less confident **(mechanism reasoning)** in delivering speech and language therapy. The number of patients within services requiring speech and language therapy was less than physiotherapy or occupational therapy, as such opportunities to consolidate and develop speech and language skills through shadowing and experience were reduced **(mechanism resource)**.

> *"I found particularly difficult the speech and language side of it because you're really thinking on your feet and I found that really, really tricky."*
>
> Site 1_012 RA

> *"I have often found it difficult in the past working with assistants on delivering say, somebody with aphasia, where the assistant has needed quite a lot of specific training, because it's not something that they often do. […] sometimes it can be a confidence thing for them. […] it's less frequent that you're maybe asked to manage day-to-day tasks for somebody with dysarthria or aphasia or whatever it is. But I think without a kind of focus on maintaining skills around that, which is perhaps sometimes really hard to build into a busy workload, I think it's just one of those things that kind of slips and then people kind of lose that confidence in it really."*
>
> Site 3_004 Speech and Language Therapist

> *"I think the particular problem with this service is the frequency of speech and language therapy patients compared – that require that, compared to the physio. So, our RAs will be exposed a lot more to people who are quite physio or OT input compared to people who require SALT input, so I think sometimes it's down to lack of experience."*
>
> Site 2_008 Speech and Language Therapist

Speech and language therapists accepted that it was perceived as a difficult discipline, partly due to the hidden nature of the presenting impairments and partly because the rehabilitation is not as easy as occupational therapy or physiotherapy to conceptualise in functional terms **(context)**. One speech and language stakeholder admitted to rarely using RAs to deliver speech and language therapy **(outcome)**, as tasks that could be delegated to the RA could also easily be delegated to carers and family members who were more readily available to practice throughout the day.

> *"it's not something visible and sometimes people find it difficult to put speech and language therapy within the everyday context of functional activities. […] I rarely request RA visits for speech and language therapy patients because the type of activities […] is stuff that their family or caregivers can be doing with them around functional tasks within the day. Or sometimes I might say, okay, if RAs are going in to do a physio session, in the last five minutes can you run through the oral motor exercises with this patient and just check that they're doing it correctly and they feel confident? Rarely do I send out RAs specifically just for— It has to be really extreme, complex communication needs that I might do that for. And if I thought it was particularly complex, I might request a double with that RA to come out with me initially so I could then model what was expected of them within the session. But having done that there's no guarantee that if I requested them to go out the next week [they would be able to]"*
>
> Site 1_016 Speech and Language Therapist

"The problem is with the communication therapy. It's not black and white. It's not like a physical kind of functional – it doesn't tend to be functional, it tends to be impairment-based. […] sometimes it's difficult for the RAs to really get their head around what's what and what they're targeting. And I think it doesn't – although they've had like, you know, the training and stuff I think it's difficult to administer therapy when it doesn't seem to make sense on a logical level. But for me obviously, I'm targeting certain things so I think it doesn't necessarily help when you don't have a full understanding as to why you're doing the therapy; why you're doing a certain activity in therapy."

Site 2_008 Speech and Language Therapist

CMOC 2.2 Interdisciplinary Training For Professionally Registered Staff

CMOC 2.2 in Table 13 on page 139 explains how newly employed professionally registered members of staff acquire interdisciplinary knowledge.

Relevant Contextual Information

Most staff within the RCSSs had previous experience of working in acute stroke services.

Comprehensive Inductions

Initial training for professionally registered staff focussed on the acquisition of interdisciplinary knowledge (not skills) which was predominately provided via comprehensive inductions **(mechanism resource)**. Due to the challenging nature of working in RCSSs, stakeholders acknowledged new staff sometimes felt under confident or overwhelmed **(mechanism reasoning)** especially if they were not used to interdisciplinary working. Time was required to develop confidence, gain role clarity and understand the level of interdisciplinary working within the services **(mechanism reasoning)**.

"…you get a lot of staff, new staff that find it difficult and it takes them a long time to settle, [….] typically a new staff member will do two weeks of shadowing

[…] it took me a good 6 months to a year to feel confident to be on my own and manage all the difficulties that you face."

Site 1_015 Physiotherapist

"I think it's essential to get an understanding of what each other's roles are and what issues they may come up against because again, we – our MDTs, we work together and then we need to be able to relay information."

Site 1_010 Physiotherapist

New staff shadowed colleagues from every discipline **(mechanism resource)**. They valued the insights their experienced colleagues had to offer and appreciated different approaches to stroke rehabilitation **(mechanism reasoning)**. New staff also shadowed RAs **(mechanism resource)**; this experience provided an understanding of the role of the RA within the service and provided a greater understanding of the function of treatment plans **(mechanism reasoning)**.

"I'm very fresh like coming into stroke and everyone is just so knowledgeable. And I think just looking at it from different perspectives, like regardless whether they're RA or a qualified member of staff, like they probably know a lot more than what I know."

Site 1_021 Occupational Therapist

"so over those two weeks she had time with each discipline. She went out with two different RAs which was quite good because again the RAs work in different ways."

Site 1_006 Nurse

Although the development of interdisciplinary skills for professionally registered staff usually occurred later, sometimes it was necessary to acquire certain interdisciplinary skills early due to the holistic nature of stroke rehabilitation. For example, providing training on managing medications **(mechanism resource)** for new staff.

"I've had training from one of the nurses in the team on medicine management, and that was kind of given as a stroke-specific thing because that's the team that I'm working with."

Site 2_016 Speech and Language Therapist

CMOC 2.3 Interdisciplinary Training For Administrators

CMOC 2.3 in Table 13 on page 139 explains how administrators with no previous experience of working in RCSSs acquire interdisciplinary skills and knowledge which facilitates interdisciplinary working as they are equipped with appropriate skills to support their professionally registered colleagues.

Relevant Contextual Information

Administrators in all sites were required to work in an interdisciplinary manner. The training to acquire the necessary skills and knowledge varied across sites. In sites 1 and 3 the administrators had gained significant knowledge and skills from working in ASUs, either as administrators or as in the case of site 1, as HCA's. The administrator in site 2 had been working within the same post since 2009.

Site 1 was the only service to formally acknowledge training new administrators however, this needs to be understood in context. In the other two services, the administrators had been working in stroke in an administrative capacity for nearly 10 years, potentially negating the need for formalised training processes.

Inductions

In all services, it was felt administrators needed to possess insights into the workings of the MDT to facilitate interdisciplinary working. As part of comprehensive inductions, in site 1 administrators attended a weekly MDM and shadowed colleagues to gain knowledge about how staff within the service worked **(mechanism resource)**. It was accepted that inductions were overwhelming and that some knowledge may not be fully consolidated; observations

revealed administrators were encouraged to continue to shadow colleagues to improve their understanding of how the staff work.

> *"we'd probably make sure they went out with a physio, an OT, a speech and language therapist and a nurse. We'd make sure they understand the MDT and where all these people were coming from, and they'd come to an MDT meeting. So we do do quite thorough inductions, but then you also have to revisit that because people don't take it all in in the first few weeks"*
>
> Site 1_003 Service Lead

> *"normally as an administrator, you would come into the team and you would go out and you would shadow the different disciplines. So, you'd probably go once out with the nurse, once out with the physio, once out with an OT, speech and language"*
>
> Site 1_018 Administrator

The administrative role within the services was believed to be complex. It was also felt to differ significantly from other hospital administrative roles and as a result, new or temporary staff often struggled with the demands. Previous experience of working in stroke was considered beneficial for services. The administrators in sites 2 and 3 acquired their knowledge and understanding **(mechanism reasoning)** of the RCSS through many years working within an administrative capacity along the stroke pathway **(context)**.

> *"when you look at other admin across the Trust, they do things completely different to how we do it. Our level of admin is huge compared to what other admin do because we are just, we're like a round peg in a square – we're trying to put a round peg in a square hole."*
>
> Site 1_018 Administrator

> *"I think if I'd have come into this knowing nothing about stroke, I don't think I could have done it to the ability I can do it now. But I think it – they need to just*

have some knowledge of the disabilities that patients can have. […] I don't know what it was; sickness or something, had a locum administrator in from another part of the hospital to come and help and it didn't work"

Site 3_011 Administrator

"I've picked up so much. I mean when I first started on the stroke unit, I mean I was absolutely petrified. […] I thought oh, my God; I know nothing about stroke so I was going onto a ward I know nothing about. But, yeah. I mean I've been there for all these years now and you do, you pick up stuff. You pick up all about the thrombolysis, […] I've had no training […] So it's just watching what they do, picking up the terminology that they use and just knowing how stroke affects patients in so many different ways."

Site 3_011 Administrator

CMOC 2.4 Ongoing Training Provision

CMOC 2.4 detailed in Table 13 on page 139 explains ongoing training provision for all staff to further develop their interdisciplinary skills within services which facilitates inter and transdisciplinary working through the delivery of holistic and equitable care.

Relevant Contextual Information

The training provided to further develop interdisciplinary skills differed across the services, reflecting contextual differences relating to the organisation of each service. Typical training resources included interdisciplinary joint visits, engaging in opportunistic dialogue, and more formally organised in-house training. It should be noted that MDMs were also considered a useful training resource; these are discussed in programme theory three.

Joint Visits

Observations revealed joint training visits occurred frequently and the practice was encouraged in all services (**context)**. Joint visits were considered a vital resource for the continued development of interdisciplinary skills and knowledge **(mechanism resource)** and stakeholders appreciated opportunities to consolidate learning in situ. For RAs, these visits

formed a major component of their ongoing training, and they would frequently be conducted across all disciplines.

> *"we do lots of double ups with the qualified therapists. And to be honest, I get more from that than any – because you're doing it in function, you're doing it there and then, it's in context. […] I use my sessions as training. For me that's better than any kind of sitting in a class doing it, because it's in context."*
>
> Site 1_012 RA

> *"If we go out as a joint session, you glean different things from each other, so I make the most of another professional to make sure I'm not missing anything"*
>
> Site 3_005 Physiotherapist

Opportunistic Dialogue

The nature of lone working in RCSS meant staff were often away from the office, however observations revealed when they were in the office together **(context)**, they seized the opportunity to engage in opportunistic dialogue **(mechanism resource)**. The interdisciplinary discussions often occurred when guidance was required from another discipline; they were rarely planned, arising through opportunity but provided a supportive environment **(context)** to learn and were considered a vital training resource.

In-house Service Training

In-house service training was a valuable and efficient resource offered by RCSSs **(mechanism resource)**. The training was pre-organised and formally delivered, available to all members at all grades, often scheduled to coincide with the weekly MDT. Observations in site 1 revealed administrators sometimes attended sessions. Staff gained knowledge and understanding of how other disciplines influenced stroke rehabilitation **(mechanism resource)**. Sometimes it was a condensed form of an external course attended by a member of staff for their own discipline-specific training needs. Stakeholders found the training highly beneficial and enjoyable.

"we do have in-service training as well where the different disciplines present some aspect of our care so that's good, so you get up to date with what everyone else is doing. And, yeah. I think I've benefitted. I really do enjoy this inter-disciplinary team approach."

Site 2_009 Speech and Language Therapist

"We do a lot of in-house training as well, so we'll learn about swallow screens, about communication types. I've done vestibular training. […] So there's a wide range of things that we do."

Site 1_004 Occupational Therapist

"One of the OTs on the south went on an RDAC training course, you know, the Regional Driving Assessment Centre; so we refer lots of patients to that when they want to drive again, and then she'd come back and then cascaded the information down."

Site 1_013 Occupational Therapist

During data collection site 1 provided training on diabetes, tissue viability and mental health **(mechanism resource)**. This was organised as staff had indicated they lacked understanding and confidence **(mechanism reasoning)** to effectively manage the increasing numbers of patients with complex multi-morbid diagnoses **(context)**.

"at one time we had tissue viability nurse, for […] came to talk to us all about prevention of pressure sores and things like that, which was very much a nursing, but it was to the whole team. It just went down so well, […], so that's something that worked. We've also had a diabetes nurse as well, […] and of value to everybody, because no matter what discipline you are, you're going to see some patients who are diabetic, so you need a little knowledge about that."

Site 1_014 Nurse

CMOC 2.5 Unmet Training Needs

CMOC 2.5 summarised in Table 13 on page 139 explains how gaps in team composition, especially in relation to psychology, impedes inter and transdisciplinary working, resulting in unmet psychological rehabilitation needs for patients.

Relevant Contextual Information

None of the sites had embedded clinical neuropsychologists within the services.

Unmet Psychological Training Needs

Stakeholders in all sites revealed they had unmet psychological training needs. The lack of an embedded clinical neuropsychologist **(context)** negatively impacted the development of psychological skills and knowledge **(mechanism resource)**. Patients often presented with psychological needs **(context)** and rehabilitation would have been supported by a clinical neuropsychologist if one existed **(mechanism resource)**. Nurses were responsible for mood-related rehabilitation and believed supporting patients, carers, and families was a large component of the role. Stakeholders referred to a lack of confidence **(mechanism reasoning)** in treating patients with psychological needs and felt training would be beneficial and reassure them **(mechanism reasoning)** over their approaches to treatment.

> *"I think we'd all feel within our team either have some psychology input on the team or, yeah. Some training, so a bit more, you know, are we doing right by these patients? […] Yeah. It's a difficult one for mood and psychology but all like that, yeah. It's a massive area after stroke"*
>
> Site 3_015 Nurse

> *"Ideally we'd love a full-time psychologist embedded […] supporting our other staff in developing their skills to do lower-level psychological interventions."*
>
> Site 1_017 Stroke Consultant

> *"it would be nice to have stronger links with the neuro team, people who can help support because I feel, yes you can do bits of it from your nursing background, but I'm not an expert in psychology or anything else like that, and some patients you go to, you just think this is way out of my depth"*
>
> Site 2_018 Nurse

Towards the end of data collection, site 2 gained limited access to a neuropsychologist, and although not embedded with the team, stakeholders appreciated the benefit that this would provide to the service and were looking forward to receiving additional training in an informal capacity **(mechanism resource)**.

> *"is going to help us with working on cognition, sort of more like a peer supervision kind of setting, so we can bring her case studies and things and talk about them and get advice, that kind of thing. So that would be of real benefit to our service certainly because I think from a cognitive point of view, we have not really had anyone to go to, we have had to share knowledge between ourselves as OTs along with the wider team but we kind of, we don't have anybody above us to go to, so that's beneficial. And I think all teams should have access to a neuropsychologist and we didn't have that for a long time. I think that was a real lack in our team."*
>
> Site 2_012 Occupational Therapist

Discussion

This section discusses the findings from the realist evaluation in light of the literature presented above and has highlighted the importance of the following key areas:

Key Findings

1. Inter and transdisciplinary knowledge and skills of professionally registered staff were developed within services and with experience in roles. Comprehensive interdisciplinary inductions followed by regular in-service inter and transdisciplinary training facilitated inter and transdisciplinary working.
2. Comprehensive competency-based transdisciplinary RA training delivered in-house incorporating a mix of classroom-based learning and practical applications equipped RAs with the necessary skills, knowledge, and confidence to deliver independent rehabilitation.
3. Although highly experienced administrators were valued in stroke services, they do not routinely receive training, knowledge and skills are accumulated over many years working in services. Providing stroke-specific interdisciplinary training for these staff members facilitated interdisciplinary working and contributed to the delivery of evidence-based services.
4. Gaps in team composition, namely in the discipline of psychology, prevented the acquisition of inter and transdisciplinary skills, leaving nurses under confident in delivering psychologically focussed rehabilitation.

Inter And Transdisciplinary Training

Most healthcare research into training within MDTs has concentrated on acute settings and primarily with nurses (Jones et al., 2018); very little is known about how MDT staff develop inter or transdisciplinary skills. The findings from this research indicate that these skills and knowledge are developed in house, over time, with experience, and via a variety of formal and informal methods which is in line with previous research on training in stroke services (Craig and Smith, 2008, Jones et al., 2018).

Professionally Registered Staff

These findings offer some insight into the initial experiences of professionally registered staff working in inter and transdisciplinary community stroke services. Stakeholders articulated that the level of inter, and transdisciplinary working was often overwhelming for new staff, even with many years working in stroke which left them feeling under confident. Although it was appreciated that time to adjust to the new way of working was required, comprehensive MDT inductions helped to smooth the process by introducing staff to the MDT roles and alternate approaches to stroke rehabilitation whilst also providing a useful way of acquiring interdisciplinary knowledge.

Acquisition of inter and transdisciplinary skills for professionally registered staff occurred informally and through joint working and opportunistic dialogue which add further support to the findings by Clarke (2010) who reported that co-locating staff facilitated interdisciplinary learning in stroke units. However, the overriding countervailing rural context within which these services operated resulted in reduced opportunities for staff to be co-located. Opportunities to engage in joint working and opportunistic dialogue were reduced as staff spent significant amounts of time working in the community. To negate this, service leads encouraged joint working and provided shared in-service training which facilitated role clarity within services which was also reported by Clarke (2010) and O'Carroll (2018).

Rehabilitation Assistants

The RAs employed within the RCSSs often had no prior experience of working in stroke or healthcare. Initial training experiences of RAs are not well documented in the stroke literature, and little is known about how they acquire their skills and knowledge. These findings indicate that the provision of comprehensive competency-based in-house training packages provides RAs with the appropriate knowledge, skills, and confidence to autonomously work in a transdisciplinary manner as outlined in programme theory one. Previous research has identified that fully training and supporting RAs to develop necessary skills takes time and resources (Moran et al., 2015) and the findings from the present study support this but also highlight the individualised nature of competency-based training, which potentially allows some RAs to progress through training at a faster speed.

At an individual level, competency-based training provided RAs with confidence to perform tasks which is consistent with outcomes from HCA training in a stroke unit (Carr, 2015). Possessing confidence to deliver rehabilitation is imperative within community stroke services as RAs are often required to work autonomously and alone in patient's homes. As outlined in programme theory one, inter-staff trust was identified as an important factor in delegating duties to RAs (Hancock et al., 2005, Storey, 2005). Previous research has also indicated that there is an increased likelihood that professional staff will delegate duties to assistants when they possess control over their training (Nancarrow et al., 2012b). The comprehensive competency-based training packages, delivered in-service, helped to instil trust between these two staff groups.

Interestingly, some RAs reported difficulties associated with delivering speech and language therapy which affected their confidence with this discipline. There are several possible explanations for this finding; in the main, speech and language therapists indicated the difficulties experienced were associated with reduced opportunities to work with patients as fewer patients presented with speech and language needs. RA competence in delivering rehabilitation is achieved by competency-based training and via practical application in real-world settings. Insufficient opportunities to consolidate learning will affect competence and confidence. Additionally, the discipline was perceived by stakeholders to be more complex than physiotherapy or occupational therapy. Lastly, there were fewer speech and language therapists employed within services than occupational therapists or physiotherapists which will have limited opportunities for RAs to engage in opportunistic dialogue or joint working with their speech and language colleagues, both of which were highlighted by the present study as being important for continued development of inter and transdisciplinary skills. These factors may have affected the ability of the speech and language therapists to delegate duties to RAs.

Administrators

In reviewing the literature no information was found relating to the interdisciplinary training of administrators in stroke services or more generally across healthcare. However, the

findings from this research indicate that administrators do not usually receive training in stroke. Rather, their skills and knowledge are accumulated through years of working in stroke services. However due to the complexity of the administrative role these valuable staff members would benefit from some training both in stroke as well as in gaining a greater understanding of the interdisciplinary working nature of community stroke services. As identified in programme theory one, administrators perform vital roles and are often required to liaise with patients and other healthcare professionals. Providing training to ensure they possess the appropriate skills and knowledge to be able to effectively interact with patients with more complex and challenging needs would be beneficial for services.

Unmet Training Needs

Unmet psychological training needs were reported in all services, which is consistent with the literature (Jarva et al., 2020) and is likely explained by the shortage of psychologists working in stroke (Stroke Sentinel National Audit Programme, 2019). Findings from this research indicate the management of patients with psychological needs were largely the responsibility of nurses who felt they did not possess sufficient psychological skills or knowledge, leaving them feeling unconfident with their ability to treat these patients, which echoes research from Harrison (2017) who reported similar findings in other parts of the stroke pathway. Interestingly, cognition, which is also encompassed within psychology was delivered by occupational therapists, but this group of staff did not report difficulties. This may be explained by the fact that cognitive rehabilitation is considered integral to the occupational therapist's role within stroke and is taught within initial discipline training, whereas the nursing role is less clearly defined, especially in community stroke services.

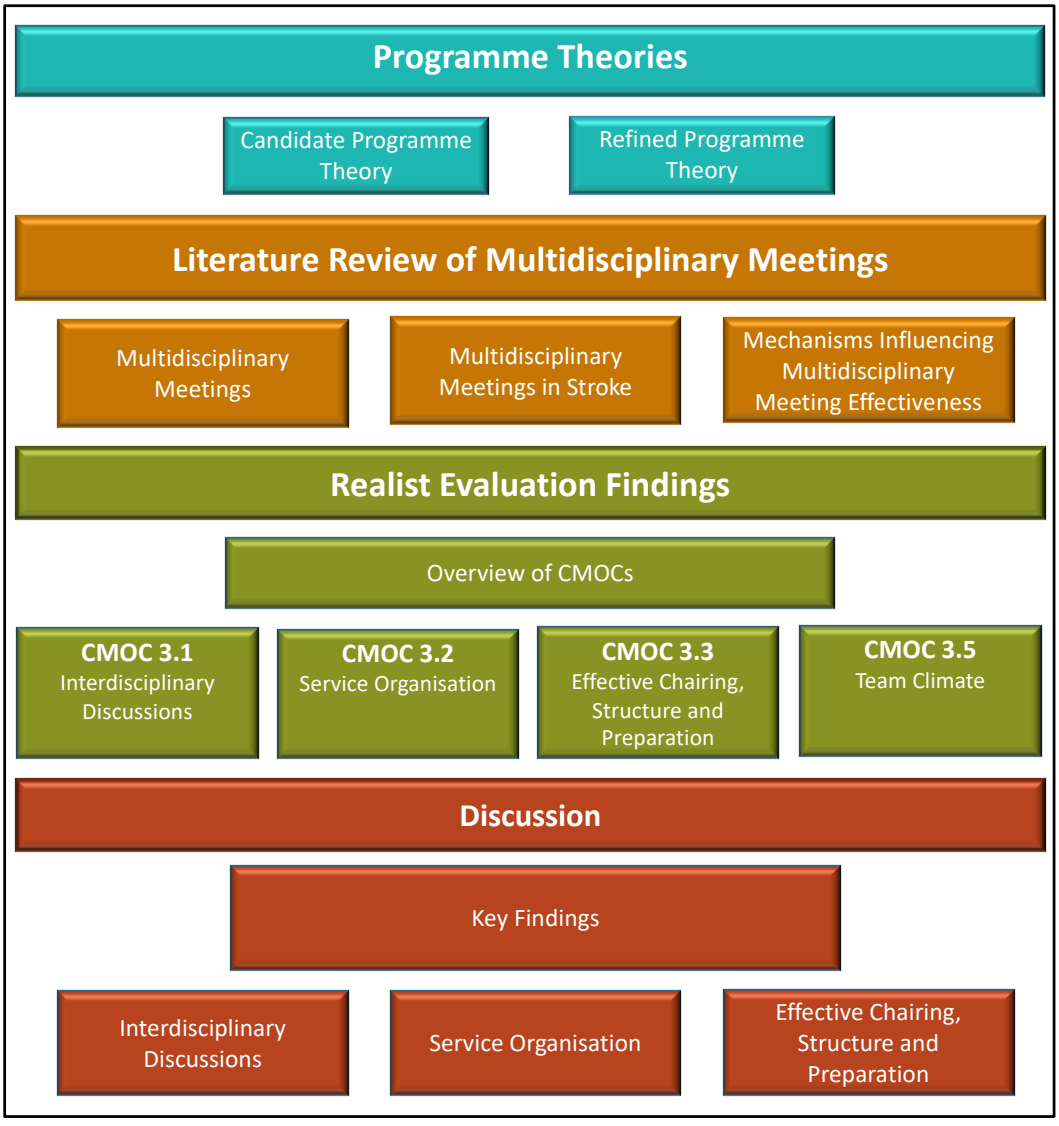
In conclusion, the refined programme theory detailed above in Table 12 and informed by the evidence provided and discussed within this chapter explains how inter and transdisciplinary training facilitates the delivery of evidence-based rural community stroke services. The provision of in-house transdisciplinary competency-based RA training promoted the development of inter-professional trust and facilitated appropriate delegation of duties, which in turn ensured RAs were appropriately utilised to maximise service efficiency. The need for a comprehensive MDT was identified as gaps in team composition impede the

acquisition of inter and transdisciplinary skills and knowledge leaving staff under confident in delivering rehabilitation and negatively impact the delivery of evidence bases services.

Chapter Seven
Programme Theory Three: Multidisciplinary Meetings

This chapter presents evidence to inform the development and refinement of programme theory three, which is concerned with MDMs. The chapter is organised into four sections which are depicted in Figure 5. For ease of navigation, the colours represented in the figure will be represented in each of the sections presented in both headings and tables.

Figure 5: Navigation Diagram For Programme Theory Three: Multidisciplinary Meetings



Programme Theories

This section presents an overview of the candidate and refined programme theories. The candidate programme theory can be found in chapter 3. The refined programme theory presented below is based upon the culmination of the realist inspired literature review of interdisciplinary working in stroke, findings from the realist evaluation (both of which are presented below), as well as further discussions with individuals from the expert advisors.

Candidate Programme Theory

The candidate programme theory initially hypothesised that rurally based community stroke services meeting at least weekly **(context)** to exchange information about patients **(mechanism resource)** would result in a shared sense of purpose and understanding of services **(mechanism reasoning)**, leading to a greater likelihood that treatment would be delivered at the recommended intensity **(outcome)**. During data collection stakeholders highlighted the importance of interdisciplinary working (see programme theory one) to the delivery of evidence-based services; weekly MDMs were a crucial component to this method of working, therefore refinement of this theory focussed on the contribution of MDMs to interdisciplinary evidence-based services.

Refined Programme Theory

The refined programme theory presented below in Table 14 outlines a context of interdisciplinary rural community stroke services with high caseloads and reduced opportunities for communication **(context)**. MDMs that are effectively chaired, formally structured, comprehensively attended with supportive team climates, provide forums for interdisciplinary discussions and sharing of knowledge and compliance with governance criteria **(mechanism resource).** Staff feel supported by colleagues and develop a shared understanding of patient needs and service objectives **(mechanism reasoning)**. This facilitates

shared decision-making, inter and transdisciplinary working and increases chances of adhering to SSNAP criteria **(outcome)**.

Table 14: Refined Programme Theory Three: Multidisciplinary Meetings

Context	Mechanism Resource	Mechanism Reasoning	Outcome
Interdisciplinary RCSSs with high caseloads and reduced opportunities for communication	With MDMs that are effectively chaired, formally structured, comprehensively attended with supportive team climates, provide forums for interdisciplinary discussions and sharing of knowledge and compliance with governance criteria	Staff feel supported by colleagues and develop a shared understanding of patient needs and service objectives	Facilitates shared decision-making, inter and transdisciplinary working and increases likelihood adhering to key SSNAP governance criteria and national clinical guidelines

Literature Review Of Multidisciplinary Meetings in Healthcare

Multidisciplinary Meetings

MDMs are believed to be an important component of multidisciplinary teamworking and are considered a central component of stroke service organisation (Langhorne and Pollock, 2002, Stroke Unit Trialists' Collaboration 2007). However, despite this there are significant gaps in the literature on this topic, most research has been conducted within in-patient settings and has focussed on generic teamworking, of which MDMs form one part. Additionally, the research conducted in stroke is very limited, therefore the evidence presented below draws heavily on research findings from cancer where MDMs have been explored in detail and may help to supplement the gaps and offer an understanding as to how MDMs help to deliver evidence-based stroke services.

Benefits Of Multidisciplinary Meetings

Healthcare research suggests MDMs may be beneficial and contribute towards effective teamworking, clinical decision-making, adherence to clinical guidelines and improvements in patient care (Lamb et al., 2011b, Lamb et al., 2011c, Harris et al., 2013, Reeves et al., 2017, Soukup et al., 2018) with meeting effectiveness associated with MDT effectiveness (Borrill et al., 2000, Buljac-Samardzic et al., 2010, Lamb et al., 2011b, Lamb et al., 2011c, Harris et al., 2013). Within stroke services, frequent interdisciplinary MDMs have been associated with accelerated discharge from ASUs (Yagura et al., 2005). Only one known study has researched how MDMs operate in stroke rehabilitation, but this focussed solely on in-patient rehabilitation stroke units (RSU) within the Greater Manchester area (Tyson et al., 2014, Tyson et al., 2015b).

Multidisciplinary Meetings in Stroke

Types of Multidisciplinary Meeting

Community stroke services engaging in at least weekly MDMs are thought to be achieving one of the elements associated with evidence-based practice, and information was collected by the national audit to determine compliance with the guideline (Royal College of Physicians, 2015). MDMs provide a forum to coordinate the delivery of patient care. The frequency and type of MDMs varies across stroke services (Baxter and Brumfitt, 2008a, Tyson et al., 2014). In addition to the weekly MDM, some stroke services engage in daily meetings often led by nurses (Tyson et al., 2014). These daily meetings, sometimes referred to as huddles, tend to be informal and serve to reinforce or adjust plans to emerging situations, ensure a shared understanding of patient and service needs are maintained and provide regular focal points for communication and the generation of team led decisions (Sheehan et al., 2007, Cruz et al., 2017). Some stroke services also engage in separate goal-setting meetings involving therapists, though nurses are sometimes included in these meetings (Tyson et al., 2014). Some stroke services also have MDMs where patients, family members, or carers are included though these are perceived as being time-consuming both for the family and the MDT members (Loupis and Faux, 2013).

The Formal Weekly Multidisciplinary Meeting

Within stroke services, the weekly MDM is usually a formal meeting and attended by all disciplines. It provides a forum whereby patients are introduced to the MDT; assessments, treatment plans and rehabilitation goals are discussed (Langhorne and Dennis, 2008). Collective decisions regarding rehabilitation are made and reviewed in subsequent MDMs (Clarke, 2010); the premise being that collaborative discussion and shared decision-making leads to improvements in patient care. However, the extent to which MDT members collectively make decisions within stroke has been questioned, some studies report decision-making activities are dominated by a select number of individuals (Gibbon, 1999, Pound et al., 1999) or that the MDM is simply a conduit to expedite discharges requiring the authorisation of medical staff, the discussion and decision to discharge having already occurred informally before the meeting (Gibbon, 1999, Baxter and Brumfitt, 2008a).

Factors Influencing The Effectiveness Of Multidisciplinary Meetings

Research findings have highlighted facilitatory mechanisms which are thought to increase the effectiveness of MDMs.

Comprehensive Attendance

Across Healthcare comprehensive attendance, punctuality and good timekeeping are valued by MDT members and considered essential to effective MDMs (Raine et al., 2014, Tyson et al., 2014). Ineffective MDMs are perceived as having reduced attendance and reductions in decision-making, partially because key members required for the decision-making process are absent (Tyson et al., 2014), leading to resentment (Raine et al., 2014) and frustration with staff believing MDMs are a waste of time (Nair and Wade, 2003). National guidelines mandating MDM presence appears to influence attendance in cancer. Some staff resent attending MDMs if they only need to input on very few patients, it can feel like a waste of time and as a result, partial attendance has been observed (Raine et al., 2014). Altering the order of presenting patients can facilitate attendance for professionals with limited time and influence service efficiency (Burton et al., 2013). Within in-patient settings nurses are the discipline least likely to attend MDMs, usually sending only one representative to meetings

whereas for other disciplines all people involved in patient care usually attend (Sinclair et al., 2009). This finding is replicated in stroke in-patient settings with staffing pressures being attributed for the practice although other reasons for non-attendance include sickness and annual leave (Tyson et al., 2014). Some stroke services have developed systems ensuring non-attending staff can still contribute by pre-submitting relevant information to the MDM but Tyson et al. (2014) found it did not always occur, leaving the MDM without the necessary information to make decisions.

Meeting Preparation

Preparation is an important aspect for smooth running MDMs and facilitates effective decision-making (Lamb et al., 2013b, Tyson et al., 2014). It is imperative people can adequately report on assessment results, progress with rehabilitation or actionable points from previous meetings (Burton et al., 2013). Administrative support and coordinators can facilitate MDM preparation by ensuring availability of documentation, however, efficiently organised teams can also ensure all documentation is collated and prepared before meetings (Raine et al., 2014). Poorly prepared team meetings can reduce engagement and negatively impact teamworking (Nijhuis et al., 2007), leading to feelings of frustration (Tyson et al., 2014). Supporting staff with protected time to attend and prepare in advance influences MDM attendance and meeting effectiveness (Lamb et al., 2011d, Soukup et al., 2018).

Meeting Structure

From an organisational perspective, structured meetings with standardised formats, pre-determined agendas and clear purposes are perceived as being more effective (Ruhstaller et al., 2006, Raine et al., 2014, Tyson et al., 2014, Tyson et al., 2015b). Larger teams tend to have more formal structures and processes than smaller teams (Raine et al., 2014), which may be necessary to manage multiple disciplines and competing voices. Larger teams are also thought to produce higher quality information and generate more interdisciplinary discussions than smaller teams (Soukup et al., 2018). Well-structured meetings are believed to influence engagement and focus. Although less structured meetings are considered more holistic as they tend to incorporate psychosocial aspects of patient's lives, the tendency is for

members to present irrelevant detail causing meetings to be more time consuming (Raine et al., 2014).

Documentation designed for use in MDMs provides a focus for care processes and results in a shared sense of purpose (Nancarrow et al., 2012a), facilitating inclusion from all disciplines (Lamb et al., 2013b). Reporting results from standardised assessments provides a common language and structure to efficiently discuss patients through collaboration and collective decision making (Ruhstaller et al., 2006, Lamb et al., 2011b, Tyson et al., 2014). The practice also facilitates adherence to national clinical guidelines (Tyson et al., 2015a, Raine et al., 2014).

Leadership

In healthcare, the MDT lead often chairs the MDM. In acute settings, this role is often assumed by senior doctors (Ferguson et al., 2009, Paxino et al., 2020) sometimes on a rotating chair basis (Raine et al., 2014) although clinical nurse specialists (McGlynn et al., 2017) or therapists (Tyson et al., 2014) have been reported to chair MDMs. The historic practice of medical professions holding chair positions within MDMs is attributed to the traditional role hierarchy within healthcare whereby medical professions hold an elevated status within the MDT (Ferguson et al., 2009, Sinclair et al., 2009). Regardless of who chairs the MDM, the possession of excellent communication skills is an attribute linked with effective chairing and training in non-clinical skills for chairs has been suggested to improve MDM effectiveness (Lamb et al., 2011a). Effective communication and equal representation between team members facilitates decision-making (Tyson et al., 2014, Soukup et al., 2018) and has been associated with improvements in the mental health of team members (Borrill et al., 2000). Leads are pivotal in ensuring all members feel valued and confident to contribute in MDMs but they must be able to make independent decisions when required (Ruhstaller et al., 2006). They are also crucial in effectively managing disagreements between MDT members (Ferguson et al., 2009, Lamb et al., 2013a), keeping meeting discussions on track and ensuring MDMs run to time (Tyson et al., 2014). Knowing when it is appropriate to defer discussions outside of the confines of the MDM is a useful skill for chairs to possess and facilitates meeting efficiency (Ferguson et al., 2009).

Role Clarity

Role clarity of MDT members is thought to facilitate cooperation and collaboration between professions, the increased understanding of the different roles within the MDT is also thought to foster the development of trust between members (Ruhstaller et al., 2006). Lack of role clarity has been attributed to frustration and conflict within teams and linked to reduced participation in meetings (Nair and Wade, 2003). In hospital settings, a lack of role clarity is more frequently found with nursing than in other rehabilitation disciplines (Paxino et al., 2020).

Team Culture

Meetings occurring in supportive environments promote interdisciplinary discussions and provide a safe place to raise concerns, as a result, members get to know one another, increasing the likelihood of equal participation in discussions (Tyson et al., 2014, Soukup et al., 2018). Multiple studies emphasise the need for a positive team culture to facilitate inclusion and communication (Raine et al., 2014, Tyson et al., 2014, Soukup et al., 2018) as a sense of belonging facilitates engagement and contribution (Tyson et al., 2014). Mutual respect and trust between team members is considered vital and facilitates shared decision-making (Pound et al., 1999, Ruhstaller et al., 2006, Wade, 2016); these are more likely to develop when the composition of staffing is stable (Paxino et al., 2020). Where mutual respect is not evident, there is a risk the chair may be undermined by domineering personalities (Gibbon, 1999, Ruhstaller et al., 2006, Tyson et al., 2014) or an unequal representation of disciplines occurs as some members, particularly nurses, may not feel able to contribute to MDMs (Ferguson et al., 2009, Soukup et al., 2018).

Realist Evaluation Findings

This section will outline the findings from the realist evaluation for programme theory three, the MDM. It will begin by presenting the CMOCs which underpin the refined programme theory, MDMs, before discussing each one in turn.

Overview of CMOCs

The four CMOCs depicted in Table 15 on page 166 underpin the refined the programme detailed in Table 14 on 160. The first two CMOCs 3.1 and 3.2, explain how MDMs contribute to interdisciplinary working and the delivery of evidence-based services in rural community stroke services. CMOCs 3.3 was constructed to gain an understanding as to how services with high caseloads were able to engage in efficient MDMs which ran to time. Finally, CMOC 3.4 explored the role that that the team climate had on the MDM, staff, inter and transdisciplinary working and shared decision-making.

Table 15: CMOCs Underpinning Programme Theory Three: Multidisciplinary Meetings

CMOC	Context	Mechanism Resource	Mechanism Reasoning	Outcome
3.1 Interdisciplinary Discussions	RCSSs with reduced opportunities for inter-staff communication	Where comprehensively attended weekly MDMs provide opportunities for staff to engage in interdisciplinary discussions and share interdisciplinary knowledge with the team	Staff feel supported and reassured by interdisciplinary colleagues and a shared understanding of patient needs is achieved	Shared interdisciplinary decision-making which facilitates interdisciplinary working
3.2 Service Organisation	RCSSs motivated to deliver evidence-based services	Structured focussed weekly MDMs provide a forum to engage in service-level planning and ensure adherence to governance criteria	A shared understanding of patient and service objectives is realised	Increases the likelihood of delivering evidence-based services through improving SSNAP performance
3.3 Effective Chairing, Structure and Preparation	RCSSs with high caseloads and time limited MDMs	Where all staff fully engage in pre-MDM preparation and chairs implement formal structure and tightly control meetings	Results in shared understanding of meeting expectations and structure as well as a shared understanding of patient and service objectives	Facilitates MDM efficiency

3.4 Team Climate	RCSSs where clinical staff work independently in community settings delivering interdisciplinary rehabilitation	Where a supportive meeting climate with comprehensive multidisciplinary team attendance with staff possessing sufficient skills and knowledge to support team members	Promotes a sense of team belongingness, increases individual confidence to seek assistance Provides reassurance and confidence in delivering rehabilitation	Facilitates inter and transdisciplinary working and shared decision-making and the delivery of holistic care

CMOC 3.1 Interdisciplinary Discussions

CMOC 3.1 detailed in Table 15 on page 166 explains how interdisciplinary discussions occurring in weekly MDMs facilitates the shared decision-making and interdisciplinary working.

Relevant Contextual Information

All three services engaged in weekly MDMs which were comprehensively attended by all clinical staff including RA's in sites 1 and 2. Although, nomenclature to describe the MDM varied across services, including referring to it as MDT or goal-setting, for consistency it will be referred to as the MDM, although the original terminology will remain unchanged when presented via quotations from stakeholders. In all services, MDMs were scheduled at the same time each week to maximise attendance and service efficiency, such as first thing in the morning or immediately after lunch and in site 2 also often incorporated service level training. Sites 1 and 2 scheduled meetings for each base; in site 1 the service lead chaired both MDMs which occurred on separate days. In site 2 the MDMs took place at the same time on the same day and were chaired by the respective service leads.

Interdisciplinary Discussions

Stakeholders particularly in sites 1 and 2 articulated that due to the nature of lone working in RCSSs, opportunities to communicate with their colleagues were limited **(context)**. MDMs provided regular forums for focussed, structured interdisciplinary discussions **(mechanism resource)**, with the primary aim being to review the progress of every patient on the caseload and make shared decisions about ongoing rehabilitation **(outcome)**. The staff in site 3

engaged in daily huddles and as such did not experience the same level of remote working as staff in the other two services.

> *The MDT obviously is a really good way of sharing information. It's a good way of knowing where we're going, […] Where are we going with these patients? It's all very well to extend a deadline three, four weeks, what are we going to achieve with it? What's the plan?*
>
> Site 1_004 Occupational Therapist

> *"It's a way for us to also discuss things that are sensitive so the whole team knows for that patient, and also that you're all working towards the same goals and the same discharge point and making sure that you're still working together."*
>
> SITE 1_002 Physiotherapist

> *"This is our chance to talk about it, so this is where I want to be saying to rehab assistants, well how are things going, are you happy with what we're doing, have you got anything to feedback? […], I've always thought goal setting's really, really valuable, it's probably the most valuable part of the week."*
>
> Site 2_004 Occupational Therapist

> *"We'll discuss everyone, […] and their goals, […] we write it all down on an MDT sheet and then that is filed in the patients' notes. And then we can review goals that were initially set and then review those changes, have we met them, are we nearing discharge? I think for us as well it's peer supervision, isn't it? It's trying to put us all together again and if we've had difficult things or we're not sure of something, it's a chance to regroup again."*
>
> Site 3_006 Nurse

Attendance at the MDM was prioritised in all sites **(context)**. The interdisciplinary discussions that took place **(mechanism resource)** enabled all MDT members to gain a holistic and shared

understanding of patient needs **(mechanism reasoning)** which facilitated shared decision-making **(outcome)**. Sometimes situations encountered by one person were not replicated with others; this provided a focus for discussions and the team collectively discussed and debated different approaches to help patients **(outcome)**.

> *"It's also good to hear the views of other people when you're giving that feedback. You go, "Oh, that's interesting. I hadn't picked up on that." or "He didn't show that in my session." or "That's really good. I'll take that to my sessions going forward."*
>
> SITE 1_016 Speech and Language Therapist

> *"We've had a number of times when someone feels that the patient is much lower in mood and then, with another person, they're absolutely fine. So why is that? What's the triggers? So, I think having that weekly goal setting is really important with that."*
>
> Site 2_017 Service Lead

MDMs provided a forum to facilitate inter and transdisciplinary working **(outcome)**. Observations revealed staff used the MDM to articulate a lack of confidence **(mechanism reasoning)** and enter into discussions with their colleagues about different approaches to rehabilitation. These discussions were more likely to occur when it was felt rehabilitation was being impacted by another discipline and were more likely to occur for patients presenting with complex needs and multimorbidies **(context)**. These patients presented challenges to staff due to their lack of specialist expertise of other health conditions **(context)**. During these discussions senior staff shared their knowledge, offering discipline-specific advice and explanations to their team members. These patients with more complex needs were discussed in more detail **(mechanism resource)** as staff were often unsure and needed reassurance **(mechanism reasoning)**. The interdisciplinary discussions and level of shared decision-making undertaken by teams was observed to be greater for these types of patients **(outcome)**. Decisions included the organisation of joint interdisciplinary visits (within the service) as well as contacting specialist health professionals for further advice or onward

referral to non-stroke specialist services **(outcome)**, including psychology due to the lack of psychological input in the service **(context)**.

> *"say for example I've explained something that I'm not quite sure about and someone was sort of going, be like, "Well, actually it might be this, it might be that" then that's when we do a joint visit with the speech and language therapist, to see what actually is going on with cognition or with speech"*
>
> Site 1_021 Occupational Therapist

> *" if you say you had a – quite a complex kind of patient it would be a chance for everyone to say, "You need to just do it in one stage or two-stage commands, everyone." So at that point, everyone then knows no matter what therapy you have to do it, deliver it in a certain way"*
>
> SITE 1_007 Nurse

Patient goals were interdisciplinary, but they were functional in nature and had discipline-specific goals embedded within them. The interdisciplinary discussion ensured a shared understanding **(mechanism reasoning)** of the embedded discipline-specific goals were achieved which facilitated the delivery of interdisciplinary rehabilitation **(outcome)**. For example, speech and language therapists were observed to ask colleagues to ensure patients could name particular objects and nurses reminded staff to undertake blood pressure monitoring.

> *"Sometimes in our planning, the physio will say, "Oh well, can you try and carry out that goal while you're washing them? You know, if you make sure they stand in the correct way." It might be from me, "Can you just check they recognise where the toothbrush is?" You know, or they can name what they're using."*
>
> SITE 2_009 Speech and Language Therapist

CMOC 3.2 Service Organisation

CMOC 3.2 detailed in Table 15 on page 166 explains how using MDMs to engage in service level planning and ensure adherence to governance criteria increases the likelihood of delivering evidence-based services through improving performance on SSNAP.

Relevant Contextual Information

All services used the MDM to facilitate service organisation. They had all devised bespoke paperwork to record pertinent information for later application, which was either used for governance purposes (SSNAP, NHS Trust Key Performance Indicators (KPI's)) or in-house purposes.

Visit Scheduling

The service leads in sites 1 and 2 had implemented structured weekly visit scheduling **(context)** which increased service capacity and allowed them to deliver more rehabilitation **(outcome)**; This is explored in greater depth in programme theory five. The MDM performed a vital function in that it provided a forum to collate and record information on bespoke documentation **(mechanism resource)**. Service leads expected staff to be prepared with this information in advance of the MDM (see MDM preparation below for more information).

> *"We do do visit planning, so as we're sitting in that meeting, we will say, so Mr X, so and so, how many visits is he having next week, we would say, well let's keep him on two visits a day to cover personal care and lunch prep and then they'll say, right who's visiting him at what time. So, they would then plan in the qualifieds' visits, and then the rehab assistants at the end of that meeting would go away and we'd start planning the rotas for the next week."*
>
> Site 2_004 Occupational Therapist

> *"During our MDT goal setting, […]. There will be columns of say, PADL [personal acitivty of daily living] , meal prep, physio, SALT, cognitive, and it will literally be ticked to the amount of days that it is required for that patient for the following*

week, so we formulate a bit of a timetable on paper. The Band 6, at that meeting, has to be prepared for the following week because I expect them to tell the Band 3 at that meeting what of those visits they are going to take. […] So then, […], they have all the information that they need on that page. Sometimes the Band 6s need nagging and it drives Band 3s nuts because, in order to be efficient, that information needs to be given."

Site 2_002 Service Lead

Staff unable to attend the MDM **(context)** due to illness, holidays, part-time working, service pressures leading to staff delivering rehab and attendance at training courses were required to submit visit requests in advance **(mechanism resource)**. Data collection revealed there were a few occasions in site 2 when this didn't happen which led to RAs feeling frustrated **(mechanism reasoning)** as they didn't have the information to undertake visit scheduling **(outcome)**.

"the whole team should be there, ideally, everybody that's working that day. We try to avoid anybody being out on visits, but obviously sometimes that happens"

Site 2_004 Occupational Therapist

"It is very hard when the qualified member of staff in charge of that patient isn't at goal setting because we don't know what the qualified want. We can't plan for the next week without them being there."

Site 2_003 RA

Service Governance

The MDM provided a forum to ensure services had completed particular actions e.g. patient assessments etc. In sites 1 and 2 service leads assumed responsibility for ensuring this occurred whereas due to the absence of a service lead in site 3, this responsibility was collectively shared across the team (**mechanism resource)**. This checking process ensured staff were aware of any outstanding service commitments and instilled a shared

understanding of service objectives **(mechanism reasoning)** facilitating the delivery of an evidence-based service **(outcome)**. For instance, a commissioning KPI in site 2 was to complete a GP discharge letter within 24 hours of patient discharge **(outcome)**.

> *"it's also essential for organisation, and that we're meeting targets as well, and that things are dealt with, rather than being forgotten about."*
>
> Site 2 _002 Service Lead

Staff were conscious they were evaluated and wanted the data submitted to reflect the kind of service they felt they were delivering **(context)**. Conversations about the SSNAP were numerous in site 1 and during MDMs senior staff in site 1 regularly reinforced the need to record **(mechanism resource)** data properly as they were concerned the SSNAP data did not accurately represent their ability to deliver an evidence-based service **(outcome)**.

> *"I am not going to sit there in the regional SSNAP meetings and see our data up on those slide decks and my name to it and they're not looking good." "Because I can only put in what you give me." And I said, "If I have to come back here because – with my head between my legs because I'm ashamed, it's going to go down the line, it's not going to stop here." And they were like, okay. Because I cannot sit there and see that we're performing poorly. And I can only put in what those guys give me."*
>
> Site 1_018 Administrative Manager

CMOC 3.3 Effective MDM Charing, Structure and Preparation

CMOC 3.4 detailed in Table 15 on page 166 explains how meeting structure and preparation facilitate the efficiency of the MDM.

Relevant Contextual Information

The MDMs in sites 1 and 2 were chaired by the service leads. When they were absent chairing was delegated to a senior member of staff. There was no chair in site 3, instead, staff took

turns to present individual patients, on a 'whoever has the notes' basis. All services had implemented a structure to the MDM. Due to high caseloads, and the need to increase the efficiency of the MDM, service leads at sites 1 and 2 had introduced a formal structure. Site 3 was significantly less formal, but this may also reflect the lack of service lead at this site as well as a smaller caseload. All services recorded key information on bespoke paperwork and in all sites, different staff members assumed the role of completing the necessary documentation.

Efficient Chairing

Service leads in sites 1 and 2 spoke of the need to control the meeting largely due to the volume of patients that needed to be discussed **(context)**; a formal structure with staff assuming key roles to ensure that the appropriate information was recorded facilitated this **(mechanism resource)** making the MDMs more efficient **(outcome)**.

> *"we've got it into quite a slick process now because we have to achieve a number of goals within that meeting. everybody is allocated a job […] it's quite a military procedure if you like but it's also an opportunity to have a bit of debate amongst clinicians,*
>
> Site 2_002 Service Lead

Service leads were observed to control the meetings by preventing irrelevant discussions with leadership styles incorporating both directive and facilitatory approaches **(mechanism resource)** which flexed between the two depending on the nature of the discussion. Leads often silently observed interdisciplinary discussions and shared decision-making, particularly if they had not been involved with the patient but stepped in and made decisions if required. In the interests of timekeeping, leads in both sites were observed to suggest very complex cases be discussed separately **(outcome)**.

"I do encourage if we've got a particularly complex patient that we potentially have another meeting about that person if we're finding it really tricky for any particular reason."

Site 1_019 Service Lead

Overall, the leadership style of the service lead in site 1 was more direct than the leads in site 2 **(mechanism resource)**. There was a definite hierarchy in place within the service **(context)**, all information presented during the meeting was directed to the lead, however, the lead was the one ensuring pertinent information required by the service was accurately recorded. Staff in this site appreciated the tight control she had over the meetings and were overwhelmingly positive about her style **(mechanism reasoning)**.

"It is a huge case-load and hard to do it in that time. […] The speed yeah. That's what we've had to do to be able to get through it and we quite reason – I know if somebody else runs it, it tends to take longer. I'm brutal – […] Our case-load at the moment is horrendous, there's no real discharges. […] that doesn't mean we should be discharging people who are continuing to improve and need the input, so it's a hard line."

Site 1_003 Service Lead

"[service lead] does have quite a tight rein on how she runs the MDT meeting […] She doesn't stand for any people rambling on. […]. Even when [service lead] is not here, they run like clockwork no one deviates from them […] Keeping a tight rein on the time and "Key points, please, people. Has the mood and secondary been done? Okay. Did we discuss it here? Do you know that person's consultant appointment is coming up?" She has all that information in front of her on a dashboard and she goes down with a ruler and it's all really structured because I have been in MDT meetings where they have gone on nearly all day."

Site 1_016 Speech and Language Therapist

RAs were integral to interdisciplinary discussions in sites 1 and 2 and staff appreciated the insight that they offered **(mechanism reasoning)** as they often developed meaningful relationships with patients. However**,** the service lead in site 1 noted it was challenging to ensure RAs felt confident **(mechanism reasoning)** enough to speak. Often RAs would be specifically asked for an opinion, this introduction gave them the reassurance **(mechanism reasoning)** that their information was important and contributed to the interdisciplinary discussions and shared decision-making **(outcome)**.

> *"So, it's an opportunity to talk about concerns about patients, concerns about relatives and how is best to deal with those issues. So I think that's a really important side, and allowing the Band 3s to feedback as well."*
>
> Site 2_002 Service Lead

> *"We're continually trying to encourage them to speak up more. Often the qualified staff that are talking, if somebody hasn't seen them or hasn't seen them for a week then the 3 will talk, whereas they're not always the first ones in. Some of our 3's are more confident and if they've got a particular personal relationship with the patient or the family for a particular reason they'll speak, but they're not speaking enough still. I'm very aware of that."*
>
> Site 1_019 Service Lead

MDM Structure

The formalised MDM structure **(mechanism resource)** in sites 1 and 2 facilitated the development of a shared understanding **(mechanism reasoning)** for staff concerning their expectations within the MDM. Stakeholders in both sites appreciated **(mechanism reasoning)** the impact that the formal structure had on streamlining meeting efficiency **(outcome)**.

> *"before it was quite rigid, it used to be a free for all […] we have to be more efficient with our time because we've got to get through them. […] in MDT you know that you've got to talk about their abilities, what their goals are and what we're working towards. Because in the past you could, some people will, even I*

have, you might waffle on something else or what they've said, that isn't really relevant."

Site 1_009 RA

Interdisciplinary discussions were usually started by the keyworker **(mechanism resource)** and provided an overview of progress and articulation of plans for the coming week. Other staff provided additional feedback **(mechanism resource)** which centred around the attainment of patient goals. In site 3, the more relaxed approach to the MDM **(context)** manifested itself in discussions that were more conversational and more detailed **(mechanism resource)** than those in the other sites.

"The MDT is then trying to be brief about the person and where we're going and being, you know, this is where we're up to, this is where we're at, this is the outcome measure, this is what we're doing, boom, this is what we need."

Site 1_004 Occupational Therapist

"I think it runs fairly well, we do complain that sometimes the conversations about the patients go on a little bit, you know, sometimes people get side-tracked. But I think it does work fairly slickly now everybody has kind of picked a role, we get on with it, you know, an hour or an hour and a half and that's it for the week, we are done."

Site 2_012 Occupational Therapist

Pre-MDM Preparation

Staff were expected to be prepared in advance **(context)** for the MDM in all services as this facilitated the smooth and efficient running of the MDM **(outcome)**. Although the pre-MDM preparation activities varied at each site, engaging in these types of activities ensured that in the event of unexpected non-attendance **(context)**, vital information required for the meeting had been submitted **(mechanism resource)**.

> *"I'll have an hour at the end of the day on a Wednesday where I update my patients' spreadsheets so it's on there. And that's also a failsafe in terms of if I phone in ill or I'm on annual leave and someone else has to feedback on my behalf. […] I don't think that's always appreciated, the fact that there is quite a bit of work that goes into getting ready for that meeting so that meeting can run so smoothly."*
>
> Site 1_016 Speech and Language Therapist

All sites held additional meetings **(mechanism resource)** which fulfilled many functions for the services including gathering pertinent information and getting ready for the weekly MDM. During data collection site 1 was experiencing a very high caseload **(context)** and weekly discipline-specific meetings helped the band 7 staff prioritise the caseload and facilitated the smooth running of the MDM **(outcome)**.

> *"And we've organised what visits we need and just what the general plans are with people. Whereas if we were doing that on a Thursday morning a meeting could go on forever."*
>
> Site 1_020 Occupational Therapist

> *"It is, it's a way of me knowing where our caseload is, what we're going to need for next week, looking and seeing what we've got available the next week and make sure we're not over asking for— Because obviously when it comes to timetabling if you've asked for sixty visits, but we've only got thirty slots, something's got to give, it's prioritising what we need to do. And whether we need to do it or whether the rehab assistants can do it."*
>
> Site 1_004 Occupational Therapist

The senior occupational therapists and physiotherapists used discipline-specific meetings as a way of teaching their junior colleagues about the formal structure and expectations of the MDM **(mechanism resource)**. The service lead expected all staff to be well prepared **(context)**

and was visibly irritated during the meeting if the information was not readily forthcoming as this wasted valuable time within the MDM **(outcome)**.

> *"I'm going to be honest – for us as a team for [service lead] not to annihilate my Band 5 and 6 […] if they don't have all their stuff together and they can't present it in a structured way, it's not going to be pretty […] So as a Band 7, I'm going through making sure that they've done everything or thought of everything they need to so when they're presenting it back at team meeting it's, "The patient's doing this. We've done this. Here are their goals. They're progressing in this. We need the EDD [expected discharge date] extended," or we don't, "and these are my visits."*
>
> Site 1_002 Physiotherapist

In sites 2 and 3 shorter daily meetings were held either at the beginning or end of the day, in a style similar to a huddle often observed on in-patient wards. These meetings also facilitated the smooth running of the MDMs **(outcome)** as they provided regular opportunities for the staff in these services to communicate **(mechanism resource)**, which staff in these services appreciated **(mechanism reasoning)** due to the reduced opportunities to engage in these activities because of the nature of rural working **(context)**.

> *"Well, we meet every morning, and if that ever gets missed for whatever reason, you can really feel it. You have an unnerving feeling that you don't really know what's going on or whether— So that's not a formal meeting. That's literally where we run through the board and what patients we've got, remind each other of what we're all agreed we're doing and who's coming up from the ward."*
>
> Site 3_001 Occupational Therapist

As with the MDM, the meetings were structured, both services used whiteboards to facilitate the structure and check on progress **(mechanism resource)**. The daily huddles in site 3 were attended by all staff and although they shorter in nature than a weekly MDM, could easily

take up to an hour if a complex situation had arisen. Observations of these meetings revealed that staff engaged in similar conversations to weekly MDMs, asking for opinions, discussing options, and jointly agreeing on a therapy direction within the meeting **(outcome)**. Although these meetings allowed site 3 to flexibly respond to patient needs and were highly valued by stakeholders it was accepted that they could be more tightly controlled. The lack of service lead **(context)** to effectively chair these meetings may have contributed to the length of them.

> *"Well, I think the thing is within our team, because you're lone working, and what are the board handovers in the morning? I'd like them to be a lot shorter, but a lot of members of our MDT like to tell the whole story of the patient. Who they've seen, what they've done, where they're up to. And I do think a lot of it could be [shortened] […] it's the chance you get to talk to people about other patients and sort of say, "Is this right? Do you think that's right?" So, it is an area we struggle with. That board handover […] can be from 15 minutes to an hour."*
>
> Site 3_006 Nurse

CMOC 3.4 Team Climate

CMOC 3.4 detailed in Table 15 on page 166 highlights how a supportive team climate within the context of the MDM facilitates inter and transdisciplinary working, shared decision-making and the delivery of holistic care

Relevant Contextual Information

In all sites, the wider presence of a supportive team culture was articulated in various ways throughout data collection. In respect to MDMs, staff were observed to offer advice, and support during meetings, sometimes joint visits were arranged (see programme theories one and two for more information on joint visits). The issue of safeguarding of staff was taken very seriously and all sites had various systems to ensure the safety of staff was ensured.

Peer Support

Newly appointed staff articulated that the supportive environment of the MDM **(context)** helped to promote a sense of belongingness within the MDT **(mechanism reasoning)**. They felt confident enough **(mechanism reasoning)** to contribute during meetings expressing that MDMs helped with gaining a holistic interdisciplinary understanding of the service **(mechanism reasoning)**.

> *if you've been seeing that patient, you know that patient, and I think that – you have that voice […] I'm not the most confident of people but I still feel like it's my sort of right to speak up and say, "What actually has been going on?" […] I do feel confident to speak up in MDT.*
>
> Site 1_021 Occupational Therapist

> *"you do get that sense of being part of the team because you're all chipping into one patient. […] you can get different opinions from everyone else at the same time, which I think's really important. But it definitely does make everything a bit more cohesive."*
>
> Site 1_020 Occupational Therapist

> *"In MDT everybody is encouraged to speak up and say their part. And I think everybody in this team is valued because none of us could do what we do without the other people."*
>
> Site 1_001 Administrative Manager

All staff commented that working in rural communities reduced their ability to access ad hoc peer support **(context)**, stakeholders viewed the MDM as an opportunity for staff at all grades to access peer support **(mechanism resource)**. Staff in all three services were observed to ask for assistance or advice when they encountered difficult situations. As well as offering practical advice regarding the delivery of rehabilitation these discussions often served to reassure **(mechanism reasoning)** individual staff members and as a service, the

interdisciplinary discussions were used to ascertain the best way forward for patients and staff **(outcome)**.

> *"if it's a difficult family or a difficult patient for any reason, or a particularly sad case. It is a bit of peer support in that respect. Sometimes they'll go, "This is frustrating because of this," and then everybody will pipe up, "Well I've had exactly the same problem, I completely agree with you. I don't know where we're going with this."*
>
> Site 1_019 Service Lead

> *"When you look at the clinical MDTs everybody has their little pockets of knowledge about patients and things that have happened during their visits and even us with what we hear on the phone or taken in. But sometimes, some of those little bits can be so vital in a patient's recovery that by sharing that, by getting together and sharing that, everybody's got that whole picture which has got to improve things. And I think it also promotes a feeling of openness and honesty amongst the team as well."*
>
> Site 1_001 Administrative Manager

Safeguarding

There were several occasions during data collection where the safety of staff was potentially compromised **(context)**. In these situations, the MDM provided a forum for all staff to discuss the situations in depth **(mechanism resource)**. The ensuing discussions served two purposes, to ensure everyone member of staff had a shared understanding of the situation **(mechanism reasoning)** and to collectively as a service with a more comprehensive understanding of the situation, decide how to proceed and whether to continue with treatment **(outcome)**.

> *"it's the heads up from a safety point of view for staff as well actually, which is very important – why somebody's in double's. Or we've had a few drug users recently and discussing whether we should be seeing them when they're clearly high."*

SITE 1_019 Service Lead

The following is an example of a typical scenario that occurred in site 2 although similar scenarios had also occurred in site 1:

> *'One of the professionally registered members of staff was concerned that one of their patients was either taking or dealing in drugs from the home. Although they had no conclusive proof; they expressed concern about visiting the patient alone. The service lead had been appraised of the situation. Several staff commented that they felt ill at ease in the patient's home but hadn't been able to determine why. The decision made was to continue with rehabilitation, with staff attending in pairs. The service lead reiterated staff could refuse to attend if they felt unsafe. The situation was to be constantly monitored.'*

Site 2 Observation from MDM

The information presented above has drawn heavily on quotes presented from sites 1 and 2. This is because staff in site 3 participated in a wide variety of meetings within the ASI, reflecting the embedded nature of this service. These are discussed in more detail in programme theory four which is located within Chapter eight.

Discussion

This section discusses the findings from the realist evaluation in light of the literature presented above in the realist inspired literature review of multidisciplinary meetings.

Key Findings

1. Weekly MDMs attended by all clinical staff provide opportunities for interdisciplinary discussions to occur. These discussions give rise to a shared interdisciplinary understanding of patient needs and contribute towards shared decision-making practices.

2. Weekly MDMs provide ideal forums for service organisation and facilitate the delivery of evidence-based services through the collation of information required for service level planning and key governance criteria.
3. Services with high caseloads can facilitate MDM efficiency through implementing highly structured meetings, which are tightly controlled by the chair and ensuring all staff understand the format and expectations of the MDM and are well prepared in advance.

Interdisciplinary Discussions

MDMs were central to the organisation of the rural community stroke services. They provided regular comprehensively attended forums to engage in interdisciplinary discussions which facilitated shared decision-and interdisciplinary teamworking, supporting findings from programme theories one and two. This finding is consistent with the literature which reports that MDMs facilitate interdisciplinary teamworking (Lamb et al., 2011b, Lamb et al., 2011c, Harris et al., 2013, Reeves et al., 2017, Soukup et al., 2018). However, there are two key contextual differences worth noting associated with community stroke services that are not discussed within the academic literature, much of which has researched hospital-based MDTs in cancer. Firstly, the community stroke services operated in rural community settings, staff spent time considerable amounts of time lone working, resulting in reduced opportunities to communicate with their colleagues. Secondly, they engaged in inter and transdisciplinary working as outlined in programme theory one. These contextual features are under-researched in healthcare generally, but are integral to the delivery of these rural community stroke services and contributed to the priority given to attendance at weekly MDMs which was valued in all services as it provided a guaranteed forum for all members of the MDT, negating some of the effects associated with rurality.

The interdisciplinary discussions occurring during the MDMs served many purposes although the main output was shared decision-making concerning a patient's rehabilitation plan. Due to the functional nature of patient goals, in many cases, attainment was an interdisciplinary endeavour, and interdisciplinary discussions reinforced the influence of the relative disciplines upon individual patient goals. Staff regularly used MDMs to gain support, advice

and partake knowledge from their colleagues enabling a holistic understanding of patient needs to be achieved and shared decision-making to occur.

The degree of shared decision-making varied within MDMs; this was not reflective of leadership style nor attributed to domineering personalities as reported elsewhere (Gibbon, 1999, Pound et al., 1999, Baxter and Brumfitt, 2008a). Rather, it was reflective of the patients presenting condition and high caseloads restricting time for in-depth discussions. Detailed interdisciplinary discussions and shared decision-making were more likely to occur for patients presenting with complex needs. It has been suggested that larger teams generate more interdisciplinary discussions than smaller teams (Soukup et al., 2018). However, this was not observed in the present study. In fact, site 3, the smaller team with a smaller caseload spent more time discussing patients as they had allocated a similar timeframe for the MDM. Compared to the other two services, they spent more time per patient engaged in interdisciplinary discussions, suggesting that for stroke, length of time spent engaging in interdisciplinary discussions is influenced by caseload and time allocated for the MDM.

Service Organisation

MDMs were also valuable forums for the collation of information required for efficient service organisation. MDMs have been attributed with improving adherence to stroke clinical guidelines and quality markers (Harris et al., 2013, Tyson et al., 2014) and all services included within this research used bespoke documentation as a way of ensuring compliance with key governance criteria which was instrumental in ensuring the delivery of an evidence-based service. Interestingly, and not researched within the literature, two services used the MDM to facilitate service planning. Both services engaged in visit scheduling, the comprehensive attendance shared decision-making occurring in MDMs provided an ideal forum to collate information. Visit scheduling is discussed in programme theory five which is located in chapter nine.

Effective Chairing, Structure And Preparation

Consistent with several studies, clear effective chairing by the allied health professional service leads facilitated MDM efficiency (Lamb et al., 2011a, Lamb et al., 2013a, Tyson et al.,

2014, Soukup et al., 2018). Service leads facilitated a meeting environment whereby all members of the team were observed to contribute (Tyson et al., 2014, Soukup et al., 2018) but ensured interdisciplinary discussions were focussed, targeted and relevant. Service leads were observed to facilitate interdisciplinary discussions for patients presenting with complex needs, seeking advice from their team and where appropriate making overriding decisions such as the need to involve external services in-patient care which is consistent with Ruhstaller et al., (2006). Service leads were respected in both sites, the more direct leadership style of the lead in site 1 was appreciated by staff who spoke very positively of their service lead, especially concerning the running of the MDM as they were aware that the meeting needed to be tightly controlled to ensure every patient on the caseload could be discussed. Staff in all three services were observed to be well prepared for MDMs, though the preparation activities varied at each site. This, alongside a formal structured MDM format, facilitated meeting efficiency, ensuring sufficient time to review all patients on the caseload which complements the findings by Raine et al., (2014).

The absence of a clear service lead influenced the way in the which the MDMs were conducted in site 3. Although a rotating chair has been observed in previous research (Raine et al., 2014), the difference between the delivery of the MDMs between site 3 and the other two sites were stark. Consistent with the other services bespoke paperwork had been devised to ensure that appropriate data was recorded, but the meetings were more conversational in style, more time was spent discussing each stroke patient as they had allotted a similar time for the meetings as the other two sites. This may have been influenced in part by the fact that the service caseload was significantly lower in site 3 and they had fewer members of staff. The MDMs were only attended by professionally registered staff as the RAs from the acute stroke unit had limited involvement with the service.

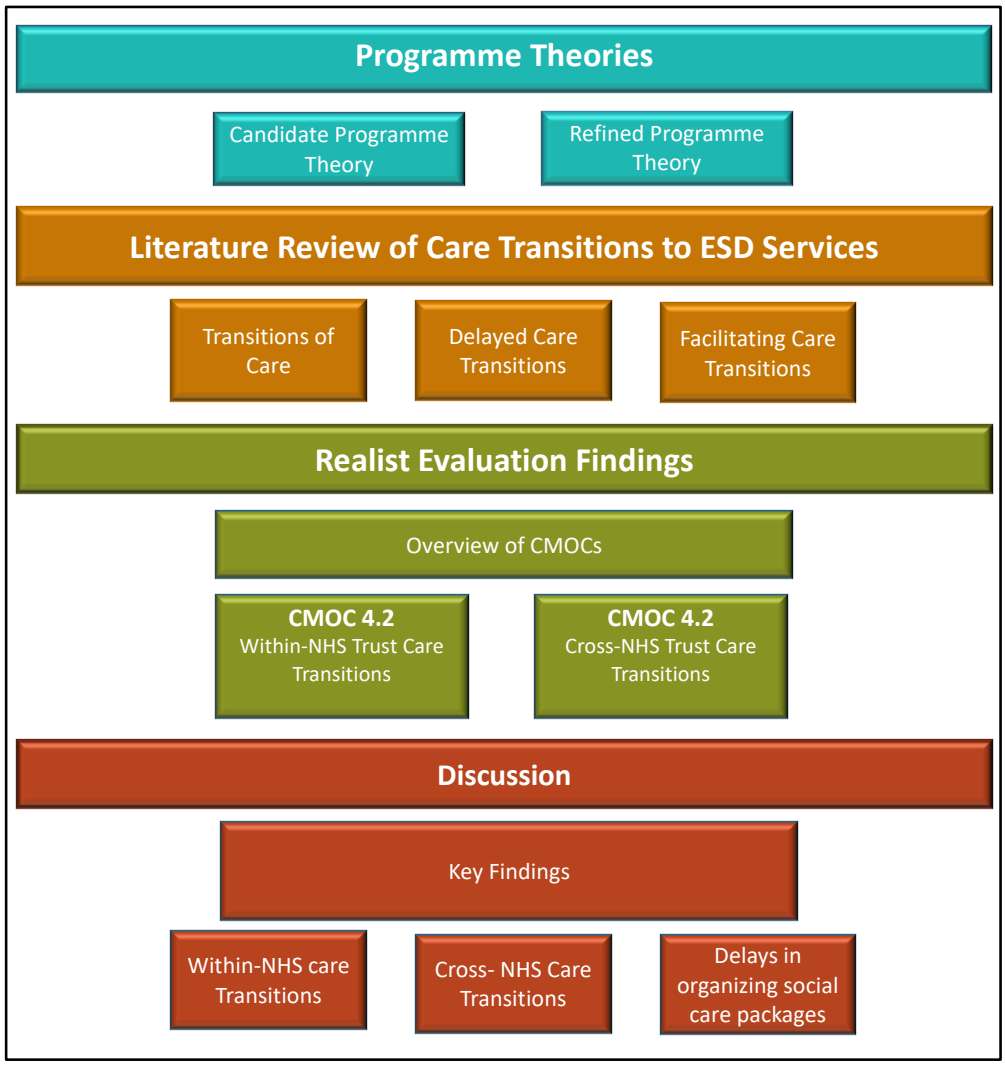
To conclude, the refined programme theory detailed above in Table 14 has been informed by the evidence provided and discussed within this chapter. Very little research has investigated the function of MDMs in stroke although the topic has been heavily researched within the field of cancer. As identified in programme theory one inter and transdisciplinary working is central to the delivery of evidence-based services in stroke. MDMs facilitate this kind of

teamworking as they provide valuable forums enabling interdisciplinary discussions and shared decision-making to occur. Using the MDM to check adherence to key governance criteria facilitates the delivery of evidence-based services by ensuring all staff gain a shared understanding of patient needs and service objectives. Additionally, when MDMs are effectively chaired, formally structured, and staff are well prepared they provide an environment for staff to share knowledge, offer advice and gain support from colleagues facilitating inter and transdisciplinary working.

Chapter Eight
Programme Theory Four: Care Transitions

The previous three chapters have been concerned with the composition and teamworking of the rural community stroke services. This chapter branches out from the context of the individual community stroke service and concentrates on transitions of care between in-patient stroke services and the rural community stroke services. The chapter is organised into four sections which are depicted in Figure 6. For ease of navigation, the colours represented in the figure will be represented in each of the sections presented in both headings and tables.

Figure 6: Navigation Diagram For Programme Theory Four: Care Transitions



Programme Theories

This section presents an overview of the candidate and refined programme theories. The candidate programme theory can be found in chapter 3. The refined programme theory presented below is based upon the culmination of the realist inspired literature review of interdisciplinary training in stroke, findings from the realist evaluation (both of which are detailed below) as well as further discussions with individuals from the expert advisors.

Candidate Programme Theory

The candidate programme theory initially hypothesised that rural community stroke services who have developed close links and protocols with referring units **(context),** results in the appropriate exchange of patient information **(mechanism resource)**, facilitating effective decision making **(mechanism reasoning)** and a more co-ordinated, smooth, and timely discharge from hospital **(outcome)**. This candidate theory was constructed on the assumption that clearly defined protocols and links would be established as criteria consistent with timely care transfers from hospital to the RCSS was part of the inclusion criteria for identified services. However, data collection revealed a significantly more complex and nuanced picture as the functional distance between services and the presence of hard organisational boundaries between influenced care transitions. Therefore, data collection focussed on understanding the influence of these factors on care transitions.

Refined Programme Theory

The refined programme theory can be found below in Table 16. It offers a deeper understanding of the causal influences impacting care transitions. It explains how functional proximity between services, a lack of hard organisational boundaries preventing cross-NHS-Trust collaborative working, with supportive service leads with good interpersonal relationships **(context)** facilitate more timely, appropriate, and smoother care transitions **(outcome)**. This can be explained by understanding that cross-service collaborative working **(mechanism resource)** encourages the development of cross-service trust and role clarity as

well as ensuring a cross-service shared understanding of patient and service needs are achieved **(mechanism reasoning)**.

Table 16: Refined Programme Theory Four: Care transitions

Context	Mechanism Resource	Mechanism Reasoning	Outcome
Functional proximity, a lack of hard organisational boundaries enabling collaborative working, and good interpersonal relationships between service leads	Provides more opportunities for cross-service collaboration to occur	Which encourages the development of cross-service trust, role clarity and shared understanding of patient and service needs	Facilitating smooth, timely & appropriate care transitions in line with the evidence base

Literature Review Of Care Transitions to ESD Services

Transitions Of Care

The academic literature on transitions of care within the stroke pathway has largely focussed on patient perspectives with feelings of abandonment and fragmented care frequently reported by patients (Pindus et al., 2018, Hartford et al., 2019). Studies specifically researching care transitions within the ESD pathway are sparse. ESD services provide a vital role in facilitating successful transitions between services, thus reducing the likelihood of problematic transfers whilst ensuring patients receive continuity of care once discharged from hospital (Wottrich et al., 2007, Chouliara et al., 2013, Leach et al., 2020, Mountain et al., 2020).

The research that has been conducted has focussed on patient or carer perspectives and has mainly reported positive experiences of care transitions to ESD services (Chouliara et al., 2013, Cobley et al., 2013, Taule et al., 2015, Nordin et al., 2015). However, experiences of

onward transition to other services are not as positive, delays for onward therapy can leave some stroke survivors feeling abandoned (Cobley et al., 2013, Chouliara et al., 2013, Nanninga et al., 2015). Studies investigating staff perceptions of transitions to ESD are limited (Chouliara et al., 2013, Kraut et al., 2014, Waring et al., 2014, Hitch et al., 2020, Lindblom et al., 2020) but given the role that staff have in influencing transitions, this is an important aspect to consider.

Delayed Care Transitions

Delayed care transitions to ESD services results in patients spending longer than necessary in hospital which can be detrimental to rehabilitation potential. Across healthcare, delayed transitions have been attributed with increasing the frequency of falls within hospitals (Waring et al., 2016). Delayed transitions are more likely to occur when organisations are unable to appropriately communicate with each other. Two examples from the literature worth highlighting are delays associated with a reluctance of stroke unit staff to refer patients to ESD services and those attributable to the organisation of social care packages.

Reluctance To Refer To Early Supported Discharge Services

Research suggests some stroke unit staff can be reluctant to discharge patients to ESD services. This is not a new phenomenon; one of the original ESD RCTs noted a hesitancy associated among stroke unit staff (Donnelly et al., 2004). This reluctance has been attributed to a lack of cross-service inter-professional relationships, a lack of clarity associated with the role and capability of ESD services as well as a lack of understanding surrounding referral processes (Donnelly et al., 2004, Chouliara et al., 2013, Kraut et al., 2014, Kraut et al., 2016, Hitch et al., 2020). Although believed to be of greater impact during the implementation of new ESD services, it cannot be assumed difficulties will resolve with time as ongoing challenges have been observed in established ESD pathways in Australia, where less experienced staff were more reluctant to refer to ESD services (Kraut et al., 2016, Hitch et al., 2020). Additionally, some staff doubt the evidence on which ESD services are based, are sceptical whether equivalent rehabilitation can be delivered (Chouliara et al., 2013, Kraut et al., 2014, Kraut et al., 2016) or worry about the level of stroke specialist expertise of ESD staff

(Kraut et al., 2014), the latter of which is partly attributed to the various ESD service models in existence, which may include non-stroke specialist staff. Developing inter-professional relationships between services is believed to facilitate timely care transitions (Donnelly et al., 2004, Chouliara et al., 2013, Waring et al., 2014).

The Organisation Of Social Care Packages

The organisation of social care packages is often a condition of discharge from hospital. Delays in securing social care packages are frequently cited by hospital staff as reasons for delays in care transitions (Chouliara et al., 2013, Waring et al., 2014, Nanninga et al., 2015). Social workers have cited reasons such as incomplete paperwork, an inability to speak with an appropriate spokesperson within the referring stroke unit to clarify details as well as limited capacity as explanations for delays in care transitions (Waring et al., 2014). The inclusion of a social worker within services has been attributed with expediting transitions from hospital for stroke patients requiring social care packages (Chouliara et al., 2013, Harris et al., 2013).

Facilitating Care Transitions

In stroke, successful care transitions across organisational boundaries are dependent upon good cross-organisational communication (Waring et al., 2014, Pindus et al., 2018, Lindblom et al., 2020), structured discharge planning (Clarke and Forster, 2015, Burau et al., 2017, Tang et al., 2017, Kyle et al., 2020, Mountain et al., 2020), good cross-service professional relationships (Fisher et al., 2011, Chouliara et al., 2013, Kraut et al., 2014, Miller et al., 2019) and collaborative cross-service or cross-organisational interdisciplinary working (Clarke and Forster, 2015, Lindblom et al., 2020). These factors alongside cross-service clarity surrounding roles, capabilities and responsibilities (Suter et al., 2009, Miller et al., 2019, Lindblom et al., 2020), mutual trust and respect, as well as a willingness to collaborate and a positive team attitude and supportive organisational climate (Lindblom et al., 2020) are believed to influence successful and timely care transitions.

Cross Organisational Collaboration

Cross-service collaboration is believed to facilitate inter-service professional communication and interpersonal relationships through promoting the development of trust and confidence between referring units and ESD services (Harris et al., 2013, Waring et al., 2016, Lindblom et al., 2020). Service leads are instrumental in providing forums for staff to formally and informally collaborate to facilitate and sustain cross-service trust (Waring et al., 2014).

Functional Proximity

Co-locating services facilitates cross-service collaboration by increasing possibilities of engaging in opportunistic dialogue and impromptu meetings (Clarke, 2010, Waring et al., 2014) which are thought to help to fill gaps in knowledge and ensure a shared understanding of patient and service needs are acquired across boundaries (Lindblom et al., 2020). Where services are not co-located, the presence of inter-service professional trust can be adversely affected (Waring et al., 2014).

Multidisciplinary Meetings

MDMs provide formal opportunities to share knowledge about patients and organisational issues and in stroke they provide the main forum where decisions regarding transitions of care are made (Tyson et al., 2014, Waring et al., 2014). These meetings provide an ideal format for cross-service or cross-organisation collaboration, as representatives from ESD services, the Stroke Association or social workers are often invited to participate (Harris et al., 2013); though it should be noted that this practice varies across stroke units. The inclusion of ESD representatives facilitates communication, contributes to a shared understanding of patient needs and service objectives (Aquino et al., 2020), reinforces service roles and responsibility, is instrumental to the development of cross-service trust (Chouliara et al., 2013, Waring et al., 2014) and facilitates timely care transitions to ESD services. However, no known studies have objectively researched the impact of ESD representatives attending referring stroke unit MDMs, so it is unclear how or why care transitions improve.

Structured Cross-service In-reach Activities

In-reach activities, where representatives from ESD services spend time in referring stroke units are common. This activity may involve conducting initial assessments to determine suitability or observing patients etc. (Waring et al., 2014) and is believed to streamline care transitions by introducing the ESD team to the patient, (Wottrich et al., 2007) whilst also increasing opportunities for cross-service opportunistic dialogue.

Pre-existing Cross-service Relationships

Pre-existing cross-service relationships can facilitate cross-service collaboration, communication and influence care transitions (Aquino et al., 2020). Waring (2014), noted established cross-service interpersonal relationships enabled an informal ease of sharing of information between stroke services which smoothed the transition process. Unidirectional communication such as fax or email in the absence of any other formal or informal dialogue, limit cross-service communication and the development of cross-service interprofessional relationships and trust (Lindblom et al., 2020).

Information Technology Systems

Compatible information technology systems, such as online patient notes systems accessible by all professionals are thought to promote inter-service collaboration, communication and facilitate transitions (Waring et al., 2016, Miller et al., 2019, Kyle et al., 2020). However, whilst this has the potential to improve cross-service communication, different NHS Trusts in the UK have implemented different IT systems which are often incompatible, limiting the effectiveness of cross-service communication. Additionally, within one healthcare provider, it is not uncommon for staff to be working on different IT systems as therapy and medical professions often utilise different software (Aquino et al., 2020).

Rotational Posts

The practice of therapy staff engaging in short rotations across different healthcare sectors commonly seen for early career therapists has been criticised for adversely affecting team cohesion and hindering interprofessional relationships (Burton et al., 2009, Harris et al.,

2013). However, rotating or working flexibly within the stroke pathway is thought to strengthen cross-service relationships (Harris et al., 2013) as the rotating staff develop good cross-service and interpersonal relationships whilst also providing tangible cross-service links. This kind of cross-service collaboration is believed to increase cross-service trust and provide increased cross-service role clarity (Harris et al., 2013).

To conclude, community stroke services providing ESD can smooth the care transition process for patients. Functional proximity of services facilitates cross-service collaboration and communication which facilitates care transitions. Functional distance between services is believed to hinder cross-service trust and role clarity. Delays in care transitions can be attributed to a lack of cross-service trust as well as the organisation of social care packages. Service leads supporting cross-service collaboration can strengthen and develop cross-service interpersonal relationships and communication practices that increase cross-service trust and role clarity. These factors are believed to facilitate timely and appropriate care transitions to community stroke services.

Realist Evaluation Findings

This section will present the findings from the realist evaluation for programme theory four, care transitions from stroke units to the RCSSs. It will begin by presenting CMOCs underpinning the refined programme theory before discussing each one in turn.

Overview Of CMOCs

The two CMOCs, depicted in Table 17 on page 196 offer a greater understanding of the refined programme theory featured in Table 16 on page 190. They explain how functional proximity or distance and hard organisational boundaries influenced care transitions from stroke units to RCSS.

CMOC 4.1 Within-NHS Trust Care Transitions

CMOC 4.1 detailed in Table 17 is concerned with RCSSs and referring stroke units that are commissioned within the same NHS Trust and therefore no hard organisational boundaries

exist. It offers an explanation as to how the degree of functional proximity between services and level of interpersonal relationships between service leads influences the extent to which care transitions are smooth, timely and appropriate.

Table 17: CMOCs Underpinning Programme Theory Four: Care Transitions

CMOC	Context	Mechanism Resource	Mechanism Reasoning	Outcome
4.1 Within-NHS Trust Care Transitions	The greater the functional proximity between services and the level of interpersonal relationships between service leads	The greater the likelihood of cross-service collaborative working	Which influences the degree to which cross-service role clarity and trust are achieved alongside how much of a shared understanding of patient and service needs and cross-service trusting interpersonal relationships are realised	Facilitates the extent to which care transitions are smooth timely and appropriate
4.2 Cross-NHS Trust Care Transitions	The greater the functional distance between services with hard organisational boundaries and limited or no cross-service collaborative working permissions or interpersonal relationships between service leads	The less cross-service collaborative working is likely to occur	Which limits or prevents the development of cross-service trust, role clarity and trusting interpersonal relationships. A shared understanding of patient and service needs are not realised	Increases the likelihood of experiencing delays and/or complications with care transitions

Relevant Contextual Information

All three RCSSs received referrals from stroke units commissioned within the same NHS Trust resulting in a lack of hard organisational borders between services. The functional proximity of the RCSSs relative to the referring stroke units differed in all three services. Site 3 was fully embedded within the referring ASU. Sites 1 and 2 were split sites, with north and south bases situated in distinct locations. The South base at site 1 was co-located within the same hospital building as the ASU. Both bases at site 2 were remotely located to the RSU; a planned move to relocate the south base to RSU hospital during data collection was delayed.

Within-NHS Trust Care Transitions: Embedded Units

The RCSS staff in site 3 reported no problems associated with care transitions from the ASU **(outcome)**, however, they flexibly worked some staff across the two services; RCSS input was central to every care transition **(mechanism resource)**. RCSS staff were initially recruited from ASU, therefore excellent cross-service interpersonal relationships existed. Due to these factors, a cross-service shared understanding of patient and service needs, and role clarity was present **(mechanism reasoning)**.

> *"We are the same team as the ward team. […] In OT particularly, all of our staff can work on both. […] likewise, we'll chip in and help with the ward when it needs to be. So it's gone as far as there isn't even a, right, now we'll refer to ESD, get your form out and fill it out. We are part of the same team. So the discussions that we have about the patients coming onto the service are usually about patients we know about"*
>
> Site 3_001 Occupational Therapist

As an embedded unit, they shared physical space with the ASU **(context)**. RCSS staff observed in-patient rehabilitation sessions, eavesdropped on conversations, engaged in opportunistic dialogue with stroke unit colleagues and attended a variety of discipline specific meetings as well as attending daily handovers and weekly MDMs **(mechanism resources)**. These opportunities equipped RCSS staff with a holistic understanding of patient needs **(mechanism reasoning)** and streamlined RCSS planning and care transitions as RCSS staff visited patients on the day they were discharged from hospital, often accompanying the patient as a discharge home visit **(outcome)**.

> *"…we're all interlinked, and we're based in the same office, […] so even if you're just on the computer, doing your own phone calls and stuff, you've got the rest of the OTs, you've got the physios popping in and out. You're overhearing conversations"*
>
> Site 3_007 Occupational Therapist

"you find yourself watching the session to get to know and to see what they're like. You'll listen to all the conversations because you can't not in that space, so you do pick a lot up that way. We hear their whole journey of acute rehab.; […] it's not just a referral that drops […] Generally we know who's sort of coming and can plan for things or if we think it's going to be a tricky situation"

Site 3_015 Nurse

"It's like, [ward therapist] popped down today and said, "[…] And I said, "Just nip and have a quick word with [RCSS Nurse] and just making sure they're aware of that when he goes on ESD, blah, blah." Simple as that, five-minute conversation. It's not a fax, it's not an email, it's not a referral; you know, it's literally just a conversation"

Site 3_008 HASU Matron

Additionally, the embedded nature of the service **(context)** allowed them to easily engage in collaborative working activities **(mechanism resource)**. These activities included attending breakfast club, stroke unit MDMs, and rotating staff between services. This ensured a cross-service shared understanding of patient and service needs was achieved **(mechanism reasoning)**, and facilitated timely care transitions **(outcome)**.

"So over the last year, we've started doing breakfast club […] I can go round and see if there's any potential ESD people […] Then start speaking to the ones on the ward to say, oh what point are these people at? Are they ESD? Identifying people quicker sometimes."

Site 3_007 Occupational Therapist

" [At MDM] So we're getting an overall view of who's coming in and what point they are at discharge, you know, what the plan is and then we can say hang on a minute, they sound as if they're ready to go. You can have that discussion, so

you're not leaving it for a week and another week and another week, so you have that communication"

Site 3_007 Occupational Therapist

"[rotating between services] then I go back on the ward and I'm more mindful of referring to ESD and then I'm on ESD and I'm more mindful of what goes on on the ward […], I've got quite good links with the staff […] it will also help when we're referring from the ward and deciding"

Site 3_014 Occupational Therapist

Within-NHS Trust Care Transitions: Co-locating Units

Within-NHS care transitions in site 1 were thought to be largely smooth, timely and appropriate **(outcome)**, but some difficulties and challenges were discussed by stakeholders, though these were mostly historic. The distance between the RCSS south office and the ASU was a short walk **(context)**. This functional distance albeit small impeded the extent of cross-service collaboration and opportunistic dialogue **(mechanism resource)**. However, prior cross-service functional proximity **(context)** (the two services were previously co-located) had provided the opportunity for cross-service interpersonal relationships to develop **(mechanism resource).** These were thought to have initially enabled the development of cross-service trust and role clarity **(mechanism reasoning**) and were attributed to improving care transitions when the service was first commissioned **(outcome)**.

"we have one main area of referral, being the acute hospital here, [name], and our referral system with them is excellent. They're always looking to discharge people as quickly as they can and they're very aware of our services, know how we work and reassure patients and families that we will be involved and that they will be safe when they go home […] there's no doubt that where the service knows us well and knows what we do and what we're capable of, it works more smoothly"

Site 1_003 Service Lead

> *"we used to both be in the gym at the bottom end, but because we're here and they're over in physio, we don't see each other at all. But because we've had years of building that relationship, when we see them it's like, "Oh hi, haven't seen you for ages," rather than we don't know them at all.*
>
> Site 1_002 Physiotherapist

When the RCSS service was originally commissioned, some cross-service interpersonal relationships with ASU staff existed **(context)** but this didn't automatically lead to cross-service trust **(mechanism reasoning)**. Rather, trust was developed over time and influenced by further development of cross-service interpersonal relationships, knowledge and understanding gained from referrer training and evidence of patient improvement **(mechanism resource)** provided by RCSS staff. It was felt that once cross-service trust was established, delays in care transitions were reduced **(outcome).**

> *"letting go of their patients was quite hard in the beginning. Plus, they didn't know what therapist they were bringing them out to. So they don't know whether the patient is going to achieve the goals in the same way they were in the hospital. So it took quite a while for them to build the trust to discharge their patients."*
>
> *Site 1_002 Physiotherapist*

> *"When we first started, we did a whole raft of referrer training, […] about our referral criteria, who's in the team, just getting people to understand what we do, […] I very much put up some case studies which were borderline […] people that people would be worried to discharge home but explaining that we can manage those things, […], and trying to get them to talk through those with us, which seemed to work quite well. And the end of the referrer training was very much, "Come out with us and see what we do," you know, because that's, in lots of ways, the best way to see how it works."*
>
> *Site 1_003 Service Lead*

> *"It took them a while to trust us to refer out at speed. Even the in-patient staff who knew me well and know us quite well, […] quickly developed into realising that they'd get as good a rehab, if not better when they get home […] the staff became more confident because they saw what happened."*
>
> Site1_019 Service Lead

Pre-existing interpersonal relationships between service leads **(context)** were thought to be beneficial to the development of cross-service interpersonal relationships with staff within the services. Service leads encouraged cross-service communication, which promoted the development of cross-service respect, trust, and role clarity of services **(mechanism reasoning)**.

> *"I know [service lead] very well, she knows a lot of our therapy clinicians and she has a good working relationship with all our consultants. So we've got an ease of access of conversation. […] there's got to be a professional relationship and respect between the two teams. […] they work very well together. They've got to be able to communicate with each other and to openly say, "Why aren't you taking this one?" "Why have you given us that one?""*
>
> Site 1_017 Stroke Consultant

Service leads also encouraged cross-service collaborative working through attendance at stroke unit MDMs, the creation of rotational posts and shared training whereby staff from both stroke services engaged in training together. These provided opportunities for cross-service opportunistic dialogue and strengthening of interpersonal relationships **(mechanism resources)** which fostered cross-service trust and role clarity **(mechanism reasoning)**. Stakeholders believed they facilitated care transitions **(outcome)**.

> *"we're just doing a big piece of working with the nursing, our specialist nurses, the community stroke team nurses and across both areas doing training in modified Rankin's. We do try and get together for training, […] monthly MDT*

training up on the stroke wards which any members of CST are welcome and if they've got training they invite us."

Site 1_017 Stroke Consultant

"[at the MDM] So, we get to know who's coming out. We kind of get to troubleshoot situations. […] in the beginning, it was more to help them see that we could take this person out. So, we'd be listening to the fact that they had a care package waiting and they may say, "But they can't do the stairs," and we'd be like, "Well, they could live downstairs and we could practise the stairs, so we can get them out now." or "They need prompts for their medication." "Well, we can do that. We can put in rehabs to go in five days a week to prompt them for their medication." So, it was just giving them little hints and tips or saying we could do that home visit to get them out.

Site 1_002 Physiotherapist

Rotational posts were felt to be useful where daily informal communication channels were difficult **(context),** rotational staff acted as conduits between services **(mechanism resource)** to facilitate care transitions **(outcome)**. Unfortunately, due to ASU service pressures **(context)**, it was announced during data collection that the practice was ceasing, this was viewed as an effective recruitment tool for the RCSS **(outcome).**

"We've also historically had rotational staff in this unit, which I think makes a big difference. […] really increased the level of knowledge of the staff in the referring […] people then who go back in who have literally worked with us and therefore they know what families can expect. So, yes, and I think there's a high level of confidence in us here, yeah, because they know what we're doing and what we're capable of doing […] Unfortunately, we've also had to stop our rotations due to various reasons, which again is a real pity. And that worries me for the future of staffing my team because that's how we've effectively acquired staff, which is partly why it's also been stopped."

Site 1_003 Service Lead

Within-NHS Trust Care Transitions: Remotely Located Units

Site 2 also reported within-NHS Trust care transitions that were largely smooth, timely and unproblematic. Although the services were remotely located, cross-service interpersonal relationships existed as the service lead for the south team had previously been employed within the RSU and therefore had excellent pre-existing interpersonal relationships with several RSU staff **(context)**. Routine cross-service collaboration between the RCSS and the RSU occurred, including joint meetings, discharge home visits or clinical supervision for RCSS therapists **(mechanism resources)**. This fostered cross-service role clarity for staff **(mechanism reasoning)** and was believed to facilitate care transitions **(outcome)**.

> *"there's automatically a very good relationship with the core staff there because I worked with them for ten years. They know me extremely well. I know them extremely well, so that's inherent anyway, I've sent my staff over to work in the in-patient unit, to get them to know the core staff. We've adopted things like attending joint discharge meetings to make things more seamless and to have a presence. We've also established that if they've got a complex home discharge, which involves a home visit, we offer for one of our staff to meet them there and that works out really well. […] we can go along and actually introduce ourselves and make firm promises of what we can and can't provide, then it can really alleviate some anxiety. So I think it can speed up discharges and helps our in-patient colleagues."*
>
> Site 2_002 Service Lead

Although the remote location created challenges, the lack of hard organisational boundaries **(context)** facilitated cross-service collaboration and flexing of staff **(mechanism resource)**. This promoted cross-service interpersonal relationships and role clarity whilst also providing reassurance for patients who would ultimately be transferred into the RCSS **(mechanism reasoning)** and was thought to help facilitate care transitions **(outcome)**.

"We used to go in and do some in-reach speech and language in [RSU] […] And that was really useful because we got to know the patients and we got to know the way the ward worked and it wasn't so daunting from the patient for when they come first out, getting used to a brand new team. At least they knew a few of our faces. But I think when we move to [RSU], that issue will be a lot better.

Site 2_003 RA

"our supervisors work there. We've got very close relationships with them. And I would feel much more comfortable having an open discussion with them because I think we understand each other's services much better."

Site 2_010 Physiotherapist

CMOC 4.2 Cross-NHS Trust Care Transitions

CMOC 4.2 depicted in Table 17 on page 196 is concerned with RCSSs and referring stroke units which are commissioned within different NHS Trusts, and therefore experience hard organisational boundaries between services. It offers an explanation as to how functional distance between services coupled with a lack of or limited ability for services to collaborate and limited or no interpersonal relationships between service leads increases the likelihood of experiencing delays or problematic care transitions.

Relevant Contextual Information

All services received referrals from stroke units residing in different NHS Trusts resulting in hard organisational boundaries between services. In sites 1 and 2, these stroke units were also their main referring units, generating regular referrals.

Site 1 received referrals from two additional units, one was an RSU located in the grounds of a community NHS Trust, approximately 12 miles from the RCSSs south office. However, the North team's office was co-located in the same hospital building and adjacent to the RSU giving an element of close functional proximity between services. Although hard organisational boundaries existed between the two services, relevant permissions were in

place for limited cross-service collaboration. The other referring unit was an ASU remotely located 17 miles from the south base office. Hard organisational boundaries and functional distance between the two services existed. Permissions enabling cross-service collaboration did not exist.

Both bases in site 2 were remotely located to the ASU which was located 13 miles from the north office and 9 miles from the south office. Some limited cross-service collaboration occurred, the RCSSs leads had attempted to engage with the ASU to improve cross-service working practices.

Site 3 also received referrals from stroke units residing in different NHS Trusts although these were not considered to be their main referring unit though referrals were frequent. Some of these hospitals were located at significant distances from site 3. No permissions were in place to allow cross-service collaboration.

Cross-NHS Trust Care Transitions: Co-located Services

In site 1, although the location of the RSU and the RCSS North team's office provided an element of close functional proximity between services, the existence of hard organisational boundaries between services impeded the extent of cross-service collaboration **(context)** and this was notable when compared with the extent and ease of cross-service collaboration occurring with the within-NHS Trust ASU located in the same hospital building as the south team. The RCSS service lead felt RSU staff were reluctant to transfer patients **(outcome)**, citing historic practices of stroke rehabilitation, a lack of patient-centred care, differing criteria regarding care transitions **(context)** and a lack of role clarity **(mechanism reasoning)** as explanations for delays.

> *"historically in some of the rehab units, people were allowed to stay for longer and their discharge criteria have been different. […] they were prepared to hold onto this guy until his annex had been built on his house, and I was just appalled. It's just not something you can keep somebody in a bed for, […] and they were screaming about why we bring them to a rehab unit if we don't give them six*

weeks of rehab, which is still the attitudinal thing. And you're like going, I actually had to turn around to them and say, "What do you think? Do you think the patient would like to go home? Because they can have their rehab at home." And they're not really asking, they're not patient orientated."

Site 1_003 Service Lead

Cross-service trust **(mechanism reasoning)** was compromised during data collection due to some unsafe and inappropriate care transitions **(outcome)**, which provided evidence for RSU staff to reinforce the belief that patients were better residing within the RSU **(mechanism reasoning)**. Re-establishing cross-service trust **(mechanism reasoning)** and improving delays in care transitions was believed to take time.

"Unfortunately, they become more risk-averse because that unit for example has done a couple of discharges recently which have been questioned and there's been a problem with. […] So it is that building trust and rapport, which takes time – there's no quick-fix on that one."

Site 1_019 Service Lead

Although the hard organisational boundary reduced cross-service collaboration **(context)**, the service lead had relevant permissions to attend the weekly RSU MDMs and the RCSS had permissions to attend the ward **(mechanism resources)**. These activities were used as forums to identify patients suitable for the RCSS and offer advice to RSU staff. It was hoped that these activities facilitated RCSS role clarity **(mechanism reasoning)** and improved care transitions **(outcome)**. RSU staff were also encouraged to accompany RCSS staff on home visits as a way of gaining evidence of continued patient improvement after discharge. The offer was never taken up.

"I've been saying to my staff there, if you get any excuse to go on the ward, go and, you know, just have more of a presence, if possible. And, as I said, we've often gone in there and, you know, said to the staff on that unit who I know, "Why don't you come out and see that patient you discharged recently with us

and see what they're doing?" just to try and get them to a better level of understanding, again, about what people are capable of when they go home."

Site 1_003 Service Lead

Cross-NHS Trust Care Transitions: Remotely Located Services

Stakeholders in all sites reported challenges associated with cross-NHS Trust care transitions with remotely located services, which were frequently deemed to be inappropriate and sometimes unsafe **(outcome)**. Explanations included limited bed capacity within referring stroke units **(context)**, poor cross-service communication, incompatible IT systems, incomplete paperwork, weekend working, a lack of discharge home visits from other NHS Trusts and a lack of role clarity of RCSSs **(mechanism resources)**, in part attributed to the national implementation of different ESD service models **(context)** and insufficient interdisciplinary working within ASUs **(context)** all of which was felt to impede holistic appreciation of patient individual needs and influence care transitions **(outcome)**.

"Well, for a start the quality of the referral information is not good sometimes, because people aren't working inter-disciplinary. […] the problem is that whatever discipline fills out the form they tend to base it on what they've seen from their own discipline and it's not – it doesn't necessarily always consider everything else."

Site 2_008 Speech and Language Therapist

"the outside referrals, there's no forewarning. You've got no medical notes, […] You're reliant on what they've wrote on their referral form which never is enough information. It's never detailed enough; they never tell us the right things we want to know. So, yeah. It's really frustrating that when you get to this patient it doesn't match up, […] generally, the most difficult things we have to sort out are from other Trusts."

Site 3_015 Nurse

"Definitely, bad experience of that. Really, yeah. Referrals. Patients that shouldn't have been out that we wouldn't have discharged from here […]. And just how they send a referral and don't pick up a phone and have a telephone conversation […] Because sometimes what's on paper doesn't transpire as what you're seeing in front of you. […] their ESD team works differently to our ESD team […] They've got a very different criteria to what we've got."

Site 3_006 Nurse

Hard organisational boundaries between NHS Trusts created barriers for collaborative working **(context)** and negatively influenced care transitions **(outcome)**. Honorary contracts were required to work within other NHS Trusts and stakeholders discussed these were difficult to secure **(context)**. In some cases, permissions to work in different NHS Trusts had been denied which prevented cross-service collaboration **(mechanism resource)**.

"We have stroke patients go to other beds across the county and the relationship isn't as good. We don't work in as closely with them. […] historically have very much found that in some of these other areas people aren't discharged as quickly. They are held onto. […] I mean there's various different units, they don't know us as well because we don't work on the same site. We're not the same Trust. I've tried to get in there to see patients and the powers that be in the Trust aren't very happy with me actually going onto the unit, so there's some organisational issues there."

Site 1_003 Service Lead

"it demonstrates the lack of communication. I've not been invited to any of their – and it's a different Trust. I can't really go and I have never been to [location]. […] Well, I think it's the sort of barrier that you see between Trusts […] There clearly needs to be a clear and agreed management so that the boundary between the two Trusts doesn't cause a problem. […] So close co-operation.

Agreed protocols for discharge and agreed protocols for admission to the ESD and agreed protocols for discharge."

Site 2_011 Stroke Consultant

For these remotely located services in different NHS Trusts, cross-service interpersonal relationships were difficult to establish, attributed to the functional distance between services and hard organisational boundaries **(context)**. Insufficient resources **(context)** influenced RCSS's abilities to engage in cross-service collaborative working with remote stroke units **(mechanism resource)** as RCSS staff could be absent from the service for significant periods which would impact service delivery **(outcome)**.

"I think there are always difficulties. It'd be ideal, I think if we could get in-reach working better. But again, we have never been given the resources to do that. It's expected of you to try and do that with the resources you've got."

Site 2_017 Service Lead

A lack of pre-existing senior management interpersonal relations **(context)** was also thought to hinder cross-service collaboration with remote services located in different NHS Trusts **(mechanism resource)** and impede the development of mutual cross-service confidence and role clarity **(mechanism reasoning)** and delay care transitions **(outcome)**.

"I think that's the first time I've met most of the people in the room. I mean admittedly I've only been here a short time and I've been focusing on acute stroke care. […] if we've not met on a managerial clinical leadership level, how do we expect the staff on the ground to meet and to build confidence?"

Site 2_011 Stroke Consultant

In site 2, the cross-service relationship between the RCSS and the ASU (located within a different NHS Trust) had historically been strained. Service leads had engaged in ad-hoc in-reach activities with the ASU **(mechanism resource)** to develop trusting cross-service relationships **(mechanism reasoning)** and facilitate care transitions **(outcome)**.

> *"When I first took up post, we didn't have a very good relationship with the acute Trust. There was some animosity and I think it was due to a lack of understanding of very different roles. So I particularly have worked on establishing a much better working relationship with the acute Trust. I have done that by being quite visual. […] people actually know my face now. They know who I am. We try and do a little bit of in-reach work into ASU and over that time, we have developed some, I think, trusting clinical relationships"*
>
> Site 2_002 Service Lead

It was acknowledged that cross-service relationships were not well defined nor were care transitions conducted in a timely fashion. During data collection, and as part of a wider initiative, the commissioner in site 2 and senior management across both stroke services initiated a structured pilot in-reach programme **(mechanism resource)**. A senior RCSS physiotherapist was seconded to the ASU for four weeks **(mechanism resource)** with the goal being to develop cross-service relationships and facilitate timely discharges **(outcome)**.

> *"part of my role is to try and facilitate that speed of discharge. I think the other part of my role is to maybe challenge thinking a little bit. So, challenge thinking as to, so why are you wanting to refer that patient to in-patient rehab? Why don't you think they can go home with the community stroke team?"*
>
> Site 2_010 Physiotherapist

> *"being able to have someone in there so the community stroke team can take this patient with confidence and actually start to sort of identify and pull those out. So, we're hoping that that pilot is going to really start to build some really clear and distinctive relationships between the two organisations that will actually facilitate some of these discharges that haven't been happening, for whatever reason. I don't think it's necessarily a negative thing we should be*

saying, but actually this is just around it making a more open process than I think it historically has been."

Site 2_013 Stroke Commissioner

However, the pilot was halted on its second day **(outcome)**. RCSS stakeholders believed ASU staff were unreceptive to RCSS input **(context)**. ASU staff were apparently unaware the physiotherapist was going to be there and made no effort to welcome them **(context)**. Although previous formal meetings concerning the pilot had been positive **(mechanism resource)**, several emails from an RCSS service lead to staff within ASU had been unanswered **(mechanism resource).** The seconded staff member was left feeling isolated and unsupported **(mechanism reasoning)**.

"[other service lead] emailed particular key therapists on ASU about [staff member] involvement in ESD. And of course, in face-to-face meetings, everybody was thinking this was brilliant and really wanting it to happen, etc. But through emails that were sent, we never had any responses at all from key therapists. […] Nobody really talked to her for most of the day and the general consensus of opinion from their perspective is that she would make no difference whatsoever. And that was day one."

Site 2_010 Service Lead

whilst elaborating on reasons why the pilot may not have worked, the service lead in site 2 proffered that cultural differences, historic working practices, and an unreceptive team climate **(context)** were barriers to cross-service collaborative working **(mechanism resource)**. These elements of context were not fully explored before the pilot started, highlighting the importance of understanding the cross-service contextual features and ensuring staff in both services are fully on-board with collaboration. The service lead believed ASU staff did not trust them to provide sufficient care for stroke patients **(mechanism reasoning)**. Previous efforts to engage in cross-service collaboration were one way **(mechanism resource)**, limiting the degree of role clarity achieved by ASU staff **(mechanism reasoning)** which was thought to delay care transitions **(outcome)**.

"there's that sort of cultural block that we know what we're doing. You can't make any changes. And we do everything efficiently. […] I was asked to join the therapists on ASU and come up […] with what we needed to make a significant difference. And every single therapist […] the only thing that would make a difference is if we had enough resources to do double up visits because in their own minds their referrals are all absolutely spot on and they couldn't be done any more quickly. So there's that slight kind of arrogance as well that's always been there really. […] I actually as part of their induction make them [RCSS staff] go and work in [RSU] and I make them go and work in ASU. ASU staff have never, ever worked with us or spent a day with us. And none of them have ever worked in the community."

Site 2_014 Service Lead

Discussion

This section discusses the findings from programme theory four in light of the literature presented in section 2.

Key Findings

1. Functional proximity of RCSSs and stroke units and good interpersonal relationships between service leads positively influence care transitions by facilitating cross-service collaborative activities which promote the development of cross-service trust and role clarity. Same
2. Hard organisational boundaries between NHS Trusts and a lack of interpersonal relationships between service leads creates barriers to cross-service collaboration and negatively impacts care transitions.

Within-NHS Care Transitions

The findings from this research indicate that care transitions occurring from services residing within the same NHS Trusts are influenced by functional proximity. This can be conceptualised as a continuum as the closer services are located, the smoother, more timely and

unproblematic care transitions are likely to be reported and explained by the level of collaborative working occurring between services. Given that good cross-service communication is believed to facilitate care transitions (Waring et al., 2014, Pindus et al., 2018, Lindblom et al., 2020), these findings are consistent with Clarke (2010) and Waring (2014) who both reported that close functional proximity increased opportunities for cross-service communication.

Although the collaborative activities differed between services, they all served the same purpose, to foster the development of cross-service interpersonal relationships, build trust and provide role clarity between services. RCSSs stakeholders who engaged in regular cross-service collaboration and possessed good cross-service interpersonal relationships believed cross-service trust and role clarity were present. These factors were believed to positively influence timely care transitions which support findings from previous research (Suter et al., 2009, Fisher et al., 2011, Chouliara et al., 2013, Kraut et al., 2014, Clarke and Forster, 2015, Miller et al., 2019, Lindblom et al., 2020).

Cross-service collaboration was hindered by functional distance. Service leads with good cross-service interpersonal relationships were instrumental in providing opportunities for cross-service collaboration. These opportunities to engage in cross-service collaboration promoted cross-service trust and role clarity. Cross-service trust took time to establish (Kraut et al., 2016, Hitch et al., 2020) and was influenced by functional proximity and cross-service collaboration. Notably, stakeholders indicated cross-service trust was also contingent upon tangible evidence of continued patient improvement once under the care of the RCSS.

Cross-NHS Trust Care Transitions

Delays or problematic care transitions were more frequently reported when they occurred between NHS Trusts. The hard organisational boundaries between services stymied cross-service collaboration preventing the development of cross-service trust and role clarity. The effect of this is most profound for remotely located services where no interpersonal relationships between service leads or honorary contracts permitting cross-service working existed. RCSSs stakeholders felt referring stroke unit staff did not trust them to provide

intensive rehabilitation at a similar intensity to the stroke unit. This was largely attributed to a lack of role clarity and lack of understanding of the ability of the RCSS. Although referring stroke unit staff were not interviewed for this research, these findings are consistent with previous research (Donnelly et al., 2004, Chouliara et al., 2013, Kraut et al., 2014, Kraut et al., 2016, Hitch et al., 2020).

Good interpersonal relationships between senior management and a supportive organisational climate were felt to be instrumental to facilitate challenges associated with cross-NHS Trust collaboration which is consistent with research by Waring et al., (2014) and Lindblom et al., (Lindblom et al., 2020). Additionally, as demonstrated by the failed in-reach pilot in site 2, the team climate in both services needs to be receptive to collaborative working which echoes findings by Harris (2013).

Whilst it was accepted by stakeholders that cross-service collaboration could facilitate care transitions, remotely located rural services reported challenges in achieving this objective. Given that the collaborative efforts were largely one-way, rurally based services may need additional financial and staffing resources to engage in cross-service collaboration as some activities are resource-intensive. Arguably, stroke pathway rotational posts require the least resourcing, staff constantly rotate through services, learning and sharing cross-service information, establishing interpersonal relationships, and acting as conduits between services. Once established, this could be an effective way of improving cross-service collaboration for stroke services in rural areas.

Delays In Organising Social Care Packages

Within the academic literature, a frequently cited delay is concerned with the organisation of social care packages (Chouliara et al., 2013, Waring et al., 2014, Nanninga et al., 2015). Although this was mentioned by a few stakeholders it was not something frequently discussed, if the voices of the referring stroke unit staff responsible for organising care transfers had been included in this research, this finding may have been more salient.

To conclude, RCSS residing within the same NHS Trust as their referring stroke units and with close functional proximity between services experience smoother, timely and less problematic care transitions. Services remotely located to referring stroke units residing in different NHS Trusts with hard organisational boundaries preventing cross-service collaboration face the biggest challenges associated with care transitions and cite unnecessary delays, inappropriate referrals and incomplete paperwork hindering smooth and timely care transitions in line with the evidence base. Good cross-service interpersonal relationships between senior leadership facilitates cross-service collaboration. In RCSSs where regular cross-service collaboration occurs, cross-service trust and role clarity exist which facilitate smooth, timely and appropriate care transitions and can negate some of the effects of functional distance and hard organisational boundaries.

Chapter Nine
Programme Theory Five: Visit Scheduling

This chapter presents evidence which has informed the development of programme theory five, which is related to visit scheduling. The previous four chapters presented programmes theories that were derived before and refined during data collection. The programme theory presented in this chapter emerged during data collection as stakeholders identified it as facilitating the delivery of evidence-based services. The chapter itself is organised into four sections which are depicted in Figure 7. For ease of navigation, the colours represented in the figure will be represented in each of the sections presented in both headings and tables.

Figure 7 Navigation Diagram For Programme Theory Five: Visit Scheduling

Programme Theory

This section presents the refined programme theory which is presented below and is based upon the culmination of the realist inspired literature review of interdisciplinary working in stroke, findings from the realist evaluation (both of which are presented below), as well as further discussions with individuals from the expert advisors.

Refined Programme Theory

The refined programme theory presented in Table 18 explains how community stroke services in rural areas with high caseloads and large geographical terrains can facilitate the delivery of equitable and efficient services by implementing manual visit scheduling for staff.

Table 18: Refined Programme Theory Five: Visit Scheduling

Context	Mechanism Resource	Mechanism Reasoning	Outcome
RCSSs with high caseloads operating over large geographical areas	Implementing visit scheduling for staff	Results in a shared understanding of service and patient needs	Facilitates equitable and efficient service provision

Literature Review Of Visit Scheduling In Healthcare

The national clinical guidelines for stroke indicate that more organised patient care leads to improved patient outcomes with the understanding that poorly organised services will result in the delivery of sub optimal care (Intercollegiate Stroke Working Party, 2016). However, beyond recommendations that service efficiencies can be realised through adapting the delivery of care and that services should aim to deliver more intensive rehabilitation, there is very little guidance on how they may organise and coordinate themselves to maximise service efficiencies and facilitate the delivery of more intensive rehabilitation for the stroke patients under their care. Not surprisingly therefore, there is no known literature that has investigated the decision-making or practical processes involved in whole service manually coordinated

visit scheduling in community stroke services. Indeed, little is known about this aspect of service delivery generally as it is markedly absent from the healthcare literature. From an in-patient perspective, proactive scheduling of patient rehabilitation sessions in stroke units, commonly referred to as "timetabling" has been associated with improvements in service efficiency, reductions of 'clashing' whereby multiple therapists would try and conduct discipline specific therapy with the same patient at the same time and maximised opportunities for stroke units to deliver more rehabilitation (Clarke et al., 2018). However, the organisation required for community stroke services to schedule patient rehabilitation is more complex than that of in-patient services as there are more variables to consider, travelling time being a major factor. Due to the limited research conducted on visit scheduling the evidence presented below draws upon the fields of 'home health care' (HHC) and 'operational research' with the latter typically using mathematical modelling and algorithms to schedule visits within HHC services.

Visit Scheduling In Home Health Care Services

HHC services providing care to patients in their own homes face challenges in efficiently organising caseloads to minimise travelling time and maximise the amount of time spent delivering care (Lamas-Fernandez, 2021). The act of planning visits is typically conducted between one day to a week in advance (Holm and Angelsen, 2014, Grieco et al., 2020). Schedules need to be flexible to accommodate staff absences, urgent patient referrals, unforeseen events or emergencies as well as changes to visit requirements and are often updated to reflect these circumstances (Restrepo et al., 2020).

Organising schedules to enable continuity of care is considered good practice (Gjevjon et al., 2013) as this is thought to foster the development of trust between patients and the professional caring for them which is associated with better patient outcomes and increased patient satisfaction (Russell and Bowles, 2016, Irani et al., 2018). Continuity of care is associated with quality care. The unpredictable nature of HHC schedules can adversely affect the continuity of care which negatively influences patient satisfaction and professional-patient trust, especially when patients are visited by unfamiliar members of staff.

Incorporating patient preferences, such as the preference to be treated by particular staff members into schedules can improve the overall patient experience and is thought to influence patient engagement and attainment of treatment goals. However, balancing the needs and preferences of patients against the drives to maximise service efficiency make it challenging to deliver continuity of care to all patients; patients are often prioritised, meaning that continuity of care can only be given to some not all patients (Gjevjon et al., 2013).

A good working environment is associated with increased staff satisfaction and better patient outcomes (Gjevjon et al., 2013, Irani et al., 2018). The HHC sector is acknowledged as being a difficult environment within which to work, reports of staff burnout and ill health are common and indeed this topic dominates the HHC literature (Irani et al., 2018). An unintended consequence of continuity of care of patients is that some staff may be adversely affected by this practice, and can be overburdened, particularly when patients present with multiple complex needs. This leaves understaffed HHC services with high staff turnover and sickness rates, all of which negatively impact service delivery (Gjevjon et al., 2013).

Individually Controlled Visit Scheduling

Retaining individual control over diaries and visit scheduling is associated with increased job satisfaction (Garza and Taliaferro, 2021). Professionals controlling their own diaries have been observed to organise schedules to minimise travelling time and maximise productivity; the ability to accurately estimate driving time between appointments was believed to improve with experience in the role (Irani et al., 2018). Professionals were found to automatically incorporate flexibility into schedules by using clinical judgement to allocate the most vulnerable patients to morning visits or scheduling patients requiring additional support on days when their duties were lighter. Scheduling more stable patients for afternoon appointments meant they could easily be moved to another day without compromising their care in the case of unforeseen events (Irani et al., 2018).

Service Level Visit Scheduling

Service level visit scheduling is associated with reductions in service costs and travelling times for health care workers in community settings (Restrepo et al., 2020). Most studies

researching visit scheduling have been conducted with single discipline community nursing teams or services providing social care to patients (Nickel et al., 2012, Irani et al., 2018, Restrepo et al., 2020). No known studies have investigated visit scheduling where patients have been visited by multiple professionals from different disciplines in one day. Traditionally visit scheduling has been conducted manually, and this is still the most common method of operational planning in HHC organisations (Nickel et al., 2012, Holm and Angelsen, 2014, Cissé et al., 2017, Restrepo et al., 2020). Despite this being the most common form, the literature investigating this or understanding the decision making that occurs to determine how visits are organised is largely unknown (Irani et al., 2018, Grieco et al., 2020).

Whole service level visit scheduling is a complex task. It requires not only an understanding of the task, as certain tasks need to be performed at certain times of the day or may require attendance by more than one person, but also the number of staff required to perform all the tasks, alongside the time taken to drive to each destination point as well as the time required to conduct the visit (Holm and Angelsen, 2014). Accurately predicting travelling time is difficult; it has been reported that HHC workers can spend up to 22% of their time travelling between patients (Holm and Angelsen, 2014). Routinely underestimating the driving time and overestimating the number of visits that can be incorporated into a day results in staff feeling stressed and frustrated as they have insufficient time to deliver appropriate care or complete necessary documentation (Holm and Angelsen, 2014).

Using Mathematical Modelling To Schedule Visits

Undertaking manual visit scheduling has been criticised for being laborious, providing sub-optimal and inflexible solutions and for using medically trained personnel instead of those trained in operational planning (Cissé et al., 2017, Nickel et al., 2012, Lamas-Fernandez, 2021). Using mathematical modelling to generate visit schedules has been associated with realising efficiency savings when compared with manual scheduling (Restrepo et al., 2020) and a 20% reduction in travelling time (Eveborn et al., 2006). Given the emphasis upon healthcare services to make efficiency savings and reduce staff travelling time, vehicle route planning dominates the operational research scheduling literature (Grieco et al., 2020). The models

are usually derived using real data, incorporate numerous variables and aim to match the needs and preferences of patients with the skills of the workforce whilst providing the most efficient route possible. Cissé et al., (2017) and Fikar and Hirsch (2017) have reviewed the state of the art technology used to devise the models and algorithms associated with visit scheduling and routing for HHC services.

Common features of the mathematical models include: 1) incorporating frequency of visits, 2) clustering patients into distinct geographic areas thus limiting the areas that staff traverse, 3) starting/ending staff at their home addresses to reduce travel to/from base, 4) incorporating patient preferences such as availability which may be restricted due to other commitments or appointments, 5) skill level required to perform the task, 6) estimating travelling times using geographic information systems, 7) using time windows instead of fixed time slots to introduce flexibility to allow for fluctuations in driving times, 8) workload balance to ensure even distribution of cases throughout the service (Cissé et al., 2017). Although continuity of care is strongly emphasised by service managers and is often described as a quality indicator, it is not often included as a variable within the models (Cissé et al., 2017).

Although the models incorporate many variables, these often create internal conflicts (Lamas-Fernandez, 2021). Shorter driving times may come at the expense of continuity of care with patients allocated to the daily caseload of the staff member working closest to their area. The models are generally tailored to individual single discipline services (e.g., nursing). Although they use real data to solve unique problems this limits the generalisability of the models to other services (Cissé et al., 2017). Additionally, although they use real data to generate the models, very few studies have reached an implementation phase (Cissé et al., 2017, Fikar and Hirsch, 2017, Grieco et al., 2020), therefore little is known about how these models could be feasibly incorporated into a complex healthcare system. Furthermore, problems associated with scheduling visits across professions or organisations has largely been ignored (Grieco et al., 2020). This singular focus is not representative of modern healthcare services which are increasingly becoming more integrated.

To conclude, advance visit scheduling has the potential to realise savings and improve service efficiency. There is no doubt though that it is a complex problem. As a concept, it is an under-researched area of healthcare. No known studies exist which have explored the decision-making practical processes underpinning manually coordinated service level visit scheduling which is believed to be the norm in community healthcare services. The operational research literature has investigated the use of mathematical modelling and algorithms to generate schedules and whilst there is promising evidence that this approach can maximise service efficiency there is a gap between research evidence and implementation into the complex and challenging environment associated with clinical practice.

Realist Evaluation Findings

This section will outline the findings from the realist evaluation for programme theory five, visit scheduling. It will begin by presenting the CMOCs which influence the refined programme theory before discussing each one in turn.

Overview of CMOCs

The three CMOCs depicted in Table 19 on page 223 underpin and influence the refined programme theory detailed in Table 18 on page 217. The first CMOC, 5.1, explains how visit scheduling facilitates the delivery of equitable and efficient services in rural areas. The second CMOC, 5.2, offers an understanding of staff perceptions and concerns associated with visit scheduling and how this can be addressed. The third CMOC, 5.3, explains how visit scheduling can ameliorate the impact of the NHS mileage policy for staff but due to the nature of the policy the impact will never be eradicated for rural services and has the potential to affect staff retention. It is important to note that CMOC 5.1 mainly reflects findings from sites 1 and 2 as structured visit scheduling did not occur in site 3.

CMOC 5.1 Equitable Efficient Service Provision

CMOC 5.1 in Table 19 explains how visit scheduling can facilitate the delivery of efficient and equitable services for rurally based community stroke with high caseloads and limited resources.

Table 19: CMOCs Underpinning Programme Theory Five: Visit Scheduling

CMOC	Context	Mechanism Resource	Mechanism Reasoning	Outcome
5.1 Efficient Equitable Service Provision	RCSSs delivering rehabilitation over large geographical areas with high caseloads and limited resources	Who implement structured visit scheduling performed by skilled RAs using geographic clustering and flexing of staff	Gives rise to a shared understanding of service and patient needs. Staff feel support by colleagues in times of service pressures	Reduces likelihood of visit clashing and facilitates delivery of efficient, and equitable services
5.2 Staff Perceptions	Staff who have historically planned their own diaries and are worried or scared about the lack of diary control	Given time to adjust, a supportive team culture and positive experiences of whole service visit scheduling	Will feel reassured and believe visit scheduling is in the best interests of the service	Worries associated with loss of diary control lessen over time
5.3 Impact of NHS Mileage Policy	RCSSs delivering rehabilitation over large geographic areas where NHS Trusts have adopted the new repayment of business miles policy	Visit scheduling increases efficiency and lessens the impact of the NHS Mileage Policy.	As the impact cannot be eradicated staff continue to experience resentment, unfair treatment, and frustration when the allowance for business miles drops to the lower threshold	Some staff are financially worse off and staff turnover increases

Relevant Contextual Information

Sites 1 and 2 had larger caseloads than site 3. This provided challenges in organising the patient visits and as a result, both implemented some form of manually planned structured visit scheduling. In site 1, whole service level visit scheduling occurred for all staff, whereas in site 2 structured visit scheduling was only undertaken for RAs. In both services, RAs organised the visits. Staff in site 1 referred to the task as 'timetabling'. Visit clashing was not an issue in site 3 for a number of reasons: 1) they only had 6 members of staff working directly in the service at any given time, making it easier to coordinate visits; 2) they had a more flexible approach to visit scheduling with most appointments tentatively arranged and firmed up on the day by the individual members of staff; 3) they held a daily huddle each morning to plan the day's activities and made plans as a team for patient visits; and 4) they did not employ transdisciplinary RAs to deliver daily rehabilitation. This method of organising visits worked

for this service and allowed them to remain flexible to the needs of the in-patient stroke unit, meaning they could accept last minute care transitions.

Maximising Service Efficiencies

Service leads in sites 1 and 2 felt manually planned structured visit scheduling facilitated efficient delivery of intensive rehabilitation to more patients **(outcome)** within existing resources **(context)**.

> *"it makes us very efficient. You know, you're getting four and five, sometimes six patient visits in a day. A lot of teams only work on three patients a day, […] I was actually asked at one point, "How can you see more than three patients in a day?" I'm like, "Well, it's not a problem if you do it properly."*
>
> Site 1_003 Service Lead

> *"we've been saying for quite a long time that we've been just getting busier and busier as a team and more and more stretched. Then my manager pulled up the data and said, "Well, this doesn't make sense because your mileage hasn't gone up," the expenses hadn't gone up, "We would've expected that to have gone up." And I said, "Well, it's just because we're working more efficiently. We are scheduling our visits."*
>
> Site 2_017 Service Lead

Additionally, and of importance in rural services, opportunities for staff to informally communicate were reduced **(context)**. Staff in site 1 acknowledged that errors sometimes occurred with scheduling **(outcome)**, but on the whole they mainly spoke about the positives of centralised visit scheduling **(mechanism resource)**, feeling reassured that visit clashes were minimised or the fact they had increased clinical time **(outcome)**.

> *"if we were all just trying to factor in our own visits we'd all probably want to go at the same time so we do need that degree of a timetable and when we're*

going to go out. And it's very alien because I'm so used to you book your visits, I'm going to come and see you then, and you fit that around everything.

Site 1_004 Occupational Therapist

"I've never known any different, so to me this is amazing and that I don't have to plan my calendar as such. I know around about what visits I want. But then it is kind of done for you. There are some frustrations sometimes, there's sometimes miscommunication and you get sessions put in that maybe you didn't need. But you make the best of that situation and you kind of alter what you do. But, for the most part, I think it works really well. And it saves a lot of time."

Site 1_020 Occupational Therapist

Efficient Use Of Rehabilitation Assistants

Visit scheduling in both services was acknowledged to be a complex and time-consuming task. As site 1 undertook whole service visit scheduling, the task was even more complex. The service lead had previously investigated whether visit scheduling could be performed via a computer program but been told that it wasn't possible due to the complexity associated with service delivery and the number of variables involved **(context)**. Therefore, the service had trained RAs to schedule, taking four of them (two to independently schedule each base) approximately six hours to schedule every week **(mechanism resource)**. They were considered an efficient use of resources as they are less costly to employ than their professionally registered colleagues **(outcome)**.

"It's a very hard job, timetabling. I haven't got many staff at the minute that can do it. I'm getting new staff in and I'm hoping that we create them to make them good timetablers. We used to try everybody having a go at it, but we've realised that the same people doing it and then acquiring the skills to do it well is more important, and they're actually the Band 3 and 4 staff, who are the cheaper staff."

Site 1_003 Service Lead

> *"if you have the same people doing it just by sheer repetition, they'll naturally be more efficient at it. […]. So I think it's hugely beneficial and I think the NHS benefits more from me going out and viewing a patient and assessing a patient and treating a patient rather than me doing timetabling*."
>
> Site 1_010 Physiotherapist

In both services efficient visit scheduling by the RAs was contingent upon good preparation **(context)**. Professionally registered staff determined the number and type of rehabilitation sessions required for each patient and whether it should be delivered by a specific staff member. Failure to provide appropriate information in a timely fashion was frustrating for the schedulers **(mechanism reasoning)** and resulted in delays to the production of the schedule or visit clashes **(outcome)**.

> *"when the Band 3 […] gets to doing the visit planning, […] they have all the information that they need on that page. Sometimes the Band 6s need nagging and it drives Band 3s nuts because, in order to be efficient, that information needs to be given on the Tuesday, really."*
>
> Site 2_002 Service Lead

> *"On a weekly basis, and on the day of us timetabling we get phone calls, "Oh, sorry but this patient's only just told me that they can't do this day" and you've finished with them. And you can guarantee we'd booked them in three visits or two visits for that day and they can't do anything."*
>
> Site 1_005 RA

Observations of MDMs and visit scheduling in site 1, revealed sometimes this planning did not fully take account of service limitations. Some staff frequently overestimated how many visits the service could fulfil in a week, partly due to the high caseload and vacancies/staff absences existing in the service **(context)**. This meant all patients couldn't receive all requested rehabilitation visits **(outcome)**. Often, RAs were left to determine which patients

were the highest priority, leaving some of them feeling underconfident to make that decision **(mechanism reasoning)**.

> *"not all of us are confident enough to make a decision. Because they're quite unrealistic sometimes with the amount of visits that are asked for, […] we do have to make a lot of high-level decisions, and sometimes we are ringing them up to say, "Look, who do you think – does this need to be a priority?"*
>
> Site 1_012 RA

Additionally, ensuring continuity of care was incorporated within the schedules was a priority in both services **(mechanism resource)** as it was believed to boost confidence and build rapport between staff and patients **(mechanism reasoning)**. However, stakeholders accepted that at times it was impossible to provide this for all patients all the time **(outcome)**. Reasons included high caseload, staff absences, patient commitments and geographical location of all patients **(context)** and despite this negative aspect stakeholders still believed visit scheduling **(mechanism resource)** was the best way for the service to maximise overall delivery of rehabilitation.

> *"[we] try to get the same RAs to that same patient because you build a rapport up with them. And they know you and you can get their confidence. So, we try to do that. If not, then we always sort of like have another RA that knows that patient as well. […] But sometimes geographically it just – it can't happen. When some patients are like an hour's drive away and other patients are five minutes away, and trying to get them all in. And then you have to fit them in with the hospital appointments or going off here or they're doing that, or around carers. In care homes, you have to fit in around their lunches and things like that, so it can be pretty demanding.*
>
> Site 1_005 RA

Geographic Clustering

All services utilised a technique referred to as clustering **(mechanism resource)**. Clustering involved locating a staff member in a geographical location and delivering rehabilitation to patients within that area. Schedulers used patient postcodes and websites such as Google

Maps to determine travelling distances and the location of patient houses. In site 3, clustering was attributed with service efficiency but it was more informally implemented than in the other two services. Staff would try and locate themselves in a particular geographic region and see as many patients from that area during the course of the day as they could. In sites 1 and 2, clustering was attributed with increasing efficiency, reducing costs and maximising the delivery of rehabilitation **(outcome)**. To ensure patient preferences were not compromised, pertinent information was collated at the MDM and incorporated into the schedule **(context)**. Details included type of rehabilitation, other patient appointments, and whether delivery of rehabilitation was required by particular members of staff. Additionally, the schedulers all possessed pertinent information about staff in the service, such as where they lived, whether they were required to collect/drop off at day care at set time slots and whether they worked part-time and how flexible their working day could be **(mechanism resource)**. The information was not written down anywhere, it was information acquired over time but was helpful to the schedulers as it helped them with maximising efficiency as staff were frequently allocated to start or end their working day near their own homes or day care facility if appropriate **(outcome)**.

> *"you can start earlier, and you don't have to allow travel time for them to get there, because they already live in that area. That's something that the timetablers just have to be aware of, who lives where, and there's nothing written or formal about it, it's just an awareness of who lives where."*
>
> Site 1_009 RA

> *"having the geography in mind so that they do sensible visit planning and they also are good at thinking about where their colleagues live. So for example, a PADL [Personal Activities of Daily Living] call that might take place at eight o'clock in [location], oh [name is] on that day. She lives in [location], so it's best slotting her in to go from home to that patient's call. So they've got in mind the geography, they've got in mind where their colleagues live and they distribute them fairly"*
>
> Site 2_002 Service Lead

Effective clustering **(mechanism resource)** was easier to achieve with generic RAs than with the professionally registered staff as RAs were able to deliver all aspects of rehabilitation **(context)** so it was easier to locate them in a geographic locale for a day.

Equitable Service Provision

Effective communication between schedulers across both bases gave rise to a shared understanding of service pressures **(mechanism reasoning)** and lead to the flexing of staff, which facilitated the delivery of equitable service across the county **(outcome)**. Referrals fluctuated and services experienced temporary staff shortages resulting in insufficient staff in one base to deliver rehabilitation **(context)**. Service leads in both services encouraged communication between the north and the south schedulers **(mechanism resource)**. In site 1, schedulers from both bases were co-located in the same room, undertaking visit scheduling for their respective bases simultaneously **(mechanism resource)**. Co-location **(context)** provided opportunities for the schedulers to engage in opportunistic dialogue **(mechanism resource)** which resulted in the flexing of staff **(outcome)**. Observations of this task revealed schedulers negotiated and swapped key members of staff. For example, one team was observed to ask to *"can we borrow an OT for an afternoon*" and the reply given was *"yes, maybe, if we can have [named person] for a few hours one day"*.

> *it used to be separate, and then we wouldn't help each other out as much, because it'd be a telephone call, we're not there just to talk to each other. […] it's an effort to call the office, get transferred, it's just easy if you're next to each other, because then as well, when you're coming to the end, they might be like, oh how're you doing, we're really busy, okay we take them for the day, or ask, can we have, have you got anyone we can have for an afternoon. It's just easier if you're there, it's about the conversation.*
>
> Site 1_009 RA

> *"I think having the timetablers down here now, talking to each other, I think that helps. Because before now they'd do their own thing up there, we'd do*

down here. Whereas here now they will share and say, "We're really down on OT, can we have an OT for a day?" And they can negotiate it."

Site 1_004 Occupational Therapist

Site 2 operated slightly differently; they were commissioned for RAs to deliver up to four reablement therapy calls a day for some patients **(context)**. They were often required to take new stroke unit referrals at short notice **(context)** and if this level of rehabilitation was required it was an intensive task to deliver. To ensure inter-service equity, the north and south service leads communicated daily with each other **(mechanism resource)** and were therefore aware of fluctuating service pressures. Solutions to these kinds of service pressures included seconding staff members to one base to cover prolonged absences and informally flexing staff to ensure service equity **(outcome)**. Informal flexing was more likely to occur with RAs. Additionally, the territories demarking the geographic boundaries covered by the respective bases could fluctuate. At the time of data collection, the north base had extended its geographic area slightly further south allowing them to take referrals and alleviate pressure on the south base without the need for any additional formal or informal communication **(outcome)**.

"[we] converse on a daily basis, either by telephone or by meeting face to face, so we know what's going on with each other's team […] When they do our visit planning, they quite often take a peek, look at what's going on in the north. […] one of my rehab assistants actually said, 'Gosh, they've got a load more patients on their caseload than we have at the moment. Can we help in any way?' So they do look at both areas. […] they historically hated doing long journeys, but I've made it absolutely clear that […] we're a county-wide service, so what needs must and it's just tough luck if they have to do a long journey."

Site 1_002 Service Lead

When asked, most stakeholders were adamant that all patients received the rehabilitation that they required **(outcome)** regardless of where they lived **(context)**. However, some did confide that even with efficient visit scheduling **(mechanism resource)** and especially in times

of high caseloads **(context)** it was not always possible to deliver rehabilitation the appropriate rehabilitation to everyone. The implication was patients living further away from the RCSS bases did not receive as much rehabilitation or more generally, the service was not able to deliver as many rehabilitation sessions due to the time spent travelling **(outcome)**.

> *"We don't have a situation where we say, oh, they're a bit far away, so we're not going to give it to them. But it does have a big hit on our service because if it takes forty-five minutes to an hour to get there and get back, if you haven't got any other patients in that area, that's three hours gone. But they will get it. It will be equitable."*
>
> Site 1_002 Physiotherapist

> *" it's 80 miles to get there from here. And that's without traffic so it's just far, it's just really long. Say they need, I don't know, daily doubles, five days a week, they're just not going to get it. We just don't have the manpower to be able to even fill that […] That's just how it is. So, it is in the sense of the closer you are (laughs) to the hospital or the more convenient you are to the place, probably the more times you're going to get seen."*
>
> Site 1_007 RA

CMOC 5.2 Staff Perceptions Of Visit Scheduling

CMOC 5.2 detailed in Table 19 on page 223 offers an understanding that feelings of disempowerment associated with loss of diary control can lessen over time.

Relevant Contextual Information

Professionally registered staff in sites 2 and 3 controlled their own diaries. In site 1, staff were required to preload electronic calendars with fixed events such as annual leave, supervision, training, and admin time etc. These activities were considered protected, and the schedulers were not allowed to change them. Though in practice, observations revealed that an activity such as admin time was more likely to be moved slightly to accommodate patient visits, staff

were quite accommodating of this practice as the actual period time was still protected, just occurring at a slightly different time.

Loss Of Autonomy

It was acknowledged by stakeholders in site 1 that structured service level visit scheduling **(mechanism resource)** was not the norm in community services **(context)**. New staff often struggled or found the lack of control of their diaries disconcerting **(mechanism reasoning)**. Most stakeholders acknowledged that over time they got used to the idea and presumably following positive experiences in the service they believed overall improvements in service efficiency and increased clinical time **(outcome)** were benefits to the strategy.

> *"it was a system that most of us who've worked in the community historically aren't used to in that you hold your own diary and sort out your own appointments, […] I think if senior staff had been used to holding their own diaries, initially there's a bit of resistance to it because you're not effectively in control of your own diary."*
>
> Site 1_003 Service Lead

> *" I guess if you feel less comfortable with someone else having that degree of control, I can understand why you wouldn't want that. But then I've not yet talked to anyone who joined physiotherapy because they wanted to […] plan their own diary or anything like that. I get to go out and see patients. I just do that all day, so it's awesome."*
>
> Site 1_010 Physiotherapist

One relatively new member of staff did report trying to retain as much control of their own diaries by pre-inserting rehabilitation visits into their electronic diary, arguing this strategy was in the best interest of their patients.

"It is really hard. And I am the rogue one; I put in my visits as much as I can do for the following week. And I know it annoys the […] timetablers, but it makes sense to me. It keeps me sane. It stops my visits being shoehorned in at [inconvenient] times […] if we go in at half eight in the morning to do a communication assessment and turn up when the carers are there giving the person their breakfast, or they're having a wash and a dress, or that person's still in bed because they don't get out of bed until nine o'clock in the morning, where is the sense in that? There is no sense in it."

Site 1_016 Speech and Language Therapist

When staff in the other two services were asked if they thought structured whole service visit scheduling could work for their service **(mechanism resource)**, they overwhelmingly thought it could not. Stakeholders had huge reservations **(mechanism reasoning)** about handing over control of their diaries to RAs, these concerns centred around the capability of RAs to appropriately allocate time for individual patients, a lack of IT infrastructure to support the initiative as they used paper-based diaries and concern they would be left unable to flexibly respond to patient needs and discharges from stroke units **(outcome)**.

"From how our team works, I don't think that would work here. I'm full time but there are other members of staff that are part-time and I think it would just get a bit confusing; you know, not having access to everybody's diary electronically either. […] I don't know whether it's a bit of control from me, […] So I think it would be difficult here. And yet even more so for the part timers."

Site 2_006 Physiotherapist

"Even on a day to day basis, we plan things. […] Obviously things happen. New people get referred. […] So if we've already planned our week and everyone's out and we've got a new person that we're seeing and you need two members of staff, that's not very helpful. Things come up. Patients sometimes ring in in the morning, they might get worse. They're struggling to stand, they're

struggling to get out of bed and we might need to rush there and change. […] things change on a daily basis"

Site 3_014 Occupational Therapist

Only one staff member in the other two services believed whole service visit scheduling could work and that was an RA in site 2 who had become increasingly frustrated **(mechanism reasoning)** with visit clashing. At the time of the interview, there had been several occasions where professionally registered members of staff had failed to fully update the RAs with their visits for the week **(mechanism resource)**, meaning when RAs turned up to deliver rehabilitation another member of the stroke team was already there **(outcome)**.

" sometimes you get the qualifieds and they put the visits in the diary, they don't tell us, so it doesn't go on the sheet, so very often we'll turn up to somewhere, qualified will already be there, or we'll turn up and they say, "Oh, so and so's just been half an hour before you." So, I think if we could plan in their diary for them […] It would stop all of this, "Oh, well so and so's been just now." You know, we've got two people driving to the same place within half an hour of each other. Pointless."

Site 2_003 RA

CMOC 5.3 Alleviating The Impact Of The NHS Mileage Policy

CMOC 5.3 depicted in Table 19 on page 223 explains how although visit scheduling can ameliorate some of the effects of the NHS mileage policy, it will never eradicate them. The policy has the potential to significantly impact staff retention as some staff are financially worse off and seek new employment.

Relevant Contextual Information

A natural consequence of rural services delivering rehabilitation is that the miles they travel within the course of their duties can be significant. In 2013, an Agenda for Change review recommended implementing a standardised policy for reimbursement of business miles (NHS

Employers, 2017). The scheme is not mandatory, individual NHS trusts may make alternative local arrangements. The new scheme reimburses staff using their own cars 56 pence per mile for the first 3500 miles and 20 pence per mile thereafter. Using data shared from site 1, under the old arrangement, the staff were reimbursed at a flat rate of 44 pence per mile and received an annual sum towards vehicle maintenance which varied according to engine size.

Stakeholders across all three sites felt they were unfairly penalised and financially worse off under the new scheme as they travelled significantly more than 3500 miles per annum **(context)**. To some extent visit scheduling, incorporating geographic clustering, starting and ending the working day close to staff homes **(mechanism resource)** alleviated some of the impact of this policy as it facilitated service efficiency enabling the delivery of more rehabilitation within existing resources. However, given the relatively low threshold before the mileage allowance dropped this policy continued to affect all services **(outcome)**.

Disproportionate Impact Of The Reimbursement Of Business Miles Policy

The policy appeared to negatively impact the generically trained RAs in sites 1 and 2 the most **(outcome)** as they were the ones accruing the most miles in the service with some of them really struggling financially when rates dropped **(mechanism resource)**. Overall, the policy resulted in feelings of frustration and resentment **(mechanism reasoning)** with staff in all services.

> *" I know some colleagues have been and got credit cards so they know that they've got their petrol money. I've known some people that have reduced in their food bills so that they know they've got that money to be able to get to work. […] I feel I pay to go to work. I certainly do."*
>
> Site 1_005 RA

> *"I am frustrated by it and I know a lot of the team are frustrated by it, and they almost start to resent driving to visits, because they know that, yeah they're not getting covered for as much. I think it's worse for the rehab assistants than it is for the qualifieds, they do a lot more miles than we do. "*

Site 2_004 Occupational Therapist

Adding to these feelings of unfairness and resentment **(mechanism reasoning)**, stakeholders in sites 1 and 2 felt they were unfairly treated in respect to other community teams which often have significantly smaller areas to cover than RCSSs and therefore may not hit the mileage threshold **(context)**.

> *"Yeah, we do the most miles. Yes, it can, we can all get a bit down about it. […] the district nurses and that who are more local, they get the same mileage as we do, and because like we cover a much bigger area, we feel we should get more mileage payments, but no."*

Site 2_005 RA

In site 1 RCSS staff were reimbursed at different rates as the speech and language therapists were employed by the Community NHS Trust who had not implemented the new policy **(mechanism resource)**. Feelings of resentment and frustration **(mechanism reasoning)** were exacerbated at this site with staff feeling the repayment of business miles unfairly distributed within the service **(outcome)**.

> *"so the two speech and language therapists are actually – they've opted in to the new agreement so they're actually getting paid more than anyone else, yeah. And they're a band 6 and a band 7. […] I think people got so irate about the mileage that now they could just ban all car payments and no one would care anymore and they've sort of let them know they don't care anymore. So people just accept it as a failure."*

Site 1_007 RA

> *"They've put together a new package that ticks the boxes for us to pay back our staff what they should be paid, for us not to have staff migrate elsewhere. […] no one is happy here about this happening. And I really do feel for them because they're employed by a trust whose stock-in-trade is acute care. Very*

few of their staff are community-based, so they've not got a vested interest in looking at that, dealing with it and putting together a package that is beneficial to their community staff. […] I think, within an MTD when you've got different people on different benefit systems, it's incredibly divisive. Really, really divisive."

Site 1_016 Speech and Language Therapist

Service leads in sites 1 and 2 were concerned **(mechanism reasoning)** about the impact the policy **(mechanism resource)** was having on staff retention. It takes time to fully train generic RAs, and staff migration to other services would affect service delivery. During data collection, a RA in site 1 resigned citing the unfair mileage policy as the reason **(outcome)**.

"I will lose staff to the Community Trust because they will get a lot more for mileage. I really hammered the fact that on our doorstep and my staff are very well qualified and will get those jobs easily, […] And I kept hammering the recruitment cost, you know the fact that I've got to now recruit somebody else"

Site 1_019 Service Lead

"So we're down to the 20p a mile by Christmas, us rehabs are. […] That is the one thing that makes me want to leave this job is the pay for the travelling."

Site 2_003 RA

Although all services raised the issue within their own NHS Trust none of them have it resolved in their favour **(outcome)**, the general feeling among staff was their concerns were not important enough to be considered **(mechanism reasoning)**.

"I have, on a number of occasions, tried to tackle this issue with our own finance department and various other senior people that have kind of laid low and never got back to me"

Site 2_002 Service Lead

"I'm now bringing that back up to higher management and I'm going to investigate other ways of dealing with it, because I am completely, completely fed up with it. […] it's kept coming up and people do just shake their heads in a "Nothing's ever going to be done," you know, attitude, which is poor. And they do feel, certainly as a community team in an acute Trust, they do feel that quite a lot of their issues are ignored."

Site 1_003 Service Lead

"when we bring it up at our meetings it makes me feel like we're just moaning and we're mardy."

Site 3_015 Nurse

Discussion

This section discusses the findings from programme theory five in light of the literature presented in section 2.

Key Findings

1. Structured visit scheduling performed by skilled RAs is attributed with increasing service efficiency and maximising the delivery of rehabilitation in rurally based community stroke services, especially in services with high caseloads.
2. Hesitancy associated with relinquishing diary control was observed in site 1 and voiced by stakeholders in the other two sites. Findings from site 1 indicate these worries can be ameliorated with time and the understanding of the benefits of service efficiency and increased clinical time.
3. The repayment of business miles has impacted staff working in rural services and disproportionally affects generically trained RAs due to the miles they travel. Visit scheduling can ameliorate the impact but never eradicate it; this policy has the potential to affect service retention.

Service Efficiency

Structured manual visit scheduling performed by RAs allowed the two services with high caseloads to be more efficiently organised, minimising travelling time and costs and maximising opportunities to deliver rehabilitation which echoes findings by (Restrepo et al., 2020). As the limited healthcare research available on visit scheduling has concentrated on single disciplines in social care or nursing (Nickel et al., 2012, Irani et al., 2018, Restrepo et al., 2020), the findings from this research cast some light on the practicalities and challenges associated with how complexly organised stroke services implement manual visit scheduling. These findings also add support to the findings from in-patient stroke services which found that 'timetabling' patients for rehabilitation sessions maximised service efficiency (Clarke et al., 2018).

Staff Perceptions Of Visit Scheduling

Structured whole service visit scheduling is not the norm in community services where traditionally staff control their own diaries, a practice which the literature indicates is associated with increased job satisfaction (Garza and Taliaferro, 2021). However, the findings from this research present a mixed picture concerning this issue. It was acknowledged that new staff often struggle with relinquishing control of their diaries, some even referring to it as a scary prospect. However, given time, they adjusted to the new way of working and appreciated its benefits for themselves, their patients, and the service. Interestingly, in services where staff still retained diary control most stakeholders were against implementing whole service visit scheduling This reluctance was attributed to concern about losing the ability to flexibly respond to patient needs and discharges from stroke units as well as a lack of trust in RAs to organise their schedules appropriately and efficiently. These findings indicate that implementing such an organisational change in community stroke services is likely to be met with some resistance and efforts will need to be made to ensure that, schedulers are appropriately trained, and staff are reassured and fully on board with the concept before it is initiated.

Research has indicated that visit scheduling can exacerbate workplace stress as accurately predicting travelling time and appointment duration is difficult, leading to overburdened staff with insufficient time to complete all visits (Holm and Angelsen, 2014). These issues were not

reported by stakeholders in the current research perhaps partly explained by the level of local knowledge acquired by the schedulers and the use of websites to predict travelling time. Instead, professionally registered staff valued the increased clinical time and believed visit scheduling reduced visit clashing, something which is more of a concern in complexly organised services where multiple therapists deliver daily rehabilitation. Whilst it was acknowledged that mistakes occurred in scheduling, most stakeholders felt they were easy to rectify and didn't have too much impact.

In line with findings from Gjevjon et al., (2013), the schedulers could not always guarantee continuity of care for all patients. High caseloads, patient commitments and restrictions associated with geographic clustering were attributed as reasons limiting continuity of care for some patients. Despite this outcome, stakeholders still believed visit scheduling was the most efficient way for the service as a whole to organise patient visits.

Computer Modelling

It is acknowledged in the literature that manual visit scheduling is a complex time-consuming task (Cissé et al., 2017, Nickel et al., 2012, Lamas-Fernandez, 2021), something which was echoed by stakeholders in both services. Staff in site 1 had researched whether computer modelling software could be purchased to perform the task more efficiently. Currently, there is no suitable software available for the healthcare market which can accommodate all of the variables required by complexly organised services such as these. This is consistent with findings reported within the academic literature, where not only is research into complexly organised services completely absent but studies into the implementation of computer modelling are limited (Cissé et al., 2017, Fikar and Hirsch, 2017, Grieco et al., 2020).

NHS Repayment Of Business Miles Policy

These findings also indicate that the NHS policy associated with the repayment of business miles has the potential to significantly impact staff retention and service delivery, especially for rural services. Although visit scheduling can ameliorate the impact of the policy through streamlining service efficiency, due to the higher mileage repayment threshold being so low, community stroke services delivering rehabilitation across large rural areas will continue to

be impacted by the policy. Although generically trained RAs in sites 1 and 2 were disproportionately affected, staff in all three services felt the policy was unfair and penalised efficient services. RAs were the lowest-paid members of clinical staff and stakeholders believed they suffered the most when the reimbursement rate dropped following 3500 miles per annum. As outlined in programme theory two, services invest significant resources to fully train RAs over several months, several RAs had considered resigning with one RA resigning during data collection citing the mileage policy as their main reason during the exit interview.

To conclude, visit scheduling allows services to effectively utilise resources to increase service efficiency and service delivery within existing financial and staffing resources. However, although this is in the best interests of the overall service it has the potential to negatively impact the wellbeing of staff in the service. Any implementation of this initiative into services where staff have historically planned their own diaries needs to account for high levels of staff reluctance and lack of trust associated with the loss of diary control; these feelings will likely be eased following a period of adjustment and positive experiences of visit scheduling.

Chapter 10
General Discussion

This final chapter begins with a brief overview of the research aim before going on to place the research in the wider context of community stroke service delivery. The key findings from each programme theory are individually presented and discussed and recommendations for service organisation and avenues for future research are outlined for each programme theory. The challenges of conducting realist research limitations of this research are then discussed before outlining advice for future students new to the realist methods.

Aim Of The Research

This PhD research aimed to build theory-based explanations for the delivery of evidence-based community stroke services in rural England by understanding how service configuration and service organisation influenced evidence-based service delivery in line with national clinical guidelines. In line with realist methods, it sought to determine what works, for whom, under what circumstances and to what extent.

Community stroke services delivering ESD have existed in the UK since the mid-1990s and although commissioning of new services has steadily increased in England, service provision is still patchy, particularly in rural areas (Royal College of Physicians, 2015, Fisher et al., 2020). Multiple RCTs demonstrating the efficacy of ESD in improving patient outcomes have been synthesised in several Cochrane reviews (Early Supported Discharge Trialists and Langhorne, 2001, 2005, Fearon et al., 2012, Langhorne et al., 2017) and the delivery of ESD is recommended within the national clinical guideline for stroke for patients presenting with mild to moderate stroke (Intercollegiate Stroke Working Party, 2016). However, most of the RCTs researching ESD have been conducted in urban settings, leaving it unclear whether evidence-based services delivering ESD could be provided in line with the national clinical guidelines in rural areas (Fisher et al., 2011, Fearon et al., 2012, Langhorne et al., 2017, Fisher et al., 2019, Fisher et al., 2020).

The core structural and organisational components of ESD services thought to facilitate the delivery of evidence-based services have been influenced by the evidence-based components

identified in in-patient stroke units (Stroke Unit Trialists' Collaboration, 1997, Langhorne and Pollock, 2002, Langhorne et al., 2020). These core components are 1) stroke specialist multidisciplinary team care, 2) access to stroke specialist training, 3) regular meetings to discuss patients, and 4) services organised by coordinators with good links to in-patient stroke units to facilitate care transitions (Fisher et al., 2011). These core components were identified through international expert consensus and are considered hallmark features of evidence-based community stroke services delivering ESD (Fisher et al., 2011). They have been incorporated into the national clinical guideline for stroke (Intercollegiate Stroke Working Party, 2016) and service adherence to them was collated by the SSNAP phase 2 post-acute organisational audit (Royal College of Physicians, 2015).

This PhD research, a theory-building realist evaluation, has investigated how these organisational core components facilitate the delivery of evidence-based community stroke services providing ESD in line with the clinical guidelines for stroke in rural areas of England. Previous research conducted in this area has largely concentrated on determining the efficacy of ESD or in understanding challenges associated with implementing ESD services into clinical practice and has therefore given a limited understanding of *'how'* the organisation of stroke services or the adoption of core components influences the delivery of evidence-based services. The findings from this PhD, complement existing guidelines and international consensus statements whilst providing a richer and deeper understanding of how service configuration and organisation facilitates evidence-based service delivery in rural areas of England. Additionally, using exemplar services, identified as evidence-based from the SSNAP phase two post-acute national audit, the programme theories developed as part of this research provide an insight into the contexts and mechanisms influencing how the core components work to facilitate the delivery of evidence-based community stroke services in rural areas. By researching stroke services in real-world clinical settings, it has uncovered some of the layers of complexity associated with service delivery. Two of these services, sites 1 and 2, could be described as integrated community stroke services. They offered ESD to patients deemed eligible, alongside a broader, longer-term model referred to as community stroke rehabilitation. Patients deemed not eligible for ESD, could be offered community stroke rehabilitation if appropriate and this was generally less intensive but available for

longer. As indicated in chapters three and four, these services had multiple registrations in the SSNAP and in the case of site 1, the filtering criteria used to identify evidence-based services also identified the CRT element which also adhered to evidence-based recommendations. this research focused on how these services were delivering ESD as part of a wider community stroke service. Given that integrated services are now being recommended nationally (National Stroke Programme, 2021) , findings from this research offer an important insight into how organisational attributes can be configured and adapted to local contextual features to facilitate the delivery of evidence based services.

In conclusion, the findings provide valuable lessons and insights for community stroke services in both rural and urban areas. Furthermore, due to the similarity in the service models of community and in-patient stroke services, it is likely that some of the recommendations from this PhD will apply to in-patient settings as well.

Summary Of Programme Theories

This section individually summarises the findings from each programme theory and locates the findings within the wider context of the evidence-based core components as identified through the international consensus and national clinical guidelines. These findings have identified the importance of conducive contexts in producing favourable outcomes (i.e., the delivery of evidence-based services) and have demonstrated ways in which individual service organisation facilitates adherence to evidence-based standards. The findings also highlight strategies that these rural services have employed to negate the effects of countervailing contexts. The section also provides recommendations to facilitate the delivery of evidence-based services in line with national clinical guidelines and are provided for service leads to consider implementing within their own services.

Additionally, this section also outlines avenues that could be pursued by future research. Due to the paucity of research investigating community stroke services, several avenues can be pursued by researchers wishing to further develop the programme theories presented in this research or develop and test specific interventions based upon the findings mentioned above. The James Lind Alliance has recently highlighted the need for more rehabilitation research

and has published a Stroke Priority Setting Partnership (https://www.jla.nihr.ac.uk/priority-setting-partnerships/Stroke/). Two lists of Top 10 priorities were produced, the first focusing on stroke prevention, pre-hospital and hospital care. The second list is of relevance to this PhD and focusses on stroke rehabilitation and long-term care. The recommendations arising from this PhD thesis are in line with several of the priorities, particularly the fifth one which calls for research to investigate how community stroke services can be resourced and organised in all regions to provide rehabilitation to people in their own homes and meet the needs of all stroke survivors.

Given that organised stroke units and community stroke services delivering ESD have been recommended since the 1990s and that the core components influencing the delivery of these services have been identified and are included as evidence-based criteria in the SSNAP it is surprising to note the lack of research in the area. Indeed, more preliminary research investigating some of the influence of the organisation and structure of stroke services, in general, would have been very welcome and would have helped to guide and focus this initial PhD research.

This PhD research, a theory-building realist evaluation has developed theories to explain how the individual core components outlined above, alongside a new theory that emerged during data collection relating to visit scheduling facilitated the delivery of evidence-based community stroke services delivering ESD and non ESD rehabilitation in rural areas of England. If the programme theories are viewed holistically, programme theory one: the multidisciplinary team and interdisciplinary working could be considered the central theory. Above all, services need a comprehensive team composition with all staff working in either an inter or transdisciplinary way. These factors of team composition and inter and transdisciplinary working provide the backdrop for the other programme theories. For instance, programme theory two focuses on how staff develop inter and transdisciplinary skills and knowledge and programme theory three explores how MDMs provide opportunities for interdisciplinary discussions to occur as interdisciplinary communication is an important aspect of inter and transdisciplinary working. The link with programme theory four, care transitions, is less obvious, but the ability for seamless care transitions to occur and intensive

delivery of rehabilitation to commence is contingent upon the inter and transdisciplinary working of services. In sites 1 and 2, early intensive rehabilitation is delivered by transdisciplinary RAs. This method of operating allows services to be responsive and flexible to the fluctuating demands of stroke units. Programme theory five, visit scheduling, is also contingent upon inter and transdisciplinary working as more efficient scheduling of transdisciplinary staff allows for a more efficient allocation of resources and maximises service capacity and the delivery of intensive rehabilitation to patients.

Programme Theory One: The Multidisciplinary Team And Interdisciplinary Working

Overview

Programme Theory One, presented in chapter 5 identified the importance of a comprehensive multidisciplinary team. This is consistent with the organisational core components and the national clinical guidelines as a comprehensive MDT can provide care from all disciplines (Fisher et al., 2011, Fearon et al., 2012, Langhorne et al., 2017, Intercollegiate Stroke Working Party, 2016). However, this research does add weight to new draft national recommendations concerning the configuration of staffing of community stroke services (NHS England, 2021) (N.B. it should be noted the service specifications are not yet incorporated into policy) which has emphasised the roles of service lead, generically trained RAs and administrators as integral members of RCSSs. These findings have provided detail explaining how these team members streamlined service efficiency, facilitated the intensive delivery of rehabilitation to patients and ensured the delivery of evidence-based service in line with national clinical guidelines. Crucially from a service configuration point of view the number of RAs employed was significantly more than indicated in staffing recommendations. RAs are less expensive members of staff compared to their professionally registered counterparts and in rural areas struggling to deliver rehabilitation, employing more RAs may help to increase service capacity and the delivery of equitable evidence-based services.

However, comprehensive team composition alone was not sufficient for evidence-based service delivery. Large geographical terrains and high caseloads made it challenging for these

rural services to provide the recommended intensity of rehabilitation to all patients. Inter and transdisciplinary teamworking facilitated this outcome but could only be achieved with comprehensive team composition and a supportive team climate. The presence of inter and transdisciplinary teamworking has been observed in in-patient stroke units (Garraway et al., 1980, Stevens et al., 1984, Wood-Dauphinee et al., 1984, Kalra et al., 1993, Indredavik et al., 1999, Clarke, 2010) trials but it wasn't clear how it facilitated patient outcomes (Langhorne and Pollock, 2002). This research suggests that in community stroke settings, inter and transdisciplinary working practices facilitated the delivery of holistic, equitable and efficient services. In rural services, this approach to teamworking can be extremely beneficial as it reduces the need for additional patient visits to be factored into service schedules. Given the fact that the core components of in-patient stroke units have influenced the organisation of community stroke teams delivering ESD, there is likely to be somewhat of a similarity in how the teamworking practices across these services as well. These findings do complement existing research (Clarke, 2010, Clarke and Forster, 2015) and indicate that stroke services across the entire stroke pathway may benefit from engaging in more inter and transdisciplinary working.

The national shortage of clinical psychologists is well documented (National Audit Office, 2010, Intercollegiate Stroke Working Party, 2016, Stroke Sentinel National Audit Programme, 2019, NHS Improvement, 2011); but the impact that this shortage has on interdisciplinary teamworking is unknown. The findings from this research indicate that staff keenly felt the absence of this discipline within the team composition. Not only did a lack of psychologists result in unmet rehabilitation needs for patients, but it also negatively impacted staff self-confidence as they felt they did not possess sufficient knowledge or skills to deal with the psychological needs of patients which is consistent with the limited academic literature in this area (Morris, 2016, Tang et al., 2017).

Recommendations For Services

- Stroke services should have a comprehensive team composition. Alongside the core MDT professions of physiotherapy, occupational therapy, speech and language therapy and nursing commonly found in services, service leads, administrators,

transdisciplinary RAs, and psychologists should all be considered integral members of the team.

- Rural services may need additional resources to upwardly adjust the staffing of RAs to enable intensive rehabilitation delivery. These essential members of staff need to be appropriately trained to work within services who are engaging in inter and transdisciplinary working.
- Service leads should promote and empower staff to develop skill sets to enable the delivery of inter and transdisciplinary working. In addition to the provision of more patient-centred holistic care, this method of working streamlines service efficiency, increases service capacity and facilitates the delivery of equitable and intensive rehabilitation for all patients. This is central to the delivery of evidence-based services in rural areas, especially for those experiencing high caseloads.

Future Research

- Future research could explore the role that transdisciplinary RAs, administrators and service leads play in facilitating patient outcomes and the delivery of evidence-based services.
- Future research could also focus on determining the optimum level of inter and transdisciplinary working and whether this differs between in-patient stroke units and community stroke services, both in urban and rural areas.

Programme Theory Two: Inter and Transdisciplinary Training

Summary

Programme theory two focussed on inter and transdisciplinary training; this theory is inextricably linked with programme theory one as staff are unable to work in inter or transdisciplinary manners if they do not possess the appropriate skills or knowledge. It is recommended that staff working in stroke services receive stroke specialist training (Intercollegiate Stroke Working Party, 2016, Fisher et al., 2011). Given the lack of specificity in the guidelines relating to the type of training, it could be assumed that training is focused on the acquisition of discipline-specific stroke skills. However, the findings from programme theory one, indicate that inter and transdisciplinary teamworking are integral to the delivery

of evidence-based services. As noted above, inter and transdisciplinary working practices have been observed in in-patient stroke units, but the process by which staff acquire inter and transdisciplinary knowledge is overlooked in the literature. The findings from this programme theory provide an insight as to how professionally registered staff, RAs and administrators initially acquire and subsequently develop inter and transdisciplinary skills. Due to the lack of formalised accredited inter and transdisciplinary training avenues, these skills and knowledge were provided in-house, over time and with experience in the role which is consistent with previous research on training in stroke services (Craig and Smith, 2008, Jones et al., 2018).

Although very little is known across healthcare as to how RAs are trained, the presence of inter-staff trust is associated with an increase in delegating duties to RAs (Hancock et al., 2005, Storey, 2005). The findings from this research suggest that comprehensive competency-based transdisciplinary programmes delivered in-house, not only provide RAs with appropriate knowledge, skills and confidence to engage in transdisciplinary working which echoes findings from HCA training from acute stroke units (Carr, 2015) but it also facilitates the development of inter-staff trust. The extent to which RAs felt confident with transdisciplinary working was questioned though, as some RAs reported challenges associated with delivering speech and language therapy. This was in the main attributed to a lack of opportunity to develop these skills due to the lower number of patients presenting with speech and language needs. So far, this issue has not been reported in the literature.

Across healthcare, the role of the administrator has been poorly explored. Within the academic stroke literature, they are often overlooked and rarely receive stroke-specific training and are potentially untapped resources in most stroke services. These findings provide an insight into how when utilised and trained effectively, these vital team members facilitate the delivery of evidence-based services. Administrators possess stroke-specific knowledge which is often used when communicating with patients and professionals. They can alleviate significant administrative burden from professionally registered staff, allowing them more time to concentrate on clinical duties. As observed with programme theory one, it is very likely that the findings from this programme theory can also be applied to in-patient

stroke units especially those that are working in interdisciplinary manners. Given the volume of administrative work entailed within in-patient settings, it is highly likely that trained administrators may be able to alleviate significant burden from professionally registered staff in these services.

Recommendations for Services

- In the absence of nationally accredited training programmes, service leads should ensure that regular inter and transdisciplinary training opportunities are provided in-house to facilitate the delivery of inter and transdisciplinary working for all staff.
- Services in sites 1 and 2 have invested considerable time and resources to develop the competency-based generic training packages for RAs to facilitate transdisciplinary working. The sharing of these resources on a national scale could inform and facilitate the evidence-based practice of other community stroke services in rural and urban areas.
- Service leads should upskill and upgrade the banding of administrators to undertake managerial tasks, such as staff rotas, absences, and other aspects of service coordination and organisation to maximise opportunities for professionally registered staff to concentrate on clinical duties.

Future Research

- Future research should explore the possibility of creating a competency-based nationally accredited programme for staff working in stroke service to acquire inter or transdisciplinary skills and knowledge. A national resource could be of benefit to stroke services across the pathway and save financial resources for services struggling and increase the skill base of staff. The Calderdale competency framework, currently under evaluation in Australia as a resource to train allied health professionals with interdisciplinary skills (Ireland and Baker, 2017) could be extended and developed as a national resource in the UK, for all staff working in stroke, including administrators who have been largely ignored with respect to training.
- Given the national shortage of psychologists which is unlikely to resolve in the coming years given how long it takes to train these members of staff, future research should

also consider innovative and new ways in which to provide staff working in stroke services with sufficient psychological skills to meet the needs of patients.

Programme Theory Three: Multidisciplinary Meetings

Summary

This programme theory offers a deeper explanation as to the role that MDMs play in shared interdisciplinary decision-making and the delivery of evidence-based rural community stroke services. MDMs were valued in all services for providing essential opportunities for staff to engage in interdisciplinary discussions about patients. This not only supports the initial explanations provided by Langhorne and Dennis (2008) but also highlights the importance of these meetings in rural areas where opportunities for communication are reduced. Additionally, the theory identified that MDMs performed a vital role in service organisation and provided the ideal opportunity to engage in service level planning and ensure adherence with national clinical guidelines and quality markers which echoes findings from the limited research conducted in in-patient stroke units (Harris et al., 2013, Tyson et al., 2014). Consistent with several studies across healthcare (Lamb et al., 2011a, Lamb et al., 2013a, Tyson et al., 2014, Soukup et al., 2018), the findings outlined specific characteristics of MDMs which were identified as facilitating the efficiency of MDMs and these are implementing structured meetings tightly controlled by chairs and engaging in pre-MDM preparation. These efficiency characteristics ensured meetings ran to time and there was sufficient time to discuss all patients on the caseload.

Recommendations For Services

- Service leads should ensure comprehensive attendance at MDMs for all clinical staff, including RAs as they perform a vital role in rehabilitation.
- Structured MDMs ensure staff understand what is expected of them and in which order, and they can facilitate timekeeping and ensure every patient can be discussed.
- MDMs provide useful forums for facilitating service organisation, particularly for services with large caseloads, as observed in sites 1 and 2. Building upon the work of Tyson et al., (2015a) who developed a framework for in-patient stroke unit MDMs , there is merit in documenting the practices used by sites 1 and 2 and adapting this

framework for MDMs in community stroke services. A structured framework tailored to the needs of community services could enable them to efficiently streamline weekly MDMs and improve the capture of appropriate organisational and governance related data. This would facilitate the delivery of evidence-based services in line with national clinical guidelines for stroke.

- Services should design paperwork tailored to their needs to capture organisational and governance data. This will streamline service efficiency, facilitate adherence to SSNAP criteria and ensure all staff develop a shared sense of purpose of patient needs and service objectives.

Future Research

- Future research could explore how shared decision-making occurring within community stroke MDMs impacts the delivery of rehabilitation to patients and influences degrees of interdisciplinary working.
- Future research could also explore the impact of implementing structured meetings on service efficiency and governance. It would be interesting to note whether this differs from what has been observed within in-patient settings (Tyson et al., 2014, Tyson et al., 2015b), especially given that chairs in MDMs are likely to be allied health professionals and not doctors.

Programme Theory Four: Care Transitions

Summary

The inclusion of a coordinator in ESD services and good communication links between in-patient stroke units and community stroke service is recommended to facilitate care transitions between services (Fisher et al., 2011, Intercollegiate Stroke Working Party, 2016). None of the services had a dedicated coordinator, but the findings did support the national clinical guidelines recommendations and previous research which suggests which has indicted that good cross-service inter-professional relationships to facilitate care transitions (Donnelly et al., 2004, Chouliara et al., 2013, Waring et al., 2014). The findings explained how cross-service collaborative working facilitated cross-service trust and role clarity, though it was acknowledged that cross-service trust takes time to develop. However, crucially in rural areas,

where opportunities for communication are reduced it was important that opportunities for cross-service collaboration be formally provided and encouraged by service leads.

Additionally, this programme theory highlighted the importance of functional proximity between services and hard organisational boundaries as factors influencing care transitions between stroke units and community stroke services which supports findings from Clarke (2010) and Waring (2014). This is important for rural services to consider as the distance between services may be significant due to the geographic terrains, this is compounded when hard organisational boundaries prevent or limit collaborative activities and greatly increase the likelihood of care transitions being delayed or problematic. Rotational posts across the stroke pathway, good interpersonal relationships at a management level, and honorary contracts between NHS Trusts were identified as ways to improve cross-service relationships and facilitate care transitions. These findings have a direct impact on in-patient stroke services as good cross-service relationships can only be developed if both services are invested.

Recommendations For Services

- Where possible, community stroke services should be located in close proximity to their main referring stroke units and be commissioned within the same NHS Trust to facilitate cross-service collaboration.
- Service leads in all services should promote cross-service collaboration to facilitate the development of trust and role clarity between staff, which may take time to develop.
- Service leads should prioritise the development of interpersonal relationships between themselves and their counterparts in their referring stroke units to facilitate the development of cross-service trust. Given the transient nature of staff employment and the inevitability associated with staff moving on, good cross-service relationships between other senior members of staff in both services should also be developed.
- Service leads should consider installing permanent rotational posts across the stroke pathway, allowing key individuals to move between services to facilitate the

development of cross-service trust and increase the likelihood of smooth and timely care transitions.

- In situations where functional distance and/or hard organisational boundaries hinder cross-service collaboration, service leads must prioritise the development of good cross-service interpersonal relationships at a management level to facilitate cross-service collaborative working.
- The provision of honorary contracts enables cross-service collaboration to occur and negates some of the effects of hard organisational boundaries.
- In rural services, where staff may spend significant periods lone working, activities designed to promote cross-service collaboration will need to be formally planned and attendance prioritised by all staff.

Future Research

- Future research could explore and develop interventions designed to promote cross-service collaborative working to streamline care transitions. This would be more beneficial and relevant to services if the complexity associated with functional proximity and distance as well as hard organisational boundaries were built into the study design.
- Incorporating patient outcomes and experiences within any research in this area to ascertain if and how collaborative working influences the patient experience would generate more meaningful results.

Programme Theory Five: Visit Scheduling

Summary

Programme theory five, emerged during data collection. As a concept, there is a dearth of research investigating manual visit scheduling, yet it is an important consideration for servicesacross the country. These findings provide valuable insights into how community stroke services in rural areas are organised to facilitate equitable service delivery and maximise service efficiency and support similar findings observed within in-patient stroke units (Clarke et al., 2018). Given the inter and transdisciplinary nature of stroke services identified above, and the fact that multiple professionals from the service could visit patients

in one day, services with large caseloads (sites 1 and 2) needed to manage their rehabilitation sessions to prevent visit clashing.

Visit scheduling was performed by skilled and trained RAs. From a resource perspective, it makes sense to use RAs as they are less expensive to employ than their professionally registered colleagues and in services using transdisciplinary RAs, they are the ones travelling the most miles and know the geographical areas very well. Services maximised efficiencies by incorporating features often found in mathematical modelling algorithms such as geographic clustering as well as flexing of staff across soft geographic service boundaries that existed between north and south teams. This was easier to achieve with transdisciplinary RAs who could be more easily located to specific geographic areas for a whole day due to the flexibility of their skill sets.

Whole service visit scheduling only occurred in one service, and it was accepted that it was a difficult concept to get used to especially for staff who were historically used to controlling their own diaries. Visit scheduling of this nature creates a tension between the needs of the service and the needs of the individual who can be very apprehensive about relinquishing control of their diaries. However, these feelings of disempowerment were felt to abate over time, once staff realised that this method was in the best interests of the service as a whole. However, it is important to clarify that this was contingent upon positive experiences of visit scheduling and a supportive team environment.

The NHS repayment of business miles policy was identified as an issue in all services and adversely affected RAs as they were the ones doing the majority of the miles. Although visit scheduling can lessen the impact of this the reality is that it cannot completely eliminate the impact and as a result staff disillusionment was high and the policy had started to affect staff turnover.

Recommendations For Services

- Community stroke services with larger caseloads should consider implementing structured visit scheduling to facilitate the delivery of intensive rehabilitation and

increase service capacity. This can be particularly beneficial for services using transdisciplinary RAs to deliver rehabilitation or those with high caseloads.

- Visit scheduling as an activity can be made more efficient by using geographic clustering and training RAs to perform the task. They are an efficient use of resources and they have extensive knowledge of the local terrain and the patients on the caseload.
- Service leads should ensure that all staff provide the appropriate information in a timely fashion so that visit scheduling can be completed. Using the MDM to collate the information required for visit scheduling is a useful resource as all staff are together in one setting.
- For services implementing whole service visit scheduling service leads should ensure that new staff who historically have controlled their own diaries are supported during the adjustment period as they are likely to feel disempowered. Providing a supportive team environment and positive experiences of visit scheduling can minimise these activities

Future Research

- Future research should investigate the implementation of structured whole and part service visit scheduling in services. Given the challenges associated with this in terms of staff acceptance, care needs to be given to ensure that staff needs and fears are adequately addressed during the design and implementation process.
- Research should also continue into developing mathematical models and algorithms that can account for the number of variables observed in complexly organised community stroke services. An automated approach to visit scheduling that can account for the complexity and be flexible could maximise service efficiencies.

Relating this PhD to Emerging Findings

The findings from this PhD support and add weight to the findings from the WISE study, which used realist evaluation to investigate the effectiveness of ESD services in urban and rural clinical settings across six sites in England (Fisher et al., 2021b). This PhD was largely written before this final report was published, and therefore the findings could not be contained

within the individual literature searches as the publication date fell outside of the dates for inclusion. Although there are similarities in the methods used within this PhD and the WISE study, as detailed in chapter two they had different focal points. Encouragingly, there are similarities between the key findings from this PhD and the qualitative component from the WISE study, adding strength to the generalisability of the findings from both pieces of research. For example, both studies have highlighted the importance of interdisciplinary working and the use of transdisciplinary RAs (referred to as generic RA's in WISE) in facilitating the delivery of evidence-based services. In addition, this PhD also highlighted interdisciplinary administrators as key members within stroke services. The role of the service lead was also extolled within WISE and the role they played in supporting staff to develop their interdisciplinary skill set was outlined. In line with recommendations from this PhD, WISE also suggested that rural teams may need additional staffing resources to be able to deliver effective ESD services. From the perspective of facilitating seamless and timely care transitions from in-patient stroke units, WISE also advocated the development of trusting interpersonal relationships between staff working in both services. However, in certain areas, this PhD adds more complementary detail to the WISE findings, such as explaining how staff in community stroke services gain their inter and transdisciplinary skills and knowledge or offering an understanding as to how structured visit scheduling can facilitate the delivery of equitable and efficient services in rural areas. The findings from this PhD also provided additional detail relating to the function of MDMs in providing a forum to coordinate service organisation and ensuring compliance with key governance criteria.

Original Contribution To The Literature

Firstly, due to the focus on acute settings over the last 30 years, very little is known about the organisation and configuration of community stroke services in England delivering ESD although these services have been in existence since the mid-1990s. This PhD thesis provides an original contribution to research in several ways, some of which have been identified above. In addition, these findings make a significant contribution to the limited literature associated with the delivery of community stroke services, especially in rural areas. This is important because previous research has predominately concentrated on urban settings;

very little is known about how community stroke services in rural areas are organised or whether community stroke services in rural areas can deliver evidence-based services (Fisher et al., 2011, Fearon et al., 2012, Langhorne et al., 2017, Fisher et al., 2019, Fisher et al., 2020). Using three rurally based exemplar services identified from the SSNAP as being evidence-based, has provided an insight into how service organisation and coordination facilitated evidence-based service delivery. The inclusion of services already achieving evidence-based standards generated meaningful findings, which it is hoped that other services both in rural and urban areas will be able to adapt to their local contexts to facilitate optimal service delivery.

Secondly, this research has provided an insight into the teamworking of community stroke services. It is the first known study within community stroke to document transdisciplinary working practices of RAs and interdisciplinary working of administrators and details how both inter and transdisciplinary training and working facilitates the evidence-based service delivery in rural areas.

Thirdly, this theory-building realist evaluation sought to develop and refine programme theories to explain how the core components identified in the stroke unit and ESD literature worked to facilitate evidence-based service delivery in real-world rural settings for community stroke services delivering ESD as well as non ESD stroke rehabilitation. These core components comprise the foundations upon which community stroke services delivering ESD are built, but little is known about how they influence service delivery. Much of the stroke literature has concentrated on determining the efficacy of ESD, therefore the contribution of these findings provide an alternative to the experimental research and afford a much-needed insight into how the core components thought to facilitate evidence-based service delivery and improve patient outcomes are implemented in rurally based community stroke services.

Fourthly, from a methodological perspective, this theory-building realist evaluation has utilised a novel approach. Typically, though not always, realist evaluations commence with a realist review (or other kinds of review) of the appropriate literature; candidate programme theories are developed and then tested and further refined during the realist evaluation. Due

to the broad scope of this research, and the limited research conducted in community settings across healthcare; this PhD research started with an evaluation, and then used the evaluation findings to conduct a series of focussed realist inspired literature searches to further refine the programme theories. This resulted in programme theories that reflected the day-to-day experiences of stroke services but were also able to be subsequently refined using available healthcare literature as frequently little or no research had been conducted within stroke. This was a useful strategy to employ and could be considered by other researchers with broad scope and/or limited literature in the area.

Finally, this PhD sought to amplify the voices of all personnel employed within stroke services and to the researcher's knowledge, this is the first time that some of the ways in which RAs and administrators facilitate evidence-based service delivery for community stroke services have been articulated. These members of staff are usually overlooked in the community healthcare literature, but they are crucial to efficient and equitable service delivery in rural areas. It is hoped that stroke services across the world will value the contribution of these key members of staff and utilise them to deliver more efficient services.

Challenges, Limitations, And Reflections Of Conducting Realist Research

This section outlines some of the challenges which were encountered whilst conducting this research. It also outlines some of the limitations associated with the research and details how they could be overcome in future research. A PhD can be thought of as a learning journey and there have been many lessons learnt during this PhD. Some pertinent reflections and advice for future PhD students are also outlined. Finally, this thesis ends with a concluding paragraph.

Challenges Associated With Designing Realist Research

Realist research is known to be challenging, this method neutral approach undoubtedly gives freedom to utilise a myriad of data collection tools but the lack of prescribed methodological principles to follow posed a challenge during this research in part due to the relative inexperience of the researcher (JH) with this approach. Within the published realist literature,

great heterogeneity exists in terms of study designs, data collection, analysis, synthesis and reporting of data. However, at the time of starting this PhD in 2015, limited information, guidance or published papers detailing the methodological processes involved in realist evaluations was available; that which did exist was primarily aimed at research investigating interventions embedded into organisations in a pre-post fashion, which differs from the focus of the research presented in this thesis.

Initially, it was very challenging to determine how this research fitted into the realist framework without a specific pre-post intervention research design. This was a theory-building evaluation, but it took time to understand this fact. The initial development of candidate programme theories was very difficult as it was hard to conceptualise what the 'intervention' was within the context of the research. Without this understanding, appropriately articulating the elements of context and mechanism were impossible. With hindsight, experience, and a much greater understanding of realist research, articulating the service as the intervention feels rather obvious now.

The initial development of the programme theories were influenced by RCT evidence, national guidelines and consensus research as this related specifically to the original research question. As such, the literature initially reviewed directly related to these theories and was predominately stroke research. It is appreciated that a broader review of the literature may have resulted in alternative programme theories, but this was considered outside of the scope of this PhD.

As noted in chapters two and three, conflating contexts and mechanisms is a common problem for realist researchers and is confounded by the ambiguity associated with the definitions that exist in the literature for mechanism and context (Astbury and Leeuw, 2010, Marchal et al., 2012, Dalkin et al., 2015, Shaw et al., 2018). The candidate programme theories generated prior to data collection incorporated an oversimplified articulation of context and focussed on rurality. Crucial elements of context, such as individual features of staff, interpersonal relationships, aspects of service model etc. were all missing from the candidate programme theories. The learning associated with realist inquiry never stops and throughout

data collection, analysis and write up, insights were made and understandings achieved which allowed a greater appreciation of the elements of context, mechanism and outcomes within the parameters of this research.

Challenges Associated With Data Collection

Although the notion of conducting realist interviews in an explicit theory-testing teacher-learner style (Pawson and Tilley, 1997, Manzano, 2016) was unnerving, they proved to be very enlightening and rewarding. The realist interview technique was a skill that developed over time. Although stakeholders were comfortable in sharing their experiences and agreeing or disagreeing with statements, to generate mechanisms, questions had to be articulated in a particular manner, which were improved throughout the evaluation. The realist interviews generated useful lines of enquiry. Individual interview guides were generated before each interview and were useful in helping to determine how elements of the programme theory played out for different groups of people, answering the "what works and for whom?" part of realist inquiry. Additionally, the interviews were useful in understanding how the different contexts observed in each service facilitated the degree to which mechanisms fired or not. Fortunately, there were no problems associated with recruiting stakeholders, they were keen to be involved, reported enjoying the interviews and often continued conversations at later dates.

Challenges Associated With Data Analysis

There was a great volume of data produced during this evaluation and although data analysis wasn't perceived as challenging per se, it was exceptionally time-consuming, very iterative and very messy. This is a known challenge for realist research and is one of the reasons why researchers are urged to focus their research to avoid gathering huge quantities of data (Wong et al., 2016, Pawson, 2013). The number of stakeholders was higher than originally anticipated as two of the services operated over two bases and to ensure parity of stakeholder engagement equal numbers of staff were recruited from each service. This obviously increased the workload, both at the time of data collection and subsequently through data analysis and synthesis as more data was generated. However, the data provided

great insights into the contextual differences occurring within the same services and was particularly useful for refining programme theory four, care transitions.

The approach to data analysis and synthesis outlined in chapter three gives the impression that this was a rather linear endeavour. It was anything but, there was a huge overlap with the programme theories which added to the complexity and the time taken for analysis. The programme theories and their underlying CMOCs were continually refined. This process commenced during data collection and continued through analysis, synthesis and writing up.

Limitations

It could be argued that the lack of quantitative outcomes is a limitation of this study. Pawson advises the use of qualitative and quantitative data collection methods in realist evaluations (Pawson, 2013). However, this advice is primarily directed at studies that are investigating the efficacy of interventions in a pre-post fashion. This realist evaluation did not seek to determine efficacy in this manner, rather the theory-building nature aimed to understand *'how'* rural community stroke services deliver evidence-based services in line with the clinical guidelines. Its focus on context provided detail explaining how the organisation of the different services facilitated evidence-based service delivery. It also offered explanations as to how different elements of the programme affected different groups of individuals within the services and how these elements facilitated evidence-based service delivery. To achieve this level of understanding, qualitative data collection methods were the most appropriate tool to utilise.

Another limitation that could be levelled at this research is the type of review undertaken for the literature contained within the findings chapters. These reviews could be considered focussed realist inspired reviews and a separate review was conducted for each programme theory. As outlined in chapter two, bone fide realist reviews are known to be time-consuming challenging endeavours to undertake (Booth et al., 2020). It was beyond the scope of this PhD to conduct five separate realist reviews, which arguably may have taken several years to complete.

A third limitation of this research is associated with the diversity of stakeholders who were interviewed as part of the realist evaluation. Efforts were made to ensure that all disciplines and all grades represented in the services were part of the research and this ensured that all voices within the community stroke services were included. However, some important voices are missing from this research. There was a lack of stakeholder representation from in-patient settings. In all three services, a representative from the main acute stroke unit was interviewed but none of the staff directly involved in care transitions were interviewed. Arguably, interviewing these stakeholders could have provided a much deeper insight into the challenges associated with care transitions which could have further refined programme theory four. Another voice missing entirely from this research is the stroke survivor and their opinions and perspectives which could have provided great insight into how the organisation of services impacts their rehabilitation trajectory. Having said that, and as already identified, this was a large evaluation, and a large volume of data was collected throughout. It was not practical to include more stakeholders. However, these are lines of enquiry that should be followed up in future research.

Reflections Of The Realist Journey

Reflecting upon the realist journey travelled through this PhD, and of potential interest to people embarking upon PhD research in the future is the following advice:

1. The RAMESES training materials for realist synthesis (Wong et al., 2013), and reporting standards for realist evaluations (Wong et al., 2016), and jiscmail group (www.jiscmail.ac.uk) are useful resources for anyone embarking upon realist methods.
2. The realist training organised and facilitated by the Centre for Advancement in Realist Evaluation and Synthesis (CARES) are worthwhile and affordable courses where 1:1 support and feedback on individual projects can be provided. The training offered via CARES has expanded over the years and will be even more valuable now.
3. Form a local peer support group if one doesn't exist. Realist methods are challenging, the terminology can be confusing, finding peers with which to discuss the more challenging aspects of realist approaches and the philosophical underpinnings can be invaluable. The Notts Realist Group was initially founded in 2016 and this author was

a founding member and continues to manage the group and organise high calibre seminars from experienced national and international speakers.

4. Explore the variety of free training resources available on the web. The UK has seen a growth in free to attend online realist training seminars provided by various regional realist groups. The Notts Realist Group and Realism Leeds record seminars and make them publicly available. Other groups namely North Realists and the Realist Research and Evaluation Group hold smaller seminars and offer more interactive journal club-type sessions which can be instrumental for consolidating knowledge. Justin Jagosh has several freely available seminars available online.
5. Social Media, namely Twitter is an excellent way of keeping abreast of realist research, the regional realist groups, realist publications, conversations about aspects of realist research and generally networking with realist researchers. This can help to expand knowledge and highlight new areas of research to investigate.
6. Realist research can be nebulous. Placing parameters and boundaries both on the scope of the research and the data collection methods taking into consideration what is feasible to achieve within the timescale of a PhD will help.

Concluding Thoughts

The realist approach has provided a valuable explanation and an insight into how stroke service organisation facilitates the delivery of evidence-based services in line with clinical guidelines. Using realist methods to conduct healthcare research is gaining traction and popularity through its use within service delivery is currently limited. The updated Medical Research Council guidance for developing and evaluating complex interventions draws heavily on realist principles and emphasises the importance of context, the development of programme theories, gaining an understanding of the interaction between context and causal mechanisms in generating outcomes (Skivington et al., 2021b). The framework advises conducting research that seeks to understand how interventions bring about behaviour change as well as understanding how interventions interact with the contexts into which they are embedded as well as the wider healthcare systems. Realist research is ideally suited to this quest and this research has demonstrated that other areas of healthcare could effectively

use these techniques to gain a deeper understanding of the delivery of various health care services in real-life settings.

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Appendices

Appendix 1 – Nottingham Approval Letter

The University of Nottingham

E-mail: FMHS-ResearchEthics@nottingham.ac.uk

Faculty of Medicine and Health Sciences

Research Ethics Committee
C/o Faculty PVC Office
School of Medicine Education Centre
B Floor, Medical School
Queen's Medical Centre Campus
Nottingham University Hospitals
Nottingham
NG7 2UH

26th April 2014

Joanne Howe
PhD Student
c/o Dr Rebecca Fisher
Stroke Association Senior Lecturer
Faculty of Medicine & Health Sciences
Room B127 Medical School
Queens Medical Centre
Nottingham
NG7 2UH

Dear Joanne

Ethics Reference No: P200317 – **please always quote** **Sponsor ID:** 17012 **IRAS Project ID:** 219584	
Study Title: Implementing Rurally Based Community Stroke Services: Aspiration or Reality? **Short Title:** Implementing Rural ESD	
Chief Investigator/Supervisor: Dr Rebecca Fisher, Stroke Association Senior Lecturer, Division of Rehabilitation and Ageing.	
Lead Investigators/student: Jo Howe, PhD Student, Division of Rehabilitation & Ageing	
Other Key Investigators: Professor Marion Walker, Professor in Stroke Rehabilitation, Division of Rehabilitation & Ageing	
Type of Study: Realist Evaluation Approach, PhD project	
Proposed Start Date: 31/03/2017	**Proposed End Date:** 29/06/2018 1 mth
No of Subjects: 60	**Age:** 18+years
School: Medicine	

Thank you for submitting the above application which was considered by the Committee and the following documents were received:

Implementing Rural ESD:

- IRAS Application form dated 01 March 2017
- Letter from Sponsor 17012 02 March 2017
- Protocol final version 1.0 01 March 2017
- Participant Information Sheet version 1.1 29 March 2017
- Participant consent form version 1.1 29 March 2017
- Interview Schedule version 1.0 01 March 2017
- CV RJ Fisher version 1.0 01 March 2017
- CV J Howe version 1.0 01 March 2017

These have been reviewed and are satisfactory and the study is approved.

Approval is given on the understanding that the conditions set out below are followed:

1. You must follow the protocol agreed and inform the Committee of any changes using a notification of amendment form (please request a form).
2. You must notify the Chair of any serious or unexpected event.

The University of Nottingham

3. This study is approved for the period of active recruitment requested. The Committee also provides a further 5 year approval for any necessary work to be performed on the study which may arise in the process of publication and peer review.
4. An End of Project Progress Report is completed and returned when the study has finished (Please request a form).

Yours sincerely

pp

Professor Ravi Mahajan
Chair, Faculty of Medicine & Health Sciences Research Ethics Committee

Appendix 2 HRA Approval Letter

NHS
Health Research Authority

Dr Rebecca Fisher
Room 127a B Floor Medical School, Queens Medical Centre
Division of Rehabilitation & Ageing, School Of Medicine
University of Nottingham
NG7 2UH

Email: hra.approval@nhs.net

30 March 2017
Reissued 31 March 2017 to correct versions of PIS/ICF in document list

Dear Dr Fisher

Letter of HRA Approval

Study title:	**Implementing Rurally Based Community Stroke Services: Aspiration or Reality?**
IRAS project ID:	**219584**
Protocol number:	**17012**
REC reference:	**17/HRA/1306**
Sponsor	**University of Nottingham**

I am pleased to confirm that **HRA Approval** has been given for the above referenced study, on the basis described in the application form, protocol, supporting documentation and any clarifications noted in this letter.

Participation of NHS Organisations in England

The sponsor should now provide a copy of this letter to all participating NHS organisations in England.

Appendix B provides important information for sponsors and participating NHS organisations in England for arranging and confirming capacity and capability. **Please read *Appendix B* carefully**, in particular the following sections:

- *Participating NHS organisations in England* – this clarifies the types of participating organisations in the study and whether or not all organisations will be undertaking the same activities
- *Confirmation of capacity and capability* - this confirms whether or not each type of participating NHS organisation in England is expected to give formal confirmation of capacity and capability. Where formal confirmation is not expected, the section also provides details on the time limit given to participating organisations to opt out of the study, or request additional time, before their participation is assumed.
- *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* - this provides detail on the form of agreement to be used in the study to confirm capacity and capability, where applicable.

Further information on funding, HR processes, and compliance with HRA criteria and standards is also provided.

IRAS project ID	219584

It is critical that you involve both the research management function (e.g. R&D office) supporting each organisation and the local research team (where there is one) in setting up your study. Contact details and further information about working with the research management function for each organisation can be accessed from www.hra.nhs.uk/hra-approval.

Appendices

The HRA Approval letter contains the following appendices:

- A – List of documents reviewed during HRA assessment
- B – Summary of HRA assessment

After HRA Approval

The attached document *"After HRA Approval – guidance for sponsors and investigators"* gives detailed guidance on reporting expectations for studies with HRA Approval, including:

- Working with organisations hosting the research
- Registration of Research
- Notifying amendments
- Notifying the end of the study

The HRA website also provides guidance on these topics and is updated in the light of changes in reporting expectations or procedures.

Scope

HRA Approval provides an approval for research involving patients or staff in NHS organisations in England.

If your study involves NHS organisations in other countries in the UK, please contact the relevant national coordinating functions for support and advice. Further information can be found at http://www.hra.nhs.uk/resources/applying-for-reviews/nhs-hsc-rd-review/.

If there are participating non-NHS organisations, local agreement should be obtained in accordance with the procedures of the local participating non-NHS organisation.

User Feedback

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/.

HRA Training

We are pleased to welcome researchers and research management staff at our training days – see details at http://www.hra.nhs.uk/hra-training/

IRAS project ID	219584

Your IRAS project ID is **219584**. Please quote this on all correspondence.

Yours sincerely

Isobel Lyle | Senior Assessor
Health Research Authority
Room 002, TEDCO Business Centre, Rolling Mill Rd, Jarrow NE32 3DT
Hra.approval@nhs.net or Isobel.lyle@nhs.net
T: 0207 972 2496
www.hra.nhs.uk

Copy to: *Ms Angela Shone, Sponsor contact, University of Nottingham*
Janine Matthew, R&D contact, Northampton General Hospital NHS Trust

IRAS project ID	219584

Appendix A - List of Documents

The final document set assessed and approved by HRA Approval is listed below.

Document	*Version*	*Date*
Evidence of Sponsor insurance or indemnity (non NHS Sponsors only) [2016 To Whom it May Concern Liability]		
Interview schedules or topic guides for participants [INTERVIEW GUIDE _Implementing Rural ESD _final version 1.0_01.03.2017]	1.0	01 March 2017
IRAS Application Form [IRAS_Form_02032017]		02 March 2017
Letter from sponsor [17012 Sponsor Letter HRA REC]		
Schedule Of Events_Implementing Rural ESD_HRA Assessed	1.0	08 March 2017
Statement of Activities Non-Interventional_ Implementing Rural ESD_HRA assessed	1.0	08 March 2017
Participant consent form [Clean version]	1.1	29 March 2017
Participant information sheet [Clean version]	1.1	29 March 2017
PROTOCOL Implementing rural ESD_final version_1.0_01.03.2017	1.0	01 March 2017
Summary CV for Chief Investigator (CI) [CV_RJ Fisher_Implemting Rural ESD_final version 1.0_01.03.2017]	1.0	01 March 2017
Summary CV for student [CV_J Howe_Implemting Rural ESD_final version 1.0_01.03.2017]	1.0	01 March 2017

IRAS project ID	219584

Appendix B - Summary of HRA Assessment

This appendix provides assurance to you, the sponsor and the NHS in England that the study, as reviewed for HRA Approval, is compliant with relevant standards. It also provides information and clarification, where appropriate, to participating NHS organisations in England to assist in assessing and arranging capacity and capability.

For information on how the sponsor should be working with participating NHS organisations in England, please refer to the, *participating NHS organisations, capacity and capability* and *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* sections in this appendix.

The following person is the sponsor contact for the purpose of addressing participating organisation questions relating to the study:

Name: Mrs Angela Shone
Tel: 01158467906
Email: sponsor@nottingham.ac.uk

HRA assessment criteria

Section	HRA Assessment Criteria	Compliant with Standards	Comments
1.1	IRAS application completed correctly	Yes	No comments
2.1	Participant information/consent documents and consent process	Yes	No comments
3.1	Protocol assessment	Yes	No comments
4.1	Allocation of responsibilities and rights are agreed and documented	Yes	A statement of activities will act as agreement of an NHS organisation to participate. The sponsor is not requesting and does not expect any other site agreement.
4.2	Insurance/indemnity arrangements assessed	Yes	Where applicable, independent contractors (e.g. General Practitioners) should ensure that the professional indemnity provided by their medical defence organisation covers the activities expected of them for this

IRAS project ID	219584

Section	HRA Assessment Criteria	Compliant with Standards	Comments
			research study
4.3	Financial arrangements assessed	Yes	The study is funded by NIHR Collaboration for Leadership in Health Research and Care (CLAHRC). No funding is being provided to NHS organisations in England. Source: Statement of Activities.
5.1	Compliance with the Data Protection Act and data security issues assessed	Yes	No comments
5.2	CTIMPS – Arrangements for compliance with the Clinical Trials Regulations assessed	Not Applicable	No comments
5.3	Compliance with any applicable laws or regulations	Yes	No comments
6.1	NHS Research Ethics Committee favourable opinion received for applicable studies	Not Applicable	No comments
6.2	CTIMPS – Clinical Trials Authorisation (CTA) letter received	Not Applicable	No comments
6.3	Devices – MHRA notice of no objection received	Not Applicable	No comments
6.4	Other regulatory approvals and authorisations received	Not Applicable	No comments

IRAS project ID	219584

Participating NHS Organisations in England

This provides detail on the types of participating NHS organisations in the study and a statement as to whether the activities at all organisations are the same or different.
There is only one 'site-type'. All participating NHS organisations will be undertaking the same activity. The Chief Investigator or sponsor should share relevant study documents with participating NHS organisations in England in order to put arrangements in place to deliver the study. The documents should be sent to both the local study team, where applicable, and the office providing the research management function at the participating organisation. If chief investigators, sponsors or principal investigators are asked to complete site level forms for participating NHS organisations in England which are not provided in IRAS or on the HRA website, the chief investigator, sponsor or principal investigator should notify the HRA immediately at hra.approval@nhs.net. The HRA will work with these organisations to achieve a consistent approach to information provision.

Confirmation of Capacity and Capability

This describes whether formal confirmation of capacity and capability is expected from participating NHS organisations in England.
Participating NHS organisations in England **will be expected to formally confirm their capacity and capability to host this research**. • Following issue of this letter, participating NHS organisations in England may now confirm to the sponsor their capacity and capability to host this research, when ready to do so. How capacity and capacity will be confirmed is detailed in the *Allocation of responsibilities and rights are agreed and documented (4.1 of HRA assessment criteria)* section of this appendix. • The Assessing, Arranging, and Confirming document on the HRA website provides further information for the sponsor and NHS organisations on assessing, arranging and confirming capacity and capability.

Principal Investigator Suitability

This confirms whether the sponsor position on whether a PI, LC or neither should be in place is correct for each type of participating NHS organisation in England and the minimum expectations for education, training and experience that PIs should meet (where applicable).
The Sponsor has correctly assessed that the CI is the Academic Supervisor of this educational project. GCP training is not a generic training expectation, in line with the HRA statement on training expectations.

IRAS project ID	219584

HR Good Practice Resource Pack Expectations

This confirms the HR Good Practice Resource Pack expectations for the study and the pre-engagement checks that should and should not be undertaken
Where arrangements are not already in place, network staff (or similar) undertaking any of the research activities listed in A18 or A19 of the IRAS form (except for administration of questionnaires or surveys), would be expected to obtain an honorary research contract from one NHS organisation (if university employed), followed by Letters of Access for subsequent organisations. This would be on the basis of a Research Passport (if university employed) or an NHS to NHS confirmation of pre-engagement checks letter (if NHS employed). These should confirm enhanced DBS checks, including appropriate barred list checks, and occupational health clearance. For research team members only administering questionnaires or surveys, a Letter of Access based on standard DBS checks and occupational health clearance would be appropriate.

Other Information to Aid Study Set-up

This details any other information that may be helpful to sponsors and participating NHS organisations in England to aid study set-up.
The applicant has indicated that they do not intend to apply for inclusion on the NIHR CRN Portfolio.

Appendix 3 Information Sheet

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

Local Letterhead to be added

Participant Information Sheet
Version 1.1: 29/03/2017

IRAS Project ID: 219584

Implementing Rurally Based Community Stroke Services: Aspiration or Reality?

Name of Researchers: Mrs Jo Howe (PhD Researcher)
Dr Rebecca Fisher (Principal Investigator)

We would like to invite you to take part in our research study. Before you decide I would like you to understand why the research is being done and what it would involve for you. We will go through the information sheet with you and answer any questions you have. Talk to others about the study if you wish. Ask us if there is anything that is not clear.

What is the purpose of the study?

The purpose of this study is to explore the implementation of evidenced based practice within rural community stroke services. National clinical stroke guidelines recommend that Early Supported Discharge (ESD) be offered to some stroke survivors. The early randomised controlled trials on which the guidelines for ESD are based were predominately conducted within urban settings. Some rural services experience challenges in delivering ESD whereas others are able to fulfil the requirements determined by the Stroke Sentinel National Audit Programme (SSNAP). Therefore questions remain over whether it is possible to successfully implement ESD within rural communities in England.

Why have I been invited?

You are being invited to take part because you are a NHS staff member involved with the team delivering ESD or a commissioner of stroke services. The ESD service that you are affiliated to is located within a rural area of England and has been identified from the SSNAP as being able to meet a number of key guidelines and SSNAP criteria.

We are inviting up to 60 staff participants across three different ESD services to take part in interviews. Not all participants will be interviewed. Additional participants will be observed in meetings as appropriate (e.g. weekly multi disciplinary team meetings or commissioning meetings).

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. This would not affect your legal rights.

What will happen to me if I take part?

Data collection for this study is expected to take place from March 2017 until May 2018 and will comprise interviews and observations of meetings as appropriate. You may be invited to participate in one of these options or in some circumstances both. The researcher will notify you as to whether

you are being invited for an interview or to be observed within a meeting or both. Permission for you to participate will be sought from your line manager (if appropriate).

Interviews

If you agree to be interviewed for this study we will arrange for you to meet with the researcher, Mrs Jo Howe at a time and place that is convenient for you. The interview will last approximately 60 minutes. We are interested in understanding how rurally based ESD services meet the requirements of the SSNAP audit. We will take details about your experience of working within a rural community stroke team and discuss how your knowledge and skills impact upon your role within the ESD service. This information will be treated as confidential. The researcher will take notes during the interview and the session will be digitally recorded. All data will be fully transcribed and analysed to identify any influencing contexts and mechanisms on the delivery of rehabilitation.

Observations

If you agree to be observed in a meeting for this study we will obtain permission to attend the meeting and sit in the room at an agreeable location to all participants and observe the meeting. The researcher will take field notes and if appropriate will audio record and transcribe verbatim. The meeting will not be disturbed in any way.

Expenses and payments

Participants will not be paid to participate in the study.

What are the possible disadvantages and risks of taking part?

There are no interventions involved in this study and therefore we anticipate no risks for you taking part. All interviews will be conducted at a time and location that is convenient to you in order to minimise disruption caused to you. It is not anticipated that any distress will be caused by the subjects to be discussed at interview but in the event that does occur, the interview will be paused and you will be offered the option of continuing the interview at a later date.
It is possible that participants may feel uncomfortable during observations. If this is the case then observations of the meeting will cease.

What are the possible benefits of taking part?

The information we get from this study will aid our understanding of factors influencing evidenced based practice within rurally based community stroke services. It is hoped that the findings from this study will inform other services of ways in which they can adapt their daily practice in order to meet the requirements of the guidelines.

What happens when the research study stops?

After the interviews and observations of meetings have been completed there is no further involvement from you in the study. The information we get from this study will be fed back to appropriate healthcare professionals and public representatives.

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. The researchers contact details are given at the end of this information sheet. If you remain unhappy and wish to complain formally, you can do this by contacting the Chief Investigator, whose contact details can also be found at the end of this information sheet

Will my taking part in the study be kept confidential?

We will follow ethical and legal practice and all information about you will be handled in confidence.

If you join the study, some parts of the data collected for the study will be looked at by authorised persons from the University of Nottingham who are organising the research. They may also be looked at by authorised people to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and we will do our best to meet this duty.

All information which is collected about you during the course of the research will be kept **strictly confidential**, stored in a secure and locked office, and on a password protected database. Any information about you will have your name and address removed (anonymised) and a unique code will be used so that you cannot be recognised from it.

Your personal data (address, telephone number) will be kept for 12 months after the end of the study so that we are able to contact you about the findings of the study. All other data (research data) will be kept securely for 7 years. After this time your data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain your confidentiality, only members of the research team will have access to your personal data.

What will happen if I don't want to carry on with the study?

Your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without your employment or legal rights being affected. If you withdraw then the information collected so far cannot be erased and this information may still be used in the project analysis.

Who is organising and funding the research?

This research is being organised by the University of Nottingham and is being funded by the Collaboration for Leadership in Applied Health Research and Care East Midlands (CLAHRC EM)

Who has reviewed the study?

All research in the NHS is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by University of Nottingham Research Ethics Committee.

Further information and contact details

Chief Investigator:
Dr Rebecca Fisher
Stroke Association Senior Lecturer
Faculty of Medicine & Health Sciences
Queens Medical Centre
Nottingham
NG7 2UH
Phone: 0115 823 0253
Email: Rebecca.fisher@nottingham.ac.uk

Co-investigators:
Mrs Jo Howe
PhD Student (Division of Rehabilitation & Ageing)
Room B112 Medical School
Queens Medical Centre
Nottingham
NG7 2UH
Email: Joanne.Howe@nottingham.ac.uk

Appendix 4 Consent Form

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

(Form to be printed on local headed paper)

CONSENT FORM – NHS Staff & Commissioners
version 1.1: 29/03/2017

Title of Study: Implementing rurally based community stroke services: aspiration or reality?

IRAS Project ID: 219584

Name of Researcher: Mrs Jo Howe

Name of Participant: **Please initial box**

1. I confirm that I have read and understand the information sheet version number 1.1 dated 29/03/2017 for the above study and have had the opportunity to ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without legal rights being affected. I understand that should I withdraw then the information collected so far cannot be erased and that this information may still be used in the project analysis. ☐
3. I understand that data collected in the study may be looked at by authorised individuals from the University of Nottingham, the research group and regulatory authorities where it is relevant to my taking part in this study. I give permission for these individuals to have access to these records and to collect, store, analyse and publish information obtained from my participation in this study. I understand that my personal details will be kept confidential. ☐
4. I understand that the interview(s) will be recorded and that anonymous direct quotes from the interview(s) may be used in the study reports. ☐
5. I agree to take part in the above study. ☐

Name of Participant	Date	Signature
Name of Person taking consent	Date	Signature

2 copies: 1 for participant, 1 for the project notes

Appendix 5 Sample Interview Guides

1st Feb 2018 Nurse

Interview Schedule

Title of Study: **Implementing rurally based community stroke services: aspiration or reality?**

Name of Researcher: Jo Howe

Thank you for agreeing to take part in an interview. This interview will not last more than an hour. During the interview I'd like to talk to you about your experiences of working in the stroke service. My research is exploring how community stroke teams in rural areas face the challenges associated with delivering rehabilitation to patients given the geographic terrain. This service is located in fairly rural area of England so I'm interested to learn about how you and your team respond to these challenges. Prior to starting here with you with the teams I did some background research on community stroke teams, I have some ideas about why I think that some teams in rural areas can fulfil the audit criteria and clinical guidelines and I'd like to discuss these with you. My ideas are tentative; I'm interested to hear your view. If you think my ideas about the service don't match your experience that is important and I'd like to hear about that. Please answer the questions as best you can but if there are any questions you don't feel comfortable with just say so and we can move on. Before we begin do you have any questions?

Schedule for Senior Therapists

1) I'd like to start with getting some information about you if that is ok.
   a) How long have you been with the team?
   b) Can you tell me a little about your role in this ESD service?
   c) Are you full time?

2) One of my ideas is that the role of the RA is important to maximise the delivery of rehab. In my other services it is the RA's who deliver the majority of the rehab and I'd like to explore how you use the RA's here.
   a) All the RA's are generic workers, How many are there in the North?
   b) Are you able to draft treatment plans for them?
   c) What impact does the RA have on therapy for the patient?
   d) How do you determine what therapy the RA will deliver?
   e) Can you tell me how the RA role works with respect to nursing?

3) My background reading has suggested that community stroke services are more likely to engage in role blurring – interdisciplinary working.
   a) It has been suggested that this service is interdisciplinary – Some SLT's have indicated they have learnt more about Cognition than when on the ward, but nurses have felt a little outside the MDT – what is your experience here?
   b) It has been suggested that PT and OT engage in this the most. SLT have common skills with OT but not with PT? What about nursing?
   c) Do you ever encounter issues with protection of professional boundaries?
   d) Do you think there should be core competency training for qualified staff?

e) It has been mentioned to me that you are more than just an OT,PT, SLT, Nurse in community, when you visit someone in their home you need a more holistic skill set. Can we briefly chat about your opinion on this?

4) My background reading suggests that having therapy staff who have stroke specific training is important. Can we talk about stroke specific training, both in respect to you and also more generally?
   a) What opportunities are there to keep up to date with stroke training or skills?
   b) How do Senior therapists like yourself access training for CPD?
      i) Are your training opportunities likely to be more informal? What difference does this have on the service?
      ii) Do you train each other?
   c) The guidelines for ESD services state that they should be stroke specific. Can you tell me how you are different from a general community team or a general neuro team? – What does stroke specific mean to you?
   d) It has been suggested that Stroke is difficult to work in, people don't want to do it – is that your experience?

5) Okay so lets move on to the delivery of rehab to the patients. This is a large county and you have a big geographical area to cover, this must be challenging at times, I'd like to discuss how the team addresses these challenges.
   a) The County is split North and South, The South is larger than the North but less populated? How do you overcome challenges delivering to boundaries?
   b) Lets talk about the terrain. How long does it take to get to patients? – what is it that makes it difficult?
      i) Are you ever affected by the weather?
      ii) Having two bases must help with the workload. What happens when you are stretched?

6) Lets talk about daily therapy – as per the guidelines 45 mins per discipline… The guidelines state that patients should receive rehab at the intensity they would have had in hospital. I'm interested to get your opinion on this
   a) Aside from the physical environment how does delivering therapy in hospital differ to delivering therapy at home?
   b) It has been mentioned that fatigue plays a bigger part when the patient returns home – why is that?
   c) Is it possible in rural areas? What do you do to maximise the therapeutic opportunities for patients?
   d) Most of the therapists talk of the need for clinical judgement when determining therapeutic intensity.
   e) Some have expressed dismay as the timeframe for treating patients as they often feel like they lose a few weeks to fatigue – is that your impression?

7) Repayment of mileage has been mentioned as something that concerns the therapists, as I understand they are only allowed to claim the higher rate for the first 3500 miles. It is the RA's who do the majority of the miles here.

a) Do you ever share cars to reduce mileage or plan days to reduce miles?
b) Does it affect morale?
c) Have people ever thought about leaving because of it?

8) I'd like to move on to the organisational aspects of the service if that is ok. One of my ideas is that administrative planning seems to be important to the smooth running of the service. All three of my services have different ways planning therapy visits.
   a) Do you plan in the same way as the South?
   b) My other sites don't think they'd like hand over control of their diaries – what is your opinion with this?

9) In this same vein, administrative planning… One of my ideas that I'm currently exploring is that community stroke services have a greater administrative function than ward based services, this has been called "Non direct Patient Contact Work"
   a) Is that your experience here?
   b) How does it differ to the ward?
   c) Does it impact on the number of patients you can deliver therapy to?
   d) Is there a way to reduce the impact of these administrative exercises?
   e) What difference have the electronic notes made?
   f) Would access to a social worker help? How?
   g) Would you be able to pass on more work to an administrator?

10) All of my services have administrators to help them with this work. I'd like to talk about the role that [redacted] have within the service and how a community stroke team administrator may differ to a ward administrator? They are based in the South, how does that affect the North?

11) Is there a North South divide? – are you two separate teams?

12) When I'm talking with therapists the one thing that comes up over and over again is the need to be flexible and adaptable. Can you tell me why a community stroke team might need to be flexible and how that impacts on the team
   a) What helps you to be flexible?
   b) Teamworking seems to play a role, what aspects of teamworking help you deliver therapy as a service

13) My background reading suggests that communication is important in community stroke. Can you tell me about the different types of services that you need to liaise with and strategies that have been taken to maximise the communication opportunities?
   a) What advice would you give to a new service starting out?
   b) It appears from my research so far that often it can take time for the staff on the acute ward to agree that people are ready to be discharged to you. The staff would rather hold on to the patients. Did you experience that here?
      i) How did you tackle it?

14) My other two services have ESD managers – one doesn't have a manager…

a) Do you think it is important to have a defined leader?

15) Another one of my ideas is that stroke services need to evolve and I'm keen to explore your perspective on this. You've been with the service since the beginning. There must have some changes along the way as you worked things out. Can you talk me through some of the things that you have changed and what impact that had on the service?

16) I'm interested to know how rural community stroke services can implement an evidence-based service. We've covered a few points already but do you think in respect to your service here that I've missed anything out?
   a) If I was to ask you why do you think your service can fulfil the audit criteria – what would you say?
   b) If I also asked if you could improve one thing what would what would that be?

17) One of the things that seems to be important within community stroke services are team meetings.
   a) Can you run me through the different types of meetings?
      i) What things are discussed?
      ii) Do you think these meetings are helpful? In what ways?
      iii) Given the large geographical area that this team covers and the fact that the therapists spend large amounts of time away from the base – Do you think it is important to come together for the meeting? = Why?
      iv) Is this the only time that patient information is discussed? – what happens in emergencies?
      v) Are you aware of other factors that influence how much rehab a patient might receive?
      vi) Are you aware of occasions which prevent patients from receiving rehab?
      vii) Can you tell me a little more about that?

18) My previous reading suggests that commissioners with knowledge of the stroke guidelines are more likely to properly commission stroke services.
   a) Do you have any knowledge of commissioning?
   b) Have you ever met a commissioner?

Thank you for taking part in this interview, I really appreciate your time. If there is anything else you that you realise at a later date that you would like to add please feel free to contact me by email and I will attach your comments to this transcript.

1st Feb 2018 OT

Interview Schedule

Title of Study: **Implementing rurally based community stroke services: aspiration or reality?**

Name of Researcher: Jo Howe

Thank you for agreeing to take part in an interview. This interview will not last more than an hour. During the interview I'd like to talk to you about your experiences of working in the stroke service. My research is exploring how community stroke teams in rural areas face the challenges associated with delivering rehabilitation to patients given the geographic terrain. This service is located in fairly rural area of England so I'm interested to learn about how you and your team respond to these challenges. Prior to starting here with you with the teams I did some background research on community stroke teams, I have some ideas about why I think that some teams in rural areas can fulfil the audit criteria and clinical guidelines and I'd like to discuss these with you. My ideas are tentative; I'm interested to hear your view. If you think my ideas about the service don't match your experience that is important and I'd like to hear about that. Please answer the questions as best you can but if there are any questions you don't feel comfortable with just say so and we can move on. Before we begin do you have any questions?

Schedule for Senior Therapists

1) I'd like to start with getting some information about you if that is ok.
   a) How long have you been with the team?
   b) Can you tell me a little about your role in this service?

2) One of my ideas is that the role of the RA is important to maximise the delivery of rehab. In my other services it is the RA's who deliver the majority of the rehab and I'd like to explore how you use the RA's here.
   a) If we were to imagine that we were advising a new community stroke service, from your perspective can you tell me what RA's can bring to the service and things that you would consider important in their usage.

3) My background reading has suggested that community stroke services are more likely to engage in role blurring – interdisciplinary working.
   a) It has been suggested that this service is interdisciplinary – what do you think of that statement? What difference does it make if any to the delivery of rehabilitation?
   b) It has been suggested that PT and OT engage in this the most due to the natural crossover – what about SLT and nursing?
   c) Do you ever encounter issues with protection of professional boundaries?
   d) Do you think there should be core competency training for qualified staff?

e) It has been mentioned to me that you are more than just an OT,PT, SLT, Nurse in community, when you visit someone in their home you need a more holistic skill set. Can we briefly chat about your opinion on this?

4) One of the things that seems to be important within community stroke services are team meetings. I know that there are a number of meetings that take place here so I'd like to talk to you about them if that is ok
   a) Can you run me through the different types of meetings?
      i) What things are discussed?
      ii) Do you think these meetings are helpful?
      iii) Given the large geographical area that this team covers and the fact that the therapists spend large amounts of time away from the base – Do you think it is important to come together for the meeting? = Why?
      iv) I know from my other interviews and observations that patients are often discussed outside of these team meetings – can you tell me about that?
      v) Are you aware of other factors that influence how much rehab a patient might receive?
      vi) Are you aware of occasions which prevent patients from receiving rehab?
      vii) Can you tell me a little more about that?

5) I'd like to move on to the organisational aspects of the service if that is ok. One of the things that seems to be important to a service like this is administrative planning. The therapy visits are determined in the goal setting meeting and then the Band 3's plan all the visits for the next week
   a) One of my services engage in a little role blurring – where they share generic skills – PT will do meal prep and OT will continue with PT programme. You are short of OT's at the moment and whilst I don't think that routinely happens here I wondered if there was more of a need to engage in this?
      i) Are there any issues over professional boundaries?
   b) The RA's – how is the therapy they provide determined? how is that different to what you might do?
   c) I know that one of the Band 7's is in the office every day – can you tell me a but more about this? Are there any occasions where this doesn't happen? What happens then?
   d) What other administrative processes do you think help the service to effectively deliver rehab to patients?
   e) I know we've talked about communication and links in respect to the acute ward but from the meetings I've observed it seems that you also need to develop links with other areas – can you pick one of these and tell me about how you have developed a link to impact upon the service.

6) My background reading suggests that having therapy staff who have stroke specific training is important. Can we talk about stroke specific training, both in respect to you and also more generally?

a) I'm aware of the training opportunities open to you here. Again if we think about new services, do you think training is important? Why – what does it bring to the service?
b) The guidelines for ESD services state that they should be stroke specific. Can you tell me how you are different from a general community team or a general neuro team? – What does stroke specific mean to you?

7) Okay so lets move on to the delivery of rehab to the patients. This is a large county and you have a big geographical area to cover, this must be challenging at times, I'd like to discuss how the team addresses these challenges. I'd like to talk about having two bases (North and South)– Can you tell me about the challenges and the benefits and anything you've tried to overcome these

a) So obviously having two bases helps (North and South) – are there challenges associated with it?
   i) IS there an them and us culture – has there ever been one? What can you do to ensure that effect is minimised?
b) Lets talk about daily therapy – as per the guidelines… Is it possible in rural areas? What do you do to maximise the opportunities for patients?

8) Repayment of mileage has been mentioned as something that concerns therapists, as I understand they are only allowed to claim the higher rate for the first 3500 miles.
   a) What can you tell me about that?
   b) Does it ever impact upon whether a patient will get their rehab?
   c) Do you have strategies to reduce the impact on the individual?

9) I'd like to discuss the management structure with you and how that structure influences the operation of the service. Jan is the ESD Manager then there are Band 7's for each therapy? Can you talk me through the kind of roles you do as a Band 7
   a) Do you think it is important to have defined leadership within the service?
   b) What role/ function do you see a defined leader performing for a stroke service?

10) My previous reading suggests that commissioners with knowledge of the stroke guidelines are more likely to properly commission stroke services.
   a) Have you had any previous involvement with commissioners? I'd love to know a bit more about that
   b) Do you think they are knowledgeable about stroke clinical guidelines and the stroke pathway?
   c) Do you agree with my idea…

11) In this same vein, administrative planning… One of my ideas that I'm currently exploring is that community stroke services have a greater administrative function than ward based services, this has been called "Non direct Patient Contact Work"
   a) Is that your experience here?
   b) How does it differ to the ward?

c) Does it impact on the number of patients you can deliver therapy to?
d) Is there a way to reduce the impact of these administrative exercises?
e) What difference have the electronic notes made?
f) Would access to a social worker help? How?
g) Would you be able to pass on more work to an administrator?

12) When I'm talking with therapists the one thing that comes up over and over again is the need to be flexible and adaptable. Can you tell me why a community stroke team might need to be flexible and how that impacts on the team
   a) What helps you to be flexible?
   b) Teamworking seems to play a role, what aspects of teamworking help you deliver therapy as a service

13) I'm interested to know how rural community stroke services can implement an evidence-based service. We've covered a few points already but do you think in respect to your service here that I've missed anything out? If I was to ask you why do you think your service can fulfil the audit criteria – what would you say?

Thank you for taking part in this interview, I really appreciate your time. If there is anything else you that you realise at a later date that you would like to add please feel free to contact me by email and I will attach your comments to this transcript.

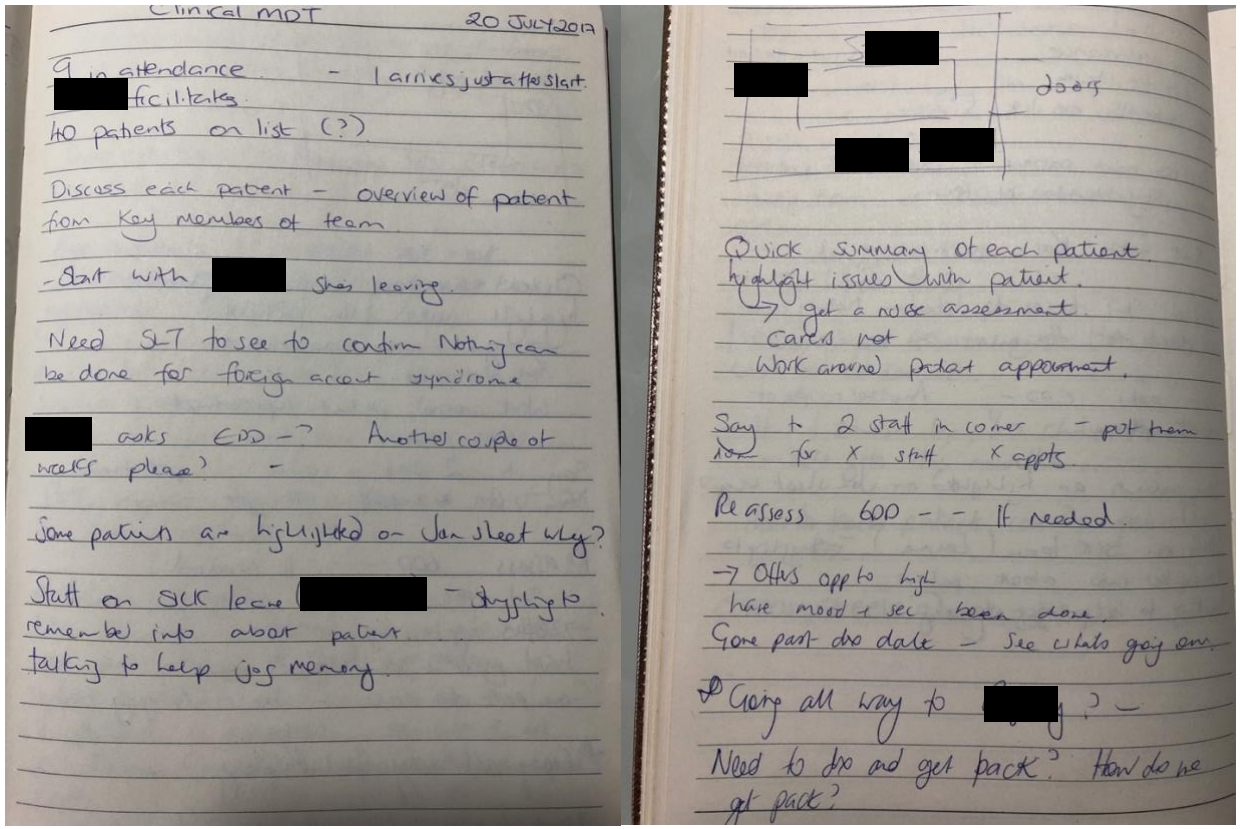
Appendix 6 Coding Framework

Programme Theory Node	Child Node	Child node	Child node	Description
	Context	**Mechanism Resources**	**Outcome**	
PG 1 Team Composition & Interdisciplinary working	• Occupational therapist • Physiotherapist • Speech and language therapist • Rehabilitation Assistant • Nurse • Service Lead • Administrator • Psychologist • Social Worker			• Team composition
		• Interdisciplinary working		• referred to by stakeholders as important
		• Staff Meetings • Staff Development		• Mechanisms identified as important to facilitate interdisciplinary working
Training	• RA training • Professionally registered staff • Unmet needs • Administrators			• Stroke specific skills training provided for different staff members • Unmet training needs identified in RCSSs
		• Inductions • Supervision • Shadowing/Joint visits • In-service training • External courses		• Mechanisms to facilitate stroke specific skills training for all staff

Programme Theory Node	Child Node	Child node	Child node	Description
	Context	**Mechanism Resources**	**Outcome**	
Patient Focussed Meetings	• Daily meetings • Weekly patient meetings • Discipline Specific meetings			• Different types of patient focussed meetings attended by the RCSS staff
		• Service level planning		• Mechanism to facilitate delivery of rehabilitation
		• Governance		• Mechanism to ensure service standards are maintained
Care Transitions	• Embedded Services • Co-located Services • Remote Services			• Contextual info influencing relationship with referring stroke units
		• In-reach • Inter-service training • Rotational posts		• Mechanisms to facilitate relationship with referring stroke units
Commissioning	• National Agendas • Pilot studies • Existing Data • Locally collected data			• Different types of evidence used by commissioners
	• Whole pathway commissioning • Insufficient pathway provision			• Responsibility for whole pathway • Lack of appropriate onward services
		• Engagement activities • Inter-personal relationships • Pathway meetings		• Mechanism to increase knowledge about commissioning • Mechanism to facilitate commissioning process • Mechanism to facilitate pathway cohesion

Programme Theory Node	Child Node	Child node	Child node	Description
	Context	**Mechanism Resources**	**Outcome**	
Visit scheduling	• Whole service scheduling • RA scheduling • Paper diaries			• Different approaches to visit scheduling in RCSSs
			• Unintended Outcome • Adverse effect on staff retention	• Impact of national mileage policy in RCSSs

Appendix 7 Sample Field Note Entry



Clinical MDT 20 JULY 2017

[redacted] in attendance - arrives just after start
[redacted] facilitates
40 patients on list (?)

Discuss each patient - overview of patient from key members of team

- Start with [redacted] she's leaving.

Need SLT to see to confirm Nothing can be done for foreign accent syndrome

[redacted] asks EDD -? Another couple of weeks please? -

Some patients are highlighted on Jan sheet why?

Staff on sick leave [redacted] - trying to remember info about patient talking to help jog memory.

[redacted] doors

Quick summary of each patient highlight issues with patient.
→ get a nurse assessment
Carers not
Work around that appointment.

Say to 2 staff in corner - put from for X staff X appts

Reassess EDD - - If needed

→ Offers opp to high
have mood + sec been done.
Some part due date - See what's going on.

Going all way to [redacted] ? -

Need to do and get back? How do we get back?

- discussion over how to get it back.
- pick up from [redacted] got lots of patients there.

Drop off at [redacted] lets check with Dav first.

Huge amount of mistakes last week.
I was down to see him but it wasn't in my calendar [redacted]

One staff has access to a computer with limited patient info.
2 staff in right hand corner making rotas.

Staff request how many sessions of OT, PT SLT, Nurse required.

Patient cancelled Appt Not seen her.
I've seen her - turned up - No notes app she dx. => Said ring today to confirm if dno.
If patient is anxious - can ring & ask qu. Patient worried about being dumped & left.

Can't tick off ... notes ...

Only 1 OT at meeting who has to leave.

=> checks before leaving Anything OT wise?

=> [redacted] ???

=> someone who's seen him tell me how long please

- Need to do carers burden as well don't we.

Is he Matrixed r u happy??

=> Yes I've got ... good!

Patient isn't managing - carers now in
I'm going to my doctors today.
- Mobile c frame
How must get about.
Retain info
Needs a MoCA - we need OT.
Paramedics have been talked (called) about.

Appendix 8 Glossary of Search Terms

Programme Theory One: The Multidisciplinary Team Composition and Interdisciplinary Working	ESD, CST, definition, team working, interdisciplinary working, multidisciplinary working, stroke units, stroke services, role blurring, communication, team working, MDT stroke pathway, Lead, leadership, manager, coordinator, HCA, RA, assistant, administrator, administrative support, administrative burden, healthcare, psychology, psychologists, community services, service specification, service model, interprofessional, collaborative working, stepped psychological care stroke
Programme Theory Two: Inter and Transdisciplinary Training	Stroke training, education, continued professional development, RA, HCA, stroke knowledge, interprofessional knowledge, stroke skills, interdisciplinary working, multidisciplinary working, teamwork, stroke units, stroke specific education framework, stroke training awareness resources, stroke competencies, clinical supervision, healthcare
Programme Theory Three: Multidisciplinary Meetings	MDT, meetings, stroke services, case conference, stroke, multidisciplinary meeting, stroke, community, goal setting, interdisciplinary, interprofessional, multidisciplinary, healthcare, decision making, communication
Programme Theory Four: Care Transitions	Care transitions, discharge link, Integrated services, healthcare, stroke, relationships, communication, implementation, co-ordinating patient care, community review UK health professionals, barriers, facilitators, delay, length of stay, organisational boundaries, co-location, collaboration
Programme Theory Five: Visit Scheduling	Home health care routing and scheduling problem, rostering, workforce planning, activity scheduling, community stroke services, healthcare, service efficiency, increased capacity, timetabling, appointment scheduling, calendaring, home visiting services, operational efficiency, diary planning

*The word “and” was used to combine keywords and search within multiple areas simultaneously.