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Exploring the potential roles and services of the community pharmacy team during a time of healthcare reform

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Abstract

Globally, health systems are complex and dynamic and can face issues when attempting to deliver equitable, accessible healthcare. Much of this is due to lack of integration across care providers. The National Health Service in the United Kingdom has revolutionised healthcare as we know it today. Currently, the NHS can be perceived as significantly fragmented, with many care providers delivering services in duplication.

Primary care is the gateway between care in the community and hospitalisation. Ninety percent of patient contact occurs within this care setting, as it mainly delivers services outside the hospital setting. Therefore, providing many channels for access to healthcare for the predominant proportion of the population.

One criticism of community care is the disconnect between care providers, which can lead to resource waste and weak outcomes, in association with care provision. One way to decrease this fragmentation is to develop an integrated approach across care providers, to facilitate seamless care delivery to strengthen primary care provision.

This study focusses on the Five Year Forward View. The publication demonstrates the requirements of the significant efficiencies and financial drivers needed to sustain and improve service provision. This would be achieved through developing new models of care to link up fragmented care through integration.

Community pharmacy is an integral care provider to support primary and community care provision. The aim of this study is to explore the potential roles and services of the community pharmacy team within a dynamic complex healthcare system.

This study consists of using a multiple case study methodology to explore the role of the community pharmacy team within the new models of care. In order to investigate this topic, semi-structured interviews and observations were undertaken to provide key insights and understandings of the identified case study sites. Three case studies were identified as part of the new models of care program. Twenty-two stakeholders were interviewed (health service commissioners (2), pharmacy team members (7), pharmacy leaders (3), Chief pharmacist (1), pharmacy business specialists (3), allied healthcare professionals (4), non-healthcare primary care professionals (2). Participants were purposefully sampled through snowballing, in order to directly access those stakeholders involved in the new models of care. Inclusion criteria consisted of having direct involvement with pharmacy related to the Five Year Forward View new models of care program. Interviews were transcribed verbatim and thematically analysed using NVivo® 11 software. The analysis process consisted of a two-stage process of inductive thematic analysis and deductive theoretical mapping on to Open Systems Theory.

This investigation leads to the identification and formation of the Formed Integrated Care System. This is key to the provision of sustaining efficient, accessible healthcare services within a complex dynamic health system. The

results from this study suggest, attributes such as seamless care provision, workforce and training are critical to the development and sustainability of the Formed Integrated Care System.

Pharmacy teams play strong roles in any integrated care system, in particular, in the community setting. Findings from this study demonstrate there are key roles for the community pharmacy team to deliver services. However, the depth of integration of these services within the wider system are significantly reliant on relationships. Two key requirements underpinned the community pharmacy teams initial integration within the wider integrated care system, these are identity and training.

This study indicates community pharmacy teams play an essential role in community care provision. Their position in the community presents them as gatekeepers to accessing healthcare services, providing them with an opportunity to facilitate better service provision. Within the wider healthcare system, the identity of community pharmacy is presented to be variable and therefore, defined roles and responsibilities for community pharmacy need to be clarified, in order for its place within an integrated care system to be recognised.

Implications for practice consist of a 'whole system' approach to integrated care provision, which includes a strong community pharmacy component. Due to the current COVID-19 pandemic, key factors which have been highlighted in this study may have altered in importance. Therefore, it is essential to research which factors, identified in this study, have been enhanced in order

to support healthcare delivery during and post-COVID-19. This will be vital to understand as it will set the pathway for community pharmacy provision for the future.

List of Publications

Publications

Karsan, Y., Anderson, C., Boyd, M.J. and Thornley, T., (2020). Exploring barriers to the sustainability of an electronic administration system in long-term care facilities: A case study approach. *Research in Social and Administrative Pharmacy*

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“Dream big, little ones”

~ Anon

List of Abbreviations

A&E	Accident and Emergency
ACC	Acute Care Collaborations
ADME	Administration, Distribution, Metabolism, Elimination
B	Balmore
CCFICS	Community Care Formed Integrated Care System
CCG	Clinical Commissioning Groups
COM-B	capability, opportunity, motivation and behaviour
COPD	Chronic Obstructive Pulmonary Disease
COVID-19	SARS-CoV-2; 2019-nCoV or Coronavirus
CPCS	Community Pharmacy Consultation Service
CPPE	Centre for Pharmacy Postgraduate Education
CQC	Care Quality Commission
CQUIN	Commissioning for Quality and Innovation
DCCPS	Devonport Collaborative Pharmacy Service
eMAR	Electronic Medicines Administration Record
FICS	Formed Integrated Care System

FYFV	Five Year Forward View
GDPR	General Data Protection Regulation
GP	General Practitioners
HSCA	Health and Social Care Act
HWB	Health and Wellbeing Board
ICS	Integrated Care System
IG	Information Governance
IP	Pharmacist Prescribers
JHWS	Joint Health and Wellbeing Strategy
JSNA	Joint Strategic Needs Assessment
LMC	Local Medical Committee
LPC	Local Pharmaceutical Committee
LTC	Long Term Conditions
MAR	Medicines Administration Record
MCP	Multi-speciality Community Provider
MDS	Monitored Dosage System
MDT	Multidisciplinary team
MIU	Minor Injuries Unit

MURS	Medicines Use Review
NAPC	National Primary Care Home
NCPCHS	Northumbria Community Pharmacy Care Home Service
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NPT	Normalisation Process Theory
OH	Orchard House
OP	Original Packs
OPAT	Outpatient Parenteral Antibiotic Therapy
OST	Open Systems Theory
PACS	Primary and Acute Care Systems
PCH	Primary Care Home
PCN	Primary Care Network
PDSA	Plan, Do, Study, Act
QIPP	Quality, Innovation, Productivity and Prevention
QOF	Quality and Outcomes Framework
RCHEMAS	Rushcliffe Care Homes Electronic Medicines Administration Service

SCR	Summary Care Records
SP	St Peters
STP	Sustainability and Transformation Partnerships
SUS	Secondary Uses Service
UECN	Urgent and Emergency Care Network
UK	United Kingdom

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Chapter 1 Introduction

1.1 Background

The National Health Service (NHS) in the UK (United Kingdom) has revolutionised healthcare as we know it today. Over time, numerous reforms have supported future proofing health services and sustaining the health needs of the country. The population in the UK is growing in both magnitude and life expectancy. An ever increasing number of people are in need of continuous healthcare, such as, those suffering with long-term conditions (LTC) (Office for National Statistics, July 2017, NHS England, 2014).

The NHS in England is facing continuous pressure and challenges associated with the current climate. Solutions are required to help, reduce this pressure and support seamless healthcare provision. The COVID-19 pandemic has provided an unprecedented unique environment, whereby essential changes in healthcare delivery has been vital. This has caused the eruption of unusual challenges to care provision, for example socially distanced care delivery, using personal protective equipment, such as face shields and screens. However, it has also enhanced previous outdated methods of care, for example, increasing the percentage of digitised prescriptions and consultations.

This study was undertaken prior to the COVID-19 pandemic and therefore will be presented and discussed in this format. However, reflections on the findings of this study will be discussed in light of the pandemic.

This study focusses on the Five Year Forward View (FYFV) (2014). This publication demonstrated a path to protect and sustain health service provision in England. In addition to, the requirements of significant efficiencies and financial drivers needed to sustain and improve service provision (NHS England, 2014, Select Committee on the Long-term and Sustainability of the NHS, 2017, The King's Fund, 2018). Through this was the suggestion to provide national investment to particular localities to provide 'model service provision'. This is known as the new models of care programs and the 'exemplar models' are called vanguard sites.

Health systems globally, are complex and dynamic, robust integrated care provision are key to delivering equitable accessible healthcare (Luke and Stamatakis, 2012, World Health Organisation, 2018). Currently, the NHS can be seen as significantly fragmented, with many care providers delivering services in duplication (NHS England, 2014). One way to decrease fragmentation is to develop an integrated multidisciplinary team (MDT) across care providers, to support seamless care provision. This can be achieved by facilitating population-based healthcare to strengthen primary care provision (Starfield, 1998).

Community pharmacy is an integral care provider to support primary and community care provision. However, its professional identity within the wider healthcare system can impact its level of integration. This can have a significant impact on the stability of the healthcare system, in terms of provision of care, workforce and resource distribution.

1.2 Study Rationale

The new models of care provided a new landscape where service components (e.g. funding, staff, service initiation) were devolved to local groups. This allowed local teams of varying personal, healthcare professionals and government stakeholders to come together and propose a new service. The initial research direction for this study aimed to explore and understand the vanguard sites in the new models of care program. However, during scoping, it emerged that community pharmacy was involved in the new models of care sites to varying degrees. Many sites did not have any pharmacy involvement but were developing integrated care platforms across primary and secondary care. This was extremely interesting. This research study narrowed to focussing on exploring and understanding the new models of care with substantial pharmacy engagement.

This study explores the roles of pharmacy teams and pharmacy services within the new models of care sites. It is important to explore these sites in depth and understand the underpinning evidence as to why and what roles the pharmacy team play. This will provide evidence to support potential roles of the pharmacy team across different localities during times of healthcare reform.

To support the in-depth analysis of different new models of care sites, case study methodology was used (Yin, 2013). Each case study used qualitative methods of interviews, observations and document analysis to provide an insight into the identified new models of care.

The nature of this study aims to demonstrate key areas of pharmacy provision within an integrated care system and will specifically focus on community pharmacy teams and service provision in community care. This study will support policy makers to develop policies in line within integrating community pharmacy provision and in turn help to build a strong primary care system, essential to facilitate the stabilisation of the wider complex health system.

1.3 Research Question

What are the potential roles and services for the community pharmacy team within a complex dynamic healthcare system?

1.3.1 Aims

The aim of this project is to explore the potential roles and services of the community pharmacy team within a dynamic complex healthcare system.

The objectives are:

1) To describe and understand the new models of care program
2) To explore and evaluate the identified new models of care at local level to inform a conceptual framework supporting community care provision.
3) To identify key factors which affect integration and sustainability in the wider dynamic integrated healthcare system.
4) To explore the roles and services of the community pharmacy team within community care.

5) To make recommendations on the role, the community pharmacy team plays, to support care providers and commissioners involved in service delivery within an integrated community care system.

In order to start to understand the concept of the new models of care it is essential to first describe the program and its implications for future practice.

This thesis follows this format in order to understand the new models of care pathway and its implications for policy and practice in relation to pharmacy.

1.3.2 Thesis Structure

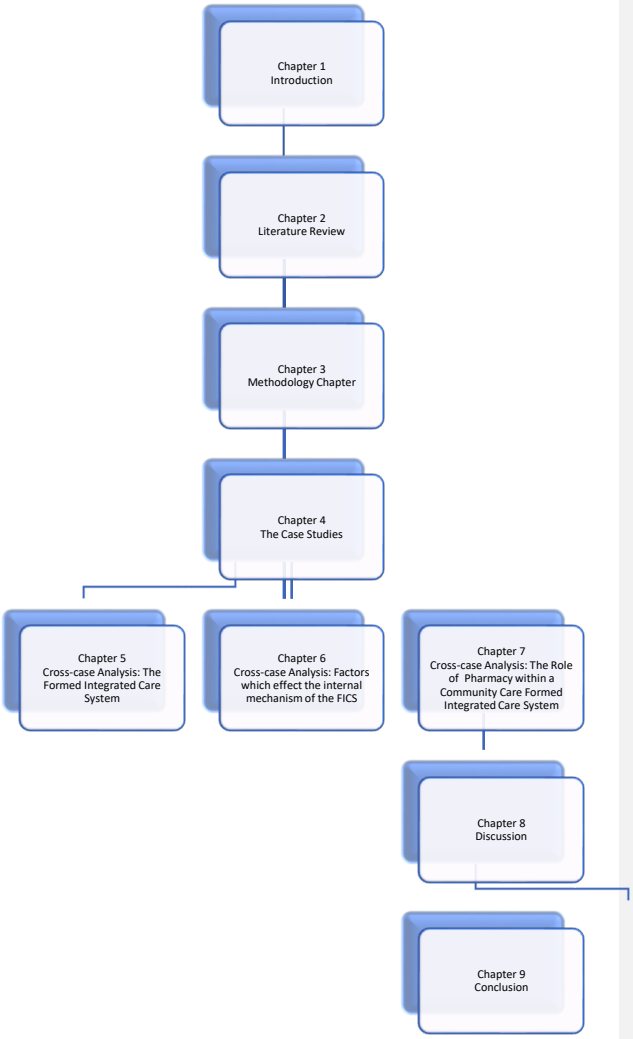


Figure 1.1 Thesis Summary.

Chapter 2 Literature Review

"We've been wrong about what our job is in medicine. We think our job is to ensure health and survival. But really it is larger than that. It is to enable wellbeing."

— Atul Gawande

This chapter sets the context of the study. It gives a brief description of the history of the healthcare system in England, its current structure and component parts, which underpin the setting of this research. The focus of this study is on the role of the community pharmacy team during and after a time of healthcare reform(Figure 2.1). A large part of the literature is based within primary care, as this is the focus area of this study. The review describes the different roles, infrastructure and services based within this care setting. The review will then discuss, key policy documents released during the period of this study to support the direction of this investigation..

The FYFV and the NHS Long Term plan are critical components to the way healthcare is shaped today. The objectives being to focus on 'proactive' healthcare as opposed to 'reactive'. Suggestions are to support health and wellbeing through communities. This shows the strong emphasis of all care providers within the primary care setting. This part of the literature review sets the context, to then build the view of potential emerging roles and services for the pharmacy team in association with wider roles required by community care teams to support care delivery within an integrated care system (ICS).

The second part of the literature review summarises the importance of evaluation and describes key examples which are essential to understand. Key insights into the methods used to evaluate the new models of care sites and their outcomes are presented. Both components are integral to continual commissioning and therefore are important considerations when developing new roles and services for the community pharmacy team.

2.1 A Brief History of UK Health Services (Historical)

The NHS was launched in 1948. The aim was to give the nation a basic right to healthcare. Its core values consisted of: being free at the point of use, care based on need, not on cost, and availability of healthcare from cradle to grave. It is funded through central taxation (Talbot-Smith and Pollock, 2006, Smith, 1989, Webster, 2002, Bion and Evans, 2011, Tan and Mays, 2014) . Since 1948, the NHS has been presented with numerous structural reforms. The current landscape in healthcare for England has led to an increase in demand for NHS services; predominantly due to the exponential growth and life expectancy of the population (Ham and Murray, 2015, NHS England, 2014, Gainsbury and Appleby, 2017, Gnani et al., 2013). The increased demand is not only for acute illness but also long-term, complex, chronic conditions, which may require more high-cost treatment plans (Crawford and Stoye, 2015, Dunn et al., 2016). The current structure of the NHS consists of three, traditionally separate, tiers. Primary, secondary and tertiary care. This study is predominantly located within primary care.

2.1.1 The NHS: Launch and Reforms

The launch of the NHS was a great triumph for the UK. The idea and support of access to healthcare for the whole country provided a great leap towards a utilitarian society (Talbot-Smith and Pollock, 2006). The NHS became a fundamental part of society in the UK. It features in many a political manifesto since the prominent publication of the 'Second Green Paper on the NHS' in 1968 (Bion and Evans, 2011, Anderson, 2007). This was the first major step, towards restructuring primary care. It consisted of the Labour government removing devolved healthcare services from local authorities to a centralised system, guided by the Department of Health. Post-election, in 1970, a conservative government sought to employ managers to improve efficiencies. They became known as regional health authorities. As decades progressed the NHS evolved through numerous, published white papers. There was a clear vision that healthcare belongs to the people and should be allocated fairly (Nuffield Trust, 2019, Talbot-Smith and Pollock, 2006, Smith, 1989).

2.1.2 The Health and Social Care Act (HSCA)

The continual reformations of the NHS have led to constant restructuring of primary care. There were several fundamental legislative changes from 1948 to 2012. These represented better integration of services and cost saving. The Department of Health has described that the population of England "feel that services are disjointed and the system isn't meeting their needs" (Department of Health, 2014). The previous care model, the Health and Social care Act 2012 (HSCA) went someway to integrating health and social care mainly within primary care (Talbot-Smith Alison, 2006, Checkland et al., 2016, Carter and Martin, 2016). The act came

into force in April 2013. There were some key areas where the legislative changes impacted primary care significantly.

2.1.2.1 Restructure of Primary care

The first major change consisted of restructuring primary care. This consisted of the formation of clinical commissioning groups (CCGs). CCGs are clinician-led statutory groups. They were identified as being in the best position of assessing needs of the locality and prioritising health strategies. CCG clinicians were seen to be more experienced in commissioning services to support primary care. Although CCGs seemed to support better primary care management, there are multiple variations of CCGs (in size, structure and function). This presents issues with services required to engage with them, but also in terms of accountability (Checkland et al., 2016). Another structural change consisted of the formation of "Healthwatch". Healthwatch are local and national groups which consist of patients and the public. Their involvement provides input on planning and delivery of health and social care services. Patient involvement and engagement have been an important part of the NHS. The aim is to give the 'power' back to the people, so they can have their voices heard in a healthcare system supported by central taxation (Hudson, 2014). However, Healthwatch has been reviewed as a 'consumer commodity' and therefore questions surrounding whether it is a true representation of patients and public views need to be acknowledged (Martin, 2008, Carter and Martin, 2016, Lupton, 2014). Alongside the structural rearrangements, further legislation passed to form "Public Health England". This sought to highlight and form a designated arena for a focus on public health needs. Additionally was the formation of various

regulatory bodies to govern and provide appropriate supervision (Department of Health, 2012, The Kings Fund, 2012).

The structural changes proposed in the HSCA went someway to support the increasing demands presented in acute and long-term care (Department of Health, 2012). However, there were not enough savings made. A report by Monitor (a body within the Department of Health responsible for measuring financial effectiveness of NHS services) and inspections completed by the Care Quality Commission (CQC) clearly described inefficiencies. This caused undue pressure on the primary workforce and infrastructure, which inherently impacted patient safety and quality of care (NHS England, 2014, Katikireddi et al., 2014).

2.1.3 Economics of the Modern NHS

The NHS is considered to be a centrally funded healthcare system, also known as the Beveridge system (Liaropoulos and Goranitis, 2015, Smith, 1989). This is to provide a 'fair' and efficient structure. But also, to disassociate financial gains with clinical needs. Allowing clinicians to focus on patient needs rather than the financial implications they represent (Talbot-Smith Alison, 2006). A recent review calculated, the total UK expenditure on healthcare in 2017 accounted for 9.6% of gross domestic product (GDP), a slight decrease from 2016 (9.7%). However, when accounting for inflation, 'real health expenditure per person' grew by 0.5% (Office for National Statistics, 2017). In 2017, 79% of the government spend was spent on the NHS (Office for National Statistics, 2017). However, this is still inadequate to support the current demands for healthcare in the UK. Other models are required to provide efficiencies and savings to support the future of the NHS and its lack of

appropriate funding (Charles et al., 2019, Gnani et al., 2013). This topic will be explored in more depth later in chapter (Section 2.7) as it sets the context for this study. Currently due to political changes, such as Brexit[1] , the Covid-19 pandemic and global inflation, the economical sustainability of the NHS has changed dramatically. As described above, financial support needed to provide adequate healthcare is insufficient (Charles et al., 2019). As a result, governmental spending changed to support an alternative focus within healthcare. The recent spending round described a 'significant' increase in the government budget to support the prevention agenda (HM Treasury, 2019, Alderwick and Dixon, 2019). For example, further funding was distributed to Public Health England to allocate resources to focus on prevention and self-care. These funds are distributed to local authorities to target local public health needs on a population basis. Services such as sexual health and smoking cessation are supported by this fund.

[1] Exit of Britain from the European Union

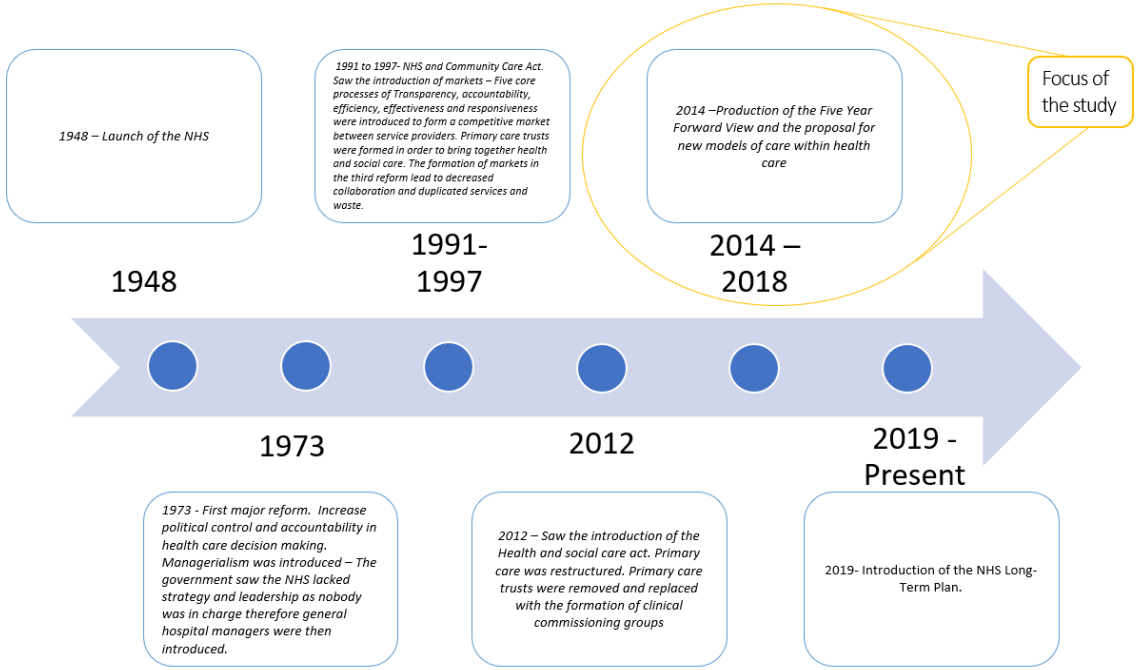


Figure 2.1 Timeline of the NHS Adapted from the King's Fund Timeline (The Kings Fund, 2012).

The previous section gives a historical insight and brief introduction into the NHS. Its structure, funding source and political weight are continuously discussed throughout this chapter. As outlined previously, the NHS is constantly changing, and therefore the location of this study is within a climate of continual change. A key focus of this study is the consideration of strategies and planned changes required to support the future of the NHS, in particular, primary care, as this will give an indication of its impact on the roles and services of the community pharmacy team. The following section will discuss the planned future trajectory of the NHS.

2.1.4 The Future - NHS Long Term Plan

Published on 7th January 2019, the NHS Long Term Plan (Figure 2.1) seeks to project the NHS strategy over the next 10 years. It was developed in response to the £20.5 billion promised by the then prime minister – Theresa May (Alderwick and Dixon, 2019). It describes key areas of focus to support the sustainability and longevity of the healthcare system in England. One of the main promises of the NHS Long Term Plan, was to 'unlock' a 3.4% increase in funding between 2019/20 and 2023/24. To support the sustainability of the NHS. However, this percentage increase described is still deemed to be inadequate. The Kings Fund specify a total increase of 4% per annum is needed to support the increasing demand for healthcare (Charles et al., 2019). Plans have been suggested by the government to support the continual financial inefficiencies. This has resulted in 'reinvention' by restructuring

primary and secondary care. Figure 2.2 presents six key areas where the NHS Long Term Plan seeks to support significant change:

1) Modernising healthcare services
    - Improve 'out of hospital care'
2) Focus and action on prevention and health inequalities
3) Emphasis on care quality through outcome measurements
4) Supporting NHS staff
5) Provide a digital platform to support healthcare professionals and population-based health
6) Financial focus to support the NHS and its

Figure 2.2 Key areas described in the NHS Long Term Plan (NHS England, 2019).

When focussing on primary and community care, the plan seeks to support the joining of services within the community. For example, supporting GPs to work with other allied healthcare professionals to service a population size of 30000-50000 patients (Alderwick and Dixon, 2019). Notably, the plan recognises that both structural and service-based changes are required to support these adjustments. The plan suggests structural changes within primary care to support better management of population-based healthcare which will provide proactive changes to health (NHS England, 2019). One of the steps to support population-based healthcare is to move to a fully ICS. The ICSs are required to have representatives from across the system. Although not detailed, it has been envisioned by NHS England to feature a single CCG across each ICS (NHS England, 2019, Charles et al., 2019). The aim is to strategically plan and 'streamline' services across each ICS to support its population within the legislative framework. Within each ICS are primary care

networks (PCNs). These are an example of structural changes required to deliver the Long Term Plan. General practices have joined together by 'federating' to be part of a wider PCN, these networks seek to support the management of population and locality based healthcare (NHS England, 2019). Pawa et al. (2017) describe the positive aspects of federating general practices, as it improves clinical safety and leads to more efficient working. However, many of the changes suggested requires more financial support and therefore further savings and efficiencies are necessary to support the changing demands. At the time of the release of the Long Term Plan, key questions were raised in relation to how the plan will be delivered. The NHS Long Term Plan suggests that funding will significantly increase within areas of primary and community care (around £4.5 billion higher than in 2019/20) (Charles et al., 2019). Although an increase in funding, it is still not enough to support the needs of the developing infrastructure and workforce within the NHS. It is well known that urgent care and accident and emergency (A&E) departments miss their performance targets as have elective surgery departments during times of crisis (Alderwick and Dixon, 2019). The plan does not describe how these already deficit targets will now be met and therefore 'trade-offs' in services are unavoidable in order to keep up with the demand. One of the main challenges faced in an already financially strained NHS, is an adequate workforce. The workforce is imperative to carry out the Long Term plan, however literature suggests the shortage of staff within the NHS could reach 250,000 by 2030. This is important, as lack of workforce, not only has an impact on current staff but this will inevitably impact patients, for example

resulting in reduced quality of care and longer waiting times (The King's Fund, 2018, Griffiths et al., 2016).

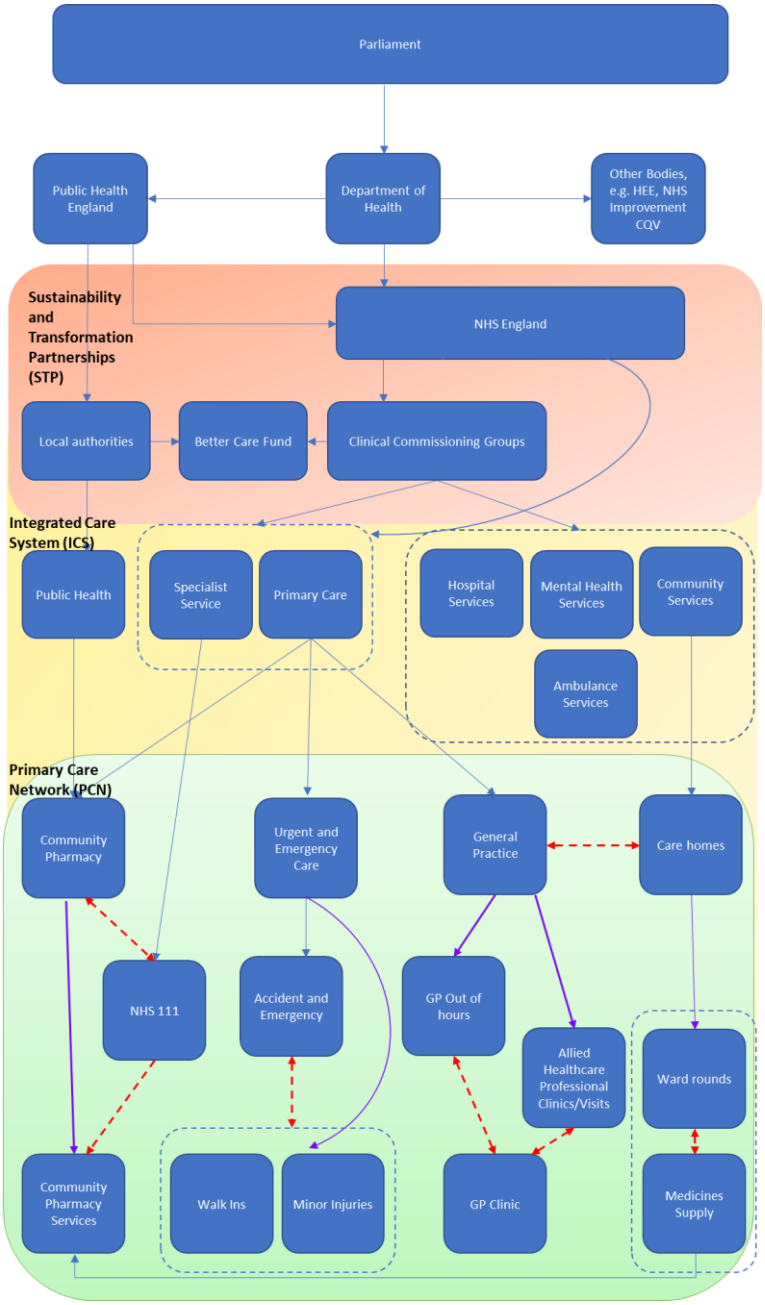


Figure 2.3 Diagram representing the pattern of NHS Commissioning (Blue), Services (Purple) and Referral (Red) Pathways. Adapted from (The Kings Fund, 2017, NHS England, 2019, Tan and Mays, 2014).

2.2 Primary Care

2.2.1 Access

Primary care is the gateway between care in the community and hospitalisation. Ninety percent of patient contact occurs within this care setting (Harnden and Lehman, 2009). It mainly provides services outside the hospital setting. Thereby, containing many portals for access to healthcare for the predominant proportion of the population. For example, urgent care, walk-in centres and general practice medical services (Talbot-Smith and Pollock, 2006). For the large percentage of the wider population living in the community setting, it is important for good ease of access to healthcare. Increased access to an effective primary care system can delay mortalities, through identifying risk factors, appropriate diagnosis and disease management (Starfield et al., 2005, Bellamy and Smith, 2007, Flanagan et al., 1999). Additionally, studies have shown better access to healthcare improves health and wellbeing, in particular, in patients suffering from long-term conditions and disabilities (Taylor et al., 2016, NHS England, 2014). Although in theory, the literature has shown the positives of access to an effective primary care system. In reality, access to healthcare is globally variable (Peters et al., 2008). In terms of geography, the healthcare landscape in England varies between densely and sparsely populated urban and rural areas. Evidence suggests, that people residing in rural areas, elderly populations and those of lower socioeconomic backgrounds have poorer access to healthcare (Goddard, 2008, Ford et al., 2016). Therefore, this suggests that the locality of healthcare services within primary care plays an important role. It can be

directly linked with health inequalities. Disadvantaged population groups find it difficult to access healthcare, such as those who are homebound, full-time carers and those who have decreased access to public transport. Elderly population groups, particularly find it difficult to access out of hours services due to issues surrounding safety and cost of transport (Goddard, 2008). There is therefore a definite need to support these patients and improve their access to primary care. A reasonable approach to tackle this issue would be to build better links between primary and community care within these underserved areas, in addition to providing a population-based healthcare approach to care delivery (Rawaf et al., 2008). The NHS Long Term Plan seeks to achieve this by forming primary care networks (Figure 2.3). However, research led by the King's fund, alongside international literature suggest it is an untested model which relies on many factors such as workforce capacity, relationships and leadership (Charles et al., 2019, Pawa et al., 2017, Rodrigues et al., 2014, Goodwin et al., 2012, Mascia et al., 2018). This is the context of where my study is based.

2.2.2 Lack of Access

Lack of access to primary care is associated with avoidable hospital admissions, which inevitably leads to a greater cost to the NHS (Weissman et al., 1991, Rosano et al., 2013). Rosano et al (2013) describe avoidable admissions as, events which could have been avoided with appropriate use of outpatient care. In order to support patients within this sector, the future NHS plans suggests using technology. Its aim is to direct almost a third of face to face consultations towards this direction, however specifics on how this will

happen have not been identified yet (NHS England, 2019). Evidence suggests technology used in the healthcare settings can facilitate and streamline patient flow (Devaraj et al., 2013, Boyer and Pronovost, 2010). However, there is very little evidence available as to whether these methods will influence patient flow and transfer of care or even improve health outcomes (Charles et al., 2019, Flodgren et al., 2015).

2.2.3 Funding

Funding is a crucial element to the development of a strong primary care system. Improvements in health outcomes and reducing health inequalities are crucial to achieving this (Ham and Murray, 2018). Figure 2.4 shows the distribution of funds (%) across primary care for 2018/19. The diagram shows a large proportion of funding (66.2%) distributed to CCGs. CCGs therefore can facilitate bigger changes to support achievement of better health outcomes and reduced inequalities in primary care. The recent Spending Round (2019) has confirmed £33.9 billion more per year by 2023/24 in comparison to 2018/19. It explains the extra funds will be used to support training and development of healthcare professionals and delivery of the NHS Long Term Plan. The additional funds will be used to support upgrading of hospitals, public prevention programs, artificial intelligence and social care support (HM Treasury, 2019). Although, politically there has been a promise to increase funding, questions arise as to whether it is enough to support the demands of the ageing population and increase in multiple morbidities. Reasons have been explored as to why the increased funding still does not support care delivery within the NHS. Maguire et al. (2016) suggest it is due to various

factors. Such as a rise in population, increased demand for service and possible higher expectations from patients, for example earlier referrals and better quality of care. Overall, financial support can help the development of innovative services and build a strong primary care infrastructure (Bitton et al., 2017, NHS England, 2014). This is important as it sets the context for this study.

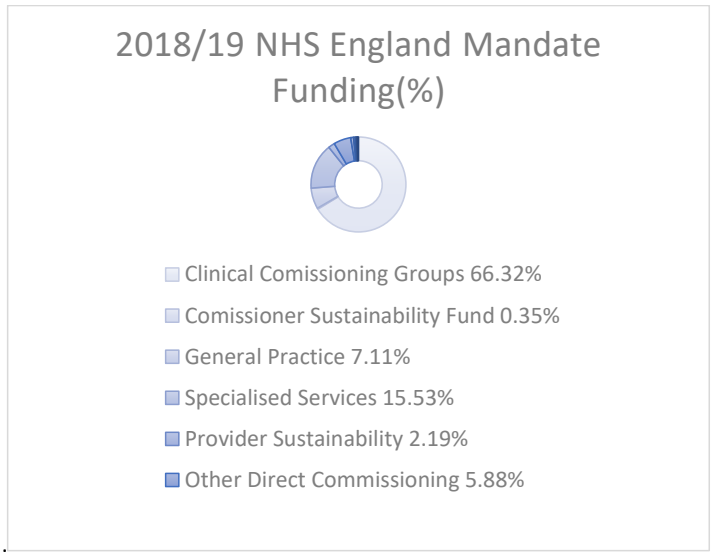


Figure 2.4 2018/19 NHS England mandate funding (%) (Baumann, 2018).

2.2.4 Primary Care Workforce

Primary care includes General practitioners (GPs),nurses, pharmacists, dentists and all other allied healthcare professionals, such as physiotherapists (Taylor et al., 2016). Figure 2.3 demonstrates the network of primary care services expands to include healthcare professionals which cross many sectors of care delivery. For example those who provide hospital services in patients own homes, such as stoma therapists and outpatient parenteral antibiotic

therapy (OPAT) (Talbot-Smith and Pollock, 2006). These types of healthcare professionals work with community services and general practice. MDT working and integration of care can support better access, and provide personalised and population-based care (The King's Fund, 2018). Dubois et al. (2018) describe the usefulness of the combined knowledge obtained from an MDT in cancer care. It was seen to support an improvement quality and coordination of care. The sustainability of these models and the current primary care system needs to be revised because it cannot keep up with the current healthcare demands (The National Association of Primary Care, 2015, NHS England, 2014, Maguire et al., 2016). Evidence suggests that healthcare as a whole benefits from better utilisation of resources and a strong primary care system (Starfield et al., 2005). In order to produce a 'better' primary care system it is important to have strong infrastructure and workforce. A Nuffield report recently cited there is a shortage of over 100,000 staff across NHS trusts. Which is due to poor planning, funding cuts in training and Brexit (The King's Fund, 2018). This can have a negative impact on staff and their wellbeing and on patient outcomes. Some nursing studies have highlighted that good quality patient care and positive outcomes are compromised when there is a reduction in staffing levels (Kitson et al., 2013, Ball et al., 2016, McGillis Hall et al., 2004). In order to compensate for this deficit, there have been a number of skill mix changes, for example the introduction of consultant clinicians and pharmacist prescribers (Rosser et al., 2017, Mann et al., 2018). In most cases these 'skill mix' additions are due to changes in policy and/or evidence based led. A Health Foundation report suggests, increasing

the ‘skill mix’ due to negative factors, such as pressures on recruitment and finances can comprise quality and safety within the NHS (Buchan et al., 2019, Beech et al., 2019). Therefore, combining training to support the growth of skill mix to meet the current demands of the NHS is significant when developing the primary care system.

The section above describes the key components of primary care. The following sections discuss further individual groups which impact the operation of a primary care system. Figure 2.3 demonstrates the different care providers involved in the various layers within the sustainability and transformation plans (STPs). STPs are ‘geographical footprints’ which support the delivery of care, improve health and wellbeing and improve service efficiency within a given area (The King's Fund, 2017). Since the release of the NHS Long Term Plan, the focus has moved towards the provision of ICS. However, there is still a place for STPs as they involve the collaboration of local authorities and clinical commissioning to support all types of community care. Including, social care and community housing (Alderwick and Ham, 2017). But eventually STPs will be phased into ICS. ICSs are built on collaborative working between the NHS and other organisations at a local scale. Its main focus is on the ‘prevention agenda’. Working with local authorities and other organisations, an ICS can build better internal systems to drive efficiency (Ham, 2018). They can provide services for the ageing population and target those wider health inequalities related to their specific population. Many ICSs have worked well to form these collaborations and improve health and wellbeing for their populations (Charles and Wenzel,

2018). Within the ICS are PCNs, which have been described earlier. Figure 2.3 demonstrates the complex nature of funding, referral systems and service delivery within the PCN network. Although a simplistic version, focussing on the areas researched within this study, it goes some way to show the collaborative relationships required to support primary care (Coultas et al., 2019).

2.2.5 General Practice

General Practice is known as 'bedrock' of primary care (NHS England, 2016). It supports a large proportion of patients who suffer from both acute and chronic conditions. The general practice community consists of not only GPs, but nurses, pharmacists, healthcare assistants, other allied healthcare professionals and non-clinical personnel (Talbot-Smith and Pollock, 2006). GPs link primary and secondary care. In relation to their role; in addition to providing medical advice, they refer patients whose interventions are out of the scope of primary care to more specialist intervention sites (Foot et al., 2010).

2.2.6 General Practice Reform

A series of changes have occurred in general practice over the years, clinically and structurally (NHS England, 2019, Gerada and Riley, 2012). These changes have been driven by policy documents and white papers (Baker, 2000). Most recently was the introduction of the General Practice Forward View and the release of the new GP contract. The General Practice Forward View, released in April 2016, consisted of key areas to support the future of primary care. Its

main focus is to provide investment, workforce support and workload management to secure the sustainability of General Practice (NHS England, 2016). On investment, by 2020/2021 an increase of £2.4 billion yearly is to be pledged. This is important, as the growing demand for healthcare is predominantly in primary care and therefore increased funding is needed to support this. In relation to, workforce a pledge has been made to recruit a wide variation of healthcare professionals to support GPs in more specialised work, for example clinical pharmacists and mental health nurses (Mann et al., 2018, Baird et al., 2016). It is commonly known that GPs are under consistent system pressures within primary care and therefore devolving certain specialisms to a wider MDT is one way to decrease the pressures faced (General Medical Council, 2019, Gerada and Riley, 2012). This study touches on some of the variations in workforce development and use within the primary care setting.

2.2.7 General Practice Contract

The GP contract is another fundamental document released to guide the future of General Practice. It has secured funding and support in line with the NHS Long Term Plan. There will be a 4% increase to support the new and emerging PCNs. The PCNs aim to support healthcare delivery on a local scale and aim to transform population-based healthcare. The contract also specifies that patients will be given more choice in who they want to see at a GP practice, for example a specialised respiratory nurse or clinical pharmacist (NHS England, 2019). This is a positive step towards changing the current model of care delivery. Increased use of multi-speciality providers within

general practice will drive efficiency to support the current demands of an ageing population, who require more healthcare services (Baird et al., 2016, Lawson, 2016).

2.2.8 General Practice and the NHS Long Term Plan

The NHS Long Term plan and the recent update to the GP contract agreement specifies an increase in the general practice workforce by 2020 (NHS England, 2019, British Medical Association, 2020). The General Practice Forward View set a target increase of 5000 additional GPs by 2020 (NHS England, 2016). This is required to keep up with the increasing demand for healthcare within the primary care sector. Namely of those who are ageing, suffer from long-term chronic conditions and in general those who have health needs (Buchan et al., 2019, Gnani et al., 2013). This target will be difficult to attain due to the long duration for full qualification to become a general practitioner. 21% of the GP workforce are made up of 'doctors in training' (Buchan et al., 2019). Therefore, in order to keep up with the demands an alternative skill-mix is required. Nursing and pharmacy have played a crucial role in the delivery of care within primary care. There has also been a 40% growth of the pharmacy workforce within General Practice (Buchan et al., 2019). This therefore shows an extensive MDT can support to meet the demands primary care faces (Mann et al., 2018, Charles et al., 2019, NHS England, 2016).

2.3 Community Care

Community-based teams in primary care are seen as a way to link up fragmented care (Van Houdt et al., 2011). They are located under the primary

care umbrella, however, can be directly linked to secondary care and mental health services. Across the globe, community care acts to support patients' independence and enhance their quality of life. In many cases involving the elderly care population, it supports their living at home for longer (Low et al., 2011). These services can be funded by different networks. government, private and/or non-profit organisations. One criticism of community care, is the disjoint between care providers, which can lead to resource waste and weak outcomes (Clarfield et al., 2001). Many patients who are elderly and suffer from multiple morbidities require frequent visits from various care providers on a long-term basis (Riste et al., 2018). Patients have described lack of communication and fragmentation between community services. This can often lead to the risk of patients being missed or 'falling through the gaps' (Juhnke and Mühlbacher, 2013, Darzi and Howitt, 2012). However, integration of health services through an ICS is one way to reduce these issues. Integration, supports alignment of health services across sectors, in terms of funding, administration and infrastructure (Kodner and Spreeuwenberg, 2002). Evidence suggests that healthcare as a whole benefits from better utilisation of resources and a strong integrated primary care system (Starfield et al., 2005, NHS Improvement and NHS England, 2018).

2.3.1 Community Care and the NHS Long Term Plan

The NHS Long Term plan suggests a move towards a more 'proactive' primary care system, rather than reactive (Ham, 2010). In order to achieve this and facilitate quality and efficient healthcare delivery, a strong community care network is required. A case study performed in Darlington (1998) on

community care management initiatives, found better links between health and social care were needed. It would also be advantageous if there were better links between community--based care and secondary care at 'hands on worker' level to better support integration. In terms of community care services within primary care, stakeholders in community care, such as district nurses, care home staff and to some extent community pharmacy can play a role in triaging patients and support self-care management (Mason and Snooks, 2010, NHS England and NHS Improvement, 2019). This can make supporting patients in primary care more manageable and allow them to see the right expert at the right time. This forms the base of the context of this study, building a strong multidisciplinary infrastructure is key to a strong ICS.

2.3.2 Care Homes

There are approximately 543,000 elderly residents occupying care homes within the UK (Care Quality Commission, 2017, Regulation and Quality Improvement Authority Northern Ireland, UK Statistics Authority, StatsWales). Care homes are generally comprised of two main types; nursing and residential (although many have dual roles). Nursing homes consist of care delivered by registered nurses and residential homes provide supportive care delivered by qualified care assistants. Both types of homes are supported through private and/or public-sector funding. Research suggests residents enter care homes in the hope to remain as independent as possible (Bally and Jung, 2015). Current national health goals seek to support independence in care homes through various methods: supporting patient centred care, developing new models of healthcare delivery within care homes and placing

a large focus on quality and strong leadership to support better healthcare (NHS England, 2016). One of the main challenges faced in care homes is the safe provision of medicines administration (Fahrni et al., 2014, Barber et al., 2009), particularly due to the frail and elderly population which poses a greater risk in terms of medicines administration. These residents suffer from multiple morbidities and are on many medications, in addition to their ageing pharmacodynamic profile (Barker et al., 2002). The National Institute for Health and Care Excellence (NICE) (2014) recommends supporting safe medicines administration in care homes by focussing on patient-centred care and administering the correct medication at the correct time and recording appropriately. Many care homes currently use medicines administration sheets (MAR) to record and support administration of medicines. These are paper-based sheets which contain details of the resident and their medication. However, MAR sheets have been linked with medication errors, many associated with stopped medications (Barber et al., 2009). The CQC and British Geriatric Society have reported that patients suffering from dementia and living in care homes do not get the level of care that they need (NHS England, 2014). Through better management of patients' conditions and use of technology, care for older people can be enhanced to reduce admissions into hospital and better rehabilitation (NHS England, 2014). A recent Health Foundation Evaluation found 41% of care home admissions to Accident and Emergency (A&E) are for potentially manageable and treatable outside of secondary care (Wolters et al., 2019). This is important, due to the impact of medication errors in care homes on the wider NHS. One area of this study

focuses on supporting safer delivery of medication through an electronic medication system (Chapter 4, 4.1).

2.4 Pharmacy

2.4.1 Role of the Pharmacist

The role of the pharmacist has continually evolved alongside the changing nature of healthcare within the UK. Pharmacists have many roles within patient safety, medication supply and usage and in advisory roles (Anderson, 2007). Before the start of the NHS (1948), patients who could not afford to see a doctor would visit their community pharmacy. This cemented the role of the pharmacist, as one which is associated with giving advice. For example, patients would attend the community pharmacy to obtain advice on common ailments (Taylor, 2016). Post the initiation of the NHS, pharmacists became inundated with dispensing and their work predominantly became volume based, due to the amount of prescriptions generated by local GPs (Anderson, 2007). Over time, the role of the pharmacist has developed, supporting services with information relating to cost-effective prescribing, healthy lifestyle advice and collaboration with other organisations. For example, local authorities and care homes (Dalton and Byrne, 2017, Blouin and Adams, 2017). An important aspect of the role pharmacists play, is their impact on deprescribing efforts and optimising appropriate therapy, especially in vulnerable groups, such as elderly and those suffering with long-term chronic conditions (Mann et al., 2018, Dalton and Byrne, 2017, NHS England, 2016).

This study focuses on the role of the community pharmacist and community pharmacies in the wider health service.

2.4.2 A Brief History of Pharmacy

The role of pharmacy is continually evolving. Community pharmacy in particular is evolving at a faster rate than its longer established hospital and industrial counterparts. 1981 saw a change in the government's stance on community pharmacy. The then Minister of Health Dr Gerard Vaughan notably described the opinion as "One knew there was a future for hospital pharmacists, one knew there was a future for industrial pharmacists, but one was not sure that one knew the future for the general practice (community) pharmacist" (Anderson, 2007). The response from the Pharmaceutical Society was clear and later cemented the role of 'the community pharmacist'.

"Every community pharmacy, by its appearance inspires confidence and by the nature of the professional service provided leaves the public and particularly the decision makers, in no doubt that community pharmaceutical services are an essential part of primary healthcare".

(Anderson, 2007).

Between 1992 – 1996 saw the release of various reports which facilitated the evolution of community pharmacy (Royal Pharmaceutical Society of Great Britain, 1992, Royal Pharmaceutical Society of Great Britain, 1996, Anderson, 2007). To summarise, the reports identified the role of pharmacy in 4 key areas; managing prescribed medication, chronic conditions, supporting minor ailments and promoting healthy lifestyles (Taylor, 2016). These expanding

roles for pharmacy are very much relevant today. The release of the white paper "Pharmacy in England" (2008) and the Now or Never Report (2013) solidified the active roles pharmacists can take in the areas mentioned above. In particular, supporting patients to manage their long-term conditions. Providing care to patients in locations suited to their needs, for example in GP practices and or fully functional consultation rooms within community pharmacies. Also supporting triage of patients in the form of urgent care and treating minor ailments (Smith et al., 2014, Anderson et al., 2019, Royal Pharmaceutical Society of Great Britain, 2013). The Now More than Ever report (2014) highlighted the impact of the changing roles and capabilities of pharmacy to policy makers and stakeholders outside of pharmacy. However, it was described due to 'divided' leadership it has been difficult for pharmacy to form collaborative links with other healthcare organisations. This is important because forming relationships are critical to the success of ICS. This adds to the context of my study and the topic of collaboration and building relationships will be described in more depth in later chapters (Chapter 6, 6.1.2 and Chapter 8, 8.2.3.3).

2.4.3 The Pharmacy Workforce

There is a strong place for the pharmacy workforce within the NHS and internationally. Pharmacists have been described as a vital resource to support healthcare; in particular public health initiatives and therefore it is important to embed the role of the pharmacist within its 'care' group counterpart (World Health Organisation, 1993). For example, embedding community pharmacy within primary care. The World Health Organisation

(WHO) defines a community pharmacist as “the health professionals most accessible to the public. They supply medicines in accordance with a prescription or, when legally permitted, sell them without a prescription” (World Health Organisation, 1993). The community pharmacist and their team are currently underutilised (Latif et al., 2016). The Department of Health issued the ”transforming primary care plan” which included a call for pharmacists to take a wider role, particularly supporting the management of LTC (Department of Health, 2014). The expanding scope of the pharmacists role, has enabled them to support personalized and population-based care; within community pharmacy teams and within interprofessional groups (Dalton and Byrne, 2017, Taylor, 2016). With the introduction of pharmacist prescribers and further community pharmacy public engagement, through more public health services, there is a great opportunity for community pharmacists to be in a position to help reduce pressures on general practice and across the PCN (Taylor et al., 2016, Mann et al., 2018, NHS England, 2019, Royal Pharmaceutical Society of Great Britain, 2013).

2.5 Community Pharmacy

Currently there are 11,539 community pharmacies in England (NHS Digital, 2019). There are 1.6 million visits to the community pharmacy every day, out of which 1.2 million are for health reasons (Department of Health, 2016). This shows a large proportion of visits from the public have a focus on solving health related issues. Recently, pharmacy has been featured in the media as ‘glorified shopkeepers’ however the numerical values published by the Department for Health suggest otherwise. The vision presented by the

Department of Health is that of a clear direction to integrate community pharmacy into the "wider health and social care system" (Department of Health, 2014). The community pharmacy team are increasingly becoming more clinically trained and professionally developed to support specialist primary care services (Hindi et al., 2019, Mossialos et al., 2015, Murray, 2016). In the UK, US and Australia, services such as atrial fibrillation clinics, tuberculosis monitoring have been piloted in the community (Lowres et al., 2015). The contractual framework seeks to support community pharmacy to provide hepatitis C testing (Department of Health and Social Care, 2019). The high street presence and long opening hours show that community pharmacy plays a vital role in new models of primary care. For example, supporting acute episodic care and facilitating self-care management of LTC (NHS England, 2017, Pharmacy Voice, 2016).

2.5.1 Community Pharmacy Contractual Framework and Services

Community pharmacists split their time between dispensing activities and health related services. Since April 2005, the community pharmacy contractual framework consisted of a predominantly volume-based contract with three tiers of services. Essential services, which is the provision of dispensing, health promotion and disposal of medicines. This is required for all community pharmacies to provide. The second tier consists of 'advanced services' which are nationally agreed services such as Medicine Use Reviews

(MURs)[2]. The final tier consists of 'locally enhanced services'. These are locally commissioned by CCGs and local authorities, such as sexual health and smoking cessation services (Royal Pharmaceutical Society of Great Britain, 2013, Anderson and Sharma, 2020). Since 2005, the contract has since evolved to attribute some funding towards public health and health promotion within the community (Anderson, 2007). Recently, the release of the community pharmacy contractual framework (2019), proposed key developments and changes to the previous community pharmacy contract. There is a focus on urgent care, prevention, medicines optimisation and safety. In relation to urgent care, the Murray report (2016) highlighted the impact community pharmacy could have in supporting triage of patients. The new contract has reflected this in proposing the introduction of the Community Pharmacist Consultation Service (CPCS). This uses direct referrals from NHS 111 and GPs to now follow to support patient's healthcare needs. For example, urgent repeat medication requests or patients with 'low acuity' conditions (NHS England and NHS Improvement, 2019). The overall aim is to integrate community pharmacy within the urgent care system. The prevention agenda focusses on supporting patients with undiagnosed cardiovascular

[2] MURs are due to be phased out as per the updated community pharmacy contractual framework Department of Health and Social Care, N. E., and, NHS Improvement, PSNC,. (2019). *The Community Pharmacy Contractual Framework for 2019/20 to 2023/24: supporting delivery for the NHS Long Term Plan* [Online]. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/819601/cpcf-2019-to-2024.pdf [Accessed 18/02/2020].

disease and secondary care referred smoking cessation. There is also an aim to support antimicrobial stewardship in the community pharmacy. The second part of the contract describes the introduction of the 'pharmacy quality scheme' which is essentially a payment by results model. It is attempting to move community pharmacy towards a more clinically focussed, payment model. Community pharmacies will submit evidence of certain training attained by staff, for example sepsis and risk management training. In addition to performing audits which support the General Practice Quality and Outcomes Framework, such as lithium audits and pregnancy prevention for female patients taking valproate (Department of Health and Social Care, 2019).

The new community pharmacy contractual framework and the redistribution of pharmacist's time supports direct referrals of patients to the community pharmacy as a first port of call. This could potentially lead to better convenience for patients and facilitate a more clinically focussed outlook. In addition to this, community pharmacists will be more vocationally empowered to deliver advanced services. With their involvement in current advanced services and access to the Summary Care Record (SCR), community pharmacies have more potential to join integrated federations and other primary care organisations (Department of Health, 2016). Thereby aiding in delivering more integrated care. This background information sets the context for this study. Understanding the changing role of pharmacy and its capabilities, alongside legislative and financial changes is essential background required for this investigation. Community pharmacy involvement in the new

models of care (which will be explored in more depth later in this chapter, section 2.7), links new ways of working and inspired collaboration bound by contractual obligations.

The previous section discussed the context of the different elements featured in primary care. The next section introduces the concept of the 'new models of care'. This was a government initiative to support primary care through the climate of change to innovate new efficient ways of working. The new models of care initiative have since been surpassed by the NHS Long Term Plan. Much of the funding had been depleted towards the end of the new models of care program. The evidence presented is true of that time. This section will introduce the new models of care and consider how they were evaluated.

2.6 The Five Year Forward View (FYFV)

The numerous NHS reforms pre-2014 were dis coordinated resulting in unnecessary replication of many services. This led to decreased efficiency and decreased quality in service provision for the vulnerable percentage of the population (The Kings Fund, 2012, Humphries, 2015). In 2014 the release of the FYFV presented a plan for sustaining the NHS and improving quality and efficiency (NHS England, 2014). The FYFV sets out a shared view on the evolution of England's healthcare system, through better service provision, culture and public awareness. It described which funded models of care will be required in the future (Ham, 2015) and the strategic approaches needed to improving health inequalities, whilst meeting the projected health and social care funding shortfalls (Taylor et al., 2016).

The FYFV suggested breaking the traditional barriers across the healthcare landscape, namely between primary and secondary care, but also within community care. Historically, there has been a clear divide between primary and secondary care (Talbot-Smith and Pollock, 2006). The FYFV aimed to dissolve those barriers and form a more succinct ICS at levels of health and social care (Riste et al., 2018). This was the next radical restructure since the HSCA. Alongside future aspirations for primary care, the FYFV was also met with much criticism. England continued to be in a time of austerity, coupled with an ageing population with much of the population suffering with multiple morbidities (McDermott et al., 2019, NHS England, 2014). Therefore, proposing and financing a restructure to support the development of local new models of care, provided increased pressure to produce positive proposals and optimistic outcomes.

2.6.1 Aims of the Five Year Forward View

One of the targets of the FYFV, was a focus on access. Patients were to be able to access multiple services during one episode of admission. For example, accessing mental health, social and clinical care services. Rather than only having the main issue of that episode treated. This would require many healthcare professionals to work collaboratively to facilitate a seamless service. McDermott et al (2019) describes findings from qualitative interviews with commissioners during this time of change. Overall, the stakeholders welcomed the idea of integrated care. However, many GPs were hesitant at the thought of funding being shifted away from general practice to more community-based services. This study was limited in that it was a 'snapshot'

of evidence from four CCGs. However, these opinions many have been felt elsewhere, due to the times of a resource stricken primary care system. This shows the climate of change, the new models were born from and sets the context of 'workplace culture' within this study (Bryce et al., 2018).

To support the development of an improved interface between primary and secondary care. The FYFV suggested the movement of some secondary care services to primary care. For example, outpatient appointments. Patients on consultant led long-term medication can be reviewed and seen in the community by their consultant. This is to reduce an increased level of avoidable hospital admissions, which are extremely costly to the NHS (Turner et al., 2016, Morse, 2013, Weissman et al., 1991). Areas in Kent and Rotherham have utilised this new way of working within primary care. In Kent, GPs have joined federations to provide further services to the community such as minor injuries and investigations, which are usually done in hospital. In Rotherham, GPs have been working with voluntary services to link up care and social services provision to give better support for patients with long-term conditions, reducing the need for out-patient appointments and visits to accident and emergency (NHS England, 2014).

The new models of care within primary care were the start of many transformational changes across England. One key factor supporting the new developments within primary care is the idea of 'prevention'. Prevention, has been a long standing focus of providers in primary care globally (Yarnall et al., 2003, Mayhew et al., 2001, Blenkinsopp et al., 2003). Lack of recognition of

the importance of prevention can have a significant impact on social determinants and in turn impact the country's economy (World Health Organisation, 2013). It has already been described, reducing admissions into secondary care decreases infrastructural pressure and financial burdens placed on hospital services (Rosano et al., 2013, Weissman et al., 1991). Evidence suggests, supporting communities through opportunities of health intervention engagements, supports positive health behaviours and improves self-care management. It also provides an access portal to those underserved disadvantaged communities, reducing overall health inequalities (O'Mara-Eves et al., 2013, Morgan and Ziglio, 2007, Buck and Gregory, 2013). South et al (2015) describes the important roles, the NHS, community and voluntary sectors play in support health and wellbeing in the community. The FYFV emphasises the need to 'empower' communities to improve population-based health through integrating community providers (NHS England, 2014). This is significant, as it gave new models of care providers guidelines to collaborate with all types of organisations.

The FYFV aimed to be inclusive for all types of patients and support better access to healthcare services. Using digital technologies was one way proposed to reach those patients who could not access healthcare services easily (NHS England, 2014). Telehealth has been cited as 'useful' to those patients who are housebound, cannot access services and possibly due to culture and linguistic issues prefer not to access health services (Raven et al., 2013). However, Greenhalgh et al (2016) cite there may be fears that this type technology may be 'clinically risky', although it is known to support

management of acute and LTC (Segar et al., 2013, Cottrell et al., 2012). With the introduction of new digital technologies, questions arise around ownership of data and information governance (IG). This will be discussed further in the Case Studies chapter (Chapter 4).

A large proportion of patients in primary care suffer from LTCs. Therefore, one of the main focusses of the new models of care was primary care led, prevention education and treatment. This is to support those who suffer from LTCs to help manage their own condition(s) better. In order to prevent avoidable exacerbations potentially leading to secondary care admissions. Support is described as self- care coaching and management of healthcare needs through community provided healthcare providers. A large proportion of patients suffer with LTCs and many are potentially unmanaged (Department of Health, 2012, Royal Pharmaceutical Society of Great Britain, 2013). Community pharmacy has a huge opportunity to be involved as a community healthcare provider to support LTCs. The Department of Health has demonstrated a clear vision for the integration of community pharmacy into the "wider health and social care system" (Department of Health, 2014). Some argue that community pharmacy is an 'untapped resource' that is already a present member of the wider healthcare network. The large presence of pharmacies has the potential to facilitate and support the main care providers in the management of LTCs (NHS Digital, 2015, NHS Digital, 2019, Murray, 2016).

In order to support these agendas a change in infrastructure is an important prerequisite. The new models of care guidance from NHS England had suggested the need for a "workforce redesign." Policy documents suggest, the stakeholders involved in the new models of care were provided with support. This was to assess their capability to deliver the services and workforce expertise. Extending the workforce included modifying the infrastructure to support the extended MDT. MDTs have an important role within healthcare delivery across primary and secondary care as discussed above. They are also a vital part of the workforce infrastructure of the new models of care, this is also highlighted in the NHS Long Term Plan (NHS England, 2014, NHS England, 2019) .

2.7 New Models of Care

The proposal set out in the FYFV, appreciated that "one size does not fit all". This is in terms of the health needs required for patients on a personalised and population basis. To combat the variation in populations across England and improve health inequalities, NHS England created new care models (Ham and Murray, 2015). The proposed new models of care sites obtained financial and commissioning support from NHS England. This was to facilitate the development of innovative new healthcare services which reflected the localities demographical healthcare needs. All cases were required to have a focus on consolidating a stronger primary care model and supporting 'out of hospital care' services (NHS England, 2014). The aim of the new models of care was to demonstrate "Innovation in commissioning" so that there is a

continual solid ground for new formulations of integration and sustainability in service provision (Ham and Murray, 2015).

The FYFV described templates for the new models of care to be based on. The templated models varied with locally enhanced additions to the designs to support local population needs. Although the overall program was known as the 'new models of care'. The specific sites funded by NHS England through this program were known as vanguard sites. During this time of innovation and change, other 'new models of care sites' arose across the country. For example, 'the national primary care home' (NAPC) and other smaller locally funded projects (The National Association of Primary Care, 2015). These, however, were not bound by the vanguard program metrics and outcome requirements. A total of 50 vanguard sites were commissioned by NHS England (NHS England, 2016). This study reviews two vanguard sites and one 'other' new model of care site.

The vanguard sites were pitched at supporting and improving the patients' journey. For example, their experience and the efficiencies of services available to them. During the vanguard development process, NHS England required vanguards to focus on four key points. These were, clinical engagement, patient involvement, local ownership and national support (NHS England, 2015). There was a strong requirement, for the vanguard sites to have an element of national transferability. This would support future prospects of replicating vanguard sites in areas similar to their initial implementation. During the commissioning process, potential vanguard

applications were measured against the areas mentioned above. In addition, each vanguard needed evidence-based processes and risk stratification tools embedded within their services. In order to assess and analyse risk and continuing changing needs of their population. Results were required to be recorded and evaluations undertaken in order to prove their concept was successful (Operational Research and Evaulation Unit and NHS England, 2016).

Metrics have been frequently used over the history of the NHS to support the evaluation of services, in order to inform continuation of the interventions. It is a tool that is used to measure performance (Hughes, 2012). All vanguards were required to produce outcomes which coincided with the gaps identified within the FYFV. These outcome metrics included efficiency savings and cost-effectiveness measurements; it was the overall aim to identify patterns which could be replicated nationally. Metrics had been produced specifically for the different types of vanguard sites. There were six high-level outcome indicators to monitor the progress of the vanguard sites. These outcome indicators measured results which coincided with the health and wellbeing gap, care quality gap and the funding and efficiency gap. There were a smaller set of "enabler" metrics which measured the progress of the vanguard sites, in terms of integration and MDT working. These results were published quarterly. In addition, results were released representing the reverse i.e. if the vanguard was not there (Operational Research and Evaulation Unit and NHS England, 2016). Logic models had been developed for each vanguard site; they were produced to identify attributes to successful change. These are described as visual diagrams which represent the relationships and flow of

elements which affect a system. For example, in the case of healthcare, the logic model provides information on inputs, affecting factors, contextual information and relationships. This information can be used to inform changes which need to be made in order to enhance processes, and inform business cases lending to proof of sustainability (Operational Research and Evaulation Unit and NHS England, 2016). The logic models and evaluations were personalised to each vanguard.

Each vanguard developed “tailor made interventions” for each population group and recorded outcomes. These results were used to support their initial and continual commissioning throughout the new models of care programme. Once chosen, each vanguard site had national support, to be guided through local and national channels in order to set up work streams and demonstrate value of their services (NHS England, 2015). During development of the new models of care programme, it was recognised that different areas and providers within areas were at different stages of healthcare delivery. Therefore, a single template for a new model of care would not be feasible. Conversely, too much variation was also deemed as inefficient. The current approach to development of the new models of care resided within an area of focussed support and facilitation to create “conditions for success” (NHS England, 2014). Five prototype models were developed and are summarised below (NHS England, 2014):

2.7.1 Multispecialty Community Providers (MCPs)

MCPs are a way of bringing together a range of healthcare providers across primary and secondary care. They support integration by providing hospital-based services in the community. This is to enable patients to access their care more conveniently and to reduce avoidable admissions into secondary care (NHS England, 2014). Its aim is to move from a 'single condition focused' pathway to 'patient focused' delivery (Turner et al., 2016, Royal College of General Practitioners, 2013). MCPs have driven the development of forming networks across primary care groups. An example of these networks are 'federated' GP practices. This consisted of groups of GP practices joining to provide better access to more services for patients. Ware et al (2015) reports findings from case studies of federated GP practices and formation of new networks across care providers. These include examples, such as extending opening hours across federations, co-location of GP practices within an A&E department in Manchester and working with voluntary sectors to support patients in vulnerable groups. In some cases, these extended groups then have the capacity to support secondary care services, such as ambulatory care and outpatient appointments. The role of MCPs also extended to incorporate small local hospitals and thereby covering chemotherapy and dialysis units. The aim of the MCPs is to improve collaborative working between all healthcare professional groups. However, with this comes the challenges of new ways of working and culture.

2.7.2 Primary and Acute Care Systems (PACS):

PACs vanguards align all areas of care through a 'single entity or group of providers' (Naylor and Charles, 2018). This approach focuses on delivering population-based healthcare through aligning different organisations to support all levels of care. Its aim is to deliver primary, secondary, mental health and community services to the local populations. This is also known as a 'vertical' integrated care approach (Baillie et al., 2014). Its objective is to facilitate, improved co-ordination of services, reduce duplication and better transfer of care for patients. The PACS model works on a population-based model. It divides its population through risk stratification and uses health management techniques to understand its locality and divide resources appropriately (NHS England, 2016). Additionally, a key element of the PACS model consists of federated GP practices which cover population sized of 30,000-50,000 patients. These practices focus on patients with complex needs and support management of long-term conditions (Naylor and Charles, 2018). The PACS model is a closed system and therefore, can support the needs of the local community more efficiently and remove care from hospital where required. Although this model monitors patients in fixed population sizes, in reality healthcare is far more complex and therefore issues may arise in terms of capitated funding for this type of model.

2.7.3 Enhanced Health in Care Homes

The enhanced health in care homes vanguard aims to link up care home providers with primary care, local authorities and voluntary organisations. Its aim is to support patients in care homes to receive the specialist care their

need. For example, access to a named GP, expert advice from a specialised MDT and rehabilitation services. The complex nature of multiple morbidities of care home residents requires better management of their care. The enhanced health in care homes vanguards has shown a 'whole system' approach to healthcare delivery in the care home sector (NHS England, 2016). Evidence has shown this type of care delivery supports better communication across different care providers and facilitates effective decision making (Cook et al., 2017, Baqir et al., 2017). However, historically care homes have been siloed and therefore pose a risk to collaboration and relationship building to support this type of model (Stocker et al., 2018).

The care homes vanguard supports better management of patients' conditions, through the use of technologies and other care services. In order to reduce admissions into hospital and support better rehabilitation (NHS England, 2014).

2.7.4 Acute Care Collaborations (ACC)

The ACC vanguard formed links between local hospitals to improve their clinical and financial sustainability. It also sought to reduce variation in care and improve quality and efficiency of healthcare provision (NHS England, 2014). This type of vanguard has a place in rural areas where there are many district general hospitals. It allows the pooling of resources and clinical specialties. Many ACC vanguards have developed clinical specific collaborations. In areas such as cancer and orthopaedics (Naylor and Charles, 2018).

2.7.5 Urgent and Emergency Care Networks (UECN)

The UECN aimed to redesign urgent and emergency care by reducing duplication across geographically diverse locations. Its objectives included, reducing waiting times and ensuring patients get the "right care at the right time". Some solutions that had been proposed include:

Extended working hours to seven day working for community-based teams and increased access to more test and treatment options during evening and weekends. Further incorporation and utilisation of primary care providers, for example through flexible referrals and better use of community pharmacists will better enable the system to deal with increasing demand and better development of links with hospital networks, especially major trauma centres, ensuring patients are seen by a specialist in a timely manner (NHS England, 2014).

2.7.6 Payment

The vanguard work streams had developed some literature on payment. The different vanguard types would require varying processes of commissioning and reimbursement. The MCPs and PACs are modelled similar to an accountable care organisation, whereby a capitated budget is used for commissioning of services.

This next section discusses the significance of evaluation and the evaluations of the new models of care. As described at the beginning of this chapter (Section 2.1), the NHS is a strong political tool. The original aims of the vanguard sites were to be sustainable and nationally transferable. With the

frequent changes in government, it could be argued that the vanguards did not have enough time to gather data for appropriate evaluations. The evaluation data is needed for continual commissioning. After the period of national funding had ended, many sites were successful with continued commissioning from their local CCGs. However, equally many sites were unsuccessful. This raises questions around the pressures faced by the vanguard sites to produce evaluations with positive outcomes. Therefore, the following sections discuss the place of evaluation in healthcare reform. Reviewing implementation strategies as a way of process evaluation and critically analysing the processes of evaluation undertaken within the new models of care programme. Additionally, there is also a paragraph discussing examples of outcomes from the evaluations of the new models of care sites.

2.8 The Place of Evaluation in Healthcare Reform

Evaluation was a significant component when accepting vanguard funding. Prior to distribution of funding, the applications of the new models of care were required to have an in-depth model for evaluation. Historically, evaluations within the NHS have been challenging (Mays and Tan, 2012, Salisbury et al., 2011). Katikireddi et al (2014) describe the challenges faced when evaluating an NHS reform. The literature suggests politics as one of the barriers when considering evaluating large scale healthcare services. The 1990s introduced the NHS internal market reforms, also known as the NHS and Community Care Act 1990 (Figure 2.1). This was a much debated and politically contentious reformation which saw the introduction of a 'new business-like NHS'. This resulted in new contracting processes and the

introduction of management. It also led to the devolution of budgetary powers to some GPs and inputting a stronger financial auditing process within the NHS. This reformation, in particular, caused historical issues around evaluations. There was political upheaval at that time and continuous changes in policies, which were debated in parliament. The then conservative government suggested evaluating the 'NHS internal market' would only lead to its delay in implementation (Social Services Committee, 1989). Once reviewed the 'internal market' approach did not produce the significant change expected. There was minimal evidence relating to its impact on quality of care (Mays et al.). One study cites hospitals that were competing with each other at this time, produced poorer patient outcomes (Propper et al., 2004). The World Health Organisation cited in 1996, major policy reforms should be evidence based where possible, continually reviewed and evaluated (Baggott, 1997). Lessons which can be learnt from this show that evaluation is an important component to provide evidence to support major changes in healthcare policy.

Literature suggests when evaluating healthcare reform it is important not to base the whole evaluation on the policy document in question (Baggott, 1997, Katikireddi et al., 2014). This is due to the multiple agents and external factors which could impact the evaluation. Firstly, the document in question; government policy documents are particularly vague, and seldom describe the governments explicit agenda. Additionally, other agents who may impact the evaluation such as government officials, healthcare providers and others who have a vested interest in the policy change (Baggott, 1997). From a theoretical

perspective, evaluating policy is a difficult task. However, constructivist evaluative methodologies seek to build a picture from multiple perspectives, rather than accepting objective evaluations. This requires upfront descriptions of assumptions and biases associated with the individuals linked with those perspectives (Patton, 2008, Guba and Lincoln, 1989, Thomas and Palfrey, 1996). Baggot et al (1997) suggests when evaluating policy, it is important that one does not solely focus on the outcomes but reviews the process of formation and implementation. By the same token, policy formation and evaluation are impacted by previous factors. Such as earlier debates, previous reforms or policy and legislation (Bovens and 't Hart, 1998, Butler et al., 1994). Therefore, it is important to understand the process of evaluation in the context of new policy and of this study.

The 1990's political scene in the UK was analogous to the time in the duration of this study. The initiation of this study started just after the dissolution of the coalition government in 2015. Since then there have been multiple elections and a resultant referendum requiring the exit from the European union[3]. This is important, because continual changes in government caused multiple changes in the direction of the political agenda. Figure 2.1 illustrates, two major government policy documents which have been published, the FYFV and the NHS Long Term Plan. Although both documents present similar

[3] Also known as Brexit

trajectories, and one could argue the NHS Long Term Plan follows on from the FYFV. The overarching theme of integrating care providers runs through both documents. However, the strategies for evaluating the 'integrative services' are different. Evaluating healthcare services and health system reforms are important as described above. This study is set in the context of the FYFV. .The following section discusses the importance of implementation strategies and their impact on conducting evaluations of services. This is important to understand because the implementation of the FYFV 'new models of care' sites and their evaluation forms the basis of this study. The next section presents evidence of previous evaluations within healthcare services and other new models of care sites, not used in this study.

2.8.1 The Importance of Implementation Strategies in Evaluation

In order to understand the evaluations conducted at the new models of care sites, it is key to understand the implementation strategies used. This evidence demonstrates the change in practice over time in association with different models and therefore will provide evidence to then establish an appropriate methodology for this study.

Implementation studies feature as an important component in healthcare research. Implementation science focusses on producing a 'how to' map of executing healthcare interventions and strategies (Lomas, 1993, Brouwers et al., 2011). Curran et al (2012) define implementation strategies as 'methods of

techniques used to enhance adoption, implementation and sustainability of a clinical program or practice' (Lomas, 1993). Implementation strategies are commonly evaluated to establish the continuity of an intervention. Therefore, a focus is given on the implementation of the interventions undertaken during the new models of care programme, with a view to evaluate and modify as appropriate to support its sustainability. This gives insight into the 'roadmap' of strategies for best practice implementation and evaluation to result in the end goal of continual commissioning.

2.9 Evaluation in Health Services Literature

Many studies with a focus on implementation and evaluation have lacked depth and clarity when published, which has made them difficult to replicate and understand their processes of evaluation (Proctor et al., 2013). This can be seen from the new models of care evaluations which are described in more depth in the following sections. Many of the evaluations have been quick, weak and lacked any concrete information on replication of the service, when replication was a crucial aspect of accepting vanguard funding (NHS England, 2014, Wilson et al., 2019). For example, one new model of care described developing a liaison psychiatry service as part of one of the vanguard sites. The published evaluation described using multiple methods for data collection to support an evaluation. For example, EURO-QOL-5D as a health status measurement, satisfaction surveys and formation of read codes to support further quantitative analysis. The population size of this particular evaluation

was very small and it is therefore hard to identify its impact within primary care and its ability to be translatable and nationally replicable (Bestall et al., 2017).

2.10 Evaluating the New Models of Care

Evaluation is a key component for replication and continual commissioning. As described above, evaluations were a prerequisite for vanguard funding. They are also essential for any new model to be considered for continual funding by commissioners. A recent report produced by the University of Manchester, investigated the 'locally commissioned evaluations of the NHS vanguard programme'. This report synthesised the evaluative reports from most of the locally commissioned vanguards. The evaluation characteristics could be described as limited due to the resource and time constraints available to the vanguards. This is a cause for concern as the policy makers described the need to capture patient satisfaction and experience in addition to economic analysis' (Wilson et al., 2019). The review of the quantitative and qualitative aspects of the vanguards evaluation methodology and analysis showed to have lacked appropriate research and data collection methods. Therefore, the outcomes produced may be seen as debatable (Salisbury et al., 2011).

Literature suggests different models for evaluating the new models of care, for example Gnani et al (2013) describe 'an evaluation of a general-practitioner-led urgent care centre'. They set out to evaluate their model against a range of indicators, which included quality of care and health impact, implementation, patient and staff impact. They quantitatively

measured and statistically analysed, attendances to A&E, readmissions to secondary care and trends in short stay care in hospital to evaluate the above. Although the linear regression produced, demonstrated a decrease in number of admissions over the time of the pilot, the impact of quality of service, patient and staff satisfaction were not described (Gnani et al., 2013). This shows the limitations of this type of evaluative process. Whereas another paper, previous to the new models of care but still relevant describes 'what is the role of walk in centres in the NHS?' and uses both quantitative and qualitative evaluative methods. The qualitative part of the evaluation gave an in-depth insight into the variability of walk-in centres in terms of their services but also the differences in grading of clinicians hired (Salisbury et al., 2002). This would not have been identified without the use of qualitative methodology.

2.10.1 NHS England Vanguard Evaluations

One of the vanguard new models of care, consisted of the Principia Vanguard (Chapter 4, 4.1). With the support of The Health Foundation, this vanguard underwent a quantitative evaluation. One of the main focusses of the Principia Vanguard was to enhance care in care homes. The overarching aim consisted of improving the care that residents received in care homes. This was in addition to giving them autonomy to be involved within their care decisions. The evaluation used quantitative analytics to identify the impact of the enhanced care home support on the 23 participating care homes within the vanguard. With the support of the Improvement Analytics Unit, its combined residents' data from a national database (Secondary Uses Service

(SUS)) and a unique, modified care home database which consisted of residents within the 23 care homes. The residents of the Principia Vanguard were compared to a control group and evidence showed there were 29% less attendance to A&E by the Principia residents than the control group. This evaluation shows the Principia Vanguard as a success. However, the evaluation itself described the need for a partnered qualitative evaluation in order to support the evolution of the new models of care by combining results to provide quality improvement suggestions (Lloyd et al., 2017).

Wakefield had two vanguards, an MCP and enhanced health for care homes vanguard. The vanguards worked in partnership under a "connecting care +" programme. The care homes aspect (known as Wakefield's community Anchors in Care Homes), saw the production of a multidisciplinary care home support team to facilitate residents and reduce secondary care admissions. The teams consisted of a nurse, mental health nurse and a physiotherapist. The evaluative methods used consisted of both quantitative and qualitative data collection and analysis. The quantitative report demonstrated a 11.5% reduction in A&E beds in care home patients and also focussed on financial gains (Wakefield Public Health Intelligence, 2018). The qualitative component focussed mainly on the staff of the care homes and their ability to deliver services and which services to deliver. The take home message was the importance of building relationships with other community providers (Niche Consulting, 2018).

The evaluations of the new models of care showed some positive results. Many of these results as described above used quantitative analysis of the new models of care, resulting in 'cost-effective models'. These types of analysis sit well with policy makers as the finite figures can give an indication of the impact of the service. For example, in the urgent and emergency care new model described above, the analysis shows a reduction in secondary care admissions. Alongside current literature, the authors suggests GPs working within out of hours, is a 'cost-effective' way to support secondary care services with resources from primary care. However, the authors also concludes that a concern was that many GPs would not have the full range and set of skills to support urgent and emergency care patients (Dale et al., 1995, Gnani et al., 2013, Roberts and Mays, 1998). This shows the importance of identifying the process of evaluations and aligning them with initial objectives. In the case of the vanguards, the objectives were set by NHS England in the vanguard supporting documents (Operational Research and Evaulation Unit and NHS England, 2016).

The outcomes of the new models of care program can be seen as a mixed array of truth, scepticism and political manipulation. The vanguard program was needed to be seen as a success due to the amount of public money spent on the new models of care. An independent investigation into the success and sustainability of the vanguard program suggests there was not enough time for the vanguards to embed themselves and be an 'intervention' (Wilson et al., 2019). The evaluations themselves were done over a short time period, which as discussed above produced some questions surrounding their

methodology. Issues surrounding the sustainability of the vanguard program have been raised due to its three-year funding model. After three years the vanguards were due to survive on their own and be self-sustainable. Many felt that the lack of national level support was a challenge to vanguard sustainability. Extended support for many vanguards came from their local CCG counterparts, and this was heavily reliant on the evaluation outcomes.

2.11 The Role of the Pharmacist in the New Models of Care

Pharmacists have a major role in community-based healthcare teams. In particular managing cost-effective prescribing, optimising medication usage and health promotion as described above (Talbot-Smith and Pollock, 2006). Throughout this literature review, one key point highlighted is the need to change professional roles to support the changing needs of the NHS. As it has been described the NHS needs to transform and modify in order to support the current demands and maintain sustainability (NHS England, 2014). Modifying roles and supporting a leadership pathway within healthcare professional roles has been supported by the Department of Health since 1999 (NHS Executive, 1999). It was seen as a way to support progression within the profession, leadership and in turn facilitate better patient outcomes (Rosser et al., 2017). Rosser et al (2017) describe the need and benefits of a 'consultant practitioner' role within the new models of care era of the NHS. Although the paper draws in on a small group of experienced clinicians, namely nurses and one physiotherapist. The need for more innovative changes are described, especially within a resource poor NHS (Rosser et al., 2017). Understanding the health system and the different roles

played within are important as it supports building a better, stronger system using professionals at the height of their expertise.

Current evidence has suggested that pharmacists are underutilised within the community (Sunderland et al., 2006, Latif et al., 2016). Further integration of innovative co-collaborative pharmacy models of care, with other community care providers could potentially lead to better outcomes for patients and better utilisation of NHS resources. A recent report from the Primary Care Foundation and NHS Alliance, with regards to GP workload, eluded to 'weaknesses' in the system, revolving around pressure on time and resources, resulting in decreased patient care. The introduction of GP practice pharmacists initiative has the potential to change the primary care environment by adapting to the workforce and workload issues (NHS England, 2016, Mann et al., 2018).

There is an evidence base which describes areas where pharmacy would have a positive impact in an ICS (Terry et al., 2017, Smith et al., 2013, Smith et al., 2017, Mossialos et al., 2015). The recent community pharmacy clinical services review describes community pharmacy as having the ability to meet both 'short term and long-term challenges' in collaboration with other integrated services. Thereby, increasing efficiency and patient satisfaction (Murray, 2016). The literature describing pharmacy involvement within the new models of care is minimal. Greenhalgh et al (2016) describes the need for new models within primary care. Their study describes one new model which

could address ‘funding and staffing pressures’, as extending the role of the community pharmacist.

In relation to the specific new models of care programme, very few pharmacists and pharmacy teams featured at the forefront within the vanguards and other associated programs during this time. One PACS vanguard based in Northumberland, published literature on their model. The model consists of developing pharmacists at postgraduate level to support primary care services. Themes presented positive outcomes in relation to ‘the benefits of integration’, building relationships with primary care practitioners and supporting the development of the ‘pharmacy practitioner’. Overall, this sets a path for pharmacists to join an integrated healthcare system (Rathbone et al., 2019). However, the nature of this vanguard was set in one area in the UK and therefore geography, employment levels and population size are some of the elements which would need to be taken into consideration when replicating this model.

2.12 Conclusion

The FYFV set an ambitious pathway to transform England’s healthcare landscape. Guidance from national and local bodies helped develop the pharmacy-led new models of care. These co-designed models have the potential to support healthcare delivery and improve service provision. The ability to modify the healthcare landscape and support multiple healthcare providers, such as GPs, nurses and care home personnel is encouraging. This

engagement can be seen as a beacon in the wake of financial hardships within and outside the pharmacy sector.

The rationale of this study is underpinned by the details and policy context discussed above. The need to expand the MDT is imperative to cope with the current trajectory of the UK population, in terms of growth, multiple morbidities and increased life expectancy. The new models of care program demonstrated a direction and is one mechanism to cope with the evolving healthcare needs. This study explores three new models of care case study sites. Each case study is presented in Chapter 4 (Chapter 4, 4.1, 4.2 and 4.3) investigating the role of community pharmacy team within an ICS and describes evidence relating to sustainability of those roles.

Chapter 3 Methodology and Methods Chapter

3.1 Research Questions and Analysis Overview

This chapter considers the methodological direction of this study and outlines the specific data collection and analysis methods used. The methods and data collection tools were chosen specifically to focus on answering the aims of this research project. The research involves investigating similar multiple case study sites. Therefore, the most appropriate methodology for this study, is the case study framework methodology (Yin, 2013). Each new model of care site consists of different contexts and constructs, therefore one methodological process alone would not have been appropriate (Yin, 2013, Pope and Mays, 2010). Various methods were used to support methodological rigour. This was an exploratory study and such, used various data sources such as interviews, documents, and service-user data.

My research explored and evaluated these models to inform future practice on the role of the community pharmacy team and community pharmacy services during healthcare reform. This evaluation demonstrated evidence of the pharmacy services within the new models of care and key factors affecting roles, service development and sustainability in an ICS.

The aim of this project was to explore the potential roles and services of the community pharmacy team within a dynamic complex healthcare system.

The objectives are:

1. To describe and understand the new models of care program.

2. To explore and evaluate the identified new models of care at a local level to inform a conceptual framework of a community care ICS.
3. To identify key factors which affect integration and sustainability in the wider dynamic integrated healthcare system.
4. To explore the roles and services of community pharmacy within a community care ICS.
5. To make recommendations on the role the community pharmacy team plays to support care providers and commissioners involved in service delivery within a community care ICS.

3.2 Methodological Approach

It was important to assess and direct the line of enquiry based the area of research. The new models of care, as discussed in the Literature Review chapter (Chapter 2, 2.7), were developed during a time of significant healthcare reform. Complex dynamic healthcare systems, such as the one which exists in the UK inhabits a fluid environment where internal and external forces are constantly modifying the landscape being researched. During healthcare reform, the health systems are particularly volatile to change and its adaptation is particularly time dependent (Luke and Stamatakis, 2012).

The nature of health services research is that of a dynamic environment, where each pocket of health service delivery is different, on a macro and micro scale. Therefore, in order to explore this phenomena within case

specific environments, a case study methodology was employed (Creswell, 2014). Yin (2013) describes the case study research method to be used in situations such as 'individual, group, organisational, social, political and related phenomena' to deeply understand the complexities of social congruence. Case study research gathers data from a 'bounded system' and collects in depth data over time (Creswell, 2012). Although this type of methodology leads to little generalisability, the topic which is researched influences the use of case study methodology, in addition to providing some translatability, when more than one site is researched (Yin, 2013, Herriott and Firestone, 1983). Stake (1995) describes the scope of 'collective case studies' is to explore broad questions and achieve a type of representation.

Health services research is not a 'one size fits all' approach and therefore for this study it was important to understand the deep underpinning constructs of each case researched, in order to gain a deep understanding of the new models of care (Cousin, 2005). For this study, a multiple case study design was undertaken. This design sought to gain a multidimensional understanding of the new models of care phenomenon, by analysing data within the individual cases and across the case study sites (Yin, 2013, Gustafsson, 2017). Multiple case study research is considered to be more reliable and robust that single case study research (Baxter and Jack, 2008). It aims to provide a comparison across all sites without compromising the internal understanding of each case (Herriott and Firestone, 1983). Herriott et al (1983) additionally explains that the essence of multisite studies is to 'optimise description and generalisability'. The sites researched in this study are vastly variable but

pertain to a similar theoretical underpinning and provide insight into the new models of care health systems phenomenon during a volatile innovative period. This in turn can offer new insights into health service research during times of pivotal political and societal changes (Chapter 2, 2.2).

3.3 Ontology and Epistemology

Social science research can be undertaken by either quantitative, qualitative or mixed method approaches. The philosophical paradigm and ontology influence the assumptions and interpretations that underpin the research strategy. The following paragraphs explains the various philosophical paradigms relating to myself as a researcher and then explains the position taken in this research study.

Ontology is the nature of reality. The fundamental belief one has with regards to reality, in addition to the epistemological stand point will influence the direction of the research (Benton and Craib, 2010). Therefore, it is vital to understand the epistemological assumptions undertaken, because it determines the methodological approach, data collection and analysis approaches used in the research to understand the phenomenon.

The ontological position undertaken in this study required a move away from the position, I began at the beginning of my doctoral studies. As a pharmacist, my previous ontological position was heavily reliant on numbers. My background as a hospital pharmacist, involved reading quantitatively focussed clinical trial data and translating that into my practice. Many reports in the field of pharmacy research is based around quantitative methodology. This

provided a gap in the evidence, leading to a lack of deep insightful knowledge of the role and position of the pharmacy team within the wider healthcare system. Therefore, it was vital to have an ontological position in this study, which accepted qualitative methodological approaches.

"All men by nature have a desire to know" Aristotle (Lear, 1988).

Epistemology is the theory of knowledge (Benton and Craib, 2010). Nicholas Rescher (2012) described it as "a condition that one has come to occupy in relation to information." The process of gaining knowledge has evolved over time, it is heavily linked with the relationship between the researcher's beliefs and rational facts. The theory of knowledge is derived from two main views, that of the "Master builders – The rationalists" and that of the "Under labourer – Empiricists." The "rationalists" recognised mathematics as a form of reasoning as it lead to certain conclusions, Rene Descartes a well-known rationalist coined the term "Cogito ergo sum – I think therefore I am" (Newman, 2019) which lead to the conclusion that the only thing, that could not be doubted is one's own existence as a thinking being. "Empiricists" recognise gaining knowledge is from experiences (Benton and Craib, 2010). The epistemological position is vital to be reflected upon, because it heavily influences the design and direction of the research. The epistemological position taken in this research is that of an empiricist. During my doctoral studies, I began to understand the importance and depth of knowledge found in experiences. Undertaking a study to explore the phenomenon of the new models of care, could only be carry out by collecting in depth data on

experiences obtained in association with the new models of care phenomenon.

Four key areas in which research design in the social sciences is influenced by epistemological assumptions are: 1) Choice of methodology, 2) The participant and researcher relationship within the method, 3) The form, voice and representation in the method and 4) The quality and rigour (Carter and Little, 2007). From an empiricist position, this study required the deep understanding of the context of each case. The epistemological assumptions taken in this study, required taking value from the experiences of the participants and myself. The multiple case study methodology facilitates data collection on contextual understanding of each case, through multiple methods of data collection. This is vital to gain a deep understanding of the new models of care, in addition to adding rigour to the study through methods of triangulation (Carter et al., 2014).

3.3.1 Paradigm

A paradigm is an area supported by particular assumptions which are derived from ontology, epistemology and methodology (Denzin and Lincoln, 1994). These assumptions support ones understanding of the world. It is important to develop and ascertain which paradigm the research sits in. In order to gather and analyse data appropriately, a correct paradigm must be chosen.

3.3.2 Positivism

Positivism is the traditional philosophical approach to research, coined by Auguste Comte (Benton and Craib, 2010). It sees the movement of philosophy

from theology and metaphysics to a scientific mode of thought. Positivism takes the stance that scientific methods used in natural science can also be extended to the study of culture and social life. The crux is doing experiments and observations in an objective way to understand the empirical world. This type of knowledge paves the way for a more structural view on how society accepts knowledge. Positivists have a prescriptive way to measure research through statistical analysis which results in non-bias reliable quantifiable data (Schwandt, 2015). Therefore, taking the understanding that each data source and result can be quantified and interpreted the same way by any individual, reducing any form of bias. The epistemology of the positivistic paradigm is objective and has the belief that social life can be quantified and statistically verified. However, the study of social science requires deep and complex understanding of behaviours. This cannot be quantified and objectively understood, because each individual understanding is based on their own experiences and behaviours do not act in isolation. Factors such as history and culture play a large role in understanding a phenomenon. The phenomena associated with behavioural and social sciences does not have a reality in a 'physical' sense, e.g. it cannot be felt, seen or touched (Guba and Lincoln, 1982), however, it can be identified through interpretation. Therefore, the new models of care phenomenon could not be understood using positivistic tools of data collection.

As a pharmacist, the positivist approach has been heavily ingrained up until my doctoral studies. For this type of research, it was vital to step away, from my comfort zone in this paradigm, to truly understand and accept the insight

and experiences of others as a form of data retrieval. It was difficult at first, because my mindset was heavily linked to requiring numbers for validation. However, the aim of this study was to explore potential roles and services of pharmacy within a dynamic healthcare system and this consisted of understanding experiences and culture. The insights required to answer the research question required exploring alternative paradigms, which led me to investigating constructivism as a paradigmatic position.

3.3.3 Constructivism

A constructivist position was undertaken in this stud. Social constructivists believe context is key to understanding. In order to gather an insight into the context, it would be vital to use qualitative methods of data collection. Using tools of measurements from the positivistic paradigm would not fit into the research design, because each case is embedded within different contexts. Therefore, using quantitative objective measures would not give the depth of insight required to understand the case studies and the new models of care phenomenon.

Guba and Lincoln (1989) describe 'reality' as ontologically relative and socially constructed. This means that through the constructivist paradigm the knowledge which is understood is relative to that time and place. This is important in relation to this study, because the new models of care are dynamic and continually changing, as are health service systems. In order for the knowledge to be fully understood, it must be socially constructed in the reality it was researched in. Weber (2010) describes constructivism in social

science research as a way to interpret the action of human experience. Action is described as 'meaning and values', this moves the epistemological focus from explaining the phenomenon to understanding 'Verstehen' (Benton and Craib, 2010). This explanation is critical because it considers attitudes and motivations, which are required to be extracted during data collection. This gave a deeper understanding of the new models of care phenomenon, and the relationships presented across the cases studied. These findings are key to demonstrating insights from health system research in this study.

Identifying presuppositions through a 'constructivist' and 'naturalistic' monocle leads to collection and interpretation of data in a holistic fashion. Taking into account attitudes, beliefs, experiences of both the participant and researcher to fully understand the depth of the phenomenon (Guba and Lincoln, 1982). This specific research project required the exploration and understanding of a social construct and therefore it can only be explored through this lens. The human experiences of participants and myself are key to capturing the data. Therefore, this paradigm was chosen.

3.4 Choice of Methodology

3.4.1 A Multiple Case Study Approach

The exploratory nature of the case study method allows for the investigation of each case in detail answering the question of 'why?' (Yin, 2013). An important part of case study research is defining the parameter. These parameters can be physical, such as an organisation, or less apparent such as a relationships (Creswell, 2012). Stake (1995) describes the importance of the

intention of case study research. An 'intrinsic' case is where the case has a specific interest or problem to be explored (Stake, 1995). In order to produce a 'rich' qualitative case study, Yin (2013) eludes to the use of multiple sources of information, interview data, observations, reports etc, to gain a deeper understanding of the case from varying perspectives. The need for multiple case studies is an important concept which can be used to support investigation of a combined phenomenon (Stake, 1995). This study used a multitude of sources from qualitative enquiry to gather data to explore the phenomenon of the new models of care.

3.4.2 Qualitative Enquiry

Qualitative research has a distinctive mode of enquiry based on human experiences (Sandelowski, 2004). In this way it seeks to grasp the 'detail' which is embedded in peoples' understandings and relationships within and around a social phenomenon (Silverman, 2017). These experiences are vital to gaining an insight to the world around us. They hold a valid place in health services research, particularly where patient satisfaction is key and relationships are held to account for the success of services (Nandram and Koster, 2014, Boerma, 2006). This type of research seeks to explore and interpret the world around us. It aims to explain 'why?' things happen rather than 'how'. Stemming from hermeneutics the 'interpretation' step of qualitative research is significant in obtaining key findings. However, it is described by literature as difficult, because hermeneutic studies required both verbal and non-verbal behaviour to be analysed (Crabtree and Miller, 1999).

In order to gain a deep understanding of the phenomenon, it is important for qualitative research to be conducted in a methodological way. There are many ways to perform qualitative enquiry. Denzin and Lincoln (1994) suggest the qualitative method of enquiry is a way to interpret the world using a series of representations, for example interviews and photographs. Various qualitative methods can be used to facilitate collecting data to interpret and understand the phenomenon. Many studies use frameworks to support their qualitative enquiry to describe the researched reality (Silverman, 2017). Some studies use frameworks at the beginning to guide their research, others use them to support their data analysis as the findings emerge from the data and some develop a framework from the emergent data. This study created a framework from the emergent data, this will be discussed in more depth later (Section 3.10.5).

Interviews can be conducted in various ways, Kvale (2008) describes interviewing as an 'inter-view' where knowledge is co-constructed between the interviewee and participant. This is critical because the two-way dialogue between the interviewer and participant allows for increased depth and understanding. In addition, to allowing ideas from the interview to be developed together via further adaptation through questioning (King and Horrocks, 2010). However, levels of co-construction can postulate potential limitations when interviewing. The presence of a power dynamic between the researcher and participant can lend to inadvertent withholding of information or the participant answering with information the researcher would like to hear. Kvale and Brinkmann (2009), discuss this phenomenon in depth and

identify minimising ‘power asymmetry’ through facing the research process equally during questioning, interpreting and reporting. This technique was vital during this study and allowed for key opinions to be heard from all stakeholders within the new models of care.

There are three main types of interview structures; structured, unstructured and semi-structured (Bryman, 2016). Structured interviews tend to be quantitatively formulaic and are presented in quantitative surveys to answer a strict set of research questions. Unstructured interviews are flexible but require a brief set of prompts to aid the researcher. It allows the participant to respond in a ‘conversational’ type manner (Bryman, 2016). Semi-structured interviews have been described to allow for flexibility but with a guideline presented in an interview topic guide. This study conducted semi-structured interviews, because it was important to gain a deep understanding of the participant experiences of the new models of care and cover certain topics, which arose from the literature and other methods of data collection (observations and document analysis). The iterative process of refining the interview topic guide across each case study allowed for further insights into the phenomenon through triangulation. The use of semi-structured interviews is particularly important in multiple case study research in order to facilitate cross comparability (Bryman, 1994). The specifics of using semi-structured interviews in this study will be discussed in depth later in this chapter (Section 3.8.3).

A wide range of qualitative methods are available to the researcher. Yin (2013) describes how observations alongside interviews allows the opportunity to gain further insight into the phenomenon. This is key in multiple case study research because it adds an extra layer of investigation and the data can be triangulated from the interviews, in order to give better insight into the phenomenon (Pope and Mays, 2010). This study undertook participant and non-participant observations; these were recorded through field note taking. This was an important addition to the qualitative enquiry because it added context and further understanding of the different case studies within the new models of care. Using combined qualitative methods added to the overall understanding of key constructs and increased rigour and validity by enhancing the depth of findings, in particular, when comparing across cases (Yin, 2013, Creswell, 2012).

The use of multiple methods allows for different perspectives to be understood, which may have been missed (Morse, 2009). A key advantage of using multiple methods of data collection is the ability to triangulate the data (Patton, 2005). This was vital to understand key constructs within and across each new model of care case study site. Triangulation, facilitates identification of congruence between data sources and increases the rigour of the study (Carter et al., 2014). As mentioned, this study used multiple methods (Section 3.8) to iteratively triangulate findings to facilitate a deep insight into the experiences presented in the findings of this study.

Qualitative research in this study, was dynamic; the research question, the analysis process and framework generation was iteratively reframed throughout the research process (Crabtree and Miller, 1999) This chapter will continue to discuss methodological considerations of this study and follow through to discuss the specific study design, data collection methods used and process of analysis.

3.5 Reflexive Account

Reflexivity is another mechanism to strengthen validity and reliability through iterative development and transparency, therefore it was vital to be reflexive at each stage of this study. The qualitative researcher is also known as a 'field' researcher and therefore, as suggested, is directly involved in the field of activity and interpretation of data. The iterative process and reflexivity involved in qualitative research allows the researcher to fully explore themes, and through logical reasoning, give an apt representation of the data. The demonstration and disclosure of assumptions is essential, and it is increasingly valued in qualitative research as something to be acknowledged. It is a crucial step in the line of enquiry, however it should not be the centre of the enquiry (unless required so) (Sandelowski, 2004, Berger, 2015).

The reflexive process aims to allow the researcher to continually question their position within their research and how this will affect their interpretations and outcomes (Berger, 2015). To describe this concept succinctly it is important to discuss 'the role of values in inquiry' (Guba and Lincoln, 1982). Guba and Lincoln (1982) discuss the importance of values

embedded in both the enquirer, participant and methodology. These values cannot be controlled in a structured environment and rather than ignoring them, it is imperative to acknowledge their place within the research. The researcher themselves can direct the line of enquiry based on one's own thoughts, feelings and experiences in the topic. This can either corroborate (value-resonant) the data collected or conflict (value-dissonant) (Guba and Lincoln, 1982). In terms of data generation during human enquiry, the socially constructed relationship between the researcher, participants and analysis process mould the line of investigation (Denzin and Lincoln, 1994). This became especially apparent during interviews and analysis. Reflexivity comprises of the researchers continual self-evaluation, this include topics such as gender, race, beliefs, biases, immigration status and emotional investments to name a few (Berger, 2015). In addition to the above, undertaking the reflexive process can increase the rigor of studies and support validity (Drake, 2010, Berger, 2015).

My background of Indian refugee origin set the pathway for an individualised thought process. This process has been laced with post-colonial British values, a need for survival with supported inherited business acumen. Layered upon this is the quantitative, scientific mind set which was propped up by teachings from my Master of Pharmacy degree and the various pharmacist positions I held in different sectors. Since undertaking the Doctor of Philosophy degree, I have reflected on my growth. Initially it was a difficult process to support other philosophies outside the quantitative world. However, upon learning about different epistemological positions, my thoughts and beliefs have

grown stronger and more open to various schools of thought. This reflection was an important step to take in order to confidently understand my own position when collecting and analysing the data. The experiences obtained prior to data collection lead the way to certain questioning techniques and surface level understanding of the cultures presented in healthcare today. My reflexive practices shown through these different constructs will provide a layer of understanding of the analysis process and the retrieval of important factors associated with the reality presented in this study.

3.5.1 Political Agenda

The current tumultuous landscape of British politics affected the sensitivity of certain questions and questioning techniques. Living in an age of great uncertainty and researching a large topic which is continually used as a political tool and frequents many a manifesto initially started my reflexive process. Restricting projection of my own views on participants became a continuous task. Nevertheless, my personal views supported the line of enquiry and helped clarify political positions of the cases and their trajectory through this research project.

3.5.2 The Need for Survival

My paternal lineage became refugees during the expulsion of Asian minorities from Uganda. Growing up I have been embedded with the 'need to survive' and to always be supported on a rainy day. Theoretically, this can be understood as being self-sustainable. My background and motivations supported a deeper understanding of 'what it means to be sustainable'. This

was transferred into this project and underpinned the constructs of 'why services need to be sustainable?' 'What factors, attitudes and motivations are important to sustainability?'. This became more apparent through my analysis process. Assumptions supported by personal experiences have allowed 'reading in between the lines' to retrieve certain ideologies faced by our healthcare system today. Thereby acknowledging the impact of the researcher on this study.

3.5.3 Economical Portrayal

Funding is a purposeful driver, the importance of its attributes to supporting services has always been apparent. Coming from a background of a self-made business in pharmacy has paved the way of an immense understanding of funding and health. This is important because it reinforces the passionate entrepreneur inside. This characteristic allowed an evaluative understanding of the cases but also embedded some of my own assumptions of how and where funds should be devolved.

3.5.4 British Born Immigrant

This is an important concept to be reflexive about, from the initial sampling strategy and later when interviewing various participants, the colour of my skin and the accent of my voice gave an insight to the way participant interviews proceeded. Participants were of various races and backgrounds, but my behaviour influenced the connections and responses during data collection paved the way for some open and some closed responses. Berger(2015)also describes this, in that certain factors can affect 'access' to

the field and some participants may be sympathetic to certain situations and share more.

During the data collection period, I grew in confidence as the PhD went on. This allowed me to have a dynamic reflexive position. I entered the field without any preconceptions and did not share I was a qualified pharmacist unless asked. This was to reduce any assumptions from both sides about certain knowledge. Additionally, I recruited participants from all backgrounds and therefore did not want to provide any basis for power asymmetry (Kvale and Brinkmann, 2009).

3.6 Ethical Considerations

Ethical issues to be considered are “anonymity, confidentiality and informed consent” (Pope and Mays, 2010). Prior to obtaining informed consent, it is important to recognise how the research can protect the anonymity of those involved within the study. To begin to anonymise, it is important to explain to the participants that their identity can remain anonymised by changing their names to respect their privacy (O'reilly, 2012). This is also a positive for the research because anonymising is used to protect the research environment, and allow the participant to feel more comfortable during interviews, thereby obtaining more depth in data (Pope and Mays, 2010).

Ethical considerations are important to take into account. Throughout this study, trust was developed between the participants and researchers. In order to promote integrity in research one must consider the ethical implications (Creswell, 2014).

O'reilly et al (2012) describes the need to inform and protect the rights of all those involved throughout the research and after publication. Although this may be difficult to ascertain, difficulties with ethical considerations should not be a reason not to conduct research. The type of research conducted in this study, was 'overt' research and therefore the investigation would only be optimally undertaken, when all participants were openly aware that research was being conducted and provided their consent.

Confidentiality is also an important issue; it protects the participant's privacy and ensures any information shared is kept confidential. Both confidentiality and anonymity are important but have different focuses; anonymity protects the participants identity and confidentiality protects what the participant says and ensures it is kept private (Pope and Mays, 2010). In the case of my research, confidential data was accessed so it was important to gain permission from the University of Nottingham Ethics Committee. It was essential to be aware of who had access to the field notes, as this could compromise the confidentiality and anonymity of the participants. The interviewee was provided with a consent form (Appendix 3) and guidance that the data produced would be confidential (Patton, 2005). In terms of anonymity, the participant's identity was kept anonymous throughout this reporting process. Although necessary, it was difficult to describe participants in the 'thick description' without identifying them (Braun and Clarke, 2006).

Informed consent is a vital consideration. My research consisted of working within groups MDTs and therefore required consent to be gained from each

participant. The consent form contained specific information with regards to the study, informing all those involved about the research, in addition to disclosure of information of what was conducted. The level of disclosure of the data collected was important to acknowledge prior to conducting the research. This gave the participants awareness of what would be happening to the data they are involved with. In the case of this study, the data was recorded as field notes, and has been anonymised (O'reilly, 2012).

3.7 The Study Design

The study design used a multiple case study methodology (Section 3.2) to explore the role of the community pharmacy team within the new models of care. A constructivist approach was used to explore and understand the nature of the new models of care and the role of the community pharmacy team within them. The aim was to understand key findings which support future roles and services at a time of healthcare reform. In order to explore this topic, semi-structured interviews and observations were undertaken to provide key insights and understandings of the case study sites identified (Section 3.7.2). The following sections describe the data collection, data management and data analysis processes undertaken to support this exploratory study.

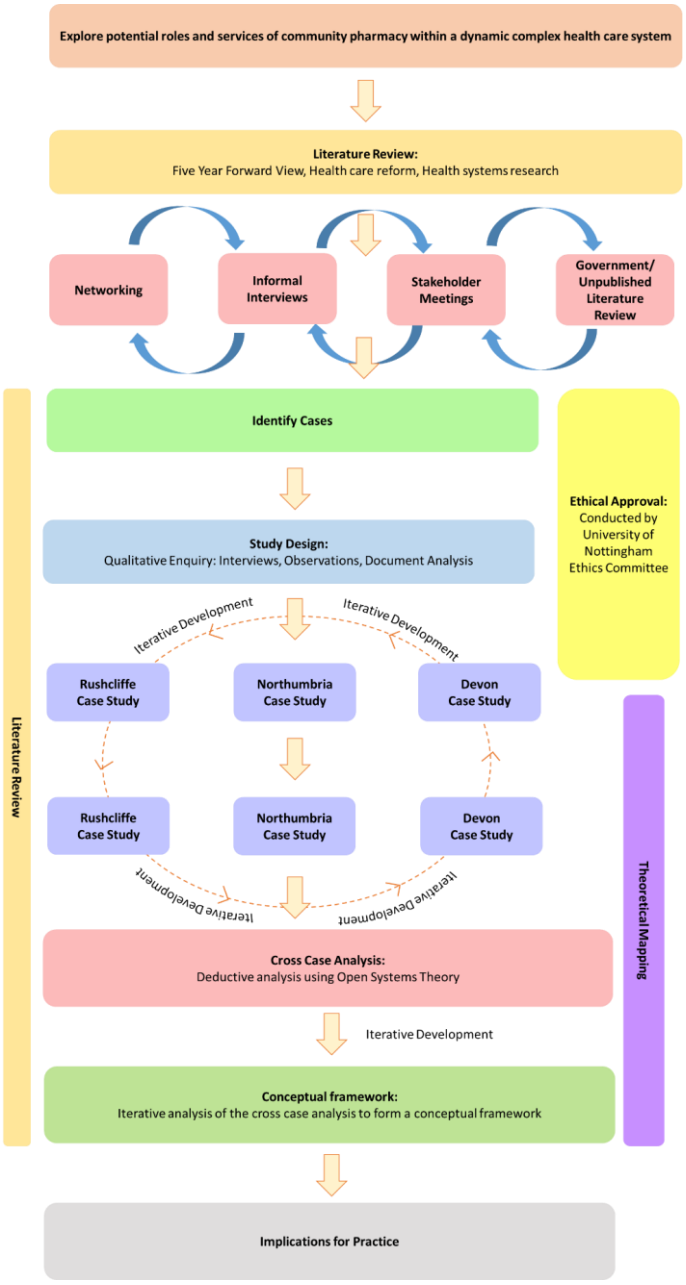


Figure 3.1 Overview of the Study Design.

3.7.1 Preliminary Study Period

The preliminary study period consisted of scoping the landscape. The new models of care were a fairly novel concept at the point of initiation of this study. It was important to identify what was happening in the field and who was involved. Initially, through government documents and conversations with organisations involved in the new models of care, connections were made with various stakeholders involved in the decision-making process. These stakeholders were either leaders of their own new model of care or were involved in a new model of care in some capacity. These stakeholders became gatekeepers within this study and supported engagement and initial access to sites. The preliminary study period was important to understand the provision of services within the UK's health system. In particular, in terms of commissioning pathways, new service provision and the strong connection between healthcare and politics. Through this period, it was vital to understand the new models of care, in terms of their focus, outcomes and position within the wider health system, in order to understand what to investigate. Stakeholders were iteratively involved in the development of key aims to be researched.

3.7.2 Identifying cases

The case studies in this study were identified through purposive sampling via gatekeepers. The nature of the new models of care program sprung varying case studies across the UK (Chapter 2, 2.7 and Appendix 4). As it was a new concept it was important to understand that only various places across the UK were awarded the NHS England New Models of Care Program funding

(Chapter 2, 2.7). Specific inclusion and exclusion criteria developed within the research team, provided the parameters for the case studies, and this restricted which were chosen (Creswell, 2012). The inclusion criteria consisted of:

Inclusion Criteria	Justification
Under the remit of new models of care	This study is based on the new models of care program as defined in the Literature Review chapter (Chapter 2, 2.7). Therefore, cases were required to be stemmed from the guidance demonstrated in the Five Year Forward View.
The new model of care had community pharmacy involvement	This study explores the roles and services of community pharmacy; therefore, each case was required to have 'engaged' community pharmacy services. Meaning, continuing the same pharmacy services as prior to the initiation of the new models of care sites, would not qualify as 'involvement'.
Strong community pharmacy involvement in decision making	This was required to ensure adequate community pharmacy representation at all levels of delivery of the new model of care, in order to gain valid insights and understanding of a 'community pharmacy involved new model of care site'.
Different areas of the UK	The new models of care, were required to produce local innovations, therefore having cases from various areas of the U.K would give an apt representation of the impact of localities on the delivery of the new model of care.

Table 3.1 Inclusion Criteria for Identifying Cases.

The NHS England New Models of Care Program consisted of very little community pharmacy involvement in the early stages therefore it was difficult to find these case studies. During the snowballing process five 5 case studies

were made known to me (Appendix 4). However only three out of the five fulfilled the inclusion and exclusion criteria.

3.8 Data Collection

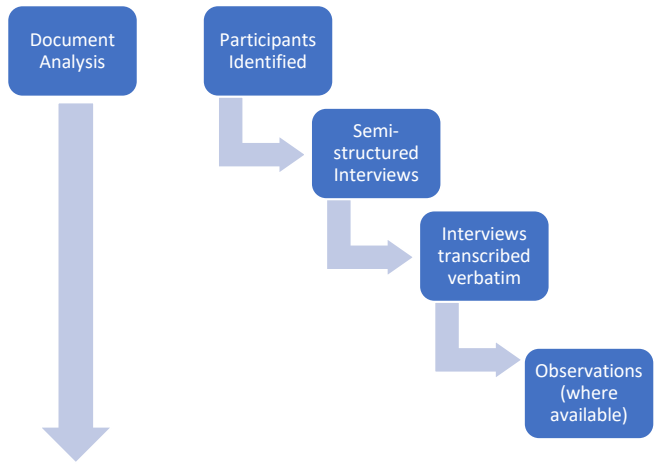


Figure 3.2 Overview of Data Collection.

3.8.1 Timeline

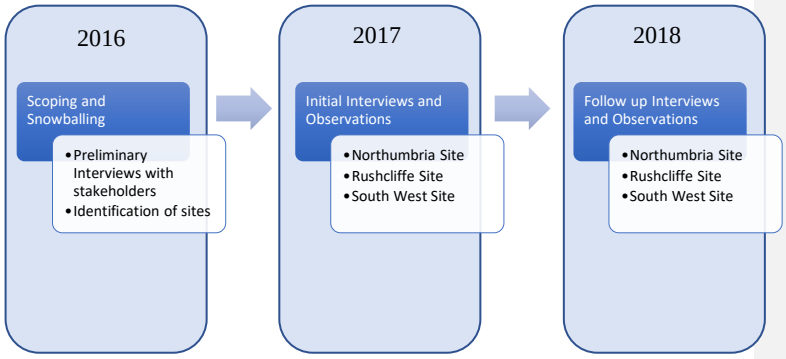


Figure 3.3 Timeline of Data Collection.

3.8.2 Sampling Strategy

The sampling strategy undertaken in this study was purposeful sampling. Purposeful sampling allows for 'in depth' understanding of the explored phenomenon (Patton, 2005). Kuzel (1986) describes the researcher as being without 'tabula rasa'. Prior to investigation an investigator has knowledge of the phenomenon. Therefore during purposeful sampling, the enquirer asks questions "Which data sources are information rich?" and "Whom should I talk to?" (Crabtree and Miller, 1999). Snowballing is also known as chain sampling and it supports the notion of seeking out particular informants to support the investigation. These informants, then locate others involved in the particular phenomena being studied (Morse, 1991).

The sampling strategy consisted of interviewing and observing key stakeholders directly involved in the new models of care case study sites. The stakeholders consisted of new models of care leaders, intermediate managers

and service-users. Such as, healthcare providers, for example, receptionists, pharmacists, GPs, nurses and all other allied healthcare professionals within primary care (list not exhaustive). The varying roles of the stakeholders, for example managerial and care giving, would give a deep insight into the understanding of the new models of care at each level of the healthcare system (Section 3.10.5). Due to the nature of the study, patients were not included as the study looked to understand the underpinning organisational structures using specific insights from stakeholders directly involved in enabling the new models of care program.

It is the understanding that sample size in qualitative research does not determine 'research significance' (Crabtree and Miller, 1999). This type of research focused on 'verstehen' and therefore it is the quality and richness of the data which is deemed significant (Benton and Craib, 2010). Patton (2005) agrees and suggests that meaningfulness and insights generated from qualitative inquiry have more to do with the information-richness of the cases selected and the observational/analytical capabilities of the research than with the sample size.

3.8.3 Interviews

This study used individual, face to face and telephone semi-structured interviews as a form of data collection. A mentioned earlier in this chapter, semi-structured interviews are identified as 'focussed' and 'open-ended' (Section 3.4.2), with communications built by the interviewer and interviewee (Crabtree and Miller, 1999). This form of data collection fitted into the

methodology of this study, because semi-structured interviews aim to extract further information on research questions. As this study used multiple case study methodology, it was important to use a flexible questioning technique guided by a semi-structured topic guide. This was essential; to cover similar topics across cases to enable congruence in the cross-case analysis.

Questioning led to deeper exploration of the role of the community pharmacy team in the new models of care. Due to the nature of these models and the use of case study methodology, semi-structured interviews were vital in exploring the phenomenon. The case studies examined were located across various parts of the UK and many of the new models of care were not fully established during data collection. Time was needed to be spent to build rapport with stakeholders to extract good quality data. Multiple visits were made to each case study site (Figure 3.2). The first visit to the sites required meeting participants face to face for the first time and building relationships. This was critical to the data collection process in order to decrease power asymmetry and diminish any preconceived misconceptions from either party involved, which could impact the data collected (Brinkmann and Kvale, 2006) (Section 3.4.2).

A semi-structured interview topic guide (Appendix 5) was developed which iteratively evolved with each site visit and available documentation, for example published government documents and published literature in the context of the study. This was important to iteratively explore the new models of care in further depth as the study continued.

The questions developed for the interviews revolved around a loose topic guide, this was to act as a guide to open-ended questioning and allow the interviewee to express their thoughts fully. In order to build on themes and ideas introduced by the participant. This process helped to build a rapport between the researcher and participant (Kvale and Brinkmann, 2009, King and Horrocks, 2010). The topic guide (Appendix 5) was formulated in order to keep the interview on track and was initially based on literature, informal interviews and personal experiences (King and Horrocks, 2010).

The interview process was conducted at each case study site and if this was unfeasible then over the telephone. Allocated time was pre-arranged with each participant to ensure adequate time was given. Each participant was emailed the information sheet (Appendix 2) prior to the interview via email. At the point of the interview, the researcher introduced themselves to the participant and produced an additional copy of the information sheet. An explanation of the study was given and the consent form (Appendix 3) was signed. Once the participant was happy to start, the recorder was switched on and the interview undertaken. Contact details of the researcher were left with the participant. The interviews started with broad questions about the stakeholder and around the topic of the new models of care. This was to ease the participant into the interview, start to form rapport and a relationship and equalise power across the interview platform. The interviews would proceed to discuss the new models of care in relation to their site and explore further the roles and services involved as per the interview topic guide. The semi-

structured approach was used to allow flexibility and the ability for the participant to describe details they felt were significant for data collection.

3.8.4 Interview Schedule

2016	2017				2018			
March to December	February	March	July	August	October			November
Informal Interviews Scoping and snowballing	Northumbria	Rushcliffe	Northumbria	South West	South west	Rushcliffe	Northumbria	Rushcliffe
Government Officials, Local Pharmaceutical Committee Leads, Members of the Royal Pharmaceutical Society, Hospital Chief Pharmacists, Community pharmacists,	Vanguard Lead, Trust Lead, Business partnership Manager, Clinical Pharmacist, Community pharmacist	Combined Commissioning Group and project meetings	Vanguard Lead, Trust Lead, Business partnership Manager, Clinical Pharmacist, Community pharmacist. Care home Staff	Local Pharmaceutical Committee, Pharmacy, staff	Local Pharmaceutical Committee	Combined Commissioning Group, eMAR implementation Team, Care home staff, Pharmacists, Pharmacy Technicians	Vanguard Lead, Trust Lead, Business partnership Manager, Clinical Pharmacist, Community pharmacist.	Combined Commissioning Group, eMAR implementation Team, Care home staff, Pharmacists, Pharmacy Technicians

Table 3.2 Interview Schedule.

3.8.5 Observations

Observations are a key form of data collection in qualitative enquiry. The ability to observe and 'see' reality through the eyes of participants and in the context of the service being observed is vitally important in gaining further understanding of a phenomenon (Bryman, 2016). The observer is known as a participant in the observations, unstructured participant observations are used when an understanding of the environment is required, in addition to the participants being researched (Crabtree and Miller, 1999).

Observations were used to gain an insight and description of the social world of the new models of care and its context. The observations collected demonstrated contextual and spatial evidence of where and how the service was undertaken. This was critical during data collection of the case studies. Each of the case studies (Chapter 4) are different to one another and therefore to gain an understanding of the implementation and continuity of the services, it was critical to observe the services, the systems, and physical components in place. This provided contextual evidence and visual data to support the analysis of all data forms collected. The observational data was triangulated with the data obtained from the interviews in order to give better insight into the phenomenon and add to the rigour of the study (Pope and Mays, 2010).

An observational schedule was formulated to keep track of the observations and type of evidence to gather. Observations in this study were taken as field notes, they facilitated in building and analysing the context the new models of

care case study sites were in. Observational field notes are important in qualitative research, they contain the reflective part of the research. Crabtree and Miller (1999) describe these notes as containing 'analysis, methods, conflicts, clarifications and frame of mind', which are important when analysing the data.

Non-participant and participant observational data was taken, this took into account the interviewer's verbal and non-verbal communication, for example their tone of voice and body language, which was recorded, but it was important to record how I felt in relation to them. This was essential to add to the 'thick description' and understanding of the cases. A limitation of this was not being able to observe those participants who were interviewed over the telephone. However, verbal cues could be noted.

Non-participant observations typically included recording contextual factors of the case study, for example the area, the building and accessibility. Additionally, in terms of physical systems such as technology, how it works, how it was used, who does it impact. Participant observations included recording their non-verbal communication and shadowing them during service hours to gain an understanding of their role and reality in relation to the new models of care.

3.8.6 Field Notes and Reflections

Field notes were undertaken as part of observational data collection. In addition, notes were taken where participants were asked to pictorially represent their vision and understanding of their new model of care site they

were involved with. This was vital as it gave an insight into their understanding and supported the co-construction of the reality of the phenomenon of the new models of care.

Reflections were written as part of the research process, this aided in gathering thoughts and understandings of each interview and site visit. Reading back on the reflective pieces reminded me what feelings, attitudes and motivations I had incurred after visiting of each site. This is critical to building the evidence base and depth of understanding of each case, in addition to adding to the credibility of the methods used. Reflections are critical in reducing researcher bias, it is also mitigating to reflexivity.

3.8.7 Document Analysis

Documents provided through governments and organisations have been a long-standing part of qualitative enquiry (Bowen, 2009). This study required exploring and understanding of the new models of care and how pharmacy fits into this vision. The development of the new models of care were first described in the FYFV as discussed in the Literature Review chapter (Chapter 2, 2.6). Therefore, to gain an understanding of the voice and vision of the government's idea of the new models of care, it was important to analyse these documents. The data from the document analysis was triangulated with collected interview and observational data. This gave valuable insight into the development and understanding of the new models of care and supported in the development of the interview topic guides. Additionally, triangulating

different data collection methods facilitates the credibility of the study (Denzin and Lincoln, 1994, Patton, 2005).

3.8.8 Ethics and Consent

The process of ethical approval was undertaken through the University of Nottingham Research Ethics Committee. However, this study was deemed a 'service evaluation' and therefore ethical approval was not necessary (Appendix 1). The University of Nottingham Code of Research Ethics and Conduct was strictly adhered to. As described previously, participants were provided with an information sheet and consent form. The consent form was either physically or digitally signed prior to the start of interviews and observations.

3.8.9 Study Duration

The full duration was from March 2016 to November 2018. Data was collected systematically over the course of three years. Due to my maternity leave being taken, a break in recruitment occurred from November 2017 to June 2018.

3.8.10 Participant Duration

Participants were interviewed on average for one hour. Due to the longitudinal nature of the research, participants were re-interviewed to explore emergent phenomena.

3.9 Data Management

3.9.1 Access and Storage

Data access and storage is crucial to the preservation of qualitative enquiry for the duration of the study. Confidentiality and anonymity are key to protecting the participants identity and data (Pope and Mays, 2010) (Section 3.8.8). Identifying information for all participants was removed and replaced with an identification code made up of a random allocation of letters, interview number and case study name. They were kept confidential during all processes of analysis. Only the research team (PhD student and supervisors) had access to the data. All data was stored securely in a locked filing cabinet and password protected digital files. Participant data will be retained for seven years as per University of Nottingham governance.

3.9.2 Transcribing

All interviews were transcribed verbatim and the process started and continued throughout data collection and after. Although the transcribing process was time consuming, it was important that as a researcher, I conducted it personally, as it allowed for closeness to the data and for notes to be reflected upon during the transcription process (Paulus et al., 2014). Ten percent of the transcripts were cross-checked to ensure no transcribing errors had occurred

3.10 Data Analysis

The multiple case study methodology implored the use of a multitude of qualitative methods as discussed (Section 3.8). The use of multiple data sources is a strategy to enhance credibility of the data (Patton, 1990, Yin, 2013). The process of analysis seeks to converge the data from all qualitative methods to explore the new models of care phenomenon. Baxter et al (2008) explain converging evidence adds to the 'strength' in the findings to facilitate a greater understanding. The analytical process in qualitative research begins at all stages of the research and uses an inductive approach to make judgements on human experience and measure their validity (Thorne, 2000).

The data analysis involved a series of processes. Due to the multitude of methods undertaken for data collection, data management was a difficult task. NVivo® 11 software was used to facilitate data storage and analysis. Literature describes the importance of using computerised software to support qualitative data analysis, it is thought to improve the reliability of the case study research, because of its facilitation in ease of organisation (Yin, 2013, Stake, 1995). A drawback of computerised analysis is the restriction on developing creative links (Baxter and Jack, 2008). Alongside use of computer software, physical analysis took place with pen to paper in order to gain closeness and undertake a form of creative analysis.

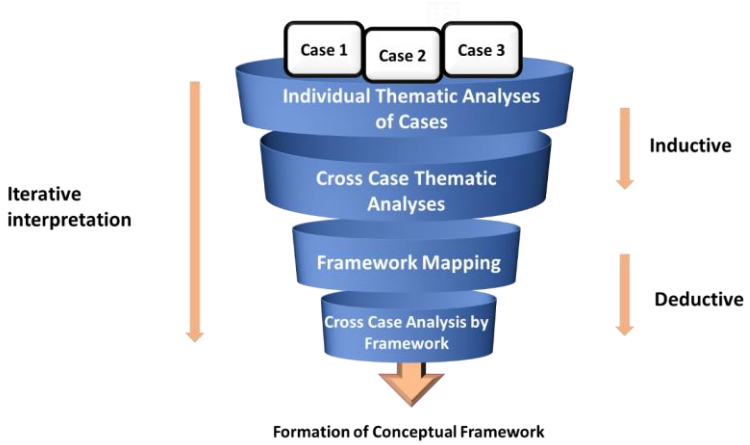


Figure 3.4 Layout of analysis.

3.10.1 Analysis of Cases

The analysis of case study material can be conducted as either a 'holistic analysis' which looks at the case as a whole, or 'embedded analysis' which is looking at specific areas of the case (Creswell, 2012). Due to the involvement of multiple case studies, the analysis process underwent a four phase process. The initial analysis underwent a 'holistic analysis' approach, which required analysing each case individually to set the scene and present the cases as single entities (Chapter 4). The issues within each case were identified by a "within-case analysis" followed by a cross-case analysis to form interpretations common across all cases (Yin, 2013, Creswell, 2012, Stake, 1995) (Chapters 5, 6, and 7).

The final interpretation relates to a deeper meaning of the case. Lincoln and Guba (1994) describe this as the "lessons learned" from each case. The qualitative researcher seeks to focus on 'instances' to analyse and synthesise

the data in a meaningful way for a direct interpretation (Stake, 1995). From these instances it is important that patterns are identified to establish congruency and consistency (Yin, 2013, Stake, 1995). These interpretations were then mapped upon a theoretical framework to support the development of a conceptual framework to describe the understanding of the reality (Chapter 8, 8.5).

3.10.2 Thematic Analysis - Coding

Coding is a form of qualitative data analysis (Bryman, 2016). Prior to initiation of coding, it was important to be immersed in the transcripts to gather the overall impression of each interview. Initial thoughts, notes and reflections were noted across the transcripts. The next stage consisted of 'classifying and interpreting' the data through coding (Creswell, 2012). Data from the interviews, observations and document analysis were coded and placed into overlapping categories. The initial codes were developed from my own reflections from the data and then modified as the analysis continued. Once all the codes had been developed, common codes with overarching themes were displayed in subcategories in the NVivo® 11 software. This facilitated visualising the data, the direction of analysis and the initial depth into the reality which was being constructed. Huberman and Miles (1994) describe counting the codes, to determine their frequency. However, I did not undertake this method as it is more in line with the positivistic paradigm and suggests equal weight should be given to all codes. Representing the codes with equal weight in this study would not provide a true representation of the data. Common in health service research is the use of 'prefigured' codes from

the literature (Crabtree and Miller, 1999). Again, I did not undertake this method, as it was important for the codes to be generated from the triangulation of all data collected in this study, in order to gain an insight and reflect on the constructed reality of the new models of care investigated in this study.

Triangulation of data sources was used to validate the research; this is well known in qualitative research. Using other researchers to analyse data is a way to gather different perspectives on interpretation and increase rigour and credibility of data. Researchers outside of the research team were recruited to 'member check' the data and add credibility to the thematic analysis process (Golafshani, 2003, Carter et al., 2014). This was undertaken in the form of a focus group, to share and discuss corroboration in findings.

This study underwent a four phase analysis. The transcribed audio recordings were inductively thematically analysed using NVivo® 11 software. The emergent themes were then analysed through a secondary deductive process and mapped to Open Systems Theory (Section 3.10.5). Fereday et al (2006) used a dual method of analysis to add rigour to their qualitative study, it was apt to use a two-step process for this study due to the nature of the new models of care and their place and impact within the wider dynamic health system. It was critical to explore and understand the new models of care in their own right, but also be able to deductively interpret these findings by using Open Systems Theory to facilitate an understanding of the whole health system (MacFarlane and O'Reilly-de Brún, 2012). Theoretical mapping was

conducted to gain a deeper understanding of the qualitative data to draw out underlying understandings across the case studies (Braun and Clarke, 2006, Boyatzis, 1998). Layder (1998) suggests this process grounds the research 'more firmly' with the added weight of empirical evidence.

The following sections will discuss the four phases of the analysis process.

3.10.3 Phase One Thematic Analysis

Thematic analysis is extensively used as an analytical method (Boyatzis, 1998, Braun and Clarke, 2006). Braun and Clarke (2006) describe it as a "foundational method for qualitative analysis" which can provide a firm grounding and produce a 'thick',' rich' and detailed account of the data. It aims to find 'patterns/themes' in the data set, and sometimes can lend to facilitate interpretation (Boyatzis, 1998, Braun and Clarke, 2006). Due to the nature of qualitative enquiry, it is essential for the researcher to undergo a process of reflexivity and demonstrate their epistemological position in order for their assumptions and values to be known and understood. This is important to be able to demonstrate in the thematic analysis process and where themes 'emerged' from. A consistent process of thematic analysis adds to the rigour and credibility of the study (Nowell et al., 2017). It is difficult to evaluate research, if the analysis process and assumptions taken are not described (Braun and Clarke, 2006).

Thematic analysis is a series of decisions which are based on the researchers experience and the data collected. From the constructivist paradigm, this study made decisions of thematisation through co-construction of both

personal experience and the full data set (i.e. interviews, observations and document analysis). The aim of thematic analysis in this study was to 'unpick' and understand the reality portrayed in each case and across the cases.

Data analysis started after the first interview was transcribed, this was to iteratively inform other interviews in the case and iteratively modify the interview topic guide accordingly. A large number of codes were continually identified, these were repeatedly reorganised as new themes and literature emerged over the data analysis part of the study period. A total number of 137 codes emerged and were rearranged into sub-code categories, such as 'care' included continuity, seamless and shared, and 'service delivery' consisted of duplication and tailoring. This analysis informed each interview round. The process consisted of thematically analysing each case individually and then via a process of cross-case analysis, the common themes presented across each case were collected and reanalysed. The initial process of analysis consisted of categorising important quotes which represented key points in the data, through coding. Secondly, these categories were re-analysed and themes were generated from the text. The themes consisted of the underlying meaning represented in the quotes. Themes which were associated with significance were considered to be categories which were highlighted by many stakeholders, in addition to my own reflections from the observation data and document analysis as to what I thought was essential to understanding the new models of care sites. These were themes such as, relationships, technology and training (Chapters 5, 6 and 7).

Themes pertaining to the individual cases were inductively identified, because it was important to explore 'data driven' perceptions of the new models of care, without fitting the data into pre-formed specific boxes (Patton, 2005, Boyatzis, 1998). The second layer to the inductive approach consisted of interpretation, a 'good code' is described by capturing 'richness' of the reality (Boyatzis, 1998). However, as Braun and Clarke (2006) demonstrate during the inductive thematic analysis process, the epistemological assumptions are still in existence. In this study, during the analysis process it was difficult to separate assumed knowledge about pharmacy from the text. Themes were designated as part of the decision process in the inductive analysis stage and discussed during research study meetings as a way to and justify decisions and increase credibility of the study.

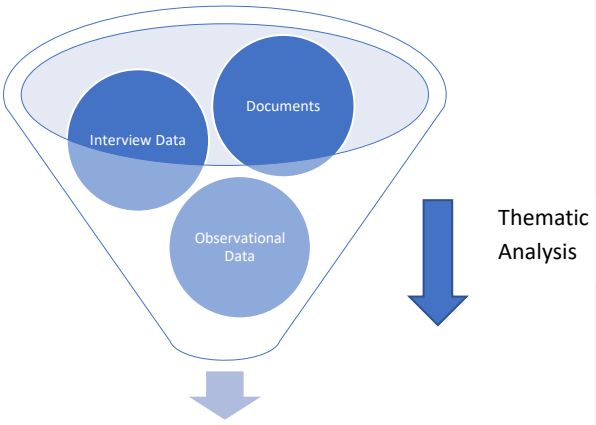


Figure 3.5 Phase One Thematic Analysis.

The interviews were analysed (Section 3.10.1), with initial coding and then iteratively modifying categories and codes as the data analysis proceeded. After the second wave of interviews and data collection had ended, the

interviews were iteratively recoded into broad and subtheme groups. These groups were again analysed and modified in relation to the triangulation of observational data and data from the document analysis. After a period of reflection, further iterative interpretation of themes arose and they were modified into focussed and refined ideas (Denzin and Lincoln, 1994). This process informed writing the individual case studies, this was critical as it formed as another layer of analysis, because it demonstrated key factors important to each case and allowed for the emergence of links and relationships between cases.

3.10.4 Phase Two Cross-case Analysis

At this point of the study, each of the individual case studies have undergone thematic analysis. This allowed the opportunity to describe and understand through a 'thick description' each case and the underpinned constructs in relation to pharmacy and the new models of care. The initial stage of the cross-case analysis consisted of grouping similar themes which emerged across each case then interpreting the data. The themes generated from each of the case studies were further categorised to represent overarching topics. This required further thematisation to re-group themes and subthemes in order to manage the data systematically and review the 'cross-case' as a whole entity. This was done for each individual case study and again for the themes which spanned across all three cases. The in-depth themes were

mapped using Mindjet MindManager Pro 6 to visually arrange and project cross cutting relationships (Appendix 8, 9 and 10).

The themes which emerged from this initial stage presented broad findings in relation to the new models of care and similarities and differences across each case. These themes covered broad areas on the different health systems presented in each case and narrow themes, which focussed on details pertaining to each individual site and barriers and facilitators to the sites emerged from the data. Upon reflection, strong findings emerged around health systems and their 'control' and impact at different levels with the system, for example at the service level, organisational level and the overarching system level (Figure 3.7). This became a critical direction for enquiry because the iterative findings represented key factors which could impact the sustainability of the services and systems, in addition to themes emerging on the fit of the role of pharmacy within the dynamic system. Open System Theory emerged from the literature as a theory to facilitate iterative development of the findings, because it demonstrated key points for analysis and interpretation in relation to organisations. Therefore, theoretical mapping was undertaken to ground the research in evidence and identify key themes which represent an increase depth of understanding of complex dynamic health systems and the required adapted roles and services of pharmacy within this system.

3.10.5 Phase Three Mapping Theoretical Framework

The thematic analysis phases (one and two), both generated key themes and commonalities which had been derived from the data. There was clear congruence between the co-constructed data points generated by the literature and the data collected. Layder (1998) discusses using theory to deductively analyse qualitative research, and how this could enhance the researchers ideology to issues and interpretations which may not have been identified during the inductive approach. There was clarity that the evidence pointed towards a view of the health system as a whole. Therefore, scoping of health systems literature was undertaken to identify theories which could support the deductive analysis of the data collected. Many theories presented themselves, for example the World Health Organisation Framework for Action (2007) and the theory of change (2015), however the themes identified from the thematic analysis were not novel in terms of health systems research and would have provided similar conclusions to the theories mentioned. Therefore, exploration away from health services research to organisational theory research presented an opportunity to deductively analyse the themes through a lens not commonly used in health services research. This would present the data in a novel way and generate a new understanding. The themes identified during the thematic analysis presented a wider system view as well as a focussed view on the area researched. Each theme was linked and formed a level of interdependency with each other and therefore, the theory required would need to represent these dynamics and take into account both the system and focussed view of the area researched.

The theory chosen for this study is Katz and Kahn's revision of 'Open Systems Theory' (1978). This theory was originally developed by biologist Ludwig von Bertanlanffy and was chosen because it reflects the dynamic nature of complex health systems where the new models of care were embedded. The theory posits that all parts or combinations of the system are interdependent and work towards obtaining a 'steady state' (Von Bertalanffy, 1950). This can be extended to the nature of complex health systems, because Luke et al (2012) argue that complex health systems are formed from elements which interact with each other and adapt over time as the system evolves. The review paper goes on to describe how 'interactions can produce emergent effects that are different from the effects of the individual elements. Holden (2005) suggests 'creative adaptations' often emerge during times of change or at 'the edge of chaos'. Therefore, this theory was chosen to represent and conceptualise the socially constructed reality of the new models of care because they were developed during a time of 'chaos' (Chapter 2, 2.7).

A key assumption of this theory is the understanding that an 'open system' is comprised of multiple sub-systems, which interact with each other. This is well represented when identifying this through the lens of the new models of care. As each level of the system (government, middle management and service level) can be seen as a 'subsystem'. A key component of this theory is the understanding that if one subsystem fails, the other systems will continue in their activities. This is an adequate representation because as demonstrated in the literature review (Chapter 2, 2.10), many new models of care failed to provide adequate results from their evaluations. However, the

system continued to provide health services. A limitation of this theory is the notion that there is a hierarchy between the subsystems. Although this might be a possibility when using this theory to understand health systems, it would be important to understand the power dynamics within this system and if these are reflected by the represented 'hierarchy'. For example, should the 'fund-holders' be at the top of the hierarchy or policy makers/government officials? Interestingly, this theory was chosen on the basis that it provides a new understanding of well-evidenced themes associated with England's healthcare system.

This research study assumed the reality of the investigation is constructed from the researcher's personal experiences and the data collected. Therefore, the definition of 'organisation' in relation to health systems research is reflected from the data, literature and personal knowledge. In line with the constructivist paradigm, the aim of this study is to understand the reality presented and develop a conceptual framework to represent the interpretations and relationships found. This study is intended to add to the understanding of the place of pharmacy in the wider complex dynamic health system.

Initially, when identifying the use of this theory in relation to the new models of care, questions arose around 'what are the factors which produce 'emergent effects'? 'Do they effect stability of the system and therefore impact system healthcare delivery and patient care?' 'What is the role of the community pharmacy team in the dynamic healthcare system and its role in

the stability of it?'. In order to provide evidence to answer the research aim it was critical to investigate the underlying mechanisms which influence the stability of the system, because frameworks developed for complex adaptive systems are increasingly required in the field of healthcare (Holden, 2005). The Open Systems Theory lends to interpretation and understanding of the deeply complex nature of health systems. This will facilitate the understanding of the role of pharmacy within this dynamic adapting system and what factors are required to adapt with the system.

Open Systems Theory as described by Katz and Kahn (1978) identifies the system as a series of repeated cycles of inputs, transformation ('throughputs') and outputs, and a cyclical process of renewed inputs and negative feedback, which results in the continual adaptation of the system. In line with its biological inception the process of negative feedback refers to a homeostatic mechanism in the system, whereby energy may enter the system in one form and the system will need to adapt in order to maintain its 'homeostatic' or steady state. Katz and Kahn (1978) additionally argue a principle of 'equifinality' whereby the system can reach the same 'final state' with different initial inputs or different paths of progression through the system. Table 3.3 explains the definitions of Open Systems Theory concepts in relation to this study. The theory was used at the second stage of the analysis process. The initial stage used thematic analysis to inductively draw themes from the data. The second stage consisted of deductively mapping these themes on Open Systems Theory. Each core component of the theory was understood and described as per the definitions presented by Katz and Kahn (1978) (table

3.3). These definitions were then applied to the themes generated during the thematic analysis. Table 3.3 shows the applied definitions of each stage of Open Systems Theory in relation to the themes generated in phase two (section 3.10.14).

Concept	**Definitions by Katz and Kahn (1978)**	**Application to Thematic analysis themes**
Input	The inflow of energy and information from the external environment	System characteristics and Stakeholder characteristics
Throughput	Energies inside the system	Service characteristics
Output	Outcome exported to the external environment	Outputs of the New Models of Care reality
Cyclical system	The process of exchange and transformation of energy, which repeated and renewing the system	Resources: Finance, Workforce, Technology
Negative Feedback	Internal adjustment of energy within in the system	Evaluation

Table 3.3 Open Systems Theory in Relation to this Study.

Once the definitions were identified, the next stage of 'theoretical mapping' consisted of mapping the themes into their various 'defined areas'. Figure 3.6 demonstrates a simplified diagram of Open Systems Theory. The full analysis

in relation to this study can be seen in (Appendices 11, 12 and 13). The themes found in phase two (section 3.10.5), were split into the subsystems identified in figure 3.6. Through this analysis process, literature related to Open Systems Theory linked it well with to the organisation of educational institutions. Thein et al (2012) describe the school system as multi-level organisations which can be viewed as 'bureaucratic, hierarchical and coordinated' in structure. Similarities of this description can also be drawn to that of the health system in the UK (Talbot-Smith and Pollock, 2006). Therefore, this representation of Open Systems Theory guided the theoretical mapping. The result of this can be seen in figure 3.6 below. Open Systems Theory is based on organisational research and thinking in a multi-level system approach. It appreciates the hierarchical nature of components of the system and uses the different levels in the 'throughputs' to delegate 'tasks' or services in order to produce outcomes (Meyer and O'Brien-Pallas, 2010). The subsystem levels (Figure 3.5) are a representation of the division of labour and can determine the flow through the system. The number of levels added to the system are determined by the complex requirements of co-ordination and integration needed to support the system to function. Therefore, the more complex the system the more levels there will be with a specialist function to support the system (Meyer and O'Brien-Pallas, 2010, Katz and Kahn, 1978). As per the description of equifinality, there is not a singular way to represent the structure of an open system in health services, due to the various complex dynamics and different factors of the system which could potentially lead to the 'same' final state. Therefore, the constructed reality facilitated by Open

Systems Theory in this study is representative of the adapted system at the time the data was collected.

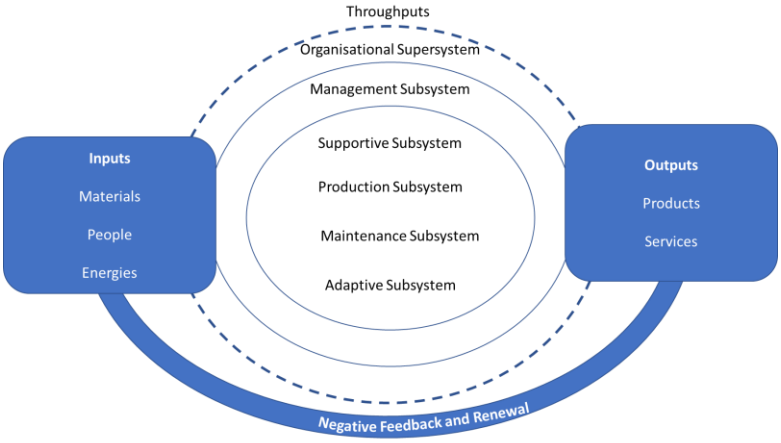


Figure 3.6 Representation of Open Systems Theory (adapted from Meyer & O'Brien-Pallas, 2010).

Open Systems Theory in relation to this study focuses of the hierarchy presented across each level of the health system. Figure 3.6 illustrates a representation of Open Systems Theory, within each level there are subsystem levels which through factors such as co-ordination provide a level

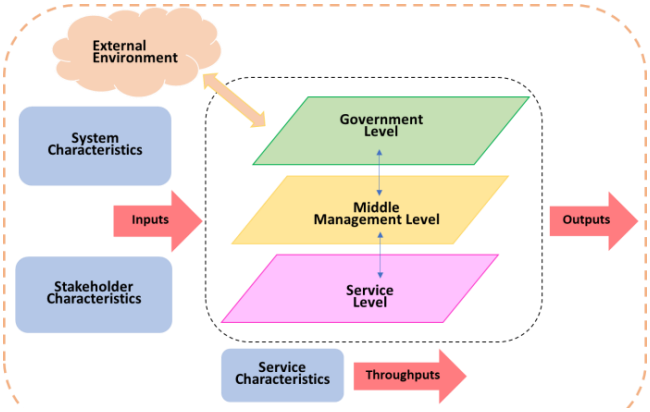


Figure 3.7 Diagrammatical representation of Open Systems Theory. Adapted from (Thien and Nordin, 2012).

of integration across the layers. The arrows are representative of 'free movement' of labour vertically across each level.

Previous pharmacy practice research in relation to future roles and services of pharmacy professionals have used other frameworks for analysis. For example, Hattingh et al (2020) used the COM-B (capability, opportunity, motivation and behaviour) model to identify 'Successful implementation and provision of enhanced and extended pharmacy services'. However, the research consisted perspectives from pharmacists only and therefore could have restricted the acceptance and understanding of these services in the wider healthcare system. This study sought to understand a 'whole system view', with the presentation of a symbiotic moving dialogue between each layer of the system to support an integrated care complex health system model.

The analysis process undertaken during theoretical mapping required analysing the data which interacted with the framework. This required mapping the themes onto the framework and interpreting the interconnecting relationships between the data and the theory. The use of Open Systems Theory supported the categorisation of the data, to then be able to visual where each theme sat in the sub-systems and how they interact with each other. This phase was critical to understanding what key factors effected each case study and how. Writing the cross -case analysis chapters (Chapters 5, 6 and 7) helped contextualise the data. Combing this process with the initial thematic analysis provided scope to further interpret the data

into a conceptual framework (section 3.10.5). This will facilitate the place of this study in practice and inform future policies in relation to the practice and roles of pharmacy.

3.10.6 Phase Four Deriving the Conceptual Framework

Miles and Huberman (1994) describe conceptual frameworks as a tool to describe relationships, gather and align constructs during data interpretation, to develop a framework which represents the phenomenon studied. It also provides clear demonstration of key constructs which indicate reasons for success and therefore provide recommendations for policy. It is developed from literature, data and personal experiences (Baxter and Jack, 2008). The fourth phase of analysis consisted of developing a conceptual framework from the data to demonstrate key relationships interpreted from the data (Chapter 8, 8.5).

The cross- case analysis is presented across three chapters (Chapter 5,6 and 7); they represent data linked to three key themes which emerged from the data.

3.11 Methodological Considerations

It is important to take into account methodological considerations when designing a research study. In terms of this study, many different methods could have been used to represent the in depth understanding of the new models of care phenomenon. It is vital in any study that appropriate methodological approaches and considerations are considered to ensure rigour and validity when conducting qualitative enquiry. This includes the

importance of reflecting on the strengths and limitations of the research methods undertaken.

3.11.1 Validation and Rigour in Qualitative Enquiry

Qualitative enquiry is laden with queries around maintenance of rigour in terms of 'validity' and 'reliability' due to its subjective nature. Many critics directly compare qualitative enquiry with its quantitative counterpart. Guba and Lincoln (1989) describe rigour as 'trustworthiness' and devised criteria which paralleled those of the positivistic paradigm in order to provide a platform to demonstrate rigour in a constructivist paradigm. For the purpose of this study the qualitative terminology will be used (Creswell, 2012).

The use of only one qualitative method would impede the rigour of this study. Creswell describes the use of more than one method as ideal for triangulation and thematic analysis, as it is important to identify themes that "cut across all data sources". Using more than one method was vital for this study, because it required deep insights into each case study to build a clear picture of the constructed reality. As described above, the four phase analysis process was important to develop the findings into a conceptual framework. The process of triangulation added a layer of rigour to this study increased the rigour of this study. However, the methods used in this study do have certain limitations, these will be later in this chapter (Section 3.11.2).

3.11.1.1 Credibility, Transferability, Dependability and Authenticity

Credibility is described as the 'internal validity' and can be obtained by using methods such as prolonging contact within the phenomenon for as long as

possible and triangulating data from using different qualitative methods (Schwandt et al., 2007). This will add more knowledge to form a 'thick description' which will support the transferability in terms of others concluding similar findings due to the depth of description provided (Crabtree and Miller, 1999). In terms of this study, credibility was achieved through using multiple methods of data collection and triangulating the data as described above.

Dependability is used as a parallel for reliability and refers to the 'stability' of the data (Elo et al., 2014) and authenticity is described as the extent to which the reality is demonstrated. These are important considerations, in terms of this study, each case study is individual in that the findings are not generalisable because they are heavily embedded within the context of the cases. However, there is a degree of transferability because key concepts and relationships have been derived from the data, facilitated by theory mapping to develop a conceptual framework.

Adding trustworthiness to the qualitative process is essential in demonstrating the quality of the study. As described above, the ontological position and epistemological assumptions undertaken within this study are vital to demonstrating transparency in this study. Transparency in all areas of this study has been demonstrated in this chapter, in order to demonstrate vital justifications and explanations in relation to the study design. This is to add rigour and trustworthiness to the study. Reflexivity was a vital undertaking in this study. It is critical to qualitative enquiry and demonstrates

transparency in the agency of the research in relation to the qualitative enquiry (Crabtree and Miller, 1999). This means it allows the researcher to reflect on their position within the research process and the impact they are having on the study. As described above, reflexivity was undertaken throughout this study, in order to be aware of how my position, beliefs and values influenced this research.

3.11.2 Strengths and Limitations

Rigorous qualitative enquiry requires reflection on all aspects of the study, in particular the methodology and methods used. The following section will describe the strengths and limitations of the methods used in this study, in order to add to the transparency and rigour of the qualitative enquiry undertaken in this study. Each method of data collection has its own strengths and limitations.

3.11.2.1.1 Interviews

Interviews are a key form of data collection used in qualitative research (Creswell, 2012). They have widely been used in pharmacy practice research as a tool to explore a phenomenon. It is important to reflect and assess whether this type of qualitative method is appropriate for the study. Individual interviews and focus groups had both been considered when choosing data collection methods. The limitations associated with focus groups around dominance and power, would have negatively impacted the results of this study, because the aim and objectives required listening and understanding the voice of participants at each level of the health system

(Bryman, 2016). It was vital for this study, to gain an in-depth insight into each of the experiences of the participants because this study focussed on collecting data at each level of the system (Figure 3.6). This would not have been achieved in a focussed group setting.

Limitation of qualitative interviewing can be reasons such as the inability to fully observe behaviour, because interviews use primarily verbal behaviour and therefore true feelings may be supressed. Additionally, due to the semi-structured nature of the interview process it might 'blinker' the researcher. Limitations of these interviews were that they were conducted on an individual basis, therefore the inductive process undertaken could not be verified by other interviewees, although there may have been a possibility of verification through literature (Patton, 2005, Kvale and Brinkmann, 2009). In order to overcome these limitations observations were also undertaken to gain further understanding and add depth to the constructed realities (Bryman, 2016).

3.11.2.1.2 Observations

Observations were critical to gaining a visual insight into the case studies. Each of the case studies had a unique setting whereby the services are undertaken. This was important to experience as the researcher and reflect upon in order to understand their importance in relation to the findings of this study. Limitations of observational research include the participants being 'reactive' to the situation. The new models of care sites were seemingly unstable in the sense of they needed to provide evidence of success if they

were to be continually funded. Therefore, having a researcher observe them could have had a negative impact resulting in them consciously working in a certain type of way and less naturally. This would have affected the reality that was being constructed. I am confident this did not happen; however, interviews were used to triangulate the observed data to corroborate the findings from each data collection process.

3.11.2.1.3 Document Analysis

Document analysis was an important tool to use, during the time of this study, there were minimal documents relating to the new models of care, many of them were government publications. These documents are usually written in a particular style; therefore, it was important to analyse these alongside unpublished new models of care documents to uncover a deep understanding of the new models of care phenomenon presented. Limitations of document analysis are insufficient detail presented in the document and biased selectivity. Insufficient detail was apparent whilst reviewing the new models of care documents, this is because government documents are notoriously vague. Selection bias was not an issue during this part of data collection due to the lack of information available on the new models of care because it had just been developed at the initiation of this study.

3.11.2.1.4 Access

There were minimal problems with access initially. The initial snowballing process allowed the preliminary stakeholders to be gatekeepers of each site. The first issue with access was distance, each site is located in different areas

of England, therefore data collection had to be arranged over a certain time period supported by the site. As data collection proceeded deeper into the sites, different access issues became apparent. The Rushcliffe site initially welcomed this study. However, due to the position of the gatekeepers, being on the side of the implementation team, they almost prevented access to the participants and users of the service. Initially it was unclear why, however it soon emerged that the service was not being adopted as hoped by the team. Through alternative avenues, such as members of the service user team, the participants were interviewed. This proved to be a better way to access the participants as it used the pharmacy team as the gatekeepers, and they had a better relationship with the participants than the implementation team. I felt the participants opened up more with this type of introduction.

Access to the Devon site was challenging, this case study consisted of a small pharmacy team, where I was only able to interview on an ad hoc basis whilst visiting the area because non face to face communication, such as email, resulted in minimal responses from the gatekeeper and participants. Challenges in relation to gaining and maintaining access to participants have been cited, reasons which support engagement are associated with points such as moral obligation and representation, however barriers to engagement have been suggested as disruption and intrusion (Clark, 2011).

When reflecting on these methods, each consisted of strengths and limitations. When conducting this research study, I am satisfied that I approached this study with methodological rigour and the appropriate

methods to answer the research question. At each stage of the study design, rigour and trustworthiness were at the forefront, in order to appropriately represent the views and experiences of the participants and do justice to the findings of this study.

The following chapters follow the outline as highlighted in the introduction (Chapter 1, section 1.3.2). The next chapter (Chapter 4) consists of presenting an outline of each case study, its context and findings. This will be a brief overview because the focus of the thesis is on the wider system view generated across each case study site, however the context of each individual case study is needed to understand why particular core themes were generated. Chapters 5-7 describe the cross case analysis this presents the findings featured across all the case study sites in depth.

Chapter 4 The Case Studies

This chapter introduces and describes each case study individually. It identifies and explains the context and findings of each site. Understanding the context of each case study is critical to their role in understanding the nature of this investigation. Each case study section describes in depth the reality constructed between the researcher and the researched. It presents the direction of qualitative enquiry to provide a summary of the findings of each case. The findings presented demonstrate barriers and facilitators found at each individual case study site which impacted the implementation and sustainability of the new models of care. This approach has been taken because the aim of this research study is to focus on the 'whole' system view of the healthcare system and therefore individual findings relevant to only the context of the individual case studies do not represent findings in relation to the overall research aim. The cross-case analysis chapters (Chapters 5, 6 and 7) present findings featured across all the case study sites in depth, providing evidence to support conclusions derived from this investigation.

Three new models of care sites were identified during the identification process as per the inclusion criteria described in the Methodology chapter (Chapter 2, 3.7.2). The three sites are: the Rushcliffe case study, the Northumbria case study and the Devon case study. Each of the three sites are defined as new models of care, however only two sites; Rushcliffe and Northumbria secured vanguard funding from NHS England as described in the literature review (see Chapter 2, 2.6). The following sections describe each

case study in depth and present summary findings. (NB: Published figures and government documents used to reflect the context of these case studies are drawn from the time of data collection to appropriately represent the reality of why the new models of care were developed and implemented).

4.1 Rushcliffe Case Study Site

4.1.1 Background

The Rushcliffe case study site is embedded within the new models of care vanguard called Principia Vanguard, located in Nottinghamshire. The overall vision for the Principia Vanguard was to improve patient pathways across a series of health system boundaries. The aim of the vanguard was to improve patient outcomes and provide better cost management and efficiency savings. The vanguard presented itself as an MCP vanguard (see Chapter 2, 2.7) by partnering with GP practices in Rushcliffe (collectively known as PartnersHealth) Nottinghamshire Healthcare NHS Foundation Trust and Rushcliffe CCG. Principia Vanguard supported the development of many new services across Nottinghamshire. This study focuses on one of those services, known as the Rushcliffe Care Homes Electronic Medicines Administration Service (RCHEMAS), which had significant pharmacy involvement within its development, implementation and delivery stages. The following sections describe the context supporting the development of the RCHEMAS and present specific findings in relation to this study.

4.1.1.1 Geography and Demographics

Rushcliffe is a small county located in South Nottinghamshire (Figure 4.1). The Office for National Statistics (Nottinghamshire Insight, 2018) reports its mid-year population in 2017 as 115,996. 11.5% of the population are aged 65 and over and the area is considered with one of the more affluent local authorities across Nottinghamshire (Rushcliffe Borough Council, 2017). This evidence led to the initial formation of the RCHEMAS as part of the new models of care vanguard program.



Figure 4.1 Counties of Nottinghamshire (Hallam and Harris, 2017)

4.1.1.1.1 Care of the Elderly in Rushcliffe

The county of Rushcliffe has 23 nursing and residential care homes (Hallam and Harris, 2017). Care homes can be considered as comprising both nursing

and residential care facilities as described in the literature review (see Chapter 2, 2.3.2). Many care homes are privately, public sector or dual funded but they are not NHS entities. National goals as described in the Literature Review chapter (see Chapter 2, 2.6), suggest one of the types of vanguards propositioned in the FYFV (2014), is to support an 'Enhance Health in Care Homes'. Key aims of supporting health in care homes is to facilitate independence in care homes through various methods: supporting patient-centred care, developing new models of healthcare delivery within care homes, for example through digital health and placing a large focus on quality and strong leadership to support better healthcare (NHS England, 2016). One of the main challenges faced in care homes is the safe provision of medicines administration (Fahrni et al., 2014, Barber et al., 2009)

4.1.2 New Models of Care and Rushcliffe

Rushcliffe CCG is part of the Principia MCP vanguard. As described above, the Principia Vanguard expanded across Nottinghamshire. The services located in Rushcliffe focussed on supporting the provision of healthcare in the elderly. The agenda of the Rushcliffe component of the Principia Vanguard as described by Rushcliffe CCG stakeholders and vanguard literature, focused on four key elements in facilitating health service delivery in relation to enhancing support to care homes:

1. Enhanced GP specification for care homes
2. Community nursing and falls specialist support
3. Closer working with Age UK Nottinghamshire
4. Support for care home managers

In terms of patient-focussed support, the main aim of care home services in Rushcliffe, focused on better care provision for its residents. This was achieved, by improving: their quality of life, the care they receive, and the extent of their involvement associated with the care they receive (including next of kin involvement).

The vanguard consisted of 22 care homes in Rushcliffe and one care home within the wider Nottinghamshire area. The premise of the section of the Principia Vanguard located in Rushcliffe, proposed facilitation of care home service support through an 'enhanced support' delivery pathway. This consisted of each care home being assigned a specific designated GP practice to support with personalised service delivery. Each practice delivered a 'service package' to its named care home. The package consisted of: regular visits to the care home by a named GP, better provisions and support from community teams, independent advocacy to allow patients to make autonomous decisions about their care and independent third sector support from Age UK (Lloyd et al., 2017).

The Principia Vanguard focussed on an array of services to support enhancing the care of the elderly in care homes. The inclusion criteria for the 'identification of case study sites' for this study (Chapter 3, 3.7.2), required each case to involve pharmacy at the implementation stage of service development within the new models of care. One of the enhanced services delivered to care homes is the RCHEMAS. This service heavily involved pharmacy at each stage of service development and delivery. The following

sections will describe this service in depth. It is important to note, that although 23 care homes were involved in the Principia Vanguard, this case study reviews three care homes involved in this study. This is because the vanguard commissioned various providers to deliver similar services, however I was not privy to this information and was unable to access the other sites linked to the alternative providers.

4.1.3 Medicines Management and Rushcliffe

The enhanced vanguard specification to support care homes, gave commissioners and service providers 'free reign' on which services to develop to best suit their footprint. Two stakeholders from Rushcliffe CCG as part of the Principia Vanguard suggested a key area for service development was medicines management and delivery to care homes. Medicines management was described as a vital area which could provide better care provision, increase safety associated with medicines, increase in cost savings and could be replicated across the Principia Vanguard footprint.

The existing medicines management processes in accordance with the Rushcliffe area were described as "responsive and reactive". This suggests, issues were 'resolved' once identified and triaged. This type of model has already been described, in the Literature Review chapter (Chapter 2, 2.7.1), as a provision for increase escalation in the conditions of care home residents', leading to a decrease quality of life and independence. Responsive care provision and lack of appropriate continual care is linked with avoidable hospital admissions leading to a greater cost to the NHS (Weissman et al.,

1991). The Principia Vanguard sought to provide “umbrella care” to the care homes through continual care provision via an allocated GP practice. These practices would deliver regular ward rounds, continual required monitoring of conditions and provide reactive care provision to treat acute conditions such as urinary tract infections.

The provision for medicines management required these services to be delivered by all pharmacy teams across the Rushcliffe area. This is because different pharmacy teams provide services to different care homes. The link between care homes and pharmacy is multi-level. At organisational level, pharmacy teams as part of CCGs or (more newly formed PCNs have their own pharmacy teams which support care homes by providing medicines review services. At community level, some community pharmacies offer specific services on a regular basis to care homes, to support their pharmacy and medicines needs. For example, provision of monitored dosage systems (MDS), stock checks, medicines wastage, inspection support and MUR. However, in acute situations, where the regular community pharmacy is closed, it requires the care home to use other community pharmacies for their medicines services. Therefore, clarity of medicines management provision was required from the vanguard, in order to support seamless, enhanced care provision to care homes from all pharmacies in Rushcliffe. In relation to this study, medicines management encompasses medicines optimisation, reviews, waste management, supply and administration.

The vanguard team, sought to enable pharmacy teams across Rushcliffe to deliver and be accountable for their medicines management services by focussing on three key elements (Figure 4.2):



Figure 4.2 Description of drivers for a modified medicines management approach in Rushcliffe CCG

This is key, because the medicines management process was described as ongoing and cyclical. This required each pharmacy to focus on incorporating these areas in their medicines management services to care homes.

4.1.4 Status of Medicines Supply and Administration

Medicines supply and administration are key areas which link care homes with pharmacy provision. Many care homes take on the responsibility of administering patient's medication and therefore require a large amount of support from pharmacy to deliver this service safe and effectively.

The process of medicines management is complex and variable between care homes. Guidance provided by the National Institute for Health and Care

Excellence (NICE) (2014) provides a basic framework for the process of medicines management in care homes, on which stakeholders associated with care homes can build on. The process (pre-vanguard) for regular medication ordering and supply is described below (Figure 3.10)

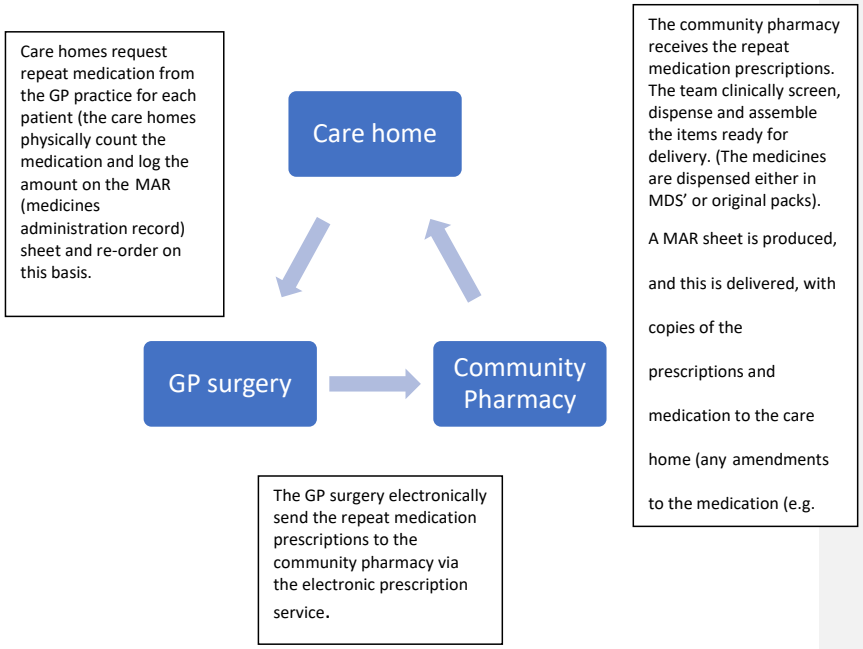


Figure 4.3 The Process for Regular Medication Ordering and Supply to Care Homes

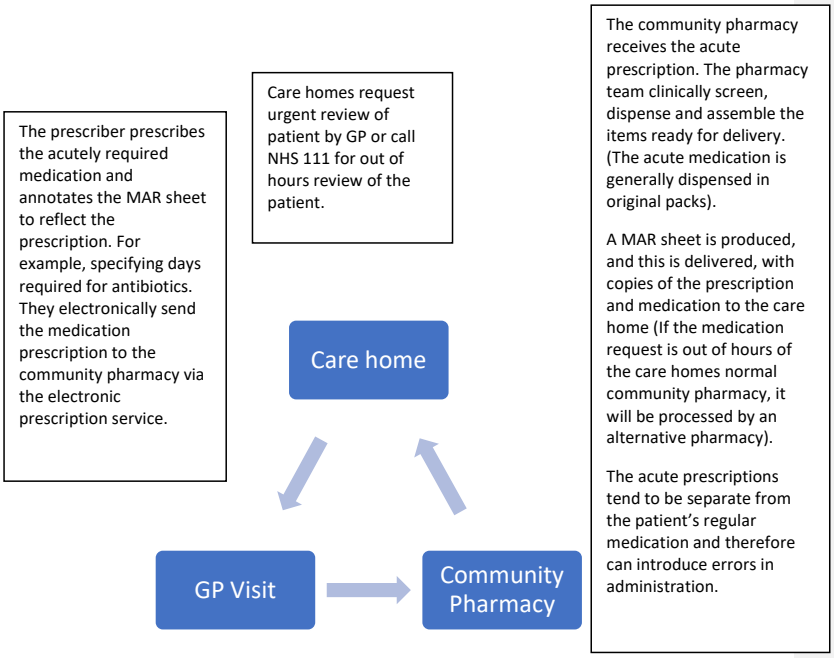


Figure 4.4 The Process for Acute Medication Ordering and Supply to Care Homes

The process of medicines administration in care homes, generally, undergoes a series of steps (Figure 4.3 and 4.4) to ensure safe provision of medicines. The community pharmacy can supply care homes with medicines in a number of ways. Regular packaging which medicines arrives in from the wholesalers are known as original packs (OP). Some care homes require the medicines to be dispensed in OPs and the care homes will itemise and check each OP and annotate the MAR sheet accordingly (Figure 4.3 and 4.4). An alternative way to package medicines to facilitate the administration process is to dispense medication in MDS. This type of packaging requires medication to be repacked into days of the week to support easier administration. This process is described in general terms, other care homes which use different supportive services or pharmacies may undergo a different process.

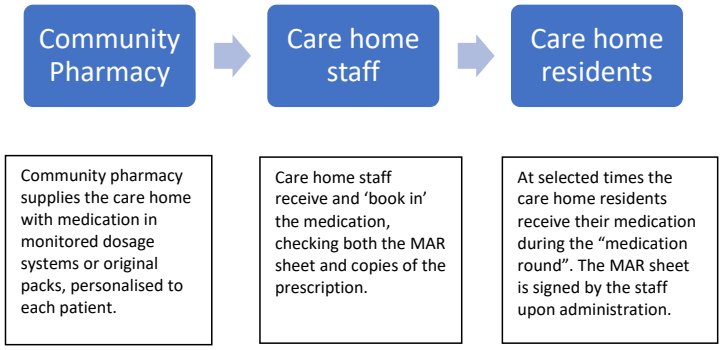


Figure 4.5 The Process of Medication Administration in Care Homes.

The medicines supply and administration process as highlighted in figures 4.3, 4.4 and 4.5 show these processes rely heavily on clear lines of communication between different care providers. Lack of appropriate ways to communicate can introduce large amounts of error and lack of care provision which will impact the level of patient care.

4.1.4.1 MAR Sheets

Medicines Administration Records (MAR) sheets are tools which care homes use to record medicines administrations. These are standardised forms which contain key information in relation to the patient and their care. In terms of patient details, the forms will contain information such as, allergy status, a photograph, likes and dislikes in relation to their medicines adherence. Key information describing their medication will also be found on MAR sheets. This will usually contain, the medicine name, form, frequency, duration, dosage and administration instructions. Care home staff who are trained in medicines administration will administer the medication as per the

instructions. Once it is given to the patient, the staff member will sign and timestamp the box next to each medication administered. Although many MAR sheets are in a standardised format, many care homes/groups of care homes will have personalised sheets as per company requirements. The forms used pre-vanguard at the three care homes featured in this study, consisted of handwritten forms, therefore there was a high chance of error occurring when in use (Barber et al., 2009). For example, illegible handwriting, missing sheets and wrong administration of medicines.

Many of the processes described above can introduce a level of risk and error to care home residents through medicines supply and administration. As described above, verbal and written communication are key to minimising this risk and reducing the introduction of avoidable errors. The Principia Vanguard highlighted the need for better processes to reduce the level of risk. They suggested introducing clinically appropriate, safe and cost-effective solutions to medicines management and delivery, to ensure patients receive the maximum benefit within safe parameters.

One proposal to facilitate delivering these solutions is to use technology to support medicines management. The vanguard commissioned a pilot to trial an eMAR (electronic medicines administration record) system to support the enhanced services to care homes.

4.1.4.2 eMAR System

The eMAR system is a computerised system designed to replace the traditionally used paper-based MAR. There are various varieties of eMAR

systems and providers. The eMAR system discussed in this study is developed by one particular provider which was used in the vanguard pilot involving the three care homes discussed below (Table 4.1).

The eMAR system used in this study, has various key features. It works on a Microsoft® Windows operating system and is designed to provide an electronic solution to the care home sector with regards to medicines management and other clinical support. It is specifically designed to assist in all aspects of medicines administration and management. Therefore, the system is equipped will tools to store patient information, preferences and clinical data to support monitoring of their conditions.

In terms of security, access and IG, the eMAR system has various security access levels allowing administrators to have varying access to the data generated. As described, this data ranges from clinical data, for example blood glucose monitoring to practical care data, such as patient preferences of medication administration and operational data, for example timeframes between required medicines administration to actual medicines administration and stock level reports. Each care home staff member has a specific log in to the eMAR system and this acts as their digital signature and therefore an audit trail of usage can be monitored.

The system has various additional functions to support the care home environment. In terms of operational support, the eMAR system allows clinicians and managerial staff to have remote access to monitor the care home. This is a key feature, because it allows commissioners, company care

home managers and managers of the individual homes to have access to reports on the level of patient care being given.

The features of eMAR as described above supported the eMAR provider company to be awarded funding from the national vanguard program to support initiation and implementation within three care homes in Rushcliffe.

4.1.5 The Care Homes

Principia Vanguard commissioned the eMAR provider to facilitate the implementation and service provision of the eMAR technology. Three care homes were chosen to be involved in the pilot study (Table 4.1).

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Care Home	Number of Beds	Type	Speciality	eMAR Implementation Date
Balmore (B)	46	Nursing and Residential	Dementia Old Age Physical Disability	30/01/2017
Orchard House (OH)	50	Residential	Dementia Old Age	06/02/2017
St Peters (SP)	34	Residential	Dementia Old Age	13/02/2017

Table 4.1 List of Care Homes Involved in the eMAR Vanguard Pilot.

4.1.5.1 Specificities of eMAR with regards to Medicines Management

The eMAR system is a multi-level technology platform which supports many services in care homes to be delivered. In relation to this study, the following sections will focus on the medicines management aspects of the eMAR system and its implementation into the pilot sites. For the purpose of the following sections, it can be assumed that all prescriptions have been written and sent to the community pharmacy.

Prior to understanding the process of medicines administration and management supported by the eMAR system. It is important to understand the form and delivery in which the medication is supplied to the care home.

4.1.5.2 Medication Supply

Generally, after receiving the appropriate prescriptions, medication is supplied by the community pharmacy to the care home in various packaging (Figures 4.3, 4.4 and 4.5). In a care home-community pharmacy system which uses eMAR, medication is supplied in OPs with barcodes. These barcodes are associated with specific patient profiles on the eMAR system. When medication is delivered to the care home from the community pharmacy, the care home staff scan the barcoded medication into the eMAR system. The patient profile associated with the scanned medication appears on the screen with an associated form. The care home staff are required to record the quantity of the medication inside the OP onto the eMAR system, whilst corroborating details of the medication and its dosage instructions with copies of the prescription sent with the medication. Upon completion of this task, the electronic signature of the staff involved in the process is recorded on the eMAR system.

The community pharmacy has access to eMAR system. As each prescription is processed for dispensing, the eMAR system is amended by the pharmacy team (checked by the pharmacist) in accordance with the medicines information presented on the prescription. The amended patient profiles are required to be electronically 'released' through the eMAR system. The

'release' allows for the care homes eMAR system to be refreshed with the amended information. If the pharmacy does not release this information, the patient profiles, prescription information and medication stock levels cannot be amended by the care homes. Once the release has 'refreshed' the system, the care home staff can amend the patient profiles. In the event a prescription or patient profile does not have adequate directions, such as "as directed", the care home staff can amend these directions to instructions, as per their standard operating procedures, clinical appropriateness and patient preference.

4.1.5.3 Medication Administration and Ordering

As described above, the eMAR system featured in this study facilitated medicines administration and ordering. Initially, every user was allocated a personal electronic interface which acted as their electronic signature. Each member of staff would sign onto their profile, various members of staff had different levels of access dependent on their qualifications and responsibilities.

Staff who were involved in medication administration had specific access to the patient profiles. Each patient profile contained personalised information, which is normally seen on a paper MAR sheet but in an electronic format. The information contained in the patient profile is as described above (see 4.14.1).

At each medication round, medicines were administered in accordance with the information presented in the eMAR system. The medicines administrator

would take the required patient's medication from the 'medication trolley' and check it alongside the patients eMAR profile.

Each administration was electronically recorded in eMAR on the staff's profile (the staff sign-in profile acted as a digital signature and this provided a layer of reporting to ensure safe and appropriate administration). At the end of each medication round the remaining medication was counted per patient and reconciled with the electronic count on the eMAR system. The system then generated a repeat medication list for the care home to send to the GP surgery in order to process more repeat prescriptions for the residents. The re-ordering process for repeat medication took place on every month on average, however this dependent on the local policy of each home.

4.1.5.4 Clinical, Practical and Audit Data

The eMAR system has functionality to store clinical information (e.g. International normalised ratio (INR) in accordance with warfarin administration, glucose levels and blood pressure), practical information (e.g. timings for Parkinson's medication) and produce auditable information (e.g. missed medication over a period of time).

The medication management systems incorporated in the eMAR system, demonstrated the technological capabilities of the eMAR system. Each process linked in with the defined requirements specified by the Principia Vanguard team to facilitate provision of enhanced services to care homes. The next sections will describe the specific implementation process developed and undertaken by the eMAR provider team.

4.1.6 Implementation of eMAR

The implementation process of eMAR, underwent a structured, facilitated approach over a number of weeks. It was undertaken by the eMAR provider company and aimed to introduce and embed the system into the homes daily routine. During the implementation process the paper MAR sheets continued to be in use until the "go live day". The process of implementation was described as a six-stage process:

4.1.6.1 Stage One: Kick Off Meeting

The first meeting was the 'Kick off' meeting. This date was decided between the homes and the eMAR provider. The meeting consisted of stakeholders from both the care homes and the provider company. The aim of this meeting was to understand more about the home in terms of its operational set up, preferences to medication administration, the type of home (residential, nursing or both) and staff. This enabled the provider company to understand the needs of the home and tailor the training specifically to them.

During this meeting a document called 'preparing for eMAR' was outlined. This document provided a level of agreement between the care home and the implementation team. It included a timeline for training, with specific details relating to areas of focus for the home. The document also contained information on accountabilities and actions which resided with the provider company and the home.

A configuration document is then produced, in order to outline the homes preferences in relation to the eMAR system, for example password length,

duration of medication rounds and if the home would like to stay on paper MAR for topical medication only. This enabled the provider and home to collaboratively build an environment for change.

4.1.6.2 Stage Two: Superuser Training (Approximately 12 weeks after Stage One)

Superuser training consisted of in-depth training on the eMAR system, providing details on the system itself and how to use it. This allowed for staff to train new or bank staff, thereby facilitating the home to support themselves with any staff changes and future training requirements. The implementation team suggested only managerial staff were to be trained as 'superusers' however during the vanguard pilot all staff in all three care homes (B, OH, SP) had been trained to superuser level, this was requested by all three care homes involved in the pilot.

4.1.6.3 Stage Three: Training of Community Pharmacy

The community pharmacy staff servicing the home were also trained to use the eMAR system. The specific community pharmacy responsible for the pilot sites were already accustomed to the eMAR system, because they were providing services to other non-pilot care home sites.

4.1.6.4 Stage Four and Five: Delivery of Medication and Upload of Medication Quantities

Four days prior to the 'go live' day the eMAR system was required to be set up ready to be used on the implementation date (Table 4.1). Firstly, the medication needed to be delivered to the care home, ready to be in put onto

the eMAR system. As described above, the medication was delivered in OP with copies of the prescription, all other information was available on the eMAR system.

The implementation team supported the staff in scanning the medication onto the patient profiles and amending any medication related preferences, such as personalised medication administration requirements. The care home staff underwent the processes as described above (medicines administration paragraph). They checked the quantities of individual medications prior to uploading to the system and compared the medication entries to the copies of prescriptions. Extra information relating to specific information on patients such as 'Do not attempt resuscitation' information and INRs were also be uploaded to the eMAR system at this point.

4.1.6.5 Stage Six: "Go live" Day

The 'go live' day was facilitated by two implementation team members. The implementation team shadowed the medication round on this day to aid the staff member and check processes were correct.

The previous section described the context and requirements of the vanguard service to support an enhanced role of primary care in care homes. The following sections will discuss the individual findings from the RCHEMAS in relation to the barriers and facilitators identified through thematic analysis.

4.1.7 Qualitative Exploration of the Rushcliffe Care Homes Electronic Medicines Administration Service (RCHEMAS)

4.1.7.1 Methods Overview

Fifteen in depth, semi-structured interviews were conducted with care home staff, service commissioners and implementers across three care home sites (B, OH, SP). The interviews took place face to face at the care homes or over the telephone (if stakeholders were unavailable face to face). In addition to interviews, observational notes were taken by the lead researcher from visits to the care homes as a form of data collection. The field notes consisted of a general description relating to the buildings, interactions between staff members and the use of eMAR system. The study participants were purposefully sampled and each interview audio-recorded, transcribed verbatim and analysed using Nvivo® 11 software.

4.1.7.1.1 Analysis

The analysis process consisted of thematically analysing the transcribed audio recordings, observational field notes and data from the document analysis. Throughout this study qualitative rigour was strived to be obtained, researcher reflexively was continually used to facilitate qualitative interpretations, in order to support the validity of the results (Sandelowski, 2004) (Chapter 3, 3.9.2 and 3.10.2).

4.1.7.2 Overview of Themes from the RCHEMAS

The data presented from this case study gives an insight into the impact of the RCHEMAS at local level. It demonstrates findings within the local vanguard

context of the new models of care. These findings will demonstrate key factors which facilitated and limited the success of the service in terms of its implementation and sustainability. Three key themes emerged from this case study which were important demonstrations of essential strengths and limitations of the RCHEMAS in relation to its implementation and sustainability. These themes are Infrastructural factors, implementation factors and operational factors.

4.1.7.2.1 Infrastructural Factors

The theme of 'infrastructural factors' emerged from the data, relating to the physical aspects of the care homes. The care homes featured within this pilot were situated in the rural areas of Rushcliffe. The building style of the care homes are a thick stone wall construction through which the internet signal required for eMAR could not penetrate, resulting in an interruption of synchronisation of information, which stakeholders cited as impacting the key processes of care delivery.

The implementation team attempted to rectify these issues by upgrading the wireless network and placing extra access points within the care homes. However, the issues continued throughout the pilot. Alternative offline methods were suggested, via synchronising information once an internet connection had been established. One of the care homes (B) was happy with this solution. However, this alternative method of synchronising as a perceived solution did not fit in line with the care homes view of "person-centred care", because the care home staff had to run back and forth to the

Commented [YK1]: The other two were not,

synchronising station. In addition to risks associated with mismatching of synchronised information, this extra process caused feelings of “frustration” and “exhaustion” amongst the care home staff. These findings suggest that although an alternative route to overcome these barriers had been suggested, it was not discussed with the care home staff and as a result changed the attitudes of the care staff towards the technology, which impacted its sustainability in the homes. The importance of seamless care and the congruent nature of information technology supported by human factors has been discussed when producing a successful system also known as ‘socio-technical systems’ (Berg, 1999, Yee, 2009, Suter, 2009).

4.1.7.2.2 Implementation Factors

The implementation of eMAR consisted of members of the implementation team visiting the care homes to deliver a pre-planned training pack as described earlier in this chapter (Section 4.16)

The implementation team played a vital role within the deployment of eMAR. Key sub themes relating to the implementation were highlighted during the analysis process. Firstly, a sub-theme around attitudes impacted the initial implementation of the service.

The attitudes of the implementation team towards the system users and lack of understanding of their needs caused a display of negative perspectives from both sides (implementation team and care home staff). Although feelings experienced by both sides were common knowledge, the implementation team did not change their training to reflect this and provide

a more supportive environment. Interviewees referred to the strong attitudes displayed by the implementation team suggesting training used a didactic approach.

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Further exploration suggested one reason for this was due to the age of the care home employees. There was a perception of technophobia, assumed by the implementation team and demonstrated by the attitudes of the system users. This coupled with lack of understanding and personalisation, clearly acted as a barrier and prevented any joint resolutions to support the service sustainability. Lluch (2011) suggests this is a common issue as software companies are held to account by only offering 'off the shelf' items with little room for adaptation.

Throughout the training process discussed above, it can be seen that attitudes of the system users towards the technology were changing. Each hurdle faced caused a comparison to be made between the previous process – paper MAR sheets and the current eMAR system. Attitudes varied between care home staff and the implementation management team. One participant describes the training as a positive experience, but that the technology itself which was the issue. This attitude precipitated throughout the care home team regardless of whether they could use the technology and was noticed by the implementation team. A combined team attitude towards 'disregarding the technology' provided a barrier to training for the implementation team. This impacted its usability and sustainability.

Monitoring progress and providing continual feedback over time emerged as a key issue to implementation. Continual support is considered an important tool for successful implementation (Harachi et al., 1999). Study participants from both the implementation team and care homes discussed various situations regarding continual support and allowing opportunities for feedback during the monitoring period. The implementation team discussed the importance of a structured timeline and the role of feedback during the pilot, they suggested 'weekly catch up calls' to support the system users. Studies suggest, eMAR systems are to be used as tools to support learning and development during the implementation period (Barber et al., 2007). Dialogue between the service-users and implementation team may have given better insight into the implementation and continuity pathway of the service.

Although, these calls provided solutions to issues faced by the care home team, it became apparent that attitudes and assumptions about the care home staffs' knowledge by the implementation team had a negative effect on the care home staff, potentially causing disengagement due to the lack of understanding and miscommunication presented on both sides. One care home manager suggested it was the attitude of an individual implementation team member which caused issues, leading to disengagement impacting the sustainability of the eMAR system. Understanding the needs of the system users are important to implementation and continual usability (Cresswell and Sheikh, 2013).

4.1.7.2.3 Operational Factors

This section refers to barriers identified outside of the immediate care home staff and implementation team environment. The use of the MDT is key when working within primary care. The care home setting is unique in that there are multiple professionals that frequent the revolving doors of a care home. Therefore, when initiating a new system, it is important to inform all the stakeholders involved. This is to ensure understanding, supporting and efficiency in using the facilities. The implementation team of eMAR describe the incorporation of stakeholders within their training program

However, interviewed MDT users, such as community pharmacists, suggested this was not the case and that they did not have personalised access to the eMAR system to support their role in the care home setting. The lack of access translated into difficulty for these users to use eMAR data within their clinical rounds, in addition to leaning on the care home staff to support them to use the service. This was perceived as a 'waste of time' for the care home staff due to removing their focus from their patients. But also questions around accountability arose, because personalised profiles on eMAR act as individual digital signatures. This precipitated friction between care home staff and the MDT users. Suter (2009) suggests a patient-centred focus is key for successful integration of a new service, therefore 'time wasted' and 'friction' negatively impacted the sustainability of the service.

Data from this case study demonstrated time was considered as both a barrier and a support when using eMAR. One care home manager described the

additional time it took when using the system, whereas conversely another described the opposite. In depth questioning demonstrated, where the technology had the ability to be used as intended e.g. with reduced infrastructural barriers, it did save time. However, within the care home where multiple barriers existed, time was highlighted as an issue which then impacted the undertaking of other tasks within the care home.

Managing safety and risk was highlighted as a key issue which impacted operational processes in the care home. The quality, safety and standards of care homes are legal requirements. The CQC inspects care homes to ensure they are up to the standards set and follow legislation. Perceptions from the care home staff suggested the eMAR system veered away from existing policies and procedures and this posed a risk on care home staff and residents. Commissioners agreed, suggesting that if this was a potential worry of the care home staff, it would impact the sustainability of the eMAR service.

To manage risk associated with medicines administration, as described above, the eMAR system had an audit and report tool which was used to scrutinise the data to enable better medicines management. Stakeholders involved in the medicines side of eMAR suggested the system provided better insight into medicines usage within the homes. One care home felt the safety profile of their patients and medication administration systems had improved. The eMAR system also supported better functionality in adding notes for other staff to better inform transfer of care, for example where agency staff are involved and may not be familiar with the patient and/or requirements for

medicines administration. These actions positively impacted the care of patients in the care homes.

4.1.7.3 Summary Conclusion

Multiple factors contributed to the implementation of eMAR. Characteristics of the system, service and stakeholders highlighted various aspects of eMAR being embedded within the care home system. This research highlights potential barriers and facilitators of implementing an eMAR system within care homes. As a result, the findings of this study demonstrate areas which should be given careful consideration for future implementation of technologies within these settings. Continual feedback and maintaining relationships between service-users and the implementation team are two key areas which should be focussed on to support understanding and co-development of the service. Overall, eMAR as a system supported the Principia Vanguard agenda of 'enhancing care in care homes' was suboptimal infrastructurally and implementation wise, and operational solutions impacted its sustainability in this setting.

Disclaimer

Sections of this chapter are sections from a paper currently under review; submitted to the Research in Social and Administrative Pharmacy Journal.

4.2 Northumbria Case Study Site

4.2.1 Background

The Northumbria case study site was embedded within the Northumberland Vanguard. The Northumberland Vanguard is an integrated PACS vanguard (see Chapter 2, 2.7.2). The aim of the PACS approach focuses on delivering population-based healthcare through aligning different organisations to support community, primary, secondary and tertiary care for the population residing in its footprint. Its objectives were to support improved co-ordination of services, reduce duplication and provide better transfer of care for patients. Logistically, many PACS formed hold a single contract to then deliver care through various providers and cater for a finite population size (Naylor and Charles, 2018). The PACS in Northumberland introduced changes at local level within each locality. This consisted of having an 'enhanced MDT' for complex needs patients in order to support and reduce hospital admissions. It supported patient care by having one port of call for both health and social care. A main aim was to focus on 'bringing care back to the community'. The service presented in the Northumbria case study, focusses on one of the services delivered by the vanguard pharmacy team. This service was co-produced, implemented and delivered by the vanguard pharmacy team and a local community pharmacy.

The following sections describe the context in which the Northumberland Vanguard was developed and information relating to the specific service explored in this study. This specific service was funded as part of the

Northumberland PACS Vanguard and was developed by both the vanguard pharmacy team and one community pharmacy. This service will now be known as the Northumbria Community Pharmacy Care Home Service (NCPCHS).

4.2.1.1 Geography and Demographics

The population of Northumberland consists of 319,030 as of June 2017 (Northumberland County Council, 2017). It is situated within the North of England, with one side bordering Scotland (Figure 4.6). Northumberland is considered densely rural. The population distribution of Northumberland is widespread. However, much of it is concentrated in the area labelled '3' in figure 4.6.

Deprivation counts describe Northumberland as having a percentage depravity and health inequalities higher than that of the average when compared with England. (Northumberland County Council, 2018).



Figure 4.6 Map of Northumberland.

Residents living in the least deprived areas live on average 16.6 years longer than those living in deprived areas and more than two thirds of the population of adults living in Northumbria are obese compared with that of England. The Health and Wellbeing Board (HWB) of Northumberland County Council developed a much-needed Joint Health and Wellbeing Strategy (JHWS) 2018 – 2028, to identify how to reduce health inequalities and support maximising health and wellbeing in Northumberland. Three key areas were identified to tackle health inequalities and minimise wider determinants of health. These

were: empowering people and communities, tackling wider determinants and adopting a whole system approach to health and social care. These key areas were the focus of the Northumberland PACS Vanguard.

4.2.1.2 Empowering People and Communities

Empowering patients and communities are important in terms of delivering healthcare services. The strategy (2018) describes having specific communities and representatives from different patient groups is important to have an insight into the different cultures and therefore healthcare delivery can be tailored towards this. The alternative views presented by these groups allow to support patients differently and promote self-care in a way they would prefer.

A key concept known as a 'community resilience' approach is suggested to empower communities and individuals to develop their skills and knowledge to support health and wellbeing and focus on prevention(Northumberland County Council, 2018). This community-centred approach seeks to support patients and promote independence. Another approach suggested was a 'more than medicine' approach, which supported aligning health and social care and promoted non-clinical approaches. Such as, physical activity or volunteering. This approach also sought to translate across to healthcare professionals, enabling them to have alternative non-clinical conversations to support patients with the best treatment. Key priority areas included, supporting knowledge transfer and ensure communities obtained the correct

information, skills and confidence to support the management and understanding of healthcare conditions.

4.2.1.3 Tackling Wider Determinants

Wider determinants such as lifestyle, living situation and access can all have an impact on factors which affect health are. As Northumberland is a largely rural area, the sparse distribution of populations provides a difficult field to deliver equal access to healthcare. Northumbria City Council suggested to help solve this issue by focussing on a few main components. This included population patterns, digital access and infrastructure.

4.2.1.4 Adopting a Whole System Approach to Health and Social Care

In order to support sustainability and efficiency, Northumbria HWB (2018) identified adopting a whole system approach to healthcare would benefit the population by reducing health inequalities and providing seamless care provision. Stakeholders suggested, aligning fragmented healthcare systems and organisations would improve access to care and enable patients to receive the right service at the right time. Specific community focus was aimed in four key areas; health promotion and prevention, improve efficiency and equal access to services.

4.2.2 The New Models of Care and Northumbria

The information presented was key to the initial development and application to the national new models of care program. Clear evidence was demonstrated by the locality of deprivation, lack of access to health services and increased health inequalities. The PACS version of the new models was

chosen to vertically align services and ensure equal and accessible services to all residents of Northumberland. This approached sought to deliver a 'whole' system integrated care approach to health and social care delivery.

4.2.2.1 Northumberland and Elderly

The Northumberland PACS Vanguard sought to support improved co-ordination of services, reduced duplication and better transfer of care for patients. A large vulnerable portion of the population residing in Northumberland were the frail and elderly. One focus of the Northumberland PACS Vanguard focussed on enhancing care to the elderly and frail population.

A large proportion of patients admitted into secondary care are over 65 years and are considered frail and elderly. Northumberland has a higher proportion of people aged 65+ than that compared with the North region of England. Due to these increasing numbers, adequate care provision and process to support transfer of care between secondary care, intermediate care and primary care are imperative. As discussed in the literature review, patients who are frail, elderly suffer from chronic long-term conditions, are vulnerable and therefore more at risk to being admitted to secondary care services. These admissions could be potentially avoidable with adequate care provision.

4.2.2.2 Care homes in Northumberland

Northumberland has a large number of care homes. As described earlier in this chapter (Section 4.2.1), care homes already have varied care provision from primary care providers. Northumberland has a vast geography,

stakeholders have suggested, the support care homes receive from primary care services are irregular and infrequent. This can impact the continuity of care those patients receive and lead to avoidable admissions into secondary care or intermediate care settings.

Before initiation of the vanguard, each care home in Northumbria was linked to a community pharmacy, to ensure continuity of pharmacy service provision to each care home, e.g. Medicines supply. Medication reviews and patient support was undertaken by the CCG. They would provide a pharmacist to medically review care home patients in every care home in Northumbria. They would review medicines compliance and usage. Due to the vast geography and large variation in care homes across the area, stakeholders suggested the number of reviews undertaken, equated to on average one review per year per patient. This provided difficulty in continuity of care and regular monitoring of patients within the frail and vulnerable category.

4.2.2.3 The Shine Project

Previous published studies undertaken in Northumbria, prior to initiation of the vanguard focussed on specific pharmacy services supporting care homes. This was known as the Shine Project (Baqir et al., 2014). The aim of the Shine Project was to support medicines use in care homes by using an innovative medication review service. The project was initiated because problems were identified in relation to patients' medication in care homes. Issues such as, excess use of medicines, lack of structured medicines reviews, lack of resident involvement in care decisions and medication rounds were not patient

centred were identified. Clinical pharmacists used resident's clinical notes to undertake structured medicine reviews. The findings of these reviews were discussed in the MDT meetings. These meetings consisted of, GPs, nurses and sometimes members of the psychiatry team. Conclusions generally supported whether to stop/start a medication or monitor patients further. During this process, the resident or resident's families (pending resident consent) were fully involved in the patients care decisions. Overall this project showed that structured reviews with resident involvement improved quality and reduce costs within the care setting.

The Shine Project was used as previous published evaluative evidence to support its continual commissioning in the Northumberland PACS Vanguard. The evidence produced provided clear outcomes for the structured use of pharmacists in the care home environment.

4.2.3 Northumberland PACS Vanguard Pharmacy Service

One key area of the new models of care in Northumberland focussed on an integrative trajectory for pharmacy. This vanguard had a specific vanguard pharmacy team who sought to integrate pharmacy across the PACS system. A designated pharmacy team provided a pathway for clear integration within the PACS system. It will be explored further later, but relationships and perceptions of other vanguard leads towards pharmacy changed to support an integrated seamless approach to care in Northumberland through the vanguard.

The vanguard pharmacy team restructured primary and secondary care pharmacy provision. Pre-vanguard, primary and secondary care pharmacy teams were separate. The primary care pharmacy teams consisted of GP practice and community pharmacists. The secondary care pharmacy teams consisted of hospital pharmacists who provided pharmacy services to the hospital wards. There were other pharmacy roles within primary and secondary care, however for the purpose of this study, the roles have been simplified. The restructure of pharmacy within the PACS vanguard consisted of developing a cross sector role, where pharmacists were trained in both a hospital ward based and GP role. This new role was rotational, and each pharmacist was required to rotate between each care sector in accordance with a timetable. The vision of the vanguard pharmacy stakeholders suggested this new role would enable the pharmacists to hand over to each other through a closed system and understand the process of transfer of care of patients from secondary to primary care.

One key focus of the PACS vanguard as described above is the emphasis on enhancing the health of care home residents. A key role of the vanguard pharmacy team was to 'optimise medicines in care homes'. Figure 4.7 illustrates the logic model developed by the Northumberland PACS Vanguard pharmacy team.

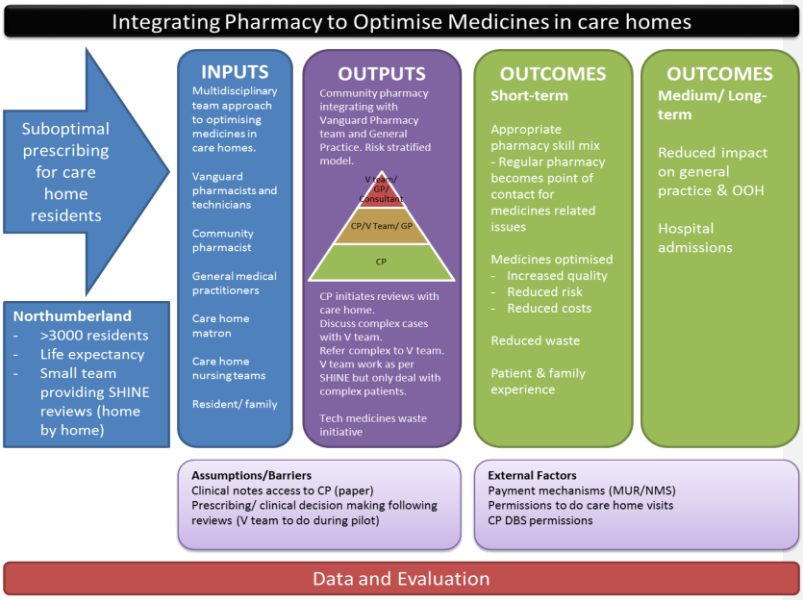


Figure 4.7 'Integrating Pharmacy to Optimise Medicines in Care Homes' Northumbria Vanguard Pharmacy Team ('v team').

The vanguard pharmacy team had a clear vision of delivering the medicines optimisation service in care homes. The inputs and outputs focussed on all members of the primary and secondary care team. The service was perceived by the researcher as a continual multidisciplinary approach to medicines optimisation in care homes. The inputs related to all the required professionals to support the service in care homes, the outputs referred to the processes required to initiate and sustain the service and the outcomes refer to the impact the service will have in the short term and long term.

The service proposed 'shared decision making' provision when optimising medicines for care home residents. The service was based on The Shine Project (2014) and as described above provided continual ward rounds,

medicines reviews and MDT meetings to enhance patient care, alongside continual dialogue with the patients. The additional component in this iteration of the service was the addition of community pharmacy as a service provider.

This study focussed on exploring the community pharmacy integrated aspect of the vanguard medicines optimisation in care homes service- NCPCHS. The following sections will discuss the community pharmacy service in depth.

4.2.4 The Northumbria Community Pharmacy Care Homes Service (NCPCHS)

The NCPCHS was the provision of community pharmacy delivering medicines reviews in care homes to support medicines optimisation. Figure 4.8 shows a risk triangle developed by the pharmacy vanguard team. It demonstrates the different categories of risk in terms of patients who are frail and elderly. The triangle is split into three tiers. The red tier represents the highest risk of patients in the frail and elderly category. These types of patients are under specialist geriatric care, suffer from multiple morbidities and are rarely stable. The second tier represents frail and elderly patients in the 'moderate' risk category, for example patients who suffer from multiple morbidities and require a certain complex level of poly pharmacy. This tier suggests these patients should be reviewed by the GP, vanguard team pharmacists or community pharmacy. The reviews are delegated to practitioners who have the required competence to manage these patients. The green tier represents low risk frail and elderly patients who reside in care homes. These patients are low risk because they do not suffer from any medical condition or if they do,

they are regularly stable and probably are only prescribed one or two medications. The patients in this area of the triangle are delegated to community pharmacy. Stakeholders described this because, traditionally community pharmacists are not fully embedded in clinical delivery of services and therefore although every pharmacist has been trained to a certain level, over time, confidence and competence can decrease relating to certain clinical scenarios. Delegating the low risk patients to be seen by a community pharmacist, allows the pharmacist to build confidence to then see patients in the middle tier, but also provides a patient cohort which reflects their everyday practice.

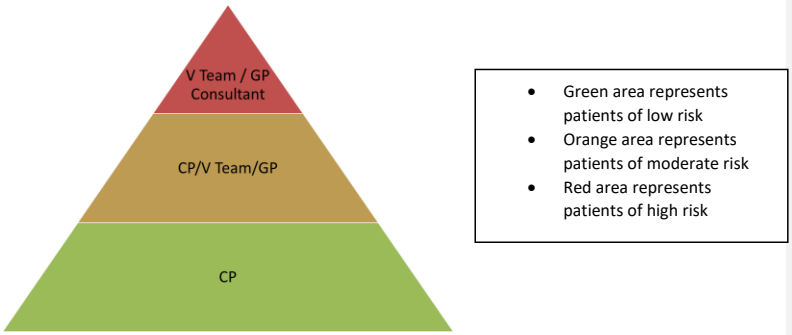


Figure 4.8 Risk assessment Triangle - Northumbria Vanguard Team.

4.2.4.1 Implementation of the NCPCHS

The initiation of the NCPCHS was developed from discussions between stakeholders at an ad hoc meeting. The vanguard and community pharmacy stakeholders had developed a relationship and discussed the potential for joined up vanguard-community pharmacy care home service.

The vanguard pharmacy team had set up an intermediate care team within a GP practice in Blyth. This GP practice provided the roles for the 'cross sector' integrated vanguard pharmacists (see 4.2.3). The community pharmacy chosen to engage with the NCPCHS was located near the GP practice in Blythe and was linked to the care home, where the vanguard team wished to run a pilot of the NCPCHS.

The initial stage prior to implementation, was to link all stakeholders involved in the service together through frequent meetings to map out the service. Once the 'inputs, outputs' had been identified and contractual agreements had been agreed upon, it was important to plan and undertake a structured training pathway. The training pathway was critical to support the community pharmacist to undertake this service in care homes. It was particularly important to train the community pharmacist in the provision of medicines reviews, but also how to undertake these types of consultations outside the community pharmacy environment. Figure 4.9 demonstrates a schematic diagram of the training pathway. As this was the first time this type of service or training had been ran, it was a case of trial and error and dual dialogue between the trainer and trainee in what worked and what didn't.

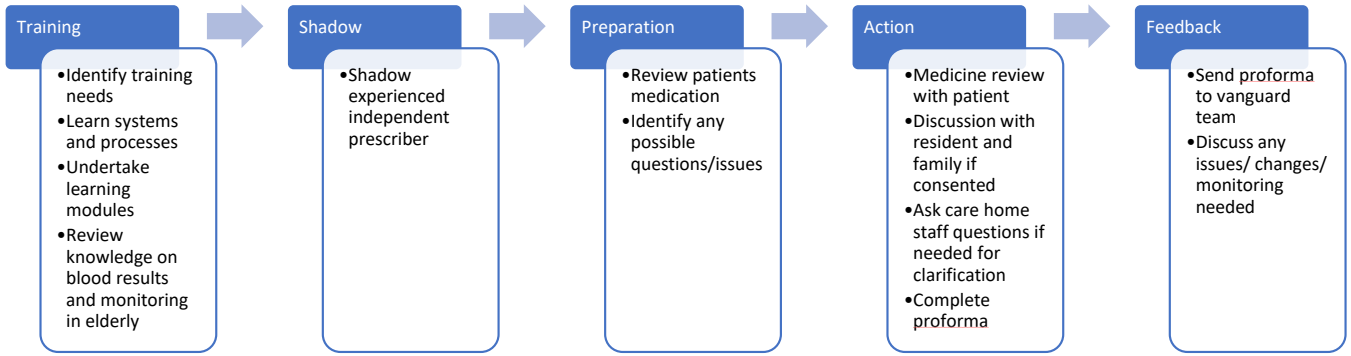


Figure 4.9 Schematic Diagram of the Community Pharmacist Training Pathway

4.2.4.1.1 Training of the Community Pharmacist

Initially, it was important to assess the level of training the community pharmacist had in terms of medicine reviews. Most pharmacist are accredited in doing MURs however these medicine reviews were required to be slightly more in depth and look at the patient holistically, rather than focus on the usage of their medicines. The vanguard lead, one of the lead pharmacist prescribers (IP) (part of the cross-sector vanguard pharmacy team) and the community pharmacist would arrange regular meetings to discuss training needs.

Once these were identified, the IP and community pharmacist would go through and complete training requirements. These requirements were in-house training competencies and included topics such as blood results, monitoring and elderly care ADME (administration, distribution, metabolism, elimination) profiles. Once the community pharmacist was comfortable in these areas, they shadowed the IP on a few visits to the care home and saw how a review was undertaken. In order to support the community pharmacist in the role a proforma (Appendix 7) was developed to record information needed for the review and any queries for discussion with the vanguard team.

Once fully trained, the vanguard team populated a list for the community pharmacist of the low risk patients within the care home. The community pharmacist arranged visits with the care home to then undertake the reviews which usually lasted an hour to an hour and a half per visit. Prior to arriving at the care home, the community pharmacist would review each patient on the

list in terms of their medication history and any previous issues they might have had. Once the visits have been completed, the community pharmacist would arrange a meeting with the vanguard team to discuss any queries or changes needed for the patients who have been seen. If queries needed to be escalated, these will then be discussed at the MDT meetings. During this pilot, some issues arose in relation to access to the system to review blood work. A data sharing agreement could not be arranged and therefore the community pharmacist then continued the role with the support of summary care records (SCR).

The previous section described the context of the Northumberland PACS vanguard and the associated pharmacy service explored in this study. The following sections will discuss the findings identified in this case study.

4.2.5 Qualitative Exploration of the Northumbria Community Pharmacy Care Home Service (NCPCHS)

4.2.5.1 Methods Overview

Nine in depth, semi-structured interviews were conducted with the vanguard lead, hospital trust lead, community pharmacy providers, pharmacists and care home staff. The interviews took place face to face at different sites (GP practice, hospital, community pharmacy, care home, external meeting points) or over the telephone (if stakeholders were unavailable face to face). In addition to interviews, observational notes were taken by the lead researcher from visits to the hospital, GP practice, community pharmacy and care home as a form of data collection. The field notes consisted of a general description

relating to the buildings, interactions between staff members and shadowing the NCPCHS service. The study participants were purposefully sampled and each interview audio-recorded, transcribed verbatim and analysed using Nvivo® 11 software.

4.2.5.1.1 Analysis

The analysis process consisted of thematically analysing the transcribed audio recordings, observational field notes and data from the document analysis.

4.2.5.2 Overview of Themes from the NCPCHS

The data presented from this case study gives an insight into the impact of the NCPCHS at local level. It demonstrates findings within the local vanguard context of the new models of care. These findings demonstrate key factors which facilitated and limited the success of the service in terms of its implementation and sustainability. Three key themes emerged from this case study which were important demonstrations of essential strengths and limitations of the NCPCHS in relation to its implementation and sustainability. These findings are presented in the context of the local Northumberland PACS Vanguard as described above. The following sections demonstrate important factors which supported and limited the service in terms of its implementation and sustainability. Three key themes emerged from this case study: workforce factors, training requirements and access.

4.2.5.2.1 Workforce Factors

'Workforce factors' were a key theme relating to the implementation and sustainability of the NCPCHS. As described in this case study, workforce is a

key factor for service development. Stakeholders from the vanguard team described their vision of a vertically integrated system consisting of having a pharmacy team which covered both primary and secondary care in order to support the patients journey from hospital bedside to home. This required a substantial workforce to deliver this service. Stakeholders described the recruitment process as positive, due to the innovative roles provided in the Northumberland PACS Vanguard new model of care. Pathways for professional development is linked with increased recruitment and retention of the workforce (Roland et al., 2015)

The specific aim of the NCPCHS was to use community pharmacy as an integrated care provider to facilitate managing the primary care workload. Stakeholders described that expanding the role of community pharmacy is essential in supporting further changes to primary care. Pre-vanguard pharmacy roles in care homes existed in varying capacities. The vanguard pharmacy lead described the need to link community pharmacy with care homes in a more supportive capacity. In the NCPCHS, the community pharmacist is required to leave the premises and visit patients at the care home. However, because community pharmacy itself is a large care provider, community pharmacy stakeholders described issues with providing extra staffing measures to ensure continuity of care while the pharmacist was at the care home. Initially, contingencies were made, and locum pharmacists employed, however vanguard stakeholders suggested it was difficult to ensure the pharmacist had 'protected' time to visit the care home. Many times, the community pharmacist had to cancel their visit due to resource

issues. This impacted the continuity and sustainability of the service. Delegated time with clear identification of roles and responsibilities enhance the provision of continuity of care (Suter, 2009)

The NCPHCHS was a novel pilot undertaken during the new models of care program period, therefore it was iteratively developed as the service continued. The overall idea was to review patients to facilitate a 'preventative' approach to healthcare delivery. In the first stages of the service, the community pharmacist could choose which patients they wanted to review because all patients seen were in the low risk category (Figure 4.8). As the pilot continued and from small evaluations conducted stakeholders expressed their vision to enhance the service by using risk management algorithms to identify patient's frailty risk categories and referring patients accordingly. Continually evaluating and iterating the service is key to its sustainability as it changes to the healthcare requirements of the locality (Diez and Ana, 2011).

4.2.5.2.2 Training requirements

Training was a key theme in this case study. As described above, a large workforce was required to support the needs of the newly developed vanguard. Vanguard leads suggested training and upskilling of key pharmacy professionals across primary and secondary care was required to deliver the service efficiently and safely. Koo and Miner (2010) showed that training is key to support safe integrated care working.

Training of the community pharmacist was critical to service delivery. Training needs were identified during meetings between the community pharmacist and vanguard stakeholders. This was vital to reduce any harboured assumptions on both sides about what the role entails and training requirements. As described above (Figure 4.9) the training was iteratively developed between the stakeholders. Validated training tools and published evidence was also used to support the training, such as NHS Scotland – 7 steps to medication review (NHS Scotland, 2018).

Trainers described the training as 'flexible' because different community pharmacists have variable levels of clinical knowledge, training and skills. One barrier cited to delivering training requirements, was the access to the patient medical record. Initially, the community pharmacist was required to read patients' blood results. However, as the pilot continued, access was reduced due to the GP practices' IG protocols and therefore the community pharmacist was unable to use this source of data to support the medication reviews. This posed as a potential barrier to upskilling the pharmacist and therefore preventing them from developing their skills to see more complex patients, because clinical data is cited as a significant facilitator to support enhancing patient care delivery (Gnani et al., 2013)

In terms of the response to training from stakeholders, the vanguard pharmacist who provided the training described the training as supportive and the pharmacist was able to pick up the information quickly in order to start practicing on their own. The community pharmacist agreed with this and

responded positively in relation to the training because it was a similar to the format to the process of MURs. However, the community pharmacist said they would have liked to have more training in relating to supporting vulnerable patients. For example, patients with learning difficulties, disabilities or speech difficulties. This is an important learning point, because residents in care homes require various amounts of support.

4.2.5.2.3 Service Factors

A key factor to service sustainability was highlighted as funding. The NCHCPS relies on a collaborative effort between the vanguard care provider and community pharmacy. The community pharmacy in this case study was part of a large corporate enterprise, one stakeholder described economic viability was essential if this service were to be continued. This is essential and therefore the vanguard team supported data collection to facilitate further commissioning. However, it was described as difficult because initial cost savings would not be seen. For these types of patients, they said 'savings over a long period of time' would benefit the local health system.

Referrals and accountability were key sub themes which facilitated the continuation of this service during the vanguard period. The PACS Vanguard can be seen as a closed system across different care providers, therefore the pathway for referral was clear across different care providers. This supported decreasing risk associated with mis-transfer of information and facilitated the transfer of patient care to different providers. Problems can arise within

patient care when crossing care sectors (Renders et al., 2000, Faulkner et al., 2003, Rat et al., 2004).

Relationships were vital to the implementation and sustainability of this service. In this particular case study, the relationships underpinned the development, implementation and sustainability of this service. Due to the initial Shine Project, relationships had already been built and formed between the care home and primary care providers. Stakeholders described the evidence from the Shine Project supported commissioning requests and faster development and deployment of the service.

4.2.6 Summary conclusion

Findings from this case study suggest key factors around workforce, training, funding and relationships supported the sustainability of the NCHCPS service. Collaboration between community pharmacy and other care providers did require some barriers, such as IG and allocated time to be overcome. However, overall the NCHCPS provided a clear pathway for community pharmacy to support enhanced care in care homes

4.3 Devon Case Study Site

4.3.1 Background

This section discusses the Devon Case Study site. This site is unique because it was not one of the vanguard sites funded by the NHS England New Models of Care program. This site was identified as a case study site because it fulfilled the inclusion criteria set out in the Methodology chapter (Chapter 3, 3.7.2). Although this case study was not officially titled a vanguard site, this site was positioned as a new model of care. This is discussed later in the chapter (Section 4.3.2).

The new models of care program and its 'spin offs' devolved power to local groups, in order to provide locally personalised services to support groups of populations. Devon was an important case study because of its geographic, demographic and economic status. These factors affected all aspects of new model of care delivery in this site.

The following sections explore this case study site in terms of the context and services under the new models of care umbrella.

4.3.1.1 Geography and Demographics

As described above, the geographic, demographic and economic status of Devon has produced a unique landscape for healthcare requirements and delivery. In terms of its geographical information, Devon can be considered as a rural county (Figure 4.10). Due to the sparse and rurally placed population, this has caused challenges around access to healthcare. As of 2017 there were 770,000 people who lived in Devon. The rural areas in Devon consist of higher

than average levels of deprivation (Devon Health and Wellbeing Board, 2018). Therefore, it is critical for health and social care services to increase access to these areas to support equitable health services for the population of Devon.



Figure 4.10 Map of Devon.

The 2017 Joint Strategic Needs Assessment (JSNA) (2017) of Devon outlined the clear challenges to the Devon healthcare system to tackle health depravity and inequalities. Evidence presented in this document suggest attendances to secondary care facilities are more likely in more deprived areas at all ages. Therefore, there is a vital need to reduce these inequalities and increase access of services to these areas.

4.3.1.2 Devon and Elderly

The population of Devon is considered to have an older profile in relation to the rest of England (Joint Strategic Needs Assessment, 2017). The elderly population are prominent users of the health service, and therefore the

demographics can reflect the increased impact face by health and social care services in Devon. The JSNA (2017) reports the biggest increase of population age group in Devon is between ages 65-84 years. This can give an indication on the projected demands and requirements on the health and social care system in Devon.

The JSNA (2017) highlighted key challenges and potential solutions to support the health and social care challenges faced in Devon. Key challenges were highlighted as, the population is aging and rising, wrong care was frequently given in the wrong setting and a stronger community care system was required to reduce depravity and increase access to those in rural and urban areas.

Commented [YK3]: Challenges

In terms of health service delivery, the level of health inequality demonstrated in Devon highlighted key health system challenges as described by stakeholders and the JSNA (2017). The overall challenge was an unprecedented demand on the health system and service requirements. This impacted workforce infrastructure and requirements. In addition to, a larger demand for urgent and emergency care. Solutions suggested developing a strong community care system to facilitate and enhance patient care in the community to reduce avoidable admissions to secondary care services and unnecessary use of the urgent care services.

This study focusses on Plymouth, a large coastal town located in West of Devon. The new model of care evaluated for this study is in the town of Devonport in West Plymouth and this will be discussed in more depth later in

this chapter (Section 4.3.2) West Plymouth, is considered the most deprived area within Plymouth (Plymouth City Council, 2018). After a period of scoping and exploring the healthcare landscape in Devon, it became apparent that there were a series of issues. This included difficulties in the clinical and financial provision of healthcare services, in particular in the community care setting. Unpublished information gathered in this this case study, identified Devon CCG understood these challenges and sought to transform community care.

Commented [YK4]: .

The following sections describe the challenges and proposed solutions by stakeholders to facilitate strong community care provision. Stakeholders described three key areas which needed to be transformed to better support community care provision. These are developing a strong and trained workforce, transforming Urgent Care, and improving population-based healthcare.

4.3.1.3 Workforce Issues

Geographically, there are shortages of clinicians in South West England, stakeholders demonstrated a clear need for workforce redesign, in order to maintain health service provision within this area. Generally, it has been cited that there is an ageing workforce, and many experienced health and social care professionals are at retirement age (Roland et al., 2015). Reports from the Local Medical Committee (LMC) in Devon suggest there is an unprecedented stress on the GP workforce and suggest there is an estimated 25% of local GPs who will leave the NHS over the next five years in Devon.

Therefore, plans to innovate and utilise other healthcare professionals need to be put in place to support these workforce issues. Plans such as placing pharmacists in general practice and supportive training to enable other community-based roles were suggested through new models of care and new ways of working.

4.3.1.4 Urgent Care

As discussed, the population of Devon is widespread with pockets of deprivation. The increase in deprivation, coupled with Devon's already complex geography, has increased the demand on the urgent and emergency services. Prior to the initiation of the required transformation of urgent care, the urgent and emergency care services consist of NHS 111, minor injury units and A&E.

The area of West Devon in particular, is complex with regards to its urgent and emergency care services. Pre-transformation, there were two providers of urgent and emergency care within the single locality. This has resulted in issues, such as variation in distribution of resources and varying workforce capabilities, such as level of trained clinician.

Solutions were proposed to incorporate these areas to allow for one streamlined service, to enable a stronger community resilience system and urgent and emergency care service. The STPs as discussed in the Literature Review chapter (Chapter 2, 2.2.3) released in line with the JSNA (2017) suggested plans to support and integrate all emergency care services across

Devon (A&E, GP out of ours, urgent care centres, NHS 111 and ambulance services) to enhance emergency care provision.

Urgent and emergency care services can be seen to link primary and secondary care services. Stakeholders suggested in order to facilitate the sustainability of the urgent care system it is important to establish a strong community system to facilitate triage and transfer of care of patients into the urgent care system. One suggestion from stakeholders is to facilitate the triage of patients by using pharmacists in various roles. For example, within A&E departments, GP surgeries and community-based healthcare teams. The aims of utilising the pharmacy workforce in this way is to add support to an already stressed workforce. Pharmacy teams can support in the provision of medicines optimisation, medicines management and general medicine reviews. These services aim to enhance patient care and facilitate flow of patients through the system.

4.3.1.5 Population-based Healthcare

Population-based healthcare is critical to build and sustain strong community care provision (Chapter 2, 2.2.1). It is based on enabling healthy living, enhancing self-care through supporting the public with tools to self-care and enabling communities to form groups to support each other. The use of digital innovations and access to early prevention methods will enable a large proportion of the population to access to good quality efficient healthcare.

One example of a non-vanguard funded new model of care which supported population-based healthcare is the Primary care home (PCH) model. Although

this was not evaluated as part of this case study, it was important to explore and understand its place within Devon. This was essential to add to the context and exploration of the new models of care.

4.3.1.6 Primary Care Home (PCH) Model

The aims of the PCH, are to provide population-based healthcare, through an integrated multi-disciplinary approach. It looks at an integrated system, aligning primary and secondary care. The National Association for Primary Care seeks to deliver PCH as an opportunity to transform primary care through an integrated approach. It aligns health and social care, through utilising various health and social care professionals to support the local community (Figure 4.11).



Figure 4.11 National Association for Primary Care.

The critical part of this model is the use of various health and social care professionals to support, mental health services, community care, diagnostics and social care within a combined entity. It uses a combined approach of

personalised care and ‘population healthcare planning’ to support the community. Interestingly, the PCH works within a defined area. The area of care in a PCH is defined as a population size of 30,000-50,000 people. This population size is demonstrated through the PCH values as a correct size to support each patient within the population adequately. It links all sectors of care – secondary, primary and social care. In addition to utilising staff from different backgrounds, including healthcare and the voluntary sector.

The PCH pilot site has been successful in reducing health inequalities and supporting the wider healthcare network. Over various pilot sites the PCH has seen to reduce admissions to A&E, decrease prescribing costs and improve GP waiting times to name a few. This has supported better access to healthcare for patients and provided sustainable services to support acute and long-term conditions.

The role of community pharmacy is described as important within the PCH ideology. Currently, pilots have shown a variation in community pharmacy roles within PCHs, to include services such as support for chronic obstructive pulmonary disease, medicine reviews and medicines optimisation. The main building blocks of incorporating community pharmacy within the PCH revolves around building and maintaining relationships with other stakeholders within primary care. This is to enable, new ways of working, new and emerging roles and formation integrated care pathways to support patients within the population.

The role of community pharmacy in supporting the management of long-term conditions is well established. The PCH seeks to hone these skills to monitor and support patients suffering from chronic conditions from the centre of the community within the community pharmacies. The use of community pharmacy as a health hub to support episodic care, can support the patient in an efficient and timely manner, rather than having to book a GP appointment (Twigg et al., 2015).

On this basis, the new model of care explored in this case study utilises the evidence and information presented by the PCH to support integrated care working within primary care. The following section describes the service explored within this case study.

4.3.2 Devon New Models of Care and Pharmacy

The issues faced within Devon have demonstrated key areas for change to facilitate improved healthcare delivery across the area. The difference between Devon and the other case studies discussed in this chapter is, the development of new models and new ways of working in Devon was a necessity to sustain the health system. Whereas the other vanguard models of care chose to develop and deliver those services. The aim of the new models of care were to support collaborative efforts to improve healthcare in Devon. In relation to pharmacy services, there was a vital need to redesign pharmacy provision across Devon to support solutions to the challenges described and fully integrate to add strength to community care provision.

As described above this case study was not part of the NHS England Vanguard Program and therefore this case study is presented differently. The identification of pharmacy related new models of care across Devon were highlighted through scoping, therefore many different models are described below. One ongoing pilot was identified during the data collection period and explored in depth.

4.3.2.1 Redesigning Community Pharmacy

There are 146 community pharmacies in Devon, all who provide the contractually required core NHS standard services. The challenges relating to workforce and growing health inequalities within the population of Devon prompted a redesign and new way of utilising community pharmacy. Stakeholders described this as being a necessity to continually provide healthcare provision within the strained area of Devon. Through discussions with various stakeholders and document analysis, new models had emerged around community pharmacy redesign.

4.3.2.2 Pharmacist knowledge transfer service

Figure 4.12 shows one of the models described by stakeholders to support the transformation of community pharmacy in Devon.

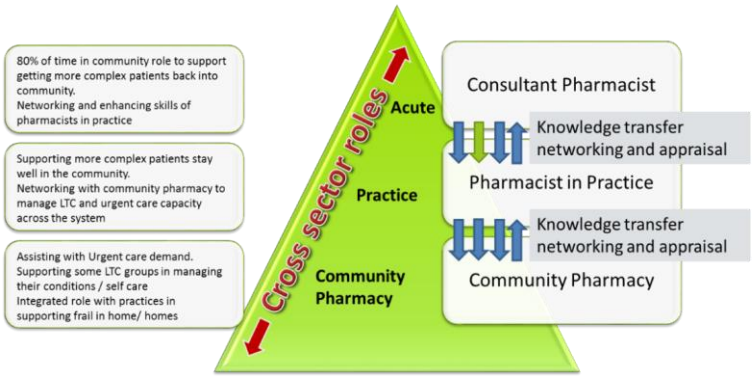


Figure 4.12 Diagram of Integrated Pharmacist Support in Devon

This model focussed on providing a structured training and support approach to link pharmacists across primary and secondary care. Figure 4.12 diagrammatically represents the alignment of the role of the pharmacist at each stage of healthcare service provision. Stakeholders described linking pharmacists across sectors through knowledge transfer would support and enhance patient care (Figure 4.13).

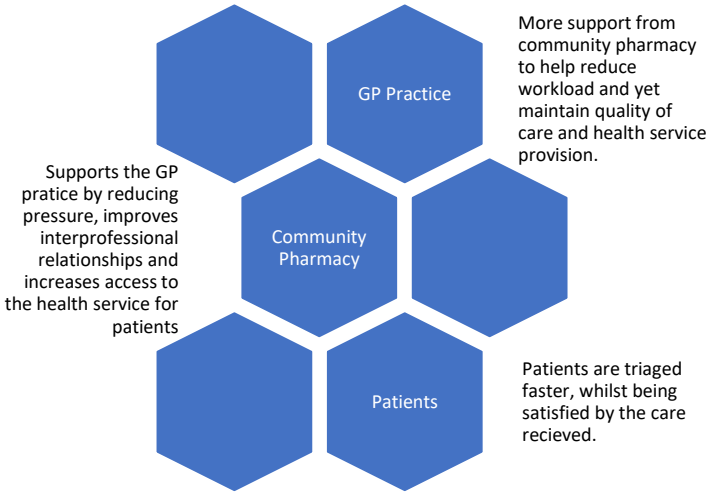


Figure 4.13 Potential Impact of 'Pharmacist Knowledge Transfer Service

As discussed above one new model of care was explored in depth during the data collection period in Devon. The following section discusses this model.

4.3.2.3 Devonport Collaborative Community Pharmacy Service (DCCPS)

The Devonport Collaborative Pharmacy Service (DCCPS) links the community pharmacy and its local GP practice in order to manage the movement of patients to best suit and optimise their care. The community pharmacy in Devonport is located within a complex, containing a GP surgery, Minor injuries unit (MIU) and College Facility of Dental Education. One stakeholder described the close proximity of multiple care providers as an enabler to the provision of the DCCPS.

The patients are referred to the community pharmacy for their clinical reviews and MURs. The community pharmacist is an independent prescriber and therefore can provide a closed system of diagnose-review-treat/refer increasing options and access to care for patients in that locality.

For patients who suffer from LTCs, the community pharmacist uses medicines optimisation techniques to improve their health outcomes, in addition to reviewing poly-prescribing and unwanted high cost medications. In terms of supportive information required, the community pharmacist had read and write access to the patients' medical record. An additional feature to electronic medical health record is the ability for the community pharmacist to prioritise seeing high risk patients and those suffering from acute issues, this also adds to increasing access to patients who require healthcare assistance.

The collaboration developed between the community pharmacy and GP practice provided a collaborative platform to facilitate healthcare delivery. This improved processes of 'transfer of care' and 'information' between the two care providers. It additionally allowed them to work contractually in synergism. The medicine reviews and MURs undertaken by the community pharmacist incorporated the Quality and Outcomes Framework (QOF) criteria. This supported patients who required specific reviews and helped manage the GP workload, 'freeing up' resources for GPs to focus on more complex patients. Figure 4.14 illustrates the DCCPS.

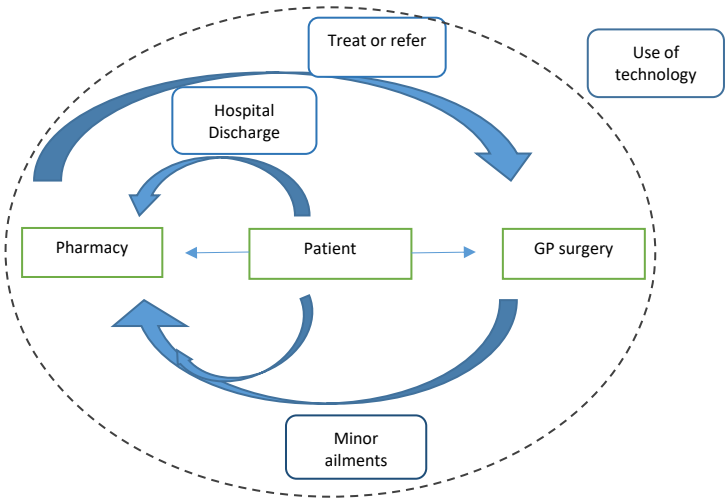


Figure 4.14 Adaptation of the DCCPS - Diagrammatically Drawn by the Stakeholders from the Devon Case Study.

The previous section described the context of the exploration of the new pharmacy models of care identified in Devon. The following sections discuss the findings of the exploration from this case study.

4.3.3 Qualitative Exploration of the Pharmacy related New Models of Care across Devon

4.3.3.1 Methods Overview

Five in depth, semi-structured interviews were conducted with pharmacy stakeholders in Devon. The interviews took place face to face at different sites or over the telephone (if stakeholders were unavailable face to face). In addition to interviews, observational notes were taken by the lead researcher from visits to the GP practice, community pharmacy and surrounding areas as a form of data collection. The field notes consisted of a general description relating to the buildings, interactions between staff members. The study participants were purposefully sampled and each interview audio-recorded, transcribed verbatim and analysed using Nvivo® 11 software.

4.3.3.1.1 Analysis

The analysis process consisted of thematically analysing the transcribed audio recordings, observational field notes and data from the document analysis.

4.3.3.2 Overview of Themes presented across Devon case study

The themes generated from the Devon case study provide an insight into the overall landscape and present findings on the local new model of care. Three key themes emerged from this case study as integral strengths and limitations of developing and sustaining a local new model of care in Devon. These are challenges to the system, training and development and service factors. Together these themes give an insight into the requirements which would

facilitate developing and implementing a new model of care within the Devon locality.

4.3.3.2.1 Challenges to the system

Resources are a key component of any new model of care. The lack of resources available in Devon have already been described. Throughout this case study the issue of lack of funding was a continual sub-theme. It was cited by stakeholders as a requirement to support service development. However, although this was a common theme, the issue of lack of workforce and recruitment was described as more detrimental to health service delivery. Stakeholders described how the lack of a 'dependable' workforce impacts upon what type of new models can be developed and resources required to support them. Experience and competencies are essential to health service provision (Barbazza et al., 2015, Roland et al., 2015).

Issues around recruitment and retention was agreed by all stakeholders. The local health system in Plymouth was described as 'stretched and complex' and this was one of the reasons described for low recruitment and retention levels. Stakeholders suggested, without a skilled clinical workforce it is difficult to maintain current healthcare provisions and support new services. Vacancies were highlighted by one participant as greater than the national average for community pharmacy in particular. Alongside recruitment issues, stakeholders described a shortage in current clinician levels. These shortages were mainly focussed within primary care and relate to the GPs.

The large number of GPs taking a break from practice and others giving GP contracts back to the NHS was worrying to participants. These decisions have a 'knock on' effect on the health system as a whole and will affect patient care and the primary care ecosystem. The GPs who hand the contracts back will not be catering for a proportion of the population and therefore this will affect other GPs and pharmacies within the surrounding area. Leading to a potential decrease in access to healthcare for patients, stress on the primary care team and impact on secondary care. Findings from this case study suggested a potential solution is the use of the pharmacy profession to support workforce regeneration.

Supporting the health system to deliver the new models of care across Devon was vital to the sustainability of healthcare delivery. One barrier described by stakeholders was the use of national contracts which 'tied' certain care providers to a particular way of working. Community pharmacy has a national contract and one stakeholder described navigating the landscape of contractual agreements as 'difficult'. Therefore, when attempting to negotiate with government bodies to amend contracts to suit the needs of different localities in Devon, it proved almost impossible. This was cited as an additional barrier, which had its own risks associated by not being able to support local health systems to deliver services due to standardised contractual agreements. This can result in unmet needs for patients, hospitalisations and issues around patient safety (Boerma, 2006).

Although, expanding the use of the pharmacy workforce and changing their contractual agreements has been cited as a solution to the challenges faced in Devon. Alongside the expanding, upskilled role of the pharmacy team, stakeholders have described the increased risk associated with a more clinically developed role. Statutory pharmacy group representatives recognised this risk as manageable. However, they discussed the importance of contracts and indemnity to protect and support the new roles.

4.3.3.2.2 Training and Development

Training and development were key themes which emerged from the data. Training and development are important aspects when upskilling a workforce and supporting new roles and new services, in particular identifying factors to help support pharmacy into the new roles upskilling the pharmacy team.

Participants described the need to co-train inter-professionally and cross professionally. This type of training pathway was suggested to improve MDT working culture. One stakeholder described how the training delivered in Devon will focus on aligning two different areas of primary care together to focus on an improved work culture for the future. In relation to the DCCPS, local training was provided to facilitate continual professional development for both GPs and pharmacists. The removal of workforce boundaries facilitates the development of pathways to deliver seamless patient care, upskilling across professions is key to facilitating teamworking towards national and local health priorities (Boerma, 2006).

Findings from this theme emerged a sub-theme barrier to training, which was 'resistance to change'. Many key frontline staff are involved in triaging patients, this includes receptionists and counter assistant staff. It was a requirement of the service that this cohort of employers were trained in appropriate triage and referrals. Perceptions from the manager suggested there was an initial resistance to this training, it can be perceived this was due to the addition of extra responsibility added to their role. Resistance to change is cited as a common barrier to professional development (Brazinha and Fernandez-Llimos, 2014).

4.3.3.2.3 Service Factors

The close proximity of the community pharmacy and GP practice within the DCCPS, was associated with positives and negatives. Findings suggest initially this closeness acted as an enabler to the development and implementation of this service. Conversely, one member of the pharmacy team cited difficulties in having a pharmacist in close proximity to the GP practice. A key strength of this service was supported by a common strategy and trajectory between the pharmacy and GP practice.

A key unmet need highlighted prior to the initiation of the DCCPS was the difficulty of the GP practice to manage their workload. During the development of the service, the pharmacist was upskilled and trained to support the GP practice and their patient cohort. One stakeholder described this training as a requirement to gain the required skill set to support 'clinically assessing' and 'triaging patients', to enhance patient care.

Access and data sharing agreements were a key factor to the success of this service, as it helped safe and secure transfer of clinical information between the two sites to support reaching an end goal of consultation with or without treatment. From a logistical point of view, teaming up with the GP surgery was a positive attribute to the service, one stakeholder describes how joining with be GP practice on this service has helped the pharmacy team in terms of governance and insurance. In addition to having a guaranteed patient population who can access the service.

Relationships and teamwork are strong enablers which supported the service. Within this case study the 'team' crosses the borders of the pharmacy to incorporate members of the GP practice team. Regular meetings on topical issues involving teamwork across both sites are discussed by the managers to ensure correct messages are filtered to the workforce and patients.

Difficulties in cross sector teamwork also became apparent during the day to day running of the service. One stakeholder described the importance of each team member to understand their roles and the boundaries. Frequently, the pharmacist would get asked to visit the GP practice during their responsible pharmacist (RP) hours. This disrupted current work practices and had an impact on prescription flow. Therefore, clearly defined roles and responsibilities were required to ensure safe and effective working. If these were misunderstood, it can cause complications within the relationships of cross sector team members and impact service delivery as a whole. This situation was managed through discussions with both the pharmacy team and

the GP surgery to set guidelines on the role of the pharmacist. This is important as both parties needed to respect the boundaries in order for the service to thrive.

The Devonport model shows a gateway for new roles for the pharmacy team. The location of the pharmacy within this service has proven to have a positive impact. This alongside upskilling the team can give way to further roles within transfer of care and patient triage. The DCCPS relied heavily on the relationships and partnerships formed between the GP practice and the pharmacy. Relationships will be discussed further in the following chapters (Chapter 6, 6.1.1 and Chapter 8.2.3.3).

4.3.3.3 Summary Conclusion

Findings from this case study highlighted key requirements of the pharmacy related new models of care required in Devon. The data outlines key challenges of workforce in the current system and potential solutions of using the pharmacy team to support the challenges faced. Training and upskilling were key factors which are required to support developing the pharmacy team, in addition to correct access provisions to enhance the role of the pharmacist.

4.4 Overall Conclusion

The case studies present an insight into three local new models of care sites. Each case study demonstrates different attributes to facilitating implementation and sustainability of pharmacy related new models of care. Each case study was predominantly based in the community setting.

Communities are an essential part of primary care and in the delivery of the local new models of care. Strong community care provision is essential to supporting integrated healthcare which will add to stabilising the English healthcare system.

A common theme across all case studies is the requirement to align services and organisations. This is critical to the provision of integrated care. Aligning systems and supporting fluidity across organisations supports care provision within and across sectors. The following chapters (Chapters 5,6 and 7) will present the cross-case analysis (Chapter 3, 3.10.4) chapters. These chapters will discuss the key findings found across all three case studies in depth. As described above, clear findings across each case study related to the provision of integrated care at each level of care delivery. The cross-case analysis focusses on this and presents evidence which supports the development of an integrated care system and factors which support its delivery and sustainability. As the focus of this investigation is on the community pharmacy team, clear evidence will be presented which identifies the roles and services of the community pharmacy team within the 'integrated care system' developed from the data presented in this investigation. The cross-case findings can be split into three sections: The formed integrated care system, factors which effect the internal mechanism of the formed integrated care system and the role of the community pharmacy team within community care formed integrated care system. These chapters aim to demonstrate clear evidence of the development, implementation and sustainability of a formed

integrated care system (derived from the evidence collected during this investigation).

Chapter 5 Cross-case analysis - The Formed Intergrated Care System

The previous chapter (Chapter 4) presents a qualitative exploration of the initiation and implementation of three independent new models of care. This chapter presents the findings of the combined analysed data across all three case study sites. The cross-case analysis spans three chapters and is split into three overarching themes; the formed integrated care system (FICS), factors which effect the internal mechanism of the FICS and the role of pharmacy within the community care formed integrated care system (CCFICS).

The following chapters demonstrate evidence of themes identified as similarities and differences found across the three case studies. The data has been analysed using an inductive and deductive approach as described in the Methodology chapter (Chapter 3, 3.10). As described at the end of the Case Study Chapter (Chapter 4, 4.4). A key theme derived across each case study is the requirement to align care across each sector in the form of an integrated care system. The following chapters will present the evidence of the provision of an integrated care system. This 'data derived' version of an integrated care system will be referred to as the 'formed integrated care system', because it has been formed directly from the data collected during this investigation.

Open Systems Theory presents the idea of a dynamic healthcare system. This theory has supported the analysis of the findings in this study (Chapter 3,

3.10.5). Many findings conformed to the framework, however others did not, and this is discussed further in this chapter.

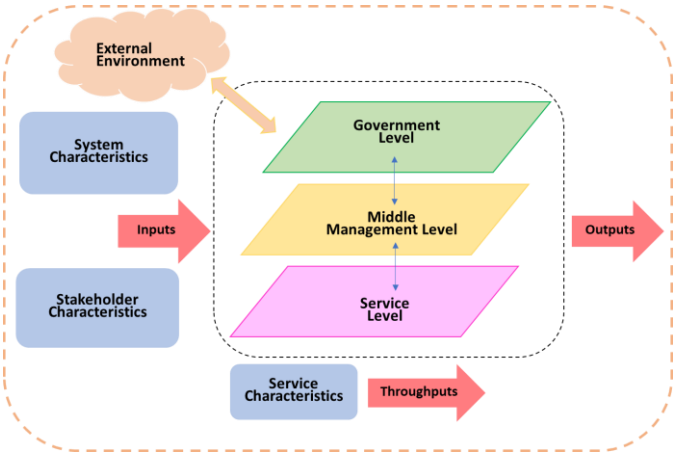


Figure 5.1 Multilayer Open Systems Theory framework in diagrammatic form within the context of this thesis. Adapted from (Thien and Nordin, 2012) (Repeated in Chapter 3, figure 3.7, Chapter 6, figure 6.1, and Chapter 7, 7.1).

Figure 1 illustrates the Open Systems Theory in the context of this study. It shows the different layers present in the healthcare system researched in this study. The open system in the context of this study will now be explained, definitions in the following explanations can also be found in the methodology chapter (Chapter 3, 3.10.5, table 3.3). The initial entropy into the system is driven by a series of characteristics, known as inputs. From the data, these have been split into 'system characteristics' and 'stakeholder characteristics'. These inputs enter the system via particular channels known as 'throughputs'. The throughputs in this case are the 'service characteristics'. Once the inputs have travelled through the system and been altered by the 'throughput channels', they exit as outputs. For example, a system characteristic can be identified as a 'trained workforce'. Once this has entered the 'service

characteristic' throughput, the 'trained workforce' enters the area of the system where it is required, and thus produces outputs accordingly. These outputs are generally known as the 'outcomes'. After the first cycle, where key constructs have formed, such as workforce, funding and infrastructure, they are then constant for the duration of the service within the system. These constructs are known as 'renewable' resources, because they are already defined constants within the system. The renewables play a large role in supporting service sustainability.

Each cross-case analysis chapter focusses on themes which were highlighted as 'outcome' characteristics. These themes are the focus of the cross case analysis because they answer the research objectives. These are: To describe and understand the new models of care program, to explore and evaluate the identified new models of care at a local level to inform a conceptual framework focussed on the community care ICS, to identify key factors which effect integration and sustainability in the wider dynamic integrated healthcare system, to explore the roles and services of community pharmacy within a community care ICS and to make recommendations on the role the community pharmacy team plays to support care providers and commissioners involved in service delivery within a community care ICS.

5.1 Open Systems Theory (Context of this study)

In order to set the context of this chapter and its connection with Open Systems Theory, it is important to explain the multiple levels present within

the health system researched (Figure 5.1). In addition to describing the overall external environment in which these services have been initiated. Figure 5.1 shows a diagrammatical form of Open Systems Theory within the context of this thesis. The multiple layers show the different levels presented within this healthcare system. The typology of the system illustrated in figure 5.1 has been guided by the data.

The government level (green layer), incorporates those who influence policy as presented in the Literature Review chapter (Chapter 2, figure 2.3). For example, NHS England, the Department of Health and local authorities. These organisations can be perceived as gate keepers to funding, commissioning, national contracts and the political direction healthcare systems may take. The middle management level (yellow layer) spans a wide range of groups. These groups can also be perceived as gatekeepers. However, in addition to this role they implement and manage health policy recommendations. This level consists of groups such as STPs, PCNs, CCGs and vanguard leads. The service level (pink layer) are individuals who are directly involved within service delivery. The arrows represent interchangeability, and therefore individuals are not limited to one level, they can move across the levels in a fluid manner depending on their roles.

5.1.1 External Environment

Figure 5.3 shows the external environment, which represents the national direction (i.e. policy documents, political agendas, healthcare reform). The national direction has been discussed in depth in the Literature Review

chapter (Chapter 2, 2.1.4). In this case the national direction, is one of a strained healthcare system. In particular, in terms of finance and workforce infrastructure. In order to support the growing demands of healthcare within the England, sustainability has been highlighted as a key agenda across many policy documents as discussed in the Literature Review chapter (Chapter 2, 2.1.4). Figure 5.2 shows the themes associated with the external environment and figure 5.3 diagrammatically represents where the external environment is placed within the open system.

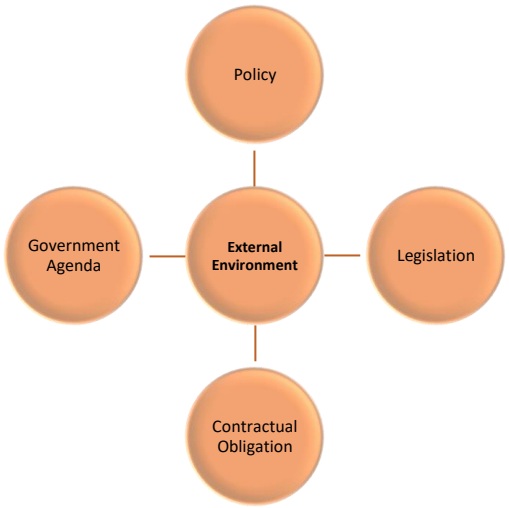


Figure 5.2 Themes associated with the external environment

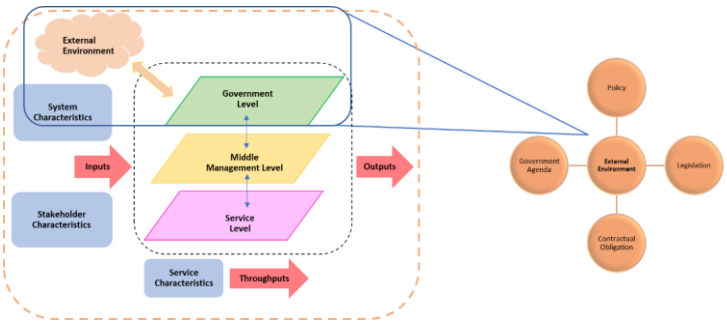


Figure 5.3 Area of where the External Environment is in Relation to the Open System.

Sustaining the English health system was a key part of the government agenda. The largest cost to healthcare and potential risk to its sustainability is secondary care. By reducing avoidable admissions to secondary care, financial savings can be made and redistributed to other areas of the health system. The case studies indicate that there is a large focus on enabling communities to practise preventative medicine, as opposed to reactive.

5.1.1.1 Prevention

Each case study focussed heavily on supporting a 'prevention agenda'. This is interesting as the data collected was prior to the publication of the NHS Long Term Plan, where one of the main agendas is 'prevention'.

The Northumbria case study (Chapter 4, 4.2) describes a model which mirrored the PACS vanguard model of vertical integrated care. These care pathways featured a change in direction of care delivery. Healthcare professionals within the PACS vanguard centred their care around supporting better patient outcomes. This was achieved through highlighting the importance of prevention and delivering services in line with this agenda. Healthcare professionals were required to take on a more 'active' role in patient care by conducting more frequent medicine reviews, rather than a reactive service, reviewing after an event has occurred.

> *"It is just trialling new things, piloting different ways of working with different healthcare professionals working on a more preventative medicine basis as opposed to reactive and*

there is lots of trial and error. I think developing different ways of working just to improve patient outcomes, reduce admissions and keep patients at home for as long as we can. Put support in from the local community to make sure that they are managed at home better so yeah effectively just trying to deliver new models of care."

SS_08, Northumbria

The 'preventative' way of delivering care, supports better management of patients. In addition to, forming stronger local communities to support each other to provide better patient care closer to patients' homes.

The basis for this model prevents further deterioration of patients' health and reduces potential escalation to secondary care. The risk triangle described in the Case Studies chapter (Chapter 4, figure 4.8) shows the pathway of escalation of moderate to severe health risk. Once patients are escalated through the risk triangle to severe, they are likely to be admitted to secondary care. Therefore, if patients are monitored more frequently, they are less likely to become unstable and be escalated to hospital care. This potentially gives an opportunity for their conditions to be managed earlier, reducing the risk of escalation leading to potentially irreversible or life-threatening clinical damage.

Chapter 4, section 5.1.1.1; describes ways the community pharmacy can support the prevention agenda. For example, using community pharmacy as a

hub to facilitate patients to take preventative measures. Such as healthy eating and sun protection.

> *"You know… the same with healthy eating and the healthy lifestyle are harder things to tackle because people don't like to be told what they are doing is wrong and they are the people that do need a bit more time you know… you will say you know...we are trying to be more prevention rather than cure."*
>
> *CD_0014, Devon*

'Prevention' is a key direction for delivering community-based care services. Findings show patients in the community who access primary care services are in low to moderate risk categories. Community care providers can support patients in manging their conditions through self-care and lifestyle advice, to prevent secondary care admissions and impacting patients' quality of life. The prevention agenda will have a large impact on the external environment of the system. Changes in legislation and healthcare policy will effect each component within the system.

5.2 The Formed Integrated Care System

The Formed Integrated Care System (FICS) is defined as a system which supports and focuses on integration across each health sector within the healthcare system. The FICS is derived from the data and demonstrates a formulated model which represents an alternative version of integrated healthcare. The following sections explore the findings which focus on key

factors present in the FICS. Previous to this section, figures 5.1 illustrates an open system in the context of this study. Figure 5.3 describe how the external environment impacts the overall open system. The following paragraphs present the evidence of the FICS.

In order to facilitate multidirectional care to support patients. Each case study expressed the importance of forming an ICS. Figure 5.4 highlight themes and subthemes which support the formation of an alternative integrated care system. From this point on, this will be referred to as the FICS. The FICS suggests joined up working supported by healthcare professionals, volunteer organisations and government is imperative to produce seamless care for patients. With an overall aim to provide an efficient healthcare system which is financially viable, with a good standard of quality and safe care.

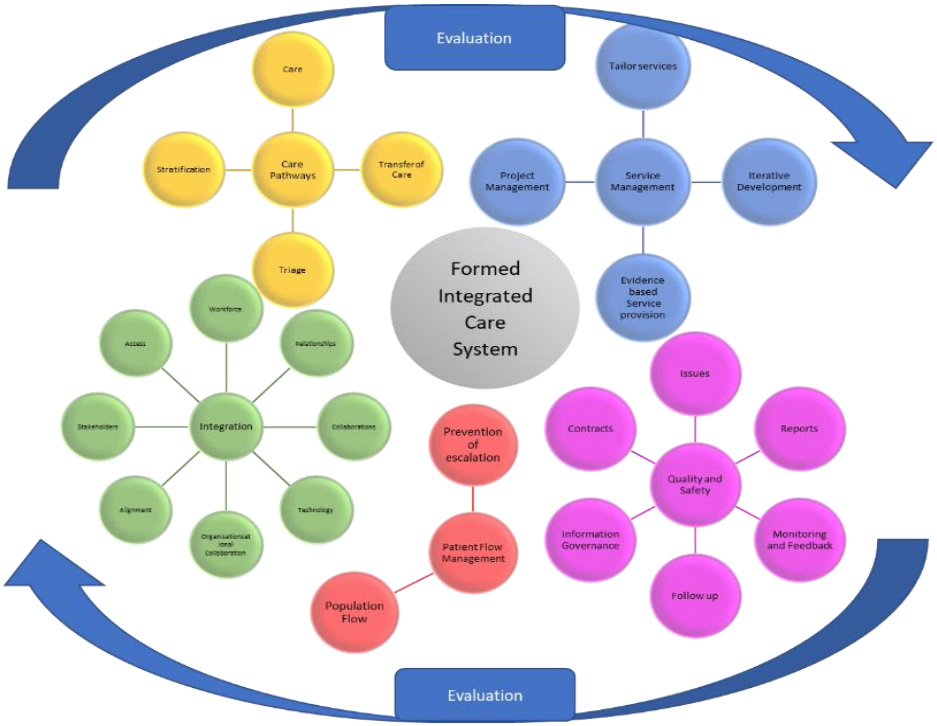


Figure 5.4 Diagram representing 'Evaluation' as an external tool to induce mechanisms of negative feedback.

Figure 5.5 indicates where the FICS would fit into the overall open system. It is important to note that the open system is dynamic and therefore findings presented in relation to the FICS can be featured at any level within the open system and across the whole system.

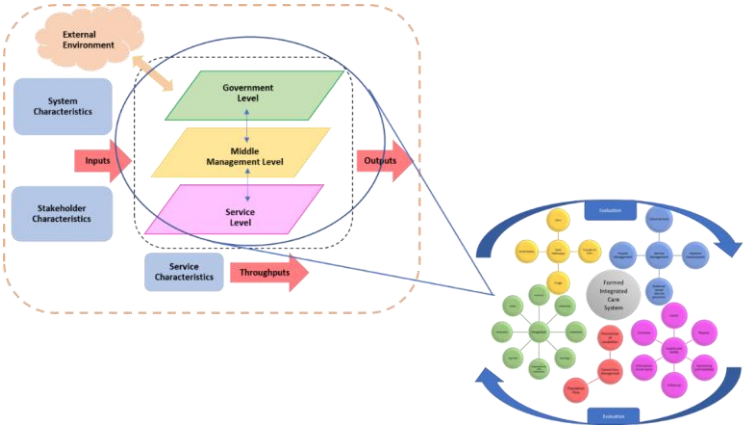


Figure 5.5 Diagrammatical Representation of where the FICS fits into the Open System.

The following sections discuss the key system characteristics of the FICS, which are required to support its formation and sustainability. These characteristics are structures and resources, which the system is required to have, in order to maintain stability and sustainability.

5.2.1.1 Understanding the needs of the system

'Understanding the needs of the system' is characterised by the type of services needed within the area the system covers. This could be within a locality or on a wider scale across larger footprints, for example STP areas (see Chapter 2, figure 2.3). One member of the local pharmaceutical committee

(LPC) in Devon describes, identifying the needs of the system as essential to recognition of the type of support needed.

> *"Most of the change work that we are doing is in fact local and it just indicates that if you link into where the system need is and recognise about the way you can help, you can actually just make the changes happen at a local level. You don't need it (funding) if you have the right attitude and mind towards it."*
>
> *GL_0015, Devon*

System needs were recognised across all three case studies as an essential element to service development and commissioning. One primary factor which affected the initial conversation of service development was geographical location. This played a large role in the type of service and infrastructure needed to support implementation of services and health system development. For example, the Northumbria site (Chapter 4, 4.2.1) describes its landscape as widespread and focussed on elderly care. Therefore, stakeholders described the service was best developed in a 'hub' type manner to be successful. This method of delivery was suggested in order to have a single point for communication within the vanguard pharmacy team.

Alternatively, the Rushcliffe site (Chapter 4, 4.1.2) consisted of developing a service to support care of the elderly within care homes. Therefore, this

service consisted of a technology-based support tool to help carers inside the care home. Resources also affect the 'needs of the system'.

5.2.1.2 Understanding the health system

When supporting the development of the FICS. It is important to appreciate and understand the current state of the national health system and the roles within it. Figure 5.6 shows the position of the external environment and the government level. This is important because the national agenda directly effects changes to the health system. Thereby, changing stakeholders' understanding of that system. One member of the LPC in Devon describes, looking at the system as a whole entity to support the movement and flow of patients.

> *"Think about patient flow and we need to shift the patient flow that is what we are about, that is the way our thinking is and everyone talks about contracts but actually, it is all about patient flow about how they hit the system and where they hit the system and making sure they hit an appropriate spot, with the last possible acute you can get them into and get people to operate at the top of their license. So if we can do that you can create a sustainable system and we keep forgetting that and we keep thinking about our own little organisations and all the pockets but actually it is about how we flow people through the system is the fundamental..."*
>
> *GL_002, Devon*

The other case studies agreed with the idea and importance of understanding the health system. If there is unanimous understanding across professions, various healthcare professionals can be utilised to their strengths to navigate patient flow and support transfer of care through the system.

However, one commissioner from the Rushcliffe case study (Chapter 4, 4.1) describes the underutilisation of pharmacy, due to misunderstanding their role within the healthcare system. This prevented pharmacists from working at their full capacity to support the system.

These findings show how important it is to understand the roles within a healthcare system and how misunderstanding can disproportionally negatively impact the system. This adds risk to forming the FICS. In order to achieve an ICS, it is important to understand the roles within the system and the system itself.

Misunderstanding the healthcare system can also refer to the services within that system, one pharmacist stakeholder from the Northumbria vanguard team (Chapter 4, 4.2) describes the misinformation surrounding medicines optimisation. Traditionally the medicines optimisation service has been demonstrated as a cost saving service. However, in the case of one site, its primary focus had been improving quality of medicines use for patients, thereby improving their quality of life. Although, there is no immediate cost savings, in the long term the savings will be seen in terms of reducing the patients burden on the healthcare system. Therefore, in terms of

commissioning these services it has been difficult to convince commissioners of their utility.

> *"So, pharmacy and medicines optimisation almost sat with efficiency in that over the last few years the system has used medicines optimisation as a way of saving money. So, it has got that perception that when you try and sell medicines optimisation as quality its sometimes difficult to get that message across because you know I might say I can save people from being harmed. I can improve their quality of life, but actually until I save money nobody is going to be interested which you know unless you actually sit back and actually think about that it's a bit disappointing isn't it."*
>
> *RF_0021, Northumbria*

This section demonstrates evidence and the negative impact misunderstanding the healthcare system and needs of the system can have on the FICS. Chapter 8 (Section 8.4.1) will discuss misconceptions around the identity of pharmacy and how it impacts the uptake of services.

5.3 Negative feedback

Negative feedback is defined as the 'internal adjustment of energy within the system where outcomes meet proposed goals' (Katz and Kahn, 1978, Meyer and O'Brien-Pallas, 2010). Within a dynamic healthcare system, the services and the proposed goals of the services and system, as a whole, will continually

change as the system evolves. One way to support the system to continually meet its changing projected goals is to undertake evaluations.

5.3.1 Evaluation

Gathering evidence of evaluation is significant for commissioning old and new services. Figure 5.4 illustrates, continual evaluation over the FICS is an important tool to support movement and evolution of the FICS. The new models of care required data to support current and future evaluations of services, in order to secure initial funding. These evaluations demonstrated outcomes required by commissioners and government bodies. Outcomes are a significant part of services and require measurement and analysis. Within the FICS, outcomes can refer to many things such as supporting patient management, identifying quality of the service and costs/savings made.

Findings show initial commissioning was based on evidence provided by previous services. The Northumbria case study (Chapter 4, 4.2) describes a previous precursor service from which the evidence supported and secured commissioning for part of the Northumbria Vanguard. Similarly, the Rushcliffe case study (Chapter 4, 4.1) describes commissioners using evidence from an evaluation to support the use of eMAR in the community setting.

> *"This is about the isolated administration of medicines in care homes and that in itself being a big enough opportunity to improve the safety, quality, cost triangle and particularly the safety aspect. So, we already knew the data from the PCS (Person Centred Software) system and the evaluation that was undertaken around that which identified the number of safety criteria which could be improved and the potential cost reduction achievable."*
>
> *SA_0012, Rushcliffe*

Overall, commissioners have described the requirement of service outcomes to meet criteria addressing needs of the locality (Chapter 4). A pharmacist stakeholder who had their services commissioned discussed the need to provide the correct 'dataset' to commissioners, to show improvements in health outcomes, not only cost saving.

> *"We need the right dataset to show that we are making a difference to people's lives and those services are improving quality of care and by doing that we are receiving money and not the other way around. We are not doing this to reduce cost. It's a reframing exercise."*
>
> *RF_0021, Northumbria*

Therefore, there is evidence to suggest that evaluation is a strong tool used by commissioners and stakeholders to secure funding of services and to produce

outcomes of improvements to patient care. This is important to note, because the FICS requires continual evaluation to track important modifications required for system evolution.

5.3.2 Renewable Outcomes:

Renewable outcomes are considered to be outcomes which are produced within the first round of implementation. When the service continues, these outcomes become part of the infrastructure and therefore from the subsequent cycles it can be seen as inputs and throughputs. One of the main areas of focus for this type of outcome is sustainability and continuity of care. Providing a sustainable support for patients is important to provide a strong healthcare network. Services which start and then collapse do not provide continuity for patients or referral pathways. The outcomes which will be discussed below will provide evidence, which adds to forming a strong infrastructure within a dynamic healthcare system.

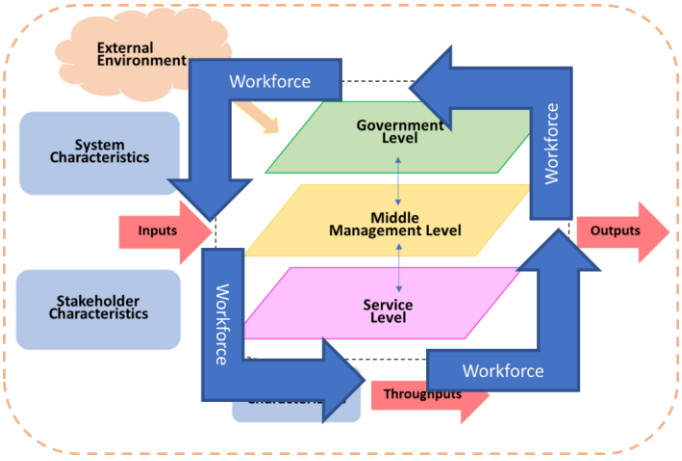


Figure 5.6 Representation of the renewable nature of workforce.

5.4 Workforce Infrastructure

Workforce is a significant part of delivering a service. Without a suitable workforce, service objectives are difficult to deliver. Utilising the appropriate workforce, training and supportive structures can affect how a service is delivered. Figure 5.6 shows how workforce affects the system. It is shown with arrows in figure 5.6 to represent its continual renewable energy. It also can affect every level of the system. At the service level, the data has shown certain input characteristics associated with workforce. Such as, job satisfaction, working conditions, communication and attitudes. These factors affect the strength of the workforce.

5.4.1 Building the workforce

Workforce featured across each case study. In terms of building a service, one important aspect is having the workforce and capabilities to achieve these services. In order to provide a sustainable service, a stabilised workforce is needed. This includes factors such as appropriate payments, job satisfaction and good working conditions. From a government and middle management level (Figure 5.6), one pharmacist stakeholder from the Devon case study (Chapter 4, 4.3) describes the need for a strong workforce to be in place prior to funding being allocated in order to secure commissioning for the service.

"On the flip side, you will never get commissioned to do something without the staff and clinical capability to do what you have to do. So, there is a chicken and egg here, which is why we are spending quite a lot of time and investment in developing up some of our people. "

GL_002, Devon

Workforce issues can arise at system level and service level, whichever healthcare system and organisation is focussed upon (Figure 5.6). The findings across all case studies describe workforce issues ranging from recruitment, retention, training and upskilling qualifications. In areas where it would be beneficial, two case studies agree some of these issues could be solved by the pharmacy team. A suggested way to tackle these issues, is to develop a structured program to support those within the workforce and incentivise staying, facilitating the development and continuation of services, stabilising and sustaining the FICS.

Other workforce issues related to the government level (Figure 5.6) will continually be present and continue to persist, due to the tumultuous, current political landscape as discussed in the Literature Review Chapter (Chapter 2, 2.2). Stakeholders across the case studies also discussed potential solutions to support workforce issues arising from Brexit*. One member of the community pharmacy care home provider team in the Rushcliffe case study (Chapter 4, 4.1) describes technology as a solution to some of the workforce issues which may be faced.

"There is a big, big workforce issue out there, you know there are vacancies left, right and centre and with Brexit coming, we don't know as everyone is uncertain. We don't know what that might mean for registered nurses for example when it comes to nursing homes so there is ambiguity there. So, I would say technology and workforce is a worry, but I think technology is probably the answer to the workforce issue, but that is what the future looks like."

RN_004, Rushcliffe

5.4.2 Utilising the Existing Workforce

Results demonstrate, in order to produce an integrated system, it is important to identify how to use the current workforce and integrate other organisations, to support new services. The Devon case study (Chapter 4, 4.3) described an area with a strained workforce environment and recruitment issues. To combat this, stakeholders described using an already present workforce to its maximum capabilities.

"So, this is again about how to we maximise the use of our workforce across the system across all professions….to start thinking about… can we do work around upper respiratory tract infections, cellulitis, ears and things such as that so we are broadening the scope of what we can deliver within that range of services."

GL_002, Devon

The solutions above may have a positive impact in supporting the sustainability of the system. However, the training and development needed to facilitate these solutions has also been discussed. Stakeholders describe the need for significant investment to support a growing workforce, where positive, supportive outcomes are not guaranteed.

> *"I think from a workforce point of view… definitely there are tasks there that you need to do in terms of these services and then preparing the workforce for that as well…You know in an ideal world you will all want to say, you know let's get all of our pharmacists trained to a certain level to do these things, but actually that is really difficult to achieve because you are looking for a massive investment where success isn't actually guaranteed. Which is a very tricky business model isn't it? So, I think that is the sustainability bit that is really interesting."*
>
> *UJ_003, Rushcliffe*

Several themes describe the level of impact the existing workforce capacity have on the success of the workforce infrastructure. It has been highlighted that there are various workforce issues. However, a strong, trained workforce is required to support the FICS.

5.4.3 Workforce and Integration

Workforce plays a large role when taking a whole system integrated approach to care. The workforce within the system can include stakeholders from different organisations or at sub-system level, within organisations. The case

studies provide evidence which supported an inter-professional and cross-professional workforce. For example, the Northumbria case study (Chapter 4, 4.2), required aligning pharmacy across different sectors, inter-professionally. This workforce crossed primary and secondary care, to form an integrated 'uni-professional' community. This relied heavily on leadership and managing both sectors under one umbrella.

> *"I think what we have got within our vanguard model, is we are seeing pharmacy being fully integrated within NHS managed community services. But you are also seeing the integration between our teams, professionally, back to being uni-professional. With community pharmacy as a strong element of that... A key factor of integration is the fact that this is one team managing across the health system."*
>
> *KE_005, Northumbria*

When thinking about integration on a practical level, findings showed it was important to understand how it was going to be implemented. The Northumbria case study (Chapter 4, 4.2) described changing stakeholders' behaviour and understanding of 'traditional' care sectors. Pharmacy stakeholders were part of the Northumbria vanguard pharmacy team and demonstrated this by creating a new service which required healthcare professionals to follow their patient through all care sectors. Thereby, forming an integrated approach to patient care, allowing specific teams within the

workforce to accept accountability, in addition to supporting a seamless route for the patients journey through the system.

Outside of the pharmacy workforce and looking at the whole MDT, the Rushcliffe case study (Chapter 4, 4.1) describes the integrated approach care home staff can use to support better work efficiency and a more integrated system within the care home. One pharmacist stakeholder stated that the introduction of care assistants within care homes had supported better efficiency instead of using trained nurses. This workforce section shows integration begins at the point of contact of professionals synergistically working together.

5.4.4 Attitudes

This category demonstrates the significance of attitudes of individuals and professional groups on the workforce. The Northumbria case study site (Chapter 4, 4.2) described the need for a passionate workforce to enable services. Whereas the Rushcliffe and Devon case study sites (Chapter 4, 4.1 and 4.3 respectively) described an increasing frustration towards the service, this translated as a barrier to its sustainability. Positive attitudes support building better services. However, there are difficulties in changing attitudes of those outside of pharmacy, in order to support service development. This is interesting as it could have an impact on the 'shared care environment' if other members of a patients care team need to be 'convinced' of certain services or clinical decisions.

"Community pharmacy are less likely to come and approach you with this on the whole because that is the way it is. So, when you approach community pharmacy, you need to get the right people in there, you have got to go with a good message and equally you have got your GPs who need to be convinced. I think the best way to do these things is to get the people who want to do this first and build up their benefits and their evidence so other people can see 'oh that doesn't look too bad'

RF_009, Northumbria

The findings showed stakeholder's attitudes played a large role within the new models of care case studies, especially in the initial service development stages. In relation to the three case studies, each stakeholder had a key relationship and positive attitude towards organisation and people they were working with. Suggesting, the inception of many of the services discussed relied on this factor, which on a larger scale would impact heavily on the FICS.

5.4.5 Workload management

Management of workload is significant to producing a safe and effective service. Overall, workload management helps manage the capacity and pressure within the system. When work pressure is distributed across a system it makes it more manageable for the workforce and therefore prevents pressure build up in an already strained system. The case studies all had different services and therefore had different ways to manage workload.

"But it is helping to keep our capacity and caseload list fairly manageable as opposed to having an x amount of care homes to do all by ourselves."

SS_08, Northumbria

On a wider scale, supporting a more structured approach to workload management, for example having designated healthcare professionals to support an organisation. Such as, in Rushcliffe, having a single GP, community pharmacy and community care team to support one care home. This could produce a more personalised service and equalise the pressure across the MDT. Allowing patients to access the right support from the correct healthcare professional. A range of approaches of workload management can be successful. It is important to recognise a focus is needed to support workload management within the FICS.

5.5 Funding

Funding also facilitates and sustains an integrated system. Aligning funding between different organisations within one care system is one way to reduce duplication in services and support a population-based health approach to care. Services which are financed in duplicate, potentially harbour the funds which could be used to support better access to older services or form newer services. It is important to note, the new models of care examined, received funding to support the services. Funding will not be discussed in depth as it was not the focal points of the case studies.

The previous chapter has introduced the FICS, the following chapter will present the data which relates to factors which effect the stability of the FICS. This is critical in understanding 'how' to stabilise and sustain the services delivered in the FICS.

Chapter 6 Factors which effect the Internal Mechanism of a FICS

This chapter focusses on outcomes which have been perceived to effect the 'inner workings' of the system. These include tangible themes such as technology, care pathways, patient flow and quality and safety aspects. Each of these themes can be considered as major aspects that affect the internal mechanisms of the FICS.

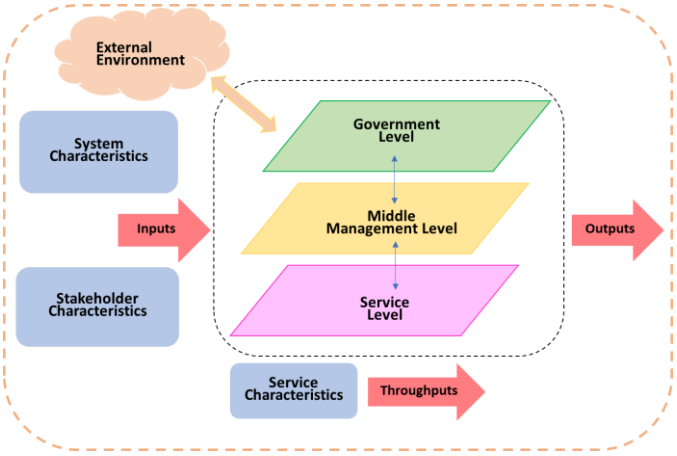


Figure 6.1 Multilayer Open Systems Theory framework in diagrammatic form within the context of this thesis. Adapted from (Thien and Nordin, 2012) (Repeated in Chapter 3, figure 3.7, Chapter 5, figure 5.1, and Chapter 7, 7.1).

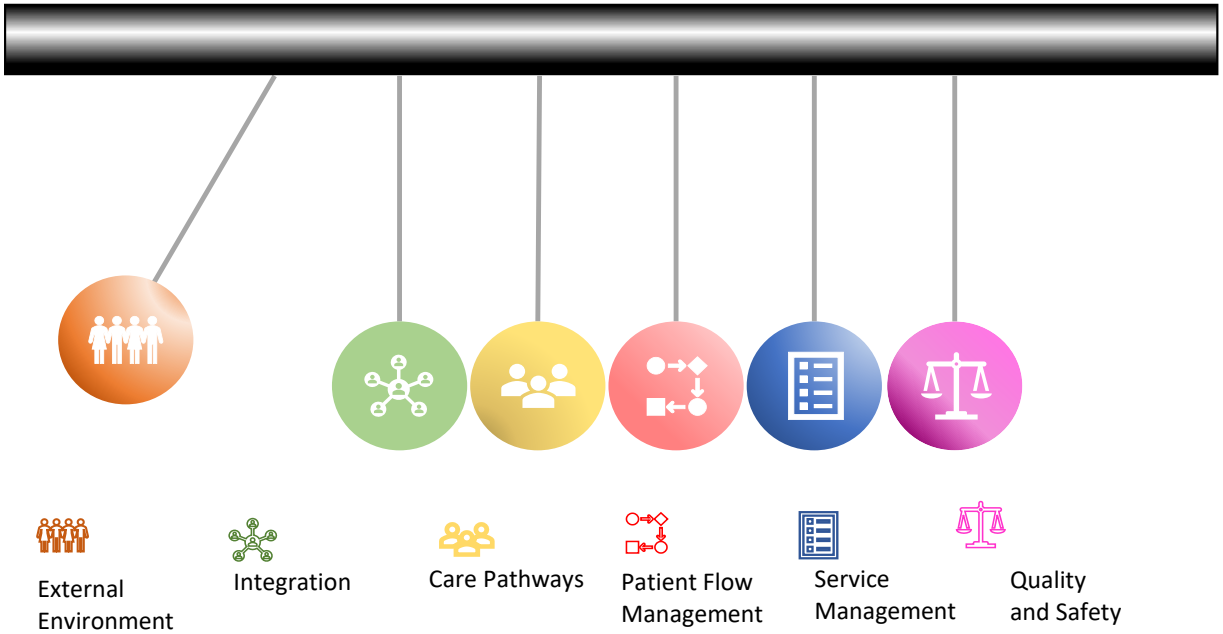


Figure 6.2 Adaptation of Newton's cradle. The 'kinetic' energy is representative of the 'dynamic' movement within the open system of the 'Formed Integrated Care System'.

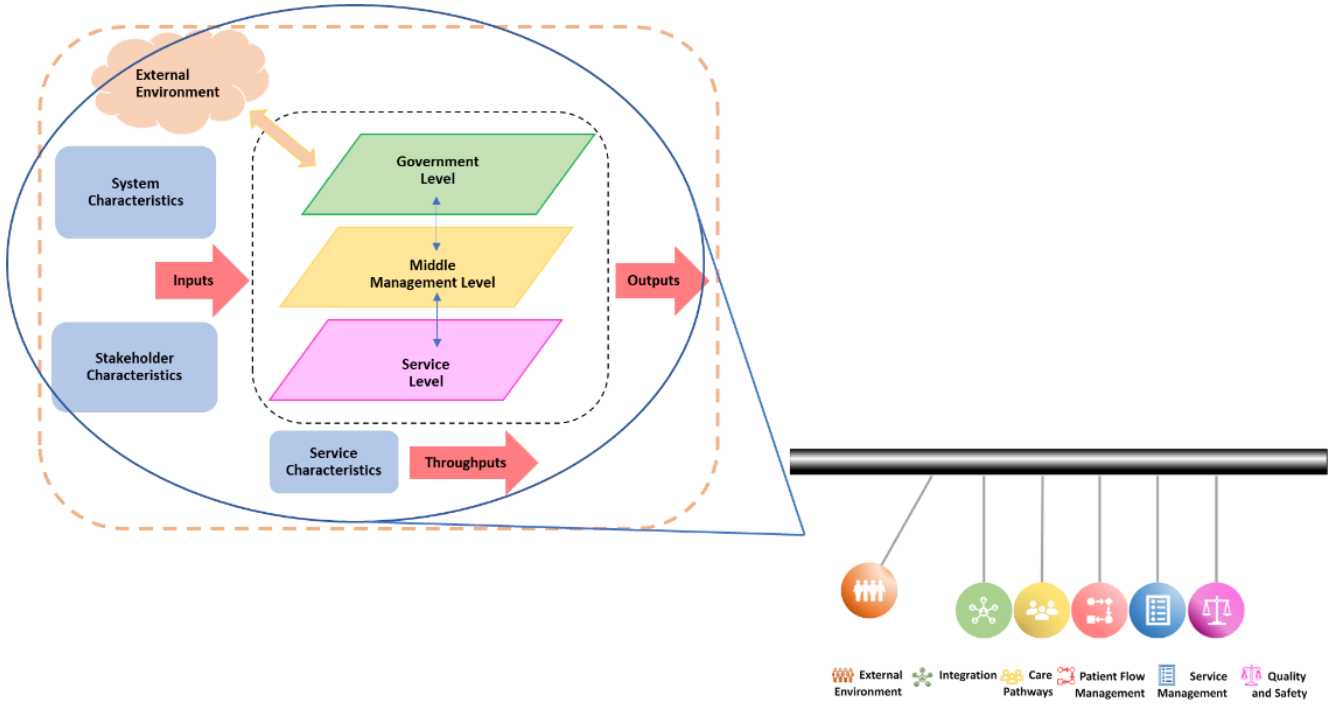


Figure 6.3 Representation of core components effecting the Open System

Figure 6.2 shows the core components which support the FICS at any level of the system and at sub-system levels, for example within services or organisations. The diagram is such that it demonstrates the 'kinetic' energy each of these components possess which effects the overall dynamics of an 'open' FICS.

6.1 Integration

Integration was a significant finding across all three case studies. Many factors can influence and support integration. Figure 6.4 shows where integration is mapped on the open system. The theme of integration and its sub-themes are located mainly at the service and middle management level. They minimally touch upon the government level due to the legislation and policy requirements to support alignment. This will be explained in more depth below (Section 6.1.5). The data indicates areas such as, technology, organisations and relationships all influence the level and amount of integration within the FICS (Figure 6.5.

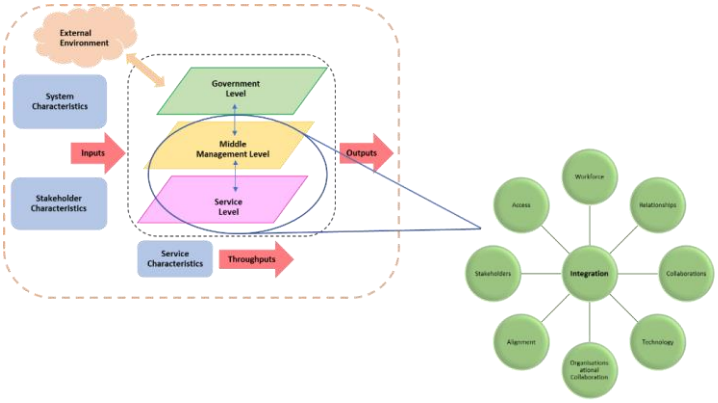


Figure 6.4 Diagrammatical representation of where the theme of integration and its sub-themes fit into the Open System.

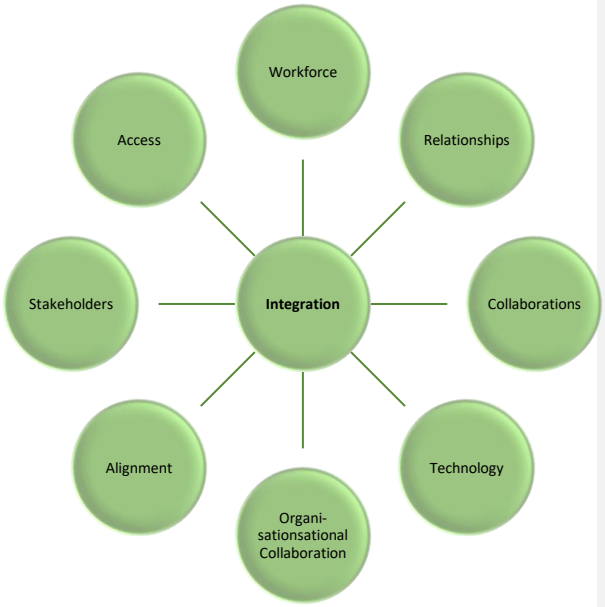


Figure 6.5 Themes of Integration and its sub-themes.

Stakeholders were asked about their definitions of integration. One pharmacist stakeholder from the Northumbria pharmacy vanguard team

explains integration as '*working together for the benefit of that patient'*. Many of the professionals interviewed across each case study, described 'Patient centeredness' as the focal point of many of the definitions. However, continued discussions, presented thoughts around building and supporting an ICS. Findings concentrate on integrating workforces and different organisations to support patient-centred care. 'Breaking down barriers' between interdisciplinary groups is vital to providing a seamless path between different care providers as this can offer patients an efficient high quality and safe service.

> *"Integration from a pharmacy point of view is just, I guess breaking down barriers between community, primary care and hospital practice. I think for the vanguard program its largely breaking down the barriers between primary and secondary care just to avoid duplication of work, build relationships and make sure that we are being efficient for our patients and putting in safe and high-quality care."*
>
> *SS_08, Northumbria*

This section reiterates evidence which shows patients are at the centre of the FICS, supporting evidence presented within the workforce section about moving away from a profession-based workforce to an MDT-based workforce.

6.1.1 Relationships

Relationships are a key factor in supporting integration in the FICS. One pharmacist stakeholder from the Northumbria pharmacy vanguard team

describes the importance of building relationships across providers. Focussing on the significance of building trust and confidence in order to support initiation and continuation of services.

> *"I think it is important to spend a lot of time understanding each other and get your relationships right... once you have done that the rest of it sort of falls into place and start with the right people and if you are going to start with somebody who is determined not to make this work then you will probably use a lot of energy wasting your time. Whereas, if you want to create the evidence and make it work then it starts with the right person."*
>
> *RF_009, Northumbria*

Stakeholders from the Northumbria case study (Chapter 4, 4.2) describe building relationships first before discussing potential services and funding. This is significant, as it shows the depth of required relationships to support service provision.

Participants from the Rushcliffe case study (Chapter 4, 4.1) describe, the importance of continuing the relationship after the initial link has been built. This case study site required many organisations to work together to implement and support service development,

"So there was collaboration between us and the providers of the system, us and the care homes involved, us and the GP practices, because we have had to facilitate each of those relationships and arrangements and then there is the collaboration along the way to overcome any hurdles barriers obstacles. So, we have frequent meetings and contact, it goes beyond a transactional relationship."

TR_0013, Rushcliffe

Building relationships are a key component to forming links within organisations and between organisations to support service provision.

6.1.2 Teamwork

Relationships influence a large part of teamworking. Teamwork can be considered as a series of relationships which have been built over time. Teamwork and supporting each other within the workforce are essential, specifically regarding training, implementation and service delivery. Teamwork can occur at any level within the system. However, a significant finding at service level (Figure 6.4) was the requirement for teamwork to be inter-professional and cross-professional. For example, connecting a solidified pharmacy team within an MDT to enhance the health in care homes.

"The sort of things we are trying to achieve is pharmacy teams - so pharmacists and pharmacy technicians being fully integrated into the wider multidisciplinary team. So, from the UK models, a framework has been published called Enhanced Health in Care Homes. Within that framework it does talk about medication review."

RF_0021, Northumbria

Teams which were previously separate from one another are now working together at a larger MDT level.

6.1.3 Collaboration

Collaboration is an important aspect of aligning healthcare and supporting an integrated healthcare system. Collaboration can be defined as 'forming incentivised links' with organisations to support the health system. It is important to note that, the data shows these links are only successfully formed once relationships and teamwork have been established. Each case study displayed a level of collaboration with organisations required to support their services. This way of working proved to be positive from quite early on during service development. It allowed stakeholders to gain insight from different organisations to develop the service. In addition to providing a mutually beneficial landscape for service provision. For example, the Northumbria case study (Chapter 4, 4.2) describes the use of a prescribing pharmacist to support general practice patient triage from inside the community pharmacy. Benefits for the general practice side, included

reaching their incentivised national targets. Benefits from the community pharmacy side included training and access to systems.

Building relationships supports the formation of collaborative links. As the trust between the organisations grows, there is a potential for further collaborative service provision,

> *"It is a lot more collaborative working, with the GPs but also with NHS England and NHS 111 in the picture and the GPs were on board saying, well actually community pharmacy can help support and deliver healthcare, so luckily because there is a lot of integrated working it works better."*
>
> *CR_020, Northumbria*

Collaboration provides significant support during service development at 'intra-service level' (Figure 6.4). The combined effect of services with good collaborative links significantly facilitates the formation of an efficient FICS. Collaborative links are based on relationship building and teamwork. This section provides evidence of links required to support services and organisations at system level. For example, when linking the service level, middle management and government level in an open system (Figure 6.4).

6.1.4 Organisational Collaboration

Linking up various organisations in healthcare was mentioned as one support mechanism to facilitate forming an ICS. The data shows organisations can be perceived as large or small conglomerates. Size can have an impact on the

level of collaboration required and provided, in order to support the system. On a wider scale, forming links with various organisations can support building a series of networks. These networks significantly support the flow of patients and help the overall delivery of healthcare within the system.

Collaborating at organisational and system level (Figure 6.4) does not only rely on building relationships and teamworking. At this level, it is additionally, important to consider aligning collaborative objectives with the wider healthcare system. This includes taking into consideration healthcare reforms and policy to support new collaborative services within the FICS.

> *"In primary care, you will have nurses and doctors and all sorts of other people who will have got roles and wishing that pharmacy must work with them as opposed to by itself outside the group. It has got to be a member of the team and must be for the benefit of patients and aligns to the wider objectives of the local area, than something that is standalone."*
>
> *RF_0021, Northumbria*

Aligning local area needs with national objectives is critical in supporting the overall ICS. The formation of larger collaborative organisations, such as STPs (Chapter 2, figure 2.3) demonstrates one way to support identification and alignment of care needs.

"So in terms of STP plans, there is a recognition now that we need a clear strategy around primary care and there is quite a lot of emphasis going into Western and the primary thing around primary care is around thinking about creating primary care hubs, which have within them lots of different services but there is also recognition that pharmacies could operate as the spokes."

GL_002, Devon

Forming strong collaborative links at organisational level requires the alignment of health priorities and organisations. Linking organisations in this way can produce a series of pathways to support and refer patients and healthcare professionals across the FICS.

6.1.5 Alignment

In order to produce and facilitate alignment between healthcare services and systems, it is important to focus on aligning organisations at service and organisational level (Figure 6.4). This alignment supports the formation of an ICS. At sub-service and sub-organisational level, it is important to recognise individuals' group understanding of healthcare priorities. Groups include key stakeholders, such as healthcare professionals and management teams. It is also important to consider the level of already existing collaboration between each organisation. Aligned priorities should be present through each level of the system (Figure 6.4) to support the FICS. Thereby, facilitating seamless healthcare for patients in line with local and national health priorities.

6.1.5.1 Interdisciplinary and Cross disciplinary Alignment

When focussing on middle management and service-level alignment (Figure 6.4), it is important to align healthcare professionals and stakeholders across sectors within the same and different disciplines. Data from two case studies suggested, one key factor to support integrated care in care homes is to align pharmacy teams within themselves and other healthcare professionals.

> *"I think it has got a good impact on multidisciplinary relationships, so we are able to work quite closely together. We have a new appreciation for what other healthcare professionals do. I think it has had an impact on our personal skills, as well we have developed really clinically, I would say and probably, consultation skills-wise because we have seen a large variation of patients."*
>
> *SS_08, Northumbria*

Building links and aligning priorities within professionals and across different professional groups is important, as pharmacists can build better links within the profession and across MDTs to support a better FICS.

6.1.5.2 Patient Centered Approach

Taking a patient-centred approach facilitates different care providers to focus on their goals and to align health priorities. The Northumbria case study (Chapter 4, 4.2) describes their service as arranging an ICS with patients at the core of their health priorities:

"Basically, rather than working in individual sectorial silos, the constant in healthcare is the patient. Patients are the one constant and my team operate throughout the health system, so it is all joined up. Therefore if you take those people and remember that the patients are the constant…the knowledge about the management of patients it would be no different - the acuity of their illness might be different but in terms of the big contribution that we could make, it would be similar whether it was on ward one at the emergency care hospital or if they were in a care home or at home."

KE_005, Northumbria

When presenting an integrated system, it is important to utilise the workforce to incorporate different healthcare organisations. One pharmacist stakeholder from the Northumbria pharmacy vanguard team describes looking at the patient in a holistic way to support a more integrated approach to care. This supports workload management, as patients can be referred to different healthcare professionals depending on their ailment and needs,

"I think sometimes that is the barrier we have previously had that we are trying to break down with this integration model of working. I think you need to sort of look at the holistic needs of the patients and not just… I think when you are a pharmacist you kind of look at just the medicines and that's it and you can work quite independently, but I think with the integration role it means you are looking at how the patient is managing at home and do they need to do something about that."

SS_008, Northumbria

Taking a patient-centred approach to care supports different organisations to focus on one care priority and align their systems and services accordingly.

6.1.5.3 Patient Empowerment

Supporting patients to be empowered to take charge of their own care, will help facilitate the prevention agenda but also supporting them to be engaged with available services for their needs. This will help the alignment of the health system towards them and vice versa and potentially ensure patients do not 'fall through the gaps' of care. Additionally, it will support them to engage with the system and help them take charge of their own care.

"So, the development of this sort of MDT vanguard project… incorporates health trainers who can then go out in the community to reinforce to patients their role and responsibility in their own healthcare. So, that comes down to having access to that model and knowing when to refer patients to it. So, I think if you know, you have got the professionals in place and patients know how to access them then they will take some responsibility and self-refer and promoting, you know their own health and wellbeing."

SS_008, Northumbria

Stakeholders have a role to play in supporting patient empowerment. This allows patients to take control of their own care whilst obtaining 'healthcare professional facilitated self-care' guidance. This is a significant finding as it shows an area where pharmacists can provide help and support to the most vulnerable patients in primary care. This adapted role will also support the sustainability of the FICS by facilitating care provision in the largest area of primary care, the community.

6.1.6 Technology

Technology is evolving in the sector of healthcare and it plays a key role in each new model of care examined. Systems can be developed to support triaging, stratification and access to information assist healthcare delivery. These information systems can facilitate efficient processing of patients and services within an integrated healthcare system.

"We need to be more flexible in our approach. So, I definitely think there needs to be the use of the technology and how that is going to facilitate some processes we do at the moment to free up the resources."

UJ_003, Rushcliffe

Resource is an enabler to many services and can better support an already strained system. Workforce, as in the previous chapter, coupled with resource can provide a strong infrastructure to deliver healthcare services. One stakeholder from the community pharmacy provider team in the Rushcliffe case study (Chapter 4, 4.1) describes how the use of technology in the future can support a strained workforce especially during a politically tumultuous time.

"There is a big, big workforce issue out there you know there are vacancies left, right and centre and with Brexit coming, we don't know, as everyone is uncertain. We don't know what that might mean for registered nurses for example. So, I would say technology and workforce is a worry, but I think technology is probably the answer to the workforce issue, but that is what the future looks like."

RN_004, Rushcliffe

In terms of patient care and supporting the transfer of care, technology is available to track patients' clinical data and generate patterns to support

clinician recommendations. For example, the eMAR technology mentioned in the Rushcliffe case study (Chapter 4, 4.1) can track patients' weight, blood glucose and INR's through reminder functions. After imputing the data this information can be sent to the GP practice for review. This enables clinicians to have full visibility of the patients' clinical profile overtime which can better inform medicines management and overall care.

Current issues faced are due to the incompatibility of different systems across primary care. One stakeholder in the commissioning team from the Rushcliffe case study (Chapter 4, 4.1) describes three entities involved within the care home scenario (care homes, community pharmacy and GP practice). However, due to the difficulties in interfacing different IT systems, the transfer of data becomes difficult. They also go on to describe the need for data sharing certificates to support data exchange. Access to data is described in more detail later in this chapter (Section 6.1.6.3).

> *"The multiple and one can only imagine the number of different IT systems which were at play within our local health network… they don't always interface with each other so even when you want to data share you can't, or it becomes very, very clumsy… It is up to the providers to create the safe environment for data to move around."*
>
> *SA_0028, Rushcliffe*

Technology is a key requirement to support the 'future' FICS. It has the capabilities to triage and stratify patients more efficiently through the

healthcare system. However, the case studies show that the key issues of IG, data sharing and interface alignment arise alongside the implementation of new technology.

6.1.6.1 AI Technology

Commented [YK5]: Change to artificial intelligence

When discussing technology with stakeholders, potential future technologies and needs were discussed. Future proofing the way data is carried, and ownership of data was of particular interest. Having patients responsible for their own care and carrying their data on a smartcard was suggested by one stakeholder from the commissioning team in the Rushcliffe case study (Chapter 4, 4.1). This would enable the patients 'smartcard to have access to every interface across the healthcare systems allowing quick access to relevant information, such as allergy status.

Artificial intelligence (AI) was an interesting technology raised with stakeholders. As it is a fairly new technology but as it is commonly used by Google®, Apple® and Amazon® it is not so far removed from use within the NHS. The underpinning typology of AI technology is its ability to undergo 'machine learning' and therefore each scenario it will come across will add to its database of knowledge. One GP stakeholder in the Rushcliffe case study (Chapter 4, 4.1) describes its place within primary care, supporting clinical interventions.

> *"The interface between the patient and the GP practice or the patient and A&E. Where before attendance, the patient requests…in the future scenario… the patient will request an appointment at the GP and fill in an online proforma which with AI may intervene actually 'a sore throat without a high temperature usually gets better in 97% of cases' click a link if you want the evidence base or pop down to the pharmacy and get some paracetamol… there is a massive opportunity to introduce it there, because patients are much more ready for AI computer-led, smartphone-led technologies than my GP colleagues ever will be."*
>
> *SA_0028, Rushcliffe*

An alternative way whereby AI can be introduced in healthcare was discussed in its support in risk stratification. Running AI systems through patient databases could assimilate and categorise information in accordance with its programmed algorithm. Stakeholders describe its use within the urgent and emergency care setting and in frailty. This will help manage resource and workforce to identify and support patients who are likely to be admitted to secondary care sooner. In addition to gathering data on service use to potentially redistribute resource more adequately.

6.1.6.2 Linking Systems

Data sharing, IG and General Data Protection Regulation (GDPR) are important concepts to consider when linking technology systems in healthcare.

Stakeholders highlighted these topics as issues during service development and provision. Accessing patient data through technology systems was an issue faced by all case studies. One stakeholder from the commissioning team in the Rushcliffe case study (Chapter 4, 4.1) describes their integrated system as being only in primary care and not incorporating secondary care due to the lack of data sharing agreements.

Data security and transfer of data was an important topic and although the Rushcliffe case study (Chapter 4, 4.1) describes an electronic system embedded within care homes, the transfer of information to other MDT's is completed by the traditional approach of fax machines. Therefore, protecting patient data and confidentiality is still at risk when transferring information. Currently, there is not a solution for this, but one non-pharmacist stakeholder from the eMAR team in the Rushcliffe case study (Chapter 4, 4.1) acknowledges this issue and provides a potential solution.

> *"So, I definitely think we need to find a way of transferring data securely… I think NHS mail is definitely a work towards… because obviously that is a secure way of transmitting that information but not every care home has that, not every…you know… it is how do we find that safe ground."*
>
> *PO_0031, Rushcliffe*

Issues around technology spanned all three case studies. Lack of technology to support cross platform sharing and lack of data sharing agreements were

perceived as a barrier to forming an ICS. However, having this type of technology was welcomed.

The approach taken in the Rushcliffe case study (Chapter 4, 4.1), around technology platforms is to support one technology system across each sector of the healthcare system, therefore data is aligned and can support patients regardless of where they enter the healthcare system.

> *"Our approach locally is to encourage as many people as possible to migrate on to one single platform, in our case in Rushcliffe, SystemOne and our hope would be that our secondary care and other provider colleague adopt first of all electronic systems… But you know the big day for me from medicines management will come, when the hospital has an electronic prescribing system which interfaces with our clinical prescribing systems and if hospitals make a change in medication it goes on to the patient record in the GP surgery as well. The scope for error at the moment is just enormous."*
>
> *SA_0028, Rushcliffe*

Evidence shows that technology links systems, organisations and services to provide a platform for an ICS. Pharmacists will need to embrace technology in order to be involved within the new models of care and future FICS's.

6.1.6.3 Access to Data

Technology and linking systems are imperative to supporting the FICS. However, although systems and links may be present, access is a key gatekeeper in using the data to support patient care. One stakeholder describes, having access to health information can provide better quality of care. However, it is important to align this access to the wider healthcare goals of the FICS.

> *"Having access to maybe their health records just to provide better quality of care. But I think you need to have a wider healthcare professional goal, we need to recognise, that some patients we want to refer to other healthcare professionals…we want to make that as seamless as possible."*
>
> *SS_008, Northumbria*

Access to data was an important theme across all case studies. One commissioner stakeholder from the Rushcliffe case study site (Chapter 4, 4.1) describes opinions about sharing data across organisations. They describe the need for changes in behaviour to facilitate opening data sharing channels in support of an integrated platform. Data sharing needs to be in the best interests of patients and the wider healthcare community,

"It is that behavioural change that we need across each organisation and I don't think we are there yet, because I think everyone is a bit like 'oh this is my data I am not going to share that' do you know what I mean…and it is until we change the mindsets of the different areas I think".

TR_0029, Rushcliffe

"I would hope that there would be sort of a shift in how people view community pharmacists, in that they will allow them more access to patient health records and it will start to become the norm."

SS_008, Northumbria

Overall, as discussed, the findings show technology and the legislative IG requirements play a large role in supporting integrated care. Each case study displayed a version of access to a patient management system. This is important, because it shows each of the new models of care discussed in this study recognised the future to involve technological support.

6.1.6.4 Access to Services

Patient access to services are significant to building an integrated healthcare system. Healthcare professionals also require access to referral services in order to support transfer of care. One pharmacist stakeholder from the Northumbria Vanguard pharmacy team describes this as an important tool to be able to have a quicker turnaround of patient care.

Whilst it is important to support the flow of patient information, it is also important to recognise where the accountability lies when supporting the transfer of care of patients and their information. Data suggests that with an aligned system consisting of easy access to services, such as technology and referrals, the end goal for patient care can be achieved more efficiently and safely, for example with tools, such as auditing and tracking,

> *"I think probably the support we have got. So, she is always able to refer to us, whereas the CCG pharmacist just has themselves they don't have any peer reviews. So, any that she finds she needs a second opinion on, or she needs anything actioned quite quickly because we are prescribers here, it means that she has got quick access and doesn't have to go through GPs and can get everything sorted via the GP pharmacists here."*
>
> *SS_008, Northumbria*

Whilst patient empowerment, collaborative services and technology are important to supporting the FICS. Providing access to these services is the most significant finding. If patients are not able to access services within the system, then collaborative efforts and technological solutions are meaningless.

6.1.6.5 Embedding of Services

Services play a large role in supporting the transfer of care of patients. Many medicines-related services support patient referrals, triage and integration

back into community from secondary care. It is imperative that new services are embedded within the primary care network in order to reach its full potential. Once embedded, the service provides an area for efficient, effective patient care (depending on the type of service). Findings suggest it is not sustainable to have weak funding and have a service available for a short period of time. This is because it can cause disengagement of patients to other services, additionally lack of utilisation, if the service isn't well advertised.

6.2 Care Pathways

Figure 6.6 shows the theme of care pathways and its relevant associated sub-themes. These associations were guided by the data. This section presents findings of care pathways and its relationship with the sub-themes, in the context of the FICS. Figure 6.7 demonstrates the focus of care pathways within the FICS. The focus of 'care pathways' are mainly located within the service level, with slight crossover into the middle management level. Many of the care pathways and associated themes are within the service level, due to sub-themes such as care, transfer of care, triage and stratification are directly linked to service delivery.

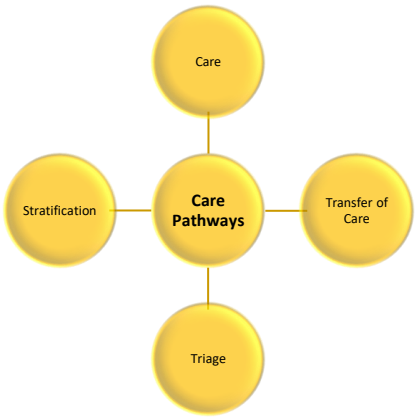


Figure 6.6 Theme of Care pathways and associated sub-themes.

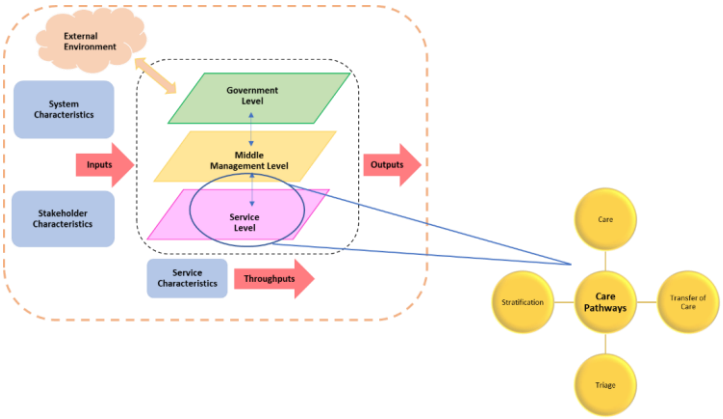


Figure 6.7 Representation of where 'care pathways' fit into the Open System.

6.2.1 Care

When considering the theme of care within the case studies examined, it can be interpreted as a process. Existing processes will not be examined because the new models of care program focussed on embracing new processes and ways of working. In this context, care is discussed in relation to its support in health delivery, from an operational point of view, such as supporting patient flow. The care processes presented can be divided into three types:

continuous care, seamless care and shared care. Findings show each of these care pathways contain key themes, which the data has shown to effect care delivery in either a positive or negative way. Continuous care is when the patient is under a regular team, either in primary or secondary care. The care which is provided is ongoing and, if needed, specific referral pathways are provided in order to support the patient journey to successfully receive the right treatment. This theme will not be discussed in depth as referral pathways are already present and embedded within current healthcare systems.

6.2.1.1 Seamless Care

Seamless care is related to the patient's journey, it is used as a description where patients are provided with a continuous, unimpeded route, to support their required healthcare needs. It also offers an efficient, smooth pathway, facilitating better access to services and improved use of resources. The aim of seamless care is to facilitate a holistic approach to patient care, having a seamless route for patients, supports the formation and sustainability of an efficient integrated healthcare system, in addition to acting as a small component of stability to the dynamic open system.

Barriers to seamless care occur when patients transition from one care setting to another, for example, when going from secondary or tertiary care to primary care. Although it is necessary to change care settings, moving from one area to another provides opportunities for many forms of

miscommunication between healthcare professionals and stakeholders involved in patients care.

Communication was a key sub-theme of seamless care. The level of miscommunication was dependent on the complex needs and requirements of patient care. Issues arise, when patient care is dependent on adequate communication. Incorrect transfer of vital information can increase the risk of inadequate and inefficient care provision, in addition to disruption of seamless care delivery. For example, ineffective communication of medicines management. Patients who have been admitted to hospital and required changes in medication. For example, hypothetically, a patient with a history of hypotension who has been admitted to hospital due to acute syncope. During their secondary care admission, their anti-hypertensive medication had been reduced and the patient is discharged home. If this patient's information is not adequately communicated to the different care providers involved in their care It could result in possible relapse of the patient, putting them at risk, and lead to a possible readmission into secondary care.

This potentially avoidable admission could have a large care and cost implication on the patient and the healthcare system. This shows communication as a key factor to support all types of care delivery.

"I vented my frustration of why patients don't see that change in provider therefore we shouldn't see a change, so if the patients are in hospital, the hospital pharmacist should speak to the community pharmacies irrespective who they work for and it should be seamless care and everyone should speak to each other as one team."

CR_002, Northumbria

This reiterates the importance of interdisciplinary and multidisciplinary communication. Building the relationships and communication pathways reduces potential risks patients could face in addition to providing a supportive seamless pathway for patients and healthcare delivery.

6.2.1.2 Shared Care

Shared care involves the use of the MDT, using various healthcare professionals to 'share' the care of one or a group of patients. This supports patients along their care journey, to ensure patients receive the right care at the right time and in the right place, with specialist provision if required. Each case study described 'shared care' in various ways. The Northumbria and Devon case studies (Chapter4, 4.2 and 4.3, respectively) describe the use of independent pharmacist prescribers to support patient flow and shared care initiatives within primary care. One pharmacist stakeholder from the community pharmacy provider in the Northumbria vanguard case study (Chapter 4, 4.2) describes the synergistic relationships between the

independent prescribers and GPs to support a larger population of patients to receive the care they need at the right time.

> *"I would think so, and I think moving forward obviously they have got what they are using their independent prescribers for… so when the GPs… each morning when the GP gets their workload list and also their home visit list. The GP is filtering what his independent prescribers can pick up…the surgery…they are actually triaging patients to see the independent prescribers instead of seeing the GPs as well."*
>
> *CR_002, Northumbria*

This explores an interesting concept of 'workload lists', providing a specific list for each healthcare professional can help guarantee each patient is seen within a timely manner. The primary care workforce featured in the Northumbria case study (Chapter 4, 4.2) consisted of GPs, independent prescribers, nurses, pharmacists and other allied healthcare professionals. Having this infrastructure was critical to providing integrated care pathways and facilitating the level of care patients receive.

At sub-service level, evidence across all three case studies describe the need to support holistic patient care, including both health and social care. One stakeholder from the Northumbria case study (Chapter 4, 4.2) describes discussing both clinical and social requirements within their consultations with patients.

"So now as part of our consultations, it is not just a basic medication review, it's how are you getting on at home, do you think you would benefit from any help and we would just give examples of how they could benefit from…so you know are you managing washing and dressing yourself, are you a carer for your partner or do you benefit from formal carers, would you like someone to come and see if you need any falls sensors or pendent alarms or extra funding…because there is lots of funding that is unclaimed that patients do not know they are entitled to...It is all one single point of access number now, so they just have to call this one number and they are open to a range of services."

SS_008, Northumbria

Patients require a holistic approach to care delivery with ease of access to services. This includes making patients aware of their entitlements, available services and individual support.

Shared care extends to involve patients next of kin and family members within patient care (consent dependent). One pharmacist stakeholder from the Northumbria vanguard pharmacy team describes the level of errors potentially made when patients and counterparts are not actively involved in relation to decisions involving their care.

"We don't give them the opportunity for them to be involved in their decisions, so no shared decision making and a lot of the time there are errors. Have you seen the Sheffield report on errors? The 257 million errors made ... well 41% of them were from care homes so you know it's a big issue."

RF_0021, Northumbria

Care pathways are important 'roads' which are required to be built, when forming an ICS. Continuous, seamless and shared care pathways are all characteristics required to support the patients journey and overall internal flow of the system. Providing a seamless route of care patients, with MDT input, increases access and provision of services. This is significant when supporting the sustainability of the FICS.

6.2.2 Transfer of Care

Transfer of care is the movement of patients through the health system. The decision to transfer patients to and through different care providers is based on various processes. These processes encompass ideas of 'triage' and 'risk stratification'. Stakeholders described the importance of, where patients 'land' in the healthcare system and this will depend on how to effectively manage them. Management of patients in a health system relies on effective triaging through pre-existing or newly developed care pathways, using appropriate referral channels.

6.2.3 Triage

Triaging of patients uses tools of stratification to support the transfer of patients to appropriate areas of the healthcare system. From the results it became apparent that triaging can be done by a healthcare professional or supportive technology. Many stakeholders described the need to triage patients to other care providers within primary care due to the lack of availability of GP appointments. One pharmacist stakeholder from the community pharmacy provider in the Northumbria vanguard describes the role community pharmacy and pharmacist independent prescribers can play in supporting primary care triage,

> *"I think there is a massive opportunity for community pharmacies to actually be involved in something similar to that. If we had independent prescribing pharmacists who had a close relationship with the surgery, they could divert people to our pharmacists instead of clogging up an appointment time."*
>
> *CR_002, Northumbria*

Using algorithms to support trained staff in triage is not uncommon. NHS 111 uses a web pathway built from a series of decision trees to support effective triage. These pathways can be delivered as an ongoing training tool, in built into technology or as a clinical tool for example CHADS2VASQ2 scoring, which identifies the risk of stroke in patients with atrial fibrillation (Sauer et al., 2011). Some GP practices have trained their reception staff to support triaging

of patients. Trained staff are given an algorithmic flow chart to follow and a list of services delivered by the community pharmacy. For example, the minor ailments (Pharmacy First) service. However, this requires knowledge of the community care services available to support triaging patients and transfer of care.

> *"Anything that the reception think that the community pharmacy can deal with, so because the receptionists have been trained, briefed on 'all these conditions can actually be referred to a pharmacist' so they have a training session and we are seeing an increase in footfall."*
>
> *CR_020, Northumbria*

This evidence shows that pharmacy services can support in transfer of care.

6.2.3.1 Referral

Referral pathways for patients provide an important route for patients to receive the right care, in the right place and at the right time. In addition to supporting care delivery by healthcare professionals, providing these pathways gives healthcare professionals a route to refer patients, for example, when patients require more specialist services. These pathways can provide a route for patients and healthcare professionals to access within and across each tier of the healthcare system. This facilitates the management of workflow and transfer of patients across the system. This is important, as it links in with developing appropriate collaborations and teamworking within and across organisations. Forming strong referral pathways could potentially

reduce a build-up of pressure within the healthcare system and therefore decreasing the risk of it collapsing. Primary care referrals can be obtained from any persons working within the healthcare field who come into contact with patients. The Devon case study (Chapter 4, 4.3) describes using many healthcare professionals to support referrals of patients with specific needs, for example mental health. In addition to opportunistic referrals which could be provided by delivery drivers for example,

> *"But most of the time in the surgery we are really good at referring people. If we find we can't help then we will refer them back to the GP, if they need a bit more specialist help or into Livewell, if it is sort of like psychiatric patients and we cannot help them, so then we will refer them on but we do try to tend to do them here ourselves."*
>
> *EA_0013, Devon*

Referral pathways are significant in relation to efficient and safe care delivery, patients can be referred by any care professional.

Findings from all three case studies suggest that in order to develop an appropriate referral pathway, designated roles for healthcare professionals are a positive step towards achieving this. Having assigned roles helps to provide an accountable officer to facilitate the patients journey. One pharmacist stakeholder from the Northumbria vanguard pharmacy team describes their specific role and how it plays a part within the referral pathway.

"My role is medication optimisation for complex, frail elderly patients, so we get referrals from various routes, we get frailty lists and we get A & E data. We get GP and other healthcare professional referrals and we largely base our visits and meds (medication) reviews on what we get through from other people. So, we do home visits fairly mobile for housebound and quite sick patients."

SS_008, Northumbria

When developing the referral scheme, difficulties in terms of lag time to see patients and levels of referrals proved difficult to manage initially. It is important to note that training in terms of referring and to whom is important when developing these pathways

"Initially quite a while, because we were getting a lot of referrals from the practices and we were developing the MDTs as well. There was less time to get these things done and because they were the low-risk patients, it was probably less of a priority compared to the high-risk ones we were getting through. So, she sent some at the end of June which have yet to be actioned. So probably about 4-6 weeks which I think is too long to be honest. So really, they should be done weekly when she sends them in even if it means asking a technician to go through them and sending me the ones, they think they need something done with them."

SS_008, Northumbria

All case studies show the development of referral pathways are important to facilitating the movement of patients through the FICS. Triaging is an important tool which can be used to decide which referral pathways patients follow. There is also evidence that stratification is an important decision-making tool which can be used to support the triage of patients.

6.2.4 Stratification

Stratification is a service characteristic which is defined by identifying groups of patients through a type of scoring system. The score can relate to the area of focus. For example, one case study used a scoring system to identify frail and elderly patients. At system level, stratifying patients can facilitate highlighting patients who are low, moderate or high-risk in terms of their

disease characteristics. This process can assist triaging and discharging of patients from care providers. One stakeholder from the community pharmacy care home provision team in the Rushcliffe case study (Chapter 4, 4.1) describes stratification as a useful tool to support services in a resource deprived healthcare system.

> *"Well risk stratification is definitely useful to be honest with you. So, if you have got limited resources you can say you can make sure people get to the right places. So, you could say things like NHS 111 actually do that, a lot of that is done with algorithms you know and flow processes, so it doesn't feel so different to that. So yeah, I think that is ok. But yeah there is obviously a risk it puts people out of jobs."*
>
> *UJ_003, Rushcliffe*

Stratification processes support the FICS, by providing provisions for structured decision-making tools to be used to support the transfer and flow of patients. 'Correct distribution' of healthcare professionals across the system is important so there is an adequate workforce provision in areas where most needed, for example, in primary care.

There is an important link between stratifying patients and workforce infrastructure (Section 6.2.3). Using various trained, allied healthcare professionals, in areas such as podiatry, and physiotherapy, a larger number of patients can be stratified quicker, reducing potential risks of patients being escalated to secondary care or tertiary care (Section 6.1.1.2). One pharmacist

stakeholder from the Devon case study (Chapter 4, 4.3) describes access to various healthcare professionals and stratification tools as a combined support to manage patients better, allowing patients to receive the correct care at the correct time, by the correct practitioner.

Expanding the primary care team (GPs, nurses, community care, pharmacists, all other allied healthcare professionals), supports a stronger workforce infrastructure within a resource-poor environment where funding is difficult to obtain. The variation in workforce also provides an opportunity for various expert, specific stratification processes to be used, for example specialised nurses trained in dermatology specific mole mapping. This provides an evidence-based approach to personalised care management.

6.2.5 Transfer of Care and Population-based Health

Patient management in primary care is complex and varied. Community care provides care to patients suffering from acute and chronic conditions in large numbers. Therefore, some ways to combat this are stratifying patients and treating them within populations. Population-based healthcare facilitates high-quality healthcare delivery in large volumes. A secondary aspect of this is that it allows for strategic planning of localised healthcare services. These services can provide better distribution of funding to support local communities.

All of the cases involved population-based health. Although care provision is described as patient-centred, findings show incentivising care provision through contractual agreements supports better management of patients and

transfer of their care. Additions to health organisation contracts have been used as a focussed way to target certain populations. These contracts provide financial motivations for healthcare professionals to stratify certain groups of patients. Nationally, these targets are known as CQUIN targets. However, certain localities have localised targets, for example, frailty in Northumbria. Chapter 4, section 4.2; describes the elderly as the majority population base in Northumbria. GPs had an addition to their contract to identify and review patients who were in the frail risk category. These reviews aimed to highlight frail patients and ensure they do not become worse as a result of their care. It became a target because if these patients became more ill, their preventable healthcare status could negatively impact an already pressured secondary care sector. Each GP within the area had frailty targets to meet and a stratification scale to support identifying these types of patients.

"We want them to stratify patients who need them (medication reviews). For example, one of the things we are looking to push is actually, could you imagine, if you got every patient who came to a care home who had a medication review at the point of coming and if you just did that for five years, given the turnaround of care home residents, you would actually be in a much better situation...there are a lot of systems out there but until we have joined up a national way of identifying high-risk patient's… that is why we have left it up to local teams to develop what works best for them."

RF_009, Northumbria

Forming collaborative links within and across organisations are significant to support the transfer of care of patients and evaluating services where stratification has been successful could produce nationally commissioned tools to facilitate the transfer of patients through the FICS.

6.2.5.1 Identifying Patients' Levels of Risk

There are three levels of risk which have been explained within the Northumbria case study (Chapter 4, figure 4.8); low, moderate and high-risk patients. Findings suggest patients who are within the middle tier (moderate risk) are at increased chance of rapid escalation either to become a high-risk patient within primary care or enter secondary care. One commissioner stakeholder from the Rushcliffe case study (Chapter 4, 4.1) describes the

patients within the middle tier and why it is important to focus on 'prevention' care of these patients.

> *"Well it is your middle tier really... the middle tier are those people living with long-term conditions, who don't yet have a high need or high demand on the system…we have traditionally focussed on those who frequently go to hospital, frequently call ambulances. It is the next group who we want to prevent getting up to that level and that is where all of these interventions are so important"*
>
> *SA_0028, Rushcliffe*

Care pathways are important roads to be built within the FICS. The data presented in the section above describes the important features these pathways should have. Findings highlighted the importance of seamless and shared care agreements. In terms of facilitating the transfer of patient care, triage and stratification provide a route for patients to follow in order to seen efficiently and by the right clinician. These routes and processes provide a proportion of stability when sustaining the FICS.

6.3 Patient Flow Management

Acknowledging and facilitating patient flow was an important theme in relation to forming an ICS. Throughout this chapter, the flow of patients and their paths through the system have been discussed. Setting a trajectory for the patients' journey through the system is an important focal point. This path can support the identification and needs of the system. Providing areas for

service development to produce a seamless route to support patients. Figure 6.8 shows the position of the theme 'patient flow management' within an open system. It is placed predominantly within the service level with some overlap into the middle management level. The theme of 'patient management flow' and its sub-themes, 'population-based flow' and 'prevention of escalation' (Figure 6.9). The following section will present the data of the emergent theme and sub-themes.

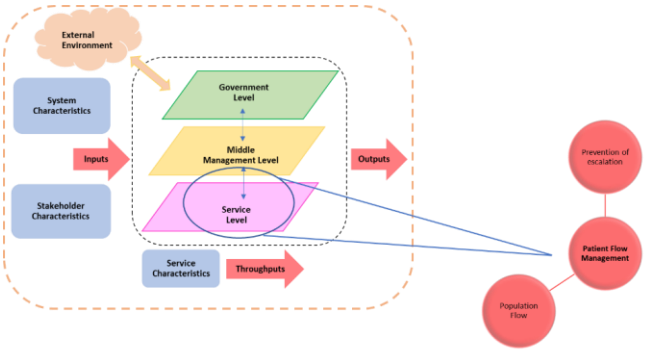


Figure 6.8 Position of patient flow management within an Open System.



Figure 6.9 Patient flow management theme.

The Northumbria case study (Chapter 4, 4.2) discusses services based in an integrated care model. This type of modelling is integral to identifying and supporting the management of patients through the system. In order to appropriately manage patient flow, an understanding of processes which affect the management is required. For example, one chief pharmacist describes the cognisance required of the discharge process to support better and safer flow of patients and their care.

"Think about a patient being discharged, then think about what that patient is going to land like after they have been discharged from hospital. So, they have a much better understanding about primary care and general practice, so they know what interventions to make to make that transition to hospital and primary care as safe as possible and obviously it also impacts on things like flow within the hospital."

KE_005, Northumbria

Patient flow is key to improving patient safety and reducing pressure within the system. This section focusses on key factors which effect patient flow and its contributing attributes. Many processes are involved and contribute to patient flow. One pharmacist stakeholder from the Devon case study (Chapter 4, 4.3) describes the importance of patient flow and why it is an important factor which supports a sustainable FICS.

"It is all about patient flow about how they hit the system and where they hit the system and making sure they hit an appropriate spot with the lowest possible acute, you can get them into and get people to operate at the top of their license so if we can do that you can create a sustainable system…we keep forgetting that and we keep thinking about our own little organisations and all the pockets but actually it is about how we flow people through the system is the fundamental."

GL_002, Devon

Training and supporting clinicians to work at the top of their licenses provides a larger pool of a qualified, experienced workforce. This workforce infrastructure can support organisations in both primary and secondary care to help manage the flow of patients in both a population health direction and prevention of escalation to higher-tier hospital facilities.

6.3.1 Population-based Flow

Population-based healthcare is important when managing the flow of patients in large volumes. There are many population healthcare directives supported by local authorities and other healthcare organisations. Such as, sexual health screening and cardiac clinics funded by NHS England and local governments (Chapter 2, figure 2.3). In the case studies there are many 'micro contracts', which provide arenas for duplication of services and inefficient service delivery.

At service level, healthcare services focus on small groups such as those who suffer from high-risk diseases, thereby leaving the larger group of patients in the low-risk category open to potential avoidable escalation. This is due to lack of appropriate self-care support and education. Lending to a potential increase in patients suffering from irreversible disease states, potentially further impacting the healthcare system.

"I think from my point of view it is about population health isn't it, at the end of the day...I think we have got too many micro contracts where we actually focus too much on a very small minority of patients, rather than looking at the population as a whole. So, from an algorithmic point of view… it goes back to your triangle where actually we focus a lot on the high-risk patients but what we don't do is focus on the bottom tier…"

TR_0029, Rushcliffe

There is a need to move to a more population-based health focus in primary care. Many stakeholders from each case study examined, have clinician and commissioning power. Therefore, providing evidence of the care quality and financial implications of a non-population focussed health system.

6.4 Service Management

Services which are appropriately managed support the formation of an efficient FICS. Figure 6.10 shows where the overall theme of 'service management' emerged in the open system. 'Service management' was discussed at the service and middle management level. Service management can be related to a number of sub-themes (Figure 6.11). Effective service management is a key construct in the development and sustainability of the FICS.

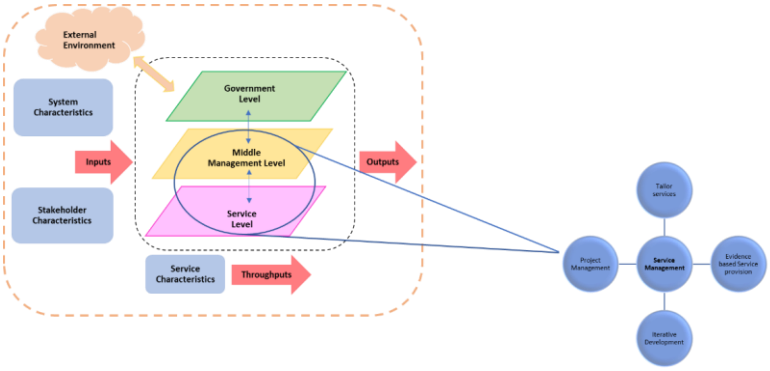


Figure 6.10 Representation of where 'service management' fits in the Open System.

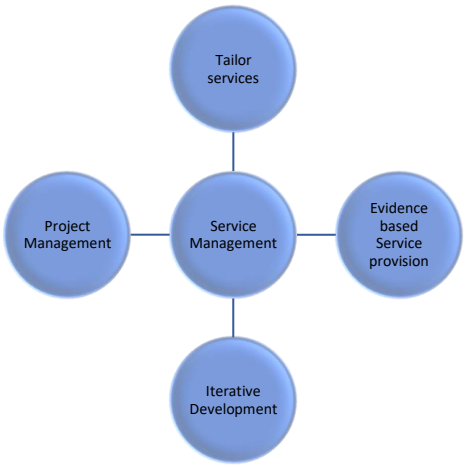


Figure 6.11 Theme of Service Management and associated sub-themes.

The following sections explore tailoring services, iterative development of services, evidence-based provision and project management in association with service development and management. These appear to be critical to the support and provision of population-based healthcare and effective flow of patients within the FICS.

6.4.1 Tailored Services

Tailoring services is critical to service management. It incorporates ideas of providing needs-based services to specific areas, localities or populations. Geography, population needs, workforce availability, training needs, technology, behaviour and relationships are key determinants of tailoring services. For example, in a former mining area, a large percentage of the population suffer from Chronic Obstructive Pulmonary Disease (COPD) and therefore it might be appropriate to direct funding and infrastructure to support COPD clinics. Within the open system, geography and population can be considered to be system characteristics. Workforce and technology are service-based characteristics and behaviour and relationships can be considered as stakeholder characteristics, all of which have been discussed earlier in the cross-case analysis chapters (Chapter 5, 5.4 and Chapter 6, 6.1). Taking into consideration these characteristics, will support the production of a tailored service. This is important, because these personalised services can support the flow of patients when large volumes are concerned, such as population-based epidemics. On a group level, these services can collect data to potentially monitor patients and their conditions to prevent escalation into secondary or tertiary care. For example, during episodic diabetic ketoacidosis or hypercapnia associated with community-acquired pneumonia, whereby ketone and carbon dioxide levels are respectively monitored.

All the case studies focussed on developing services which provided a personalised approach to support specific patients and group needs. The Rushcliffe case study (Chapter 4, 4.1) discussed and the use of an eMAR

system which allows for a personalised function to support individual administration needs for patients. This function supported an important aspect of the patient experience and therefore their overall care. Additionally, due to the technology capabilities of the system, these specific needs were able to be transferred with the patient each time they moved and flowed through different areas of the healthcare system (primary care, secondary care and/or intermediate care facilities).

6.4.2 Using Evidence to Support New Services

The development of many services required evidence to support their initiation. The new models of care program supported local development of services. These services were generated from needs-based requirements. Each case study researched and collected evidence on the needs and requirements of their localities. This evidence supported service development and highlighted how these services facilitate the patients' journey. One pharmacist stakeholder from the Devon case study (Chapter 4, 4.3) describes the importance of understanding the context of the area in terms of healthcare need and geography.

"Unless we can sort out primary care, a whole system is in peril and I think what you are beginning to see is this is not novel to Plymouth. Now it is beginning to manifest itself in other parts of the country as well. That is the context for new models work and why you see quite a lot of new models work going on in the western part of Devon and in particular Plymouth because there is significant crisis that we have to play in to. So, I think you have to understand that context to be able to write about anything that is going on within it."

GL_002, Devon

The Devon case study (Chapter 4, 4.3) describes evidence generated from previous pilot studies supported the development of the project on a larger scale. The published findings became an important component towards commissioning and overall adding to the national body of evidence to support development of care home services.

"So yes, we know that the care homework in Northumbria... We know that Shine amongst other publications have led to NHS England commissioning the care homes work, because you know it provided robust evidence about pharmacy and medicines optimisation is good and it can reduce risk and improve quality and all that…reduce cost."

RF_0021, Northumbria

In relation to replicating the services elsewhere, having data from the iterative development of the service supported the roll out of the service in another places. This is important as it would support problem solving during the replication process, in addition to adding to the knowledge of service development if new challenges were faced.

6.4.3 Iterative Development

An important aspect of service development and management is continuous iterative development of services. Continuously overlooking the service and monitoring its evolution gave an insight into the organic growth of the service, but also the ability to keep the service in line with key objectives. The Devon case study (Chapter 4, 4.3) described a service, whereby the community pharmacist was used to support the review of low-risk elderly care residents of care homes. At the inception of the service, the community pharmacist was given access to all GP data in order to support their reviews. However, it was quickly noticed that all the information was not required to support the review of low-risk patients. Chief pharmacist stakeholder describes using PDSA (Plan, Do, Study, Act) cycling to monitor and support the growth of the service. This format allowed them to identify issues with the service and modify accordingly.

Supporting the management of services indirectly supports patient flow and system stability. Factors which facilitate the management are processes such as tailoring and continually monitoring services.

6.4.4 Project Management

Project management is a key function which helped shape the development of the services and their continuation. Project management was an important tool used to support service development and link into patient flow. Development and organic growth of the services examined showed to support and facilitate better patient flow within the case study localities. This was affected by the level of project management and consisted of management strategy, leadership, relationships, understanding the roles of others, and passion. Relationships have been discussed in depth earlier within this chapter (Section 6.1.1). The following paragraphs focus on the sub-themes of management strategy, leadership and understanding the roles of others. They are discussed in the context of facilitating the FICS.

6.4.4.1 Management Strategy

Management strategy was important in all three cases. It was important to arrange meetings between the parties involved in service development to set key common objectives. Secondly, arranging regular meetings and contact with members of the teams added to building rapport and cementing relationships. This strategy also allowed stakeholders (at service level) and organisations (at system level) to be updated on the successes and pitfalls of the services as they developed. This gave an opportunity for discussions on strategies to overcome issues and monitor the services progression. Monitoring is an important part of iterative service development and will be discuss further later in this chapter (Section 6.5.2). Having a management strategy also devolves recruitment responsibility to those directly involved in

service provision. This is important, as described in the previous chapter (Chapter 5, 5.4). A strong infrastructure and workforce are critical to service sustainability and forming a strong FICS.

6.4.4.2 Leadership

A clear leadership strategy and leader to deliver and manage services is critical to their success. It also allows for integrated parties to be in contact with one person or team who are aware of key objectives. One pharmacist stakeholder from the Northumbria vanguard pharmacy team describes leadership as essential to any 'new service'.

> *"I think it is essential. I think you need any new service like this, needs managing, and I think you can grow in silos. But if you are going to get a wholly integrated service where you have got secondary care, primary care and community pharmacy working together you probably need some sort of leadership there."*
>
> *RF_009, Northumbria*

The Devon case study (Chapter 4, 4.3) describes lack of leadership as an interruption in supporting change. Effective leadership is an important component to service management and delivery.

6.4.4.3 Understanding the Roles of Others

It is important to understand the roles of others within the team and in the wider context of the organisations involved in the service delivery and

acknowledging the capabilities of others to understand where their roles fit in the service. This facilitates the provision of seamless, sustainable service.

The case studies showed various models that used employees from different backgrounds to support service delivery. Some employees were healthcare professionals and some from local authorities and volunteer organisations. The variation of workforce as described in the previous chapter (Chapter 5, 5.4.3) enables better patient flow by referral to the correct practitioner or social care representative. One pharmacist stakeholder from the Devon case study (Chapter 4, 4.3) describes the importance of understanding the roles and the workflow in order to best set referral pathways to support the system.

The Northumbria case study (Chapter 4, 4.2) describes the use of charity organisations to support social care services for loneliness. This was interesting as it proposed a referral pathway from MDT meetings to volunteer organisations. In order to support patients who were in need of this specific service. Joining up health and non-healthcare services to support the patient journey enables patients to receive the right care by the right professional.

"We had spoken to the Red Cross and they had explained to us what they did. So by understanding what they did we could have a conversation with them about how we can refer people... and as the relationship got better you know we... got to know the team better we could be more specific about what we were sending patients, what referrals we were making… I think the Red Cross up until that point locally didn't really understand what pharmacy did... we would happily start building those relationships and be able to understand each other."

RF_0021, Northumbria

Additionally, discussing pharmacy services and provision with local authority groups such as Healthwatch[4] has helped the public to be aware of what services are available to them to receive. This reiterates the importance of access and awareness of the existence of available services (Section 6.1.6.4).

Managing services is a key element to supporting healthcare delivery and service provision. Sub-themes such as tailoring services and project

[4] Independent group representing the views of persons who utilise health and social care services, making sure their views are represented Healthwatch. (2020). *What we do* [Online]. England: Healthwatch. Available: https://www.healthwatch.co.uk/what-we-do [Accessed 20/06/2020].

management emerged from the data as significant findings which facilitates the formation of the FICS.

6.5 Quality and Safety

Quality and safety are essential elements in service development, patient-flow management and the overall formation of a safe and effective FICS. Figure 6.12 shows a diagrammatical representation of the open system. Quality and safety provision mainly occur within these areas of the system. The new models of care program required services to provide evidence of quality and safety measures. Therefore, the diagrammatical representation of quality and safety crosses into the external environment.

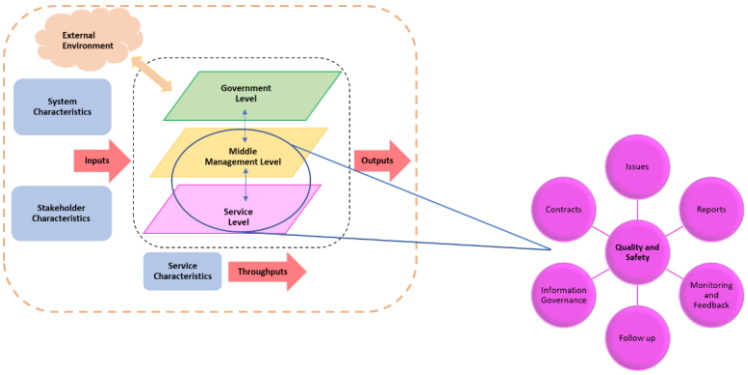


Figure 6.12 Representation of 'Quality and Safety' in an Open System.

Quality and safety attributes have played a large role in their service development and continuation. Auditing, reporting systems, use of technology, monitoring and providing feedback in relation to quality and safety (Figure 6.13) are discussed below.



Figure 6.13 Quality and safety and its associated sub-themes.

6.5.1 Reports

Reporting and auditing are common practices within healthcare settings. This supports identifying trends in stock usage and medicines wastage and can be used in clinical settings to monitor safety. One non-pharmacist stakeholder from the eMAR team in the Rushcliffe case study (Chapter 4, 4.1) describes how the reporting system allowed healthcare professionals to identify issues in management of patient care.

"There are loads of reports. An interesting one I like to look at is meds (medication) variance reports…. that was a really good report to pull off and explain to the prescriber… they were given Zopiclone but he (care home resident) is a bit of a wanderer so… at 9 o clock they were having it not at half 11 or 12 so that's what was keeping him sleeping in all morning."

SN_0011, Rushcliffe

The Rushcliffe case study (Chapter 4, 4.1) demonstrates the use of an automated reporting system as part of the medicines administration technology. This supported healthcare professionals to deliver good quality service and monitor safety.

"I suppose viewing, looking at the reports, it is a lot easier to see, you know, missed medication, how many there has actually been rather than looking at each paper MARs. Also, I find most of the MARs are legible as well, whereas with paper MARs it does become very confusing at times..."

DA_0035, Rushcliffe

Auditing is a requirement in many healthcare environments, to check the quality and safety of service delivered. One member from the community pharmacy care home provider team describes using an electronic system supports better visibility of what is happening in care homes.

"More visibility, better audit trails. From our perspective less wastage. It's just getting to grips with changing which is the issue."

RN_004, Rushcliffe

Using reports to facilitate medication safety is an important tool for service development.

6.5.2 Monitoring and Feedback

All case studies (Chapter 4) show that monitoring services and giving feedback were significant to the sustainability of these services. As described, in an earlier section iterative development and continual support (Section 6.4.3), is important to facilitate the evolution of services. The Rushcliffe case study (Chapter 4, 4.1) describes the challenges faced when feedback was unavailable or misunderstood. The Northumbria case study (Chapter 4, 4.2) discusses the importance of giving feedback which supported the learning and development of the community pharmacist within the service.

"I offer some feedback to her based on the decision she has made, 'we would continue this in this case because of x y z' just for her learning as well and development. I would action anything she suggests, and I agree with. It doesn't normally go through a GP and then if there is anything that she needs to go back to review then we can bounce it back."

SS_008, Northumbria

Therefore, evidence shows feedback and monitoring are significant developing and managing service provision, in addition to delivering quality and safety outcomes.

6.5.3 Follow up

Once changes have been made to a patients' medical care, it is important patients are monitored for any side effects or changes in their wellbeing. This is an important finding, because continually supporting patients care, though follow up, will reduce avoidable admissions to escalated care settings (e.g. secondary care) (insert paragraph number), which could financially negatively impact the system.

> *"We go and visit them at home, check they are managing ok with their medicines, sort any medicines management issues… while we are there we also check symptoms and check their general wellbeing and see if they need any extra help at home and refer them on to any other services and feedback any issues to other healthcare professionals… and follow them up as and when we need them."*
>
> *SS_008, Northumbria*

Following up on patients' care is important in reducing avoidable admissions to secondary care and will overall impact the financial and care quality stability of the FICS.

6.5.4 Information Governance

IG plays a large role within the new models of care examined. IG is linked with the national agenda and supporting quality and safety within the FICS. The case studies integrated with different healthcare organisations and individuals. The Northumbria case study (Chapter 4, 4.2) describes the initial challenges with gaining access to patients' clinical records. This is because the GP practice were not comfortable giving access to a 'third-party' organisation. In order for the service to continue the pharmacist used summary care record (SCR) access to support their medication reviews.

From a management level, the vanguard lead from the Northumbria case study (Chapter 4, 4.2) facilitated IG and access provision. This was arranged by planning meetings with various stakeholder's privy to IG access. In order to co-collaborate and find a solution, the meetings opened opportunities for a shared understanding of access requirements. This demonstrates the value of building those relationships and collaborations with stakeholders and various organisations to support service development (Section 6.1.1 to 6.1.4).

"We have had some issues with IG - we have had trouble to get access to prescribing data for monitoring purposes and what we have…what we did in the last case, was get the right people on the table to talk to each other and I think what we need... a solution to this is have a shared purpose and understanding of what the data is and how the data will be used to improve care and safety and efficiency and all that..."

RF_0021, Northumbria

The Northumbria vanguard had issues around stakeholders who were gatekeepers to giving access and they had concerns around the competency of community pharmacists. In order to find a solution, it was important for the vanguard team to reassure the stakeholders and have data agreements in place to facilitate the access. Stakeholders were notified and access to medical records acted as a support tool for the community pharmacist to deliver a holistic approach to patient care.

"But I can't imagine - I think there will be some concerns about data and information governance, which we deal with. There will be some concerns about competency of community pharmacy which we need to reassure commissioners with, but ultimately we need to work with them."

SS_008 Northumbria

This again highlights the value of understanding the roles of others within a shared-care environment (Section 6.4.4.3).

All three case studies describe issues with access to data and IG. Stakeholders suggested a solution to these issues is to change the view of community pharmacy. Thereby, having access to records will become normal practice and integrated within their decision-making process.

Aside from having more access to patient information to support clinical decision making, one stakeholder describes having access as a tool to support and improve patient workflow. Trained pharmacists with IG agreements in place and full access to patient data, will be able to triage patients appropriately and support a more efficient patient flow through the system. The importance of triage and stratification has already been highlighted in association with facilitating the transfer of care (Sections 6.2.2 and 6.2.3).

From a GP point of view, data sharing has been seen as a positive move towards an ICS.

> *"So, I think, data sharing is a really interesting one, because there has been a view that patient data is sacrosanct and must be protected at all costs, which has led to a failure to share data in scenarios which is safety critical."*
>
> *SA_0028, Rushcliffe*

To conclude this section on IG, a suggestion by one pharmacist stakeholder is:

"With improved access, you have to face this and the realities is that practices start talking together about how they work together. They have to come to solutions about data sharing and about how we move things around and we find actually we (community pharmacy) can just bolt into the same solution. So again, it is about data sharing agreements, having protocols around that etc. But clearly you do need some consistent solution to allow you to engage."

GL_002, Devon

With the appropriate data sharing agreements in place, access should be fluid across healthcare organisations to improve patient flow, transfer of care and provide a platform for an ICS.

These findings present the significance each level plays in terms of delivering healthcare and the dynamic interactions between the constructs to support transfer of care, patient flow, an ICS and quality and safety profiles.

6.5.5 Contracts

Contracts between healthcare organisations have also been suggested to be aligned in order to support the FICS. One commissioner from the Rushcliffe case study (Chapter 4, 4.1) describes the importance of aligning the financial side to support positive behaviours and incentivise good safe service delivery.

"Need for a different commissioning model because at the moment behaviour is driven by money, and money is driven by contract, and it is the contracts that is getting in the way of us doing things differently, therefore we want to have some more freedom…in the future which needs to be outcomes based, not activity based and more and more what we are uncovering is that the contracts that we have at the moment are micro-managed, activity-based contracts, which drive the wrong behaviours…"

SA_0028, Rushcliffe

At service level, the current situation in relation to the pharmacy contract and GP framework is misaligned and due to the types of new services requiring to be delivered it is important for the contracts to be reviewed and aligned.

A modification in the pharmacy contract to support a BLOC model of payment, using an outcomes-based payment model, rather than the current model of a volume-based contract is desirable to many stakeholders.

To conclude this section, quality and safety of services and systems play an important role when forming an ICS. Developing safe systems such as reporting, and monitoring are a requirement to providing quality and safe care. Having contractual support in the form of financial incentives and data sharing agreements also provide a base for a healthcare system supported by quality and safe practices.

6.5.6 Quality and Safety Issues

When exploring the case studies, some displayed concerns around safety and delivering a quality healthcare service. The Devon case study (Chapter 4, 4.3) demonstrates, the lack of workforce infrastructure, posed a risk on the workforce already in place.

> *"No that is the GP practice, they are one of the ones that recently handed back their contract but before they did, you know they were down to four GPs to 28,000 (patients), so it is one GP for 7,000 patients and that gives you an understanding of the stress those guys are under and it is not sustainable and that is why basically that contract went back because there were clearly quality and safety issues when you reach that kind of level of stress."*
>
> *GL_002, Devon*

In order to support better safety and quality in terms of healthcare delivery, technology has been suggested as a facilitator. However, concerns over data sharing and access have posed some questions around safety (Section 6.5.4)

"I think it hits the national agenda for safety and I think we have never been there before, because it has always been about finances and budgets, but I think nationally they seem to think safety-wise. Well it is good they think safety is a good thing. I think the only way to get that is through data sharing and having to put information governance in place because otherwise it is a bit piecemeal isn't it. You are going to have different people working in different...with access to different data sets and it is just going to compromise patient safety, I guess. So, I think it is really important."

TR_0029, Rushcliffe

The eMAR system (Chapter 4, 4.1) is an example of safety measurements featured within technology. One non-pharmacist member of the eMAR team from the Rushcliffe case study site (Chapter 4, 4.1) describes how eMAR has shown an improvement in safety reporting and monitoring in comparison to the paper MAR sheets.

"Yes, absolutely so feedback we have had is that it is not instant but over a period of 6 months to 12 months they find that med (medication) round times are reduced, the reduction of errors or gaps on MAR chart or missed medication is significantly reduced. More available time to support the residences with other activities...it is giving that home manager improved visibility of what is going on in their care setting which is invaluable."

PO_0031, Rushcliffe

Issues have arisen from case studies around quality and safety. However, technology has been suggested as a potential solution, alongside IG and access agreements.

The following chapter will describe the role of the community pharmacy team within a FICS. Community pharmacy is positioned within primary and community care, therefore the role of its team and the services they deliver would be focussed within the community care area of the system. This section of the FICS is known as the Community Care Formed Integrated Care System (CCFICS).

Chapter 7 The Role of the Community Pharmacy Team within a CCFICS

The aim of this study focusses on roles and factors which facilitate the sustainability of services in community care. This chapter focusses on the specific findings from the data associated with community care. Up till this point, the results presented a focus on attributes required to support the FICS in general. This chapter, is centred around demonstrating evidence in support of community care provision, including community care stakeholders and organisations, such as primary care, general practice and patients. It will focus on the community pharmacy aspect of community care provision.

The following sections discuss the role of pharmacy mainly within community care area of the FICS. This area of the FICS is known as the Community Care Formed Integrated Care System (CCFICS)..

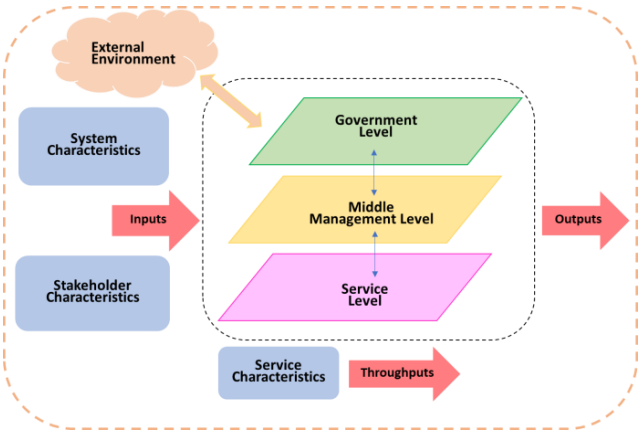


Figure 7.1 Multilayer Open Systems Theory framework in diagrammatic form within the context of this thesis. Adapted from (Thien and Nordin, 2012) (Repeated in Chapter 3, figure 3.7, Chapter 5, figure 5.1, and Chapter 6, 6.1).

7.1 Support in Community Care

An important mainstay of the FICS, as discussed in the previous chapter (Chapter 6, 6.1.4), is understanding and collaborating with various organisations and stakeholders. Forming an integrated system requires the support of surrounding organisations, in order to uphold relationships and system constructs. For example, the Northumbria case study (Chapter 4, 4.2) discusses a service located in primary care. It uses stakeholders from community, primary and secondary care, such as GPs, pharmacists, care home staff and volunteer organisations. Across all three case studies, support from various providers was an important factor in developing relationships within and across each organisation within the system. Building relationships are a key construct to the sustainability of the FICS.

7.1.1 Supporting Primary Care

Primary care is in the middle management level and service level area (Figure 7.1). It is an organisation which supports the majority of patients within the community (Chapter 2, figure 2.3). A truly ICS relies on a strong primary care system, to facilitate referral pathways to different healthcare professionals and to secondary care. Many of the services presented within these case studies support primary care and vice versa to facilitate a sustainable community care system.

"The hospital really wants to try and support primary care to really resolve its issues, because it is putting a burden on them in terms admissions, A&E attendances etc. So, you know they wish to support general practice either directly or indirectly to try and change the way it operates, and their view is community pharmacy could play a major role in changing the way it operates."

GL_002, Devon

7.1.2 Supporting General Practitioner's

At service level, supporting general practice was important. The services of each case study had a large aspect featured in general practice and primary care. Therefore, building these relationships and supporting GPs was an important throughput to achieve the overall outcome of an integrated service. One pharmacist stakeholder from the Northumbria vanguard pharmacy team described supporting GP home visits and triaged patients to see more appropriate healthcare professionals, freeing up GP time.

"GP appointments as well as some home visits, we looked at our role in them…trying to reduce how many GPs have to see, during the day, because a lot of them we filtered out and could be dealt with by other healthcare professionals, like district nurses or by pharmacy technicians for medicine management issues…so along those lines."

SS_008, Northumbria

7.1.3 Supporting Patients

Patients can be considered as a large stakeholder within the healthcare system. The importance of patient flow has been described in the previous chapter (Chapter 6, 6.3). In this case, the data described patients as service users. Therefore, they need to be supported in terms of what services can be offered within the healthcare system and how to navigate through the system.

Services are important features of the healthcare system for patients. They improve access to healthcare, as well as offer personalised advice. One pharmacist stakeholder from the Northumbria vanguard pharmacy team describes the lack of knowledge of the range of services available to patients.

> *"So, I think probably patients just have more access without realising to a range of other services. I think part of the problem, we have is that patients don't know sometimes what they are entitled to, so there might be extra funding…they aren't aware of that might enhance their quality of life and until someone brings that patient into a multidisciplinary discussion, it is not necessarily known that they can access these either."*
>
> *SS_008, Northumbria*

This is an important consideration, because it is a positive move if services are commissioned. However, if they aren't being utilised by patients, the same

pressures exist within the healthcare system, risking inadequate management of patients and their health conditions.

7.2 Pharmacy Services - Medicines Management Services

Medicines related services can support reducing admissions into secondary care (Baqir et al., 2014, Barnett et al., 2011). Some of these services can facilitate patients in self-care (Ogunbayo et al., 2017). Conducting medicine health checks and regular reviews can prevent escalation of patients' health status and support continual stability and management of long-term conditions. The following services discussed below are featured in the new models of care case studies.

7.2.1 Medicines Waste

Medicines waste is an increasing problem within the wider healthcare system. Identifying waste and preventing accumulation of large levels could support cost-effective savings and patient care. One pharmacist stakeholder from the Northumbria vanguard pharmacy team (Chapter 4, 4.2) describes the overall impact and implications of medicines wastage on their services.

"Community pharmacy… integrated into a vanguard pharmacy service overall has improved quality for patients… and that includes choice, you know, patients making decisions about what medicines did, (what medicines) they want, (what medicine) improves safety, so less harm from medicines… so stopping drugs that are harmful and actually cost effective. So, what we are doing there, is probably reducing the number of drugs that patients don't necessarily take, we are reducing waste in the system, we are reducing time taken from nurses to administer medicines, we potentially are reducing GP call outs and hospital re-admissions because patients are not taking dangerous combinations of tablets."

RF_009, Northumbria

Medicines waste is particularly a problem within care home settings. This is due to the traditional form of medicines storage for care home patients. It is within weekly blister packaging. Therefore, if a patient has a change in medicine, the complete blister pack is disposed of and re-dispensed with the correct medication. New technologies and original pack dispensing have been mentioned in the data to support the medicines wastage initiative. Chapter 4 describes how technology can be used to provide reports and log information to identify trends in waste.

"The reporting system (eMAR) normally shows me the report of what returns they (care home) have sent back for that month and what I look at is what the reason was… so, is it 'excess stock' or 'discontinued'… so, if it is a lot of excess stock, then I would be questioning them on why... you know 'there seems to be a lot left over' especially regular medicines… maybe one or two tablets but if there is a whole load of medication, I would be questioning that and similarly PRNs… why are they returning those."

DA_0035, Rushcliffe

Involving the complete pharmacy team can support reduction in waste, leading to better patient care. Developing relationships with those involved in medicines distribution and administration can help facilitate understanding of appropriate use and need. This stakeholder from the community pharmacy team in the Northumbria vanguard (Chapter 4, 4.2) describes the involvement of the community pharmacy team to help reduce waste and support patient care.

"I think the whole team, because when I have been looking at waste. I just think that there is a big part that even our dispensers can play when it comes to ordering medication for homes - do they really need it? It is just that relationship of care, but I do think that it is the whole community pharmacy not just the pharmacists."

CR_002, Northumbria

Therefore, the evidence shows that community pharmacy teams can play an important role in minimising wastage through new models of care.

7.2.2 Medicines Review

Medicines review is a common service available in many primary care settings. Community pharmacies have been commissioned nationally to deliver MURs[5]. This service supports patients to use their medicines correctly and for the right reasons. Recommendations post MUR and referral processes vary across primary care. One pharmacy stakeholder from the Northumbria vanguard (Chapter 4, 4.2) pharmacy team describes the lack of accountability and follow up of patients who have an MURs, in addition to making vague recommendations to show the MUR has been undertaken.

[5] Due to be removed from the current community pharmacy contract (see Chapter 2, community pharmacy section)

"You don't know what happens do you, there is no accountability, I think when you (community pharmacists) send them (MURs) to the GP practices... and often the MUR recommendation, I have seen just tends to be 'review blood pressure medicines' without a blood pressure on there, just because that is all they can think of to suggest. I think sometimes just the pressure to feel like they have to suggest something otherwise the whole consultation would have been pointless. But we would say not to encourage that, if all their medicines are appropriate there is no need to try and force us to stop one."

SS_008, Northumbria

Interestingly, within the Northumbria case study (Chapter 4, 4.2) refining the referral process and having accountable officers to complete suggested recommendations from MURs have reduced vague recommendations. Therefore, this would inevitably save time spent by the accountable officer.

At the time of the study, community pharmacies had a capped limit on how many MURs can be performed within one year (400 MURs). In order to support the wider population within primary care, including the general population, care home population and assisted living population, allowances have been suggested as one way to incorporate each type of primary care population. This was to incentivise community pharmacies. In addition, to building a self-sustainable service under community pharmacy provision.

"It's all about trying to work with a community pharmacy. We don't tell them what to do but maybe ask a few challenging questions. Say to the guys you know 'you have done your 400 you know but your care home resident population might only be 60' so is there 60 patients in your 400 that you felt had no value? Is the question to ask - where is the value added for MURs?"

RF_009, Northumbria

However, questions arise around incentivising community pharmacies to engage with care home populations, or assisted living populations if the general population fulfils their yearly target of MURs. A stakeholder from the community pharmacy team in the Northumbria case study (Chapter 4, 4.2), discussed providing an extended MUR service known as the MUR plus. This would allow community pharmacies to have more funding to support patients through an extended MUR service.

"In some places, they now do an MUR plus, we don't have that in this geography. We have got it in the middle of Newcastle, an MUR plus for Asthma and they are getting the additional funding …when they have got all the data from how we have done with the vanguard they might be able to get some money to actually make that an MUR plus… or something so the pharmacies can actually get that extra money… at the moment we are in affect just breaking even with doing the MURs, but we are helping to support the pilot and to look at where pharmacies can go forward."

CR_002, Northumbria

The data shows there is less scope to get medication reviews within the new models of care because they already exist. However, they can be modified to encompass a deeper review.

7.2.3 Medicines Optimisation

Medicines optimisation is on the national agenda, to support healthcare professionals in identifying specific areas of patients' medication consultation, in order to optimise their medication usage. It aims to support cost-saving initiatives and safety surrounding medicines. Medicines optimisation has been embedded within quality payment contracts and the quality, innovation, productivity and prevention (QIPP) programme. A member of the Northumbria pharmacy vanguard team redefines the idea of medicines optimisation:

"I think we need to really refocus and reframe what medicines optimisation is. It is not about just saving money it is about actually making sure that the right medicines are being given to the patient."

RF_0021, Northumbria

On a pharmacy level, medicines optimisation is embedded within the pharmacy role. Specific medicines optimisation pharmacists undertake a role which supports care homes and other primary care institutions. One stakeholder from the Rushcliffe community pharmacy care home team describes the role of a medicines' optimisation pharmacist within care homes.

"The pharmacist will go in and do a pharmacy advice visit and then start working through the patient's MAR charts and then sit with the patients and see what changes need to be made, to make some more interventions than we do at the moment…In some cases they are actually working as part of the wider team, with some money for them to join up with dieticians and doctors and, you know, there are all sort of people involved."

UJ_003, Rushcliffe

Aside from supporting the patient, this pharmacy team role will also support care home staff in relation to storage and waste of medication. A member of the Northumbria pharmacy vanguard team describes the importance of

refining this role is to then embed it within every care home across the UK to have a synonymous service.

> *"Eventually, what they all have in common is… medicines optimisation process for care home residents, so, medication review and then supporting care homes with things like systems and ordering and storage and waste - medicines management stuff…it doesn't happen everywhere so where it works, it works really well and the residents get benefits but where it doesn't work, where the service doesn't exist then we know the care home residents get really poor care…the research around this… there is lack of medication review often prescribed excess medications sometimes medicines are inappropriate, unnecessary or even harmful."*
>
> *RF_0021, Northumbria*

Medicines optimisation is a key component to pharmacists' involvement in new models of care.

7.3 Community Pharmacy

This section focusses on community pharmacy, the role of the community pharmacy team and its future. It explores the perceptions of community pharmacy, training needs and potential new roles. It specifically focusses on inputs and throughputs which align community pharmacy with the overall workforce infrastructure.

7.3.1 Identity of Community Pharmacy

The identity of community pharmacy is an important theme to explore, because it shows the current perceptions of stakeholders of community pharmacy. Accessibility, 'healthcare on the high street', clinical service supplier, and supply and distribution of medicines were all discussed in the case studies. One stakeholder from the Northumbria pharmacy vanguard team describes the identity of community pharmacy as follows:

> *"I think the identity is a healthcare practitioner on the high street and they have got to maintain that they are a source of expert advice and access to minor low-acuity issues that keeps patients away from GP practices and hospitals. They are medicines experts; they are able to support people with their medicines."*
>
> *RF_0021, Northumbria*

Overall perceptions of community pharmacy are based on assumptions of competency, a chief pharmacist describes this as an issue which can be overcome.

"Some of the issues, I suppose, are the deep-seated view about what pharmacists could do out in primary care within the existing workforce in primary care, the GPs and foundation pharmacist element of it…who (GPs) hadn't had very much exposure to what pharmacists - clinical pharmacists could provide. So, it is not that they needed a bit of convincing, but they just needed to have that soul (reality) to them."

KE_005, Northumbria

One large aspect of the identity of community pharmacy is the finance supporting community pharmacies. The contract for community pharmacy is based on a national contract which focuses on a volume-based payment scheme. Many stakeholders identify community pharmacy with this payment process and associate their service provision to volume based. One GP stakeholder describes the fact that the financial gain of community pharmacies is based on dispensing practices. Therefore, their incentive to support new services which are not linked to a volume-based payment scheme will prevent them from doing these new services.

"I think the identity hasn't changed yet. I think there is still quite a lot of onus on it still being dispensing-led, finance-led model as opposed to a clinical-led model in my eyes...I think we are about 5% of getting to 100% around changing what community pharmacy looks like, because I think until the contracts change, I don't think there will be much change in community pharmacy because the contracts don't align with any of the NHS contracts, any of the GP contracts... I think the way I always say is that community pharmacies are a business and will always be a business unless they are funded differently."

TR_0029, Rushcliffe

Interestingly, one community pharmacy business representative suggests although this is not always the case, new services need to be supported by finance or it is difficult to deliver these services.

I think… years ago where the pharmacist was always in the back and beyond in the dispensary just checking prescriptions… I do think they have moved further to the front of the dispensary, so a lot of places I go to that is where I see the pharmacist anyway and obviously we need to get them more involved in services but until they are commissioned and paid for by someone it is a very fine line on what they can deliver."

CR_002, Northumbria

The identity of community pharmacy is commonly associated with its volume-based contracts and this can be an issue when working in a shared-care environment as the competency of the community pharmacy team can be questioned.

7.4 The Role of the Community Pharmacist

The role of the community pharmacist has changed significantly over the years. As legislation and political agendas have changed, so has the direction of healthcare. Stakeholders' understanding of the role of the pharmacy team and community pharmacist has also changed. As the roles have been modified, one non-pharmacist stakeholder from the eMAR team, discusses the need for resource to be available to support and sustain the changes.

"The role is changing; I think the pharmacist is becoming much more of an additional 'diagnoser', maybe to what they were 10 years ago. I think more people are being encouraged

to see their pharmacist for minor ailments if you like, whereas we would've always gone to the GP… I think the worry is, in turn that is putting a lot more pressure on community pharmacy and how do we make sure that they have got the right level of resource, because my worry is we don't want people then to be put under greater pressure."

PO_0031, Rushcliffe

This suggests that the community pharmacy team has an opportunity to mould new roles to support the FICS.

7.4.1 Pharmacy Technicians

Pharmacy technicians play a large role within the community pharmacy team. Their roles have expanded to include technical roles such as dispensing and accuracy-checking, in addition to some clinical roles such as medicines reconciliation and blood pressure monitoring. Pharmacy technicians provide additional support within an ICS and can engage to support information transfer within an MDT. One stakeholder from the Northumbria pharmacy vanguard team describes the role of pharmacy technicians within a care home team.

> *"The pharmacy team, not just pharmacists…technicians as well. For pharmacy technicians we expect to support care homes, we would also expect management of waste, we would like some clinical stuff, like medicines reconciliation and acuity reviews but also supporting the home with things like systems, waste, ordering and stuff like that."*
>
> ***RF_0021, Northumbria***

An important point to recognise is competency-based training to upskill pharmacy technicians. The case studies discuss using pharmacy technicians in novel roles once they have been upskilled to provide these services. This suggests that their role provides substantial support in the integrated healthcare system as once upskilled they will be able to refer patients along pathways to support their transfer of care.

Interestingly, one pharmacy technician from the Devon case study (Chapter 4, 4.3) describes discussions around access to patients' medical records to support recent discharge from hospital. Future prospects of gaining access to full medical records is still being sorted for pharmacists. However, when it benefits patients and supports the overall healthcare system to facilitate patient flow, with the right training, accountability and shared data agreements, it can be used as a support.

Therefore, the new models of care support competency-based training approaches to aid the further development of pharmacy technicians. This will

in turn facilitate forming a stronger workforce infrastructure to support the FICS.

7.4.2 Identity within the Wider Healthcare System

Discussions above show stakeholder perceptions of community pharmacy and its identity. This section explores the identity of community pharmacy within the wider healthcare system. The extent of the intended integration is currently unknown; however, some case studies have discussed 'full' integration is needed in the sense of finance, healthcare services and population-based health. During data collection it was understood that the national agenda consisted of choices around local areas to become accountable care organisations, where finances and services are devolved to local statutory organisations.

One stakeholder, a member of the LPC, an organisation which represents community pharmacy, discusses the pros and cons of community pharmacy joining, this type of ICS.

> *"It is quite hard to suggest in pharmacies, you have to throw all your contracts and stuff into a pot, but actually if you don't, you will never be an equal partner and your likelihood is you won't necessarily get a full share of the services pie..."*
>
> ***GL_002, Devon***

The current issue with this type of integrated system is the national community pharmacy contract. As discussed earlier the contract is volume

based and therefore poses restrictions to the financial gain of the community pharmacies if 'caps' and 'balances' were placed upon each pharmacy. The stakeholder above discusses the overall gain received by the pharmacies will be greater than their current financial gain. However, as it would not be guaranteed, the risk associated may be too great and pose a barrier to community pharmacies joining this type of ICS.

Understanding the roles and capabilities of the community pharmacy team is an important aspect to consider, one stakeholder who is involved in the sustainability and transformation plans suggests a clear role and leadership representative is needed for pharmacy, in order for other stakeholders to appreciate how pharmacy fits into the overall wider healthcare system. Additionally, pharmacy itself needs to align itself to the wider national agenda in order to be perceived as a 'main player' within an ICS

> *"I think we need to ensure value for money, we need to ensure quality and safety and contributing to the wider plan. So, pharmacy must align itself...to the NHS plan and actually they need to talk about what their unique selling point in the primary care team is."*
>
> *RF_0021, Northumbria*

Interestingly, a community pharmacy representative discusses the perception community pharmacy has of themselves. They suggest that the community pharmacy team do not perceive themselves as a member of the primary care

team and therefore future plans and agendas do not contain community pharmacy due to the lack of engagement and representation.

> *"Yes, but I think it is changing. I think the system is viewing pharmacy in a different way more rapidly, than we are changing our mindset to recognise our role in primary care. So, I think there is quite a recognition… we could a lot more, but I don't think we yet see ourselves, truly, as part of primary care, which is where again primary care home might help. The difficulty is very few primary care sites have actually featured community pharmacy, very, very few."*
>
> *GL_002, Devon*

When talking about public perception, one community pharmacy stakeholder describes the current image of community pharmacy and explains its lack of exposure and advertising of its expertise has affected the public perception, and therefore the public do not use community pharmacy as their first port of call.

"I think they (GPs) will become more of the centre point. I think we (the community pharmacy team) will be the first port of call for patients but unfortunately we have got to build that image …so I think from a profile point of view, community pharmacy has got to increase its own profile as the solution for people, not just where you go and get a prescription done."

CR_020, Northumbria

The identity of community pharmacy within the wider healthcare system is varied. However, it is clear community pharmacy have an opportunity to build relationships and collaborations with other organisations to facilitate a shared care environment.

7.4.3 Training

Training is a large part of supporting and developing the workforce infrastructure. Within these case studies, different training pathways for pharmacy and other allied healthcare professionals had been undertaken to upskill the workforce. Key inputs and throughputs of the system consist of, interdisciplinary training and competency-based training through a structured pathway. The Rushcliffe case study (Chapter 4, 4.1) showed that a lack of continual training decreased the uptake of skills by the service users, to ultimately lead to a breakdown in the service and system. Conversely, the Northumbria case study (Chapter 4, 4.2) demonstrated a structured, shared

training approach, which enabled a two-way dialogue between the trainer and trainee. This supported better training and learning provisions.

7.4.3.1 Competency Based Training

Various training models have been undertaken within the case studies examined. A structured program to support competency development can reflect attributes needed to support needs-based services. Alternatively, on an individual basis whereby a professional has been required to deliver a service but may not have the required competencies to deliver it adequately. Additionally, competencies go hand in hand with accountability and responsibility within roles. It may be up to the individual to develop their own competencies and ways of working, in order to support their professional development and safety in delivering services. This is due to the large variation of competencies across pharmacy individuals and community pharmacy provider. This presents a confused view to the wider healthcare community and stakeholders in other healthcare organisations. One pharmacist stakeholder describes the issues faced when there is confusion on what community pharmacy can offer.

"People get upset, you know, community pharmacies aren't clinical pharmacists…but you have to look at where they are competent to operate...there needs to be some sort of support for them to actually grow their skill base. So there is a difficulty, there is a big training hump we need to get over and the difficulty there is… when you talk to various people, we have a chicken and egg situation it is very difficult to train up a load of people when there is no clarity about what they are going to do with it and how they are going to create revenue out of it."

GL_002, Devon

The skill mix of the community pharmacy team has been described as an issue, however producing standardised roles and competency frameworks may also mass produce a similar 'type' of pharmacist which may not fit into the local healthcare agenda and provide the most needed competencies for those roles.

One pharmacist stakeholder from the Devon case study (Chapter 4, 4.3) discusses the need for training in LTC within their locality. Teams were trained in different areas to support different parts of the system. This shows that unanimous training and a single competency framework would not work here as the healthcare professionals involved needed a different skill set to support an already pressured system.

Recognising the level of competency through self-reflection is important, but also as a trainer to understand the skill sets of the individuals within the training group.

One way to support training has been described in the Northumbria case study (Chapter 4, 4.2) using tools already available such as NHS training tools and the Centre for Pharmacy Postgraduate Education (CPPE) to support community pharmacists into gaining the correct skills to deliver the service.

A structured approach to training to form a standardised base is considered to be a positive move when introducing new services. New services, whereby the training starts with everyone at the same level, requires a structured approach to learn the basic training levels.

This type of training approach was welcomed by commissioners and provided reassurance and confidence in fulfilling the service deliverables.

> *"The other facilitator was the structured training delivered by the pharmacy providers into the care homes… that again built confidence for us, so we could see this was going to be a good implementation and have a good chance of succeeding."*
>
> *SA_0012, Rushcliffe*

7.4.3.2 Integrated Training

Providing an integrated training platform supports learning and development from a range of healthcare professionals and organisations. It also provides a foundation for good working relationships.

> *"How do we get medics and pharmacists to work more together… how can we align education between pharmacy and medics… which is the work we are just going to do…what can we do about joint training?"*
>
> *GL_002, Devon*

In relation to the GP team and pharmacy team relationship, one pharmacy team member from the Devon case study (Chapter 4, 4.3) describes learning and development provided for non-clinical staff as well as clinical staff. This gave an opportunity to discuss challenges and training needs between the teams.

> *"Myself and the practice manager got together and we kind of did a checklist of the things we needed to train our staff on and then we both kind of did our own separate bits and then we had an evening where we all together, the doctors, the receptionists and all the other staff and then our staff…We went through everything and we kind of tried to iron out the problems."*
>
> *CD_0014, Devon*

Supporting the training process with shadowing and supervision techniques, helps facilitate the training pathway and solidify learning of the trainees as described in the Northumbria case study (Chapter 4, 4.2).

Therefore, training is an important factor in developing an integrated strong workforce. In relation to upskilling the pharmacy team, there are various models which could be undertaken. A mix of competency-based training and integrated face to face training will provides a robust platform to develop the pharmacy workforce in the FICS.

7.5 Roles

The roles of the community pharmacy team are extremely variable. One CCG stakeholder from the Northumbria case study (Chapter 4, 4.2) describes the need to use pharmacy to support the healthcare system as a whole. Evidence suggests pharmacy can play a supportive role in saving time for other healthcare professionals.

> *"I think maybe going back one step from there is that health systems are very much described in terms of doctors and nurses, but without past experiences here we both recognise there is much more to this system and pharmacy in all its domains, whether that is hospital-based pharmacy, whether that's community-based pharmacy or clinical pharmacists… self-care of which community pharmacy plays a very supportive role."*
>
> *SA_0012, Rushcliffe*

One Northumbria pharmacy vanguard team member agrees with this and describes community pharmacy as acting in support to manage workloads and

build connections with other healthcare professionals in order for 'time' to be adequately transferred.

This type of support can be demonstrated in many ways. One way is developing community pharmacy to deliver a more clinical role. Stakeholders describe being in support of pharmacy delivering a more clinical focus, however a change in contract is required to support its changing roles. The type of change in contract would require a movement from volume-based contract to an outcomes-based contract (Chapter 2, 2.5.1). This is described to support many services related to medicines, including deprescribing.

> *"I think personally the supply of medicines for people and their prescribing needs, need to be separated (contractually) from the clinical services that the community pharmacy offer… What you'll then find is what community pharmacy are doing is trying really hard to cut those numbers of medicines down and help deprescribe and actually they won't focus on getting as many of those items dispensed because that isn't where the income stream is…"*
>
> *RF_0021, Northumbria*

The Northumbria vanguard case study (Chapter 4, 4.2) demonstrates a vertical healthcare system based on the PACS vanguard model. Community pharmacy was embedded within that model to support medicine reviews in care homes. One pharmacist stakeholder from the Northumbria vanguard pharmacy team

describes the evolution of this community pharmacy service to move to clinical hubs. These hubs will focus on particular conditions.

> *"We are now creating…we are now moving the service to clinical hubs. Where each hub will have a defined number of clinical pharmacists and technicians, which is what the model for the vanguard was, but we just made it that much more permanent now and those pharmacy teams are focussing, because we have less staff we will make a focussed effort on frailty and probably care homes."*
>
> *RF_0021, Northumbria*

The hub model has also been mentioned within the Devon case study (Chapter 4, 4.3). A pharmacist stakeholder describes the use of a hub network based in the CCGs, which will support urgent care.

> *"We have hub pharmacists working across… and you also have got practice-based pharmacists who come out of the CCG and out of the acute trust rather than in community, so it is acute down and they will do the start-stop stuff etc… and so they have got massive cost benefit out of that in Torbay. So, all those pharmacists pay for themselves three or four times over by drug reduction and reduction in admissions."*
>
> *GL_002, Devon*

Role development is an important aspect to cultivating the workforce to facilitate building a strong infrastructure. This can be within a profession and across organisations, as the quote above demonstrates, evolving the role of community pharmacy can support workload issues. Having a structured approach to role development is important, as it supports upskilling, better collaboration and the ability to train individuals to deal with specific capacity issues which may arise (these may be different in different localities), for example a 'hub' role for pharmacists who deliver community care. This is important, as it supports the idea of a strongly formed integrated community system, which will feed into the dynamic open health system.

7.5.1 Pharmacy and its Potential

Workforce is a large part of the infrastructure of healthcare services. The community pharmacy workforce, it has been described by stakeholders as an 'untapped resource.'

> *"It is a huge untapped potential in terms of its role in that system… we have just been describing and I continue to encourage people to not forget community pharmacy and to think how best to utilise… in some of the communities that exist within Northumberland because they are very remote… but I think the issue is that the chicken and the egg we need a change in how they are rewarded to enable them to undertake those functions."*
>
> *KE_0027, Northumbria*

Commented [YK6]: Remove

As described above the direction for the community pharmacy workforce is to engage with the services route and enable patients to access healthcare in different forms.

> *"So, I think it is sort of more going down the services route whereby we are introducing a lot more sort of different services, which are easily accessible and more convenient for patients…. So that is the way I see community pharmacy going and offering more services… as well as obviously doing the checking prescriptions and dispensing prescriptions, it is going to be sort of going down the services route… "*
>
> *DA_0035, Rushcliffe*

Pharmacy has a great potential to support the new models of care which emerge from healthcare reform and it has a unique place with easily accessible premises to provide huge opportunities to support community-based health services.

7.6 Future of Community Pharmacy

The identity and roles of community pharmacy are not always clear to the wider healthcare network. This is because stakeholders do not always know the level of competency each community pharmacist possesses. Structured training and integrated professional support may be needed for community pharmacy to join integrated community care.

The discussion chapter discusses the findings alongside current literature to support the formation and development of the FICS and CCFICS.

Chapter 8 Discussion

This chapter discusses the findings in relation to what is known in the field.

The aim of this research study is to explore the potential roles and services of the community pharmacy team within a dynamic complex healthcare system in England.

Chapters Five, Six and Seven presented cross-case findings, highlighting stakeholder's views of essential attributes required in the development of a 'formed integrated healthcare system[6]'. The findings were thematically analysed and underpinned by Open Systems Theory as discussed in the Methodology chapter (Chapter 3, 3.10.5).

Conclusive findings of this study are discussed, explaining key elements required to support a new vision for community pharmacy teams within community care. This has aided the development of a conceptual framework (discussed later in this chapter), which demonstrates key requirements, assumptions and risks of a CCFICS. The CCFICS links pharmacy and other community care providers in support of building a strong community care

[6] FICS is independent of ICS mentioned in the NHS Long Term Plan. The vision of the FICS has been derived from the data within this study.

network. The conceptual framework highlights essential components of services which support the sustainability of the CCFICS.

This chapter brings together the findings presented across the cross-case analysis chapters (Chapters 5,6 and 7) and conveys the key areas of understanding garnered from the data. The discussion is sub-divided into three sections: Firstly, a consideration of key pillars required to develop the FICS and its evidence-based contribution to the primary care system. Secondly, the presentation of evidence in relation to the CCFICS and thirdly, factors relating directly to roles and services of pharmacy within the CCFICS.

8.1 The Formed Integrated Care System

Formation of a 'type' of ICS was demonstrated as a strong requirement in the results when considering an integrated approach to healthcare delivery and sustainability. Case studies highlighted key constructs for the development of the FICS. Stakeholders reported 'understanding health systems and health priorities' providing a workforce infrastructure and including evaluation as key three pillars on which to build the FICS.

8.1.1 A Pathway to Integration

8.1.1.1 Seamless Care

For the purpose of this study, 'seamless care provision' is defined as a pathway which supports continuity of care. A seamless route for patient care is required to support the FICS, as it facilitates, holistic, and efficient coordination of healthcare delivery (Mur-Veeman et al., 2003). To develop this pathway a movement is required away from 'co-located' providers to a

population-based health services model facilitated by local and national public health guidance, in addition to epidemiological evidence, in order to support service delivery (Black, 2017, Strosahl, 1998, Darzi and Howitt, 2012). The new models of care examined attempted to support the provision of seamless care by localising services to facilitate population-based healthcare.

Robust and efficient primary care systems are integral to support equality and accessibility to healthcare services (Rawaf et al., 2008, World Health Organisation, 1978). This becomes threatened when there is an increased amount of fragmentation and variation in care provisions. My findings suggest that providing a seamless route of care for patients supported by MDT input, increases access and provision of healthcare services. However, Haggerty et al (2003) state that increased variations in providers of care poses risks to continuity and seamless care provision. This is due to the narrowing of specialities required of most MDT. Therefore it can be argued, that these teams are developed to treat diseases, rather than overall population-based health; a requirement of a strong seamless primary care system (Starfield, 1998).

Variation in care providers pose risks around accessibility to health services in primary care (Starfield, 1998). My results demonstrate the importance of interdisciplinary and multidisciplinary communication to support seamless care provision to minimise these risks. Dedicating time to build relationships and communication pathways has been shown to reduce fragmentation in

care provision and to increase provisions of access and continuity of healthcare services (Boerma, 2006).

The initial step to facilitating seamless care provision is to close the historical divisions between care settings, for example primary and secondary care. My findings at system level are indicative of the impact of these divisions. Many stakeholders were required to demonstrate their value, through previous service evaluations, in order to collaborate with parties from varying care sectors. Although the separation has previously hindered integrated care development, coordination of integrated care practices across sectors have been historically sought after (Mur-Veeman et al., 2003, McDermott et al., 2019, Grundmeijer, 1996). Therefore, it is critical to develop seamless care pathways across historically separate care sectors to facilitate the development of ICS's through communication and strong collaborative efforts.

Findings from this study and the literature demonstrate that seamless care is critical to the development and sustainability of an ICS. However, there are risks associated with misconceptions and miscommunication between care providers and at service level (Figure 8.1) between stakeholders of the MDT. Therefore, it is vital to have good communication (for example about medicines) amongst care providers, which can be facilitated by pharmacists.

8.1.1.2 Workforce

The workforce underpins the ability to provide a strong primary care system and seamless care delivery. As discussed above, seamless care provision is critical in facilitating the stability of an ICS. A strong workforce will need to work in new and innovative ways to support the changing requirements of a complex dynamic healthcare system. This section discusses the key constructs that the workforce possesses and their strong link to developing and sustaining the FICS.

8.1.1.3 Existing Workforce

Existing primary care systems are supported by an already active workforce. It is clear a strong and capable workforce is vital to facilitate service delivery. The extent of the experience of the workforce dictates its responsiveness to health priorities; therefore experience and competencies are essential to health service provision and are a reflection of the current work pattern (Barbazza et al., 2015, Roland et al., 2015). The current lack of integration in health services delivery suggests that the existing workforce does not have the required competencies to support the changing needs of current integrated care provision. The context of this study is located within the new models of care, which require new ways of working and therefore a mismatch of competencies and requirements would be expected. The data suggests there is a need to develop the current workforce to support the evolved integrated working pattern. This indicates that the existing workforce infrastructure lacks certain qualities and competencies to support the development of an ICS. Frenk et al (2010), Jackson et al (2014) and Rawaf et al

(2008) describe links between primary care workforce competencies and improved health outcomes, particularly when focussing on social determinants of health.

8.1.1.4 Training

My findings indicate that the existing workforce needs training. However, this is not always feasible; the realities of workforce development expose the misalignment between evidence-based and 'on the ground' practices (Koo and Miner, 2010). Facilitating training to support workforce development was vital to align integrated care delivery priorities. However, through no fault of the workforce, development of competencies through training and education takes significant time and investment. Therefore, it is critical for health systems to have an awareness of the balance between resources available and skills required (Werrett et al., 2001).

The Five-Year Forward View (FYFV) described the challenges faced by the NHS. Increased demands on the health and social care system forces pressure on an already strained organisation and the workforces within it (NHS England, 2014). In order to develop a safe and efficient FICS, a resilient and stable workforce infrastructure is required. Reduced workforce development, by lack of professional competency enhancement, leads to barriers associated with safe workforce provision, recruitment issues and staff retention, causing a negative impact on retaining and providing a safe and stable workforce infrastructure. Roland et al (2015) cited workforce retention as a current issue within primary care.

Education and training are key to developing the existing workforce to decrease the pressure and support safe integrated care working (Koo and Miner, 2010). Retaining an already trained workforce is vital in supporting seamless continued care provision; stakeholders suggested healthcare professionals in particular should *'utilise their skills at the highest level of their license'* to add to the pool of expertise to strengthen the workforce infrastructure. Providing a training pathway to support professional development supports workforce retention, which inevitably leads to continuity of care for patients, therefore resulting in better patient outcomes and safer care (Rosser et al., 2017, Fisher et al., 2017).

8.1.1.5 Inter- and Cross-Professional Training

Introducing variation in skill mix strengthens primary and community care (Shi et al., 2002). Although variation in workforce has been debated upon (Haggerty et al., 2003), it is clear an interprofessional and cross-professional workforce is required to facilitate continuity of patient care and workload management within the FICS. Interprofessional working includes those of the same profession working across different sectors, where cross-professional working is those who are from different professions working across sectors. Multidisciplinary links are required at all levels of the system (service, middle management and government) in order to decrease fragmentation and support seamless care provision (Starfield, 1998). Workforce integration is required from teams and individuals involved at the point of contact with patients and continued throughout the system. This includes recognising and integrating the role of pharmacy within the MDT and across the system. The

removal of workforce boundaries facilitates the development of pathways to deliver seamless patient care (Boerma, 2006). It additionally facilitates workload management (Alderwick and Ham, 2017) . These combined factors will stabilise the FICS.

Training and education have already been discussed as critical components to strengthening the workforce. Professionally enhancing competencies is key to workforce development. However, it is important to recognise that the system is required to be upskilled as a whole to facilitate teamworking towards national and local health priorities. Only upskilling inter-professionally can negatively impact integration because the respective professions will not be growing in line with the other disciplines and health priorities within the FICS (Boerma, 2006).

8.1.1.6 Teamwork

The MDT workforce is fundamental to primary care (Roland et al., 2015). Although an MDT may be present, it is important to engage in the action of teamwork. This is especially important at service level (Figure 8.1), in order to provide a 'shared-care environment'. Inter- and cross-professional teamwork allowed pathways for the expansion of the MDT to enhance health across the system and increase accessibility to services for patients (Campbell et al., 2014).

Expanding the primary care workforce to involve not only healthcare professionals, but those from social care and third-sector voluntary organisations is essential to supporting an ICS (Stankiewicz et al., 2015). These

organisations specifically focus on supporting populations impacted by social determinants of health through provisions of social prescribing and financial support (Skivington et al., 2018). Linking these two sectors will facilitate the development of a pathway to increase access to healthcare services and reduce health disparities across populations (Baum et al., 2013). Perceptions varied around different levels of quality of the services offered by social care and voluntary organisations, therefore when collaborating, communication is key to support effective patient care (Rathbone Adam P, 2016, Werrett et al., 2001, Harting et al., 2010, Li et al., 2018). Training and understanding the roles of the wider workforce, to include more than clinical staff, is therefore integral to supporting care provision within the FICS.

8.1.1.7 Attitudes

The new models of care relied heavily on relationships between workforce providers, healthcare delivery organisations and commissioners. Attitudes heavily influence commissioning and key service level (Figure 8.1) changes within localities. These changes can have a combined effect and impact the integrated system as a whole. This is an important finding, as it shows during the development of an ICS, protocols finances and facilities are not the only influencing factors when supporting the development of the FICS (Mur-Veeman et al., 2003).

The Devon case study (Chapter 4, 4.3) describes the effect of negative attitudes on historical professional divides. Data was difficult to change attitudes of those outside the pharmacy profession to support 'shared-care

provision'. Perceived interprofessional barriers between community pharmacy and general practice, for example, is well known. Attitudes around hierarchy has been evidenced as a barrier to collaborative working (Hughes and McCann, 2003). Therefore, facilitating positive attitudes across professional boundaries and between care providers are essential when developing the FICS.

A strong workforce built on relationships and understanding of roles is critical to efficient functioning in a healthcare system. Training should be prioritised and delivered through teamwork and shared approaches. The more experience gained in new ways of working and in the new models of care, the stronger the system becomes. However, negative attitudes and misconceptions can have a detrimental impact on workforce. Therefore, pharmacy can play an important role in contributing to training and shared understanding between professionals and commissioners, in order to strengthen and stabilise the system.

Factors at service level (Figure 8.1) which strengthen the workforce infrastructure were identified as salary, job satisfaction, leadership and positive working environments. These factors are critical to workforce stabilisation and effective patient care (Werrett et al., 2001). A stable workforce at service level (Figure 8.1) is critical to increasing the probability of securing commissioning for new services. This is vital because opportunities to develop and adapt local services to a continuously changing healthcare

system is key to stabilising primary care provision and the overall stabilisation of the wider system (Starfield et al., 2005, Luke and Stamatakis, 2012).

8.1.1.8 Leadership

Strong leadership was key to successful management of service provision. Ling et al (2012) discusses barriers and facilitators to integrating care. Leadership is highlighted as a key prerequisite to success because strong leadership is linked with continual professional engagement and motivation.

Political issues were raised concerning the effect of Brexit on the workforce. Government policies and decisions are considered to affect the stability of a whole system and, in particular, the workforce. Brexit is thought to diminish a percentage of the UK's healthcare workforce (Fahy et al., 2017). Introducing new technologies as a solution to stabilise the workforce as in my study, post Brexit, may be too costly and require significant investment in finance, time and training (Starfield, 1998, Campbell et al., 2014).

The existing workforce is required to be upskilled to match the needs of an evolving healthcare system. Whilst the literature and government policy suggest it is important, my study has demonstrated it is not always feasible due to time and investment. The new models of care that have trained and retained their workforce have evolved and grown in strength. Where this has not been the case, those models have been less successful. Furthermore, where longer term commitments to retain staff have not been employed, there is an associated risk of destabilising the new models of care services and the overall healthcare system.

8.1.1.9 Workload management

The demand for UK primary care services has faced an unparalleled increase in areas such as workload, elderly population and patients who suffer from both chronic and acute conditions (Campbell et al., 2014, Roland et al., 2015). Developing the workforce to support these challenges has been discussed earlier in this chapter (Section 8.1.2). Managing the workload is an important factor in providing safe and effective healthcare delivery. At system level, workload management reduces undue pressure within the system and helps manage and distribute capacity where needed, for example to various healthcare professionals within MDTs (Fisher et al., 2017, Roland et al., 2015, Mann et al., 2018). At service level (Figure 8.1), workload management can provide a basis for personalised care approaches to patient groups, in addition to accessing the required professional for the service needed (Gnani et al., 2013).

8.2 Factors which Effect the Internal Mechanism of the FICS

One of the objectives of this study was to consider factors which support the sustainability of new pharmacy services within community care in England. Key components which heavily influence the internal mechanisms of the FICS, in turn inevitably impact sustainability of services across the FICS. Five key themes were evident in the case studies: integration, care pathways, patient flow management, services management and provisions for quality and safety. Interviewees highlighted the importance of building relationships to facilitate patient flow, providing services with adequate management provisions and supporting safe and effective healthcare delivery in order to

sustain the FICS. This will be discussed in more detail later in this chapter (Section 8.2.4)

8.2.1 Integration in Dynamic Complex Health Systems

In order to truly understand the FICS, it is important to appreciate the complex nature of health systems in general. Health systems are complex, non-linear and dynamic (Lee et al., 2017, Luke and Stamatakis, 2012, World Health Organization, 2012). The development of the FICS is underpinned by Open Systems Theory. This is because it embraces non-linearity along different planes of a healthcare system. It argues that a number of factors can affect the movement (inertia) of a system. The inertia carried by these key elements will determine how close to equilibrium and for how long the system stays in this perceived 'equilibrium' (Katz and Kahn, 1971).

Baumgartner et al (2010) argue that systems may reach a state of perceived stability and may not be in equilibrium. It is the state of 'stability' which is required from each component of the system. Figure 8.1 shows diagrammatically the core components at system level needed to support the FICS. The combined stability of these components is likely to facilitate delivering a sustainable healthcare resource for the entire systems.

However, it is important to note that complex health systems continually change and adapt to the time-dependent circumstances (Luke and Stamatakis, 2012). Therefore, the level of inertia that each component holds is not constant and changes as the system evolves. For this study it was important to

explore and understand the key agents involved in influencing the internal mechanism of the system.

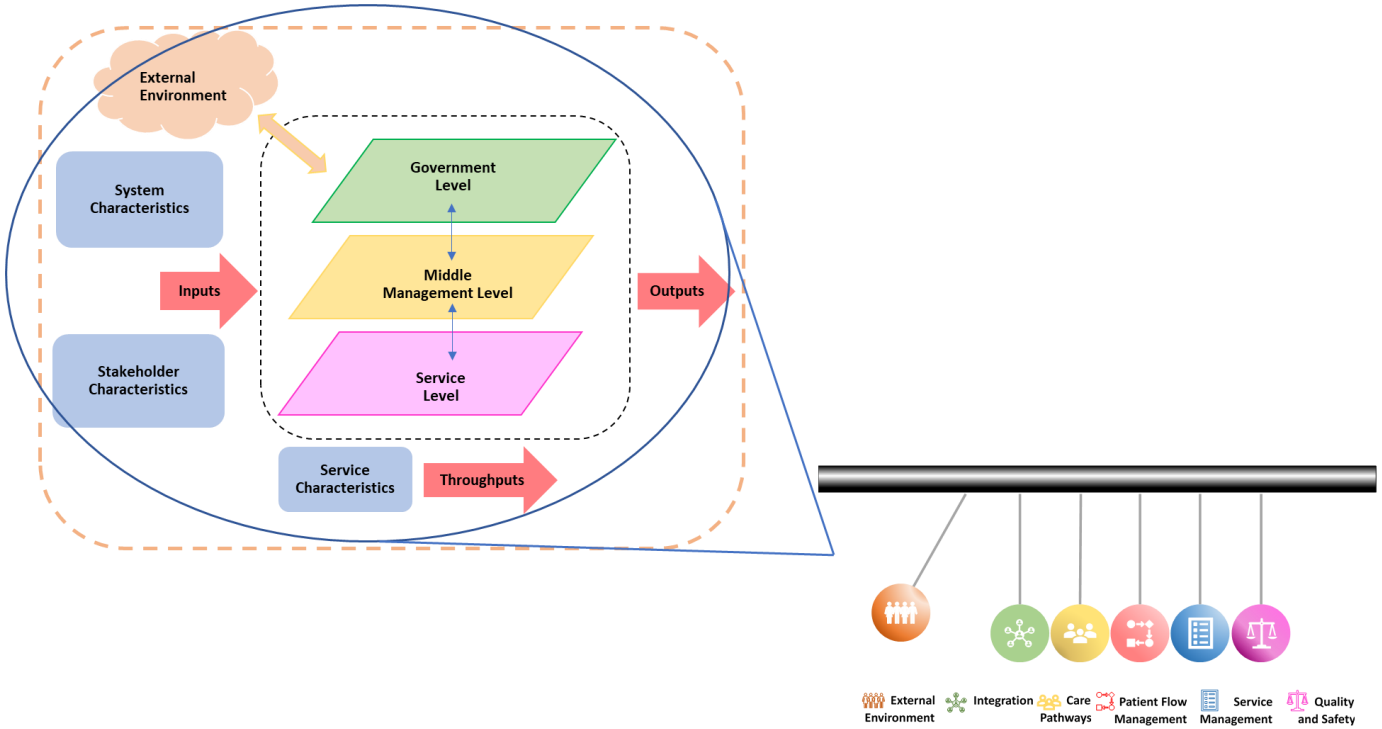


Figure 8.1 Representation of core components effecting the open system (Repeated in Chapter 6, figure 6.3).

The cross-case analysis chapters (Chapters 5,6 and 7) identified the external environment, integration, care pathways, patient-flow management, service management and quality and safety, as important themes which emerged from the data in association with an ICS. Since this study focuses on primary and community care provision, this will be the context within which the evidence is presented and discussed. It is important to undergo an in-depth analysis of these components, in order to understand the contextual and ecological factors which impact each level of the system (service, middle management and government) (Figure 8.1) (Luke and Stamatakis, 2012, Katz and Kahn, 1978). The following sections introduce the idea of the CCFICs and discuss key findings which affected the internal mechanisms of the system.

8.2.2 Introduction to the Community Care Formed Integrated Care System (CCFICS)

The CCFICS is located in primary care across the middle management level and service level (Figure 8.1) area of this study's dynamic healthcare system (Figure 8.1). It is an organisation which supports the majority of patients within the community (Chapter 2, figure 3). In order to form the CCFICS, integration is required and works on a basis of fluidity and free flow of information to support the goals of the system (Suter, 2009). The CCFICS relies on a series of intricate links within a dynamic complex health system model (Valentijn et al., 2013, Luke and Stamatakis, 2012).

A primary care ICS relies on efficient, coordinated care in order to support key primary care goals of equality and accessibility (World Health Organisation, 1978). Findings from the new models of care sites indicate that key constructs placed in the integration category add to the level of stability of the system. For example, patient care, patient empowerment and provision of access are all key constructs which add to a sustainable stable CCFICS alongside the other core components (Figure 8.1), which are discussed as the chapter proceeds.

The new models of care case study sites indicate that integration is facilitated by the development of strict referral pathways. Darzi and Howitt (2012) and De Maeseneer (2015) suggest that directing pathways towards specific healthcare professionals across care sectors supports improved transfer of care and integration across different care providers. The case studies showed that delegating roles and responsibilities, through referral pathways, manages

workloads within the system and directs clearly identified responsibilities to the workforce. As discussed in the workforce section, delegation will enhance quality of care and facilitate integrated care working through provisions of continuity of care (Baqir et al., 2018, Suter, 2009).

8.2.2.1 Alignment

Aligning professionals and organisations is key to supporting the formation of an ICS. At service level (Figure 8.1), aligning these groups provides opportunities to recognise each other and form links to delegate roles and resources efficiently. This links into the earlier section (Section 8.1.1.1), as it supports the provision of seamless care, 'insufficient coherence and coordination' is a barrier to continuous care delivery and integration, as it can result in a lack of adequate responses to patient needs (Boerma, 2006). This is unsurprising, because at system level, results show that aligning professionals across different groups and organisations forms better links for joined up care delivery and provides improved orientation of the workforce to build toward delivering key health system priorities. Ham et al (2013) describe that a 'whole system' approach is required to develop and sustain an ICS.

8.2.2.2 Patient Empowerment

Person-focussed or centred care is a critical part of the future of primary care provision. It focuses on treating the person or populations as a whole; taking into account their social determinants as well as disease states (Pulvirenti et al., 2014, Starfield, 2011). It considers both health and social care requirements and enables practitioners to provide holistic patient care

(Jackson and Gracia, 2014). Person-centred care is required because diseases do not 'act in isolation' and therefore a complete understanding of the patient is required (Starfield, 1998). All study sites indicated that stakeholders need to support patient empowerment in order for the new models of care to succeed. This fits in with the literature and demonstrates its importance; at service and community level it gives patients the autonomy to participate in 'self-care' whilst gaining access to 'healthcare professional facilitated self-care' guidance (Borgermans et al., 2017). Greenhalgh et al (2009) reiterate this message and argue that 'interventions' must include social and cultural norms, facilitating treatment via patient empowerment. This is important; healthcare professionals such as pharmacists can support the most vulnerable patients in primary care through empowering individuals to self-care whilst respecting their cultural and social requirements (Capone and Petrillo, 2011, Peterson and Zimmerman, 2004). Critically, this suggests that professionals (clinical and non-clinical) should be trained in supporting patient empowerment and building relationships with one another in order to build a pathway to support patient empowerment across the CCFICS.

8.2.2.3 Access to services

Understanding and increasing provisions to access services is vital for integration and for the expanding role of pharmacists within the CCFICS. Healthcare systems have become increasingly fragmented, proving it difficult for patients with complex health conditions to navigate and access services (Boerma, 2006). These types of patients are likely to require access to services across care sectors, literature suggests problems arise within patient care

when crossing care sectors (Renders et al., 2000, Faulkner et al., 2003, Rat et al., 2004). Access was essential to the success of the new models of care. All the case studies suggested at service and system level demonstrated that a lack of access negatively affects patient flow and therefore the stability of the system. From a population view, lack of access can be associated with an increase in health inequalities and social disparities (World Health Organisation, 2008). This is key, because pharmacists and community pharmacists, in particular, are in a unique position and can play a key role as gatekeepers to the population accessing services and introducing patients to new available services.

From a workforce view, one of the case studies indicated that a lack of knowledge of the range of services available to the patient population caused issues in delivering equitable patient care. For example, the care home described in the Northumbria case study (Chapter 4, 4.2) had a direct link to a pharmacist during the new models of care service. They felt it was easier to contact the pharmacist for queries relating to patient care because they were easier to access than the GP. This is important, because although services may be commissioned to support the CCFICS, if there is difficulty in accessing them, then the same pressures exist in the ICS that are trying to be eliminated or reduced.

The new models of care in this study demonstrate the importance of access to an ICS. Community pharmacy plays a key role as gatekeepers to the population and community care providers in accessing information and

services. With better communication, teamwork and understanding across the wider healthcare system, health providers can work synergistically to improve access and reduce duplication to support more efficient community care provision.

8.2.2.3.1 Embedding Services

Embedding services is vital for continuous service provision. It can be defined as 'full integration' of these services into the wider healthcare system on a local or national scale. Lack of time and financial backing to support embedding services within the system was perceived as a barrier to sustainability in the new models of care (Wilson et al., 2019). It is not sustainable to have weak funding because this will negatively impact service provision, leaving patients without adequate care. Secondary to this, it can be postulated that failure to support continuity of service provision may cause further disengagement of patients to other services, as they may feel they do not want to invest their time into services that have the potential to collapse. Wilson et al (2019) agree with the findings from this study; they explored experiences of evaluations during the vanguard program and demonstrated that a lack of embedding surrounding the intervention had a negative impact on vanguard sustainability and continual commissioning.

8.2.2.4 Technology

All the case studies identified technology as a key factor affecting integration. The use of technology in healthcare has been longstanding (Cottrell et al., 2012, Raven et al., 2013). The NHS Long Term Plan outlines a strong digital

agenda to support primary care (NHS England, 2019). However, detailed specifics have not been outlined. Technology is particularly useful in supporting patient flow and has the capability to link services, organisations and systems effectively to facilitate seamless integrated care pathways (Devaraj et al., 2013).

Technology can be used to support triaging patients and is often required to assist in healthcare delivery. Types of technology used range from the telephone to more advanced systems, such as computer-assisted programs with or without artificial intelligence (Campbell et al., 2014). The use of computer-assisted technology to triage patients is well known in the field of accident and emergency. It's notable attributes consist of an electronic trail of documentation and assistive efforts in decision making tools, which are particularly helpful for those who are novice within the field (Sadeghi et al., 2006). Whilst some studies found that technology does facilitate the transfer of care, when computer technologies cannot interface with each other, duplication occurs. Additionally, as in the case of Gnani et al (2013)when patients were transferred from the urgent and emergency department back to their GP, a discharge letter was faxed, which in itself carries its own risks, such as lack of retrieval and confidentiality.

Sadeghi et al (2006) demonstrate that algorithms are well known to support decision making. The case studies indicate that a *'flexible approach'* in relation to using technology is required to *'free up resources'* in an already strained system. Sadeghi et al (2006) demonstrate the use of 'Bayesian network

technology' to facilitate nurse decision making in accident and emergency and showed a reduction in patients' length of stay. However, the data is inconclusive because the length of stay is not the only determinant of patient care. The use of algorithms might be one use of technology but there is a requirement for further study and validation.

Artificial intelligence (AI) is a concept which has been discussed within this study as a way to future-proof healthcare and address the growing demands required of the health system. Many stakeholders support this type of technology but are unsure of its capacity and development in healthcare. Its link to 'big data' is cause for concern as it uses patients' data and therefore data ownership and potential safety questions in relation to misuse may come into question. The use of AI technology has been discussed as a way to support clinicians in reducing patient waiting time and improving clinical care (Krittanawong, 2018). However, challenges have been highlighted where different information technology interfaces do not easily communicate or combine information (Saboor and Ammenwerth, 2009).

Barriers to technology have been cited in the case studies as IG issues, lack of access, data sharing and challenges with interface alignment. Data sharing posed a large challenge within the vanguard evaluations. Lack of access to health service data altered many analyses and outcomes (Wilson et al., 2019). Clinical data is a significant facilitator to support patient care pathways. It is particularly important that this data can be accessed when needed (Gnani et al., 2013). Technological solutions to barriers associated with IG and data

sharing have been proposed by using blockchain technology to protect patient data. However, this type of application is novel in the field of healthcare and there is not an existing 'gold standard' application. Various global healthcare providers have been using different platforms, which does not overcome challenges associated with interface operability (Agbo et al., 2019). Although technology offers benefits, the data collected shows it also has many barriers and this is supported by the literature. However, it is clear that technology is the future; therefore, within the CCFICS, pharmacists and other community care providers will be required to be educated and develop skills to be able to use and embrace new technologies.

8.2.3 Transfer of Care

The FYFV called for a more integrated approach to health and social care. It postulated requirements for links to be formed across different care providers to support patient care (NHS England, 2014). Local and national providers are required to work together across local footprints to support consistent and continuous care provision. Coordination is critical to facilitating continuity of care, it is essential when supporting the transfer of care of patients (Boerma, 2006, Boon et al., 2004). The case studies suggest that focusing on the transfer of care process supports enhanced patient care by providing a direction along the seamless care pathway in the health system.

The new models of care sites showed it is vital to know where patients arrive for treatment in the healthcare system. This information provides a knowledge base for the allocation of resources to support patient care. For

example, a common limited resource featured in healthcare is the number of beds available in secondary and tertiary care settings. Significant hospital management is required to appropriately allocate resources to support factors such as workforce, workload and treatment options (Cudney et al., 2019). Lack of appropriate allocation of resources can result in significant delays in transfer of care for patients. This in turn impacts patient care and the costs faced across the whole NHS system (Jasinarachchi et al., 2009). Modes of triage and stratification can aid the transfer of care for patients in community care. However, assumptions and risks associated with these core elements, such as relationships, can impact the internal mechanisms of the system, thereby effecting the stability of the FICS. Features of triage and stratification are discussed below.

8.2.3.1 Triage

A strong, developed primary care system can act in a responsive way to support patients (Boerma, 2006). Triage can be explained as an analogy of a two-sided coin. The 'heads side' describes triage as an indicator of how best to use resources through critical assessment (Hobbs and Kristjanson, 2003), whereas Subash et al (2004) describe the 'tails side' of triage as assessing patients in a MDT to efficiently direct patient care to appropriate services. The new models of care examined indicate that the understanding of triage incorporates both explanations and seeks triage to be a pathway that substantially enables healthcare professionals to direct care to the right services at the right time and at the right places.

Evidence from all case study sites indicates that linking triage processes to referral pathways are important to facilitating the movement of patients through the FICS. Triaging is an important tool which can be used to decide which referral pathways patients follow. Prior to the new models of care, the system can be seen as very fragmented, which is confusing for both the public and professionals needing to refer themselves or patients (Roland et al., 2015). This can negatively affect the access to primary care services and impact upon levels of health inequalities within the healthcare system (Starfield, 1998, World Health Organisation, 1978). This study indicates an 'end to end' referral system is needed to ensure patients ultimately get the care they need, in addition to healthcare professionals accessing specialist expertise to treat their patient groups.

The current situation across many localities within the UK consists of a strained primary care system (Roland et al., 2015). Support such as technology and utilising other community care providers can facilitate the triage of patients to support their transfer of care. Community care providers such as community pharmacy can be used to support triaging patients. Technology and triage have been extensively discussed above.

Community pharmacists are trained in troubleshooting and decision making to support treatment and/or referral of patients if needed. The triage process can be a two-way pathway whereby practitioners within primary care can refer to community pharmacy and vice versa. This has been successful on a local scale. Historically, the minor ailment scheme was one way to support

triaging patients to the community pharmacy (Pumtong et al., 2011). Linking triage processes and workforce development enables the strengthening of an ICS. Continual upskilling of the community care workforce provides synergistic growth in workforce development to meet the changing demands and priorities of health systems (Starfield, 1998, Rosser et al., 2017). Pharmacists are now able to qualify as independent prescribers; this increases the scope of their practice and ability to deliver more clinical services to meet the current demands of the health service (Mann et al., 2018, Roland et al., 2015). This potentially paves the way to add to a varied MDT triaging service, resulting in reducing the delay of transfer of care for patients and adding strength to the FICS (Subash et al., 2004, Weiss and Sutton, 2009).

8.2.3.2 Stratification

Stratification is a decision-making tool which can be used to support the triage and care planning of patients. It has been highlighted in the case studies as an important tool to facilitate identification of patients' level of risk, in terms of increasing morbidity (Chapter 4, figure 4.8). For example, Pialoux et al (2012) describe the use of screening tools to stratify frailty in order to support care plan management in the frail and elderly population. At service level (Figure 8.1), early identification of patients' ailments through stratification will affect their level of care required. For example, the Northumbria case study (Chapter 4, 4.2) indicated early identification and management of frailty was essential in supporting the elderly population to remain independent for as long as possible. Secondly, managing their care to remain in their regular risk category decreased possible avoidable escalation leading to admissions to

secondary care. This is important, because this type of population tends to remain in secondary or intermediate care settings for long periods of time due to the recovery process slowing with age. This type of stratification was supported by local financial incentives and therefore, this demonstrates stratifying patients in this population had a strong impact on the stability of that local health network at that time, which would reverberate and impact upon the stability of the wider healthcare system.

Stratification and screening tools can be used to support transfer of care. Pialoux et al (2012) agree and suggest they can be a good supportive tool to identify high-risk patients within a resource-poor healthcare system. Risk stratification is used across primary and secondary care; for example, in cardiac patients and in surgery, the CHADVASQ2 score is used to identify patients' VTE risk. In cancer services, genomic stratification tools are widely used to support potential identification of cancers in certain populations, for example identification of the BRCA gene and its associated risk of developing breast cancer (Orlando et al., 2014).

Validated stratification tools can be used to facilitate identification of high-risk patients, enabling them to be triaged by clinicians earlier (Subash et al., 2004, Yeoh et al., 2011). Within primary care, risk stratification algorithms are used to support triage of patients within NHS 111. Tools such as this have supported the transfer of care of patients, but have also enabled non-clinical professionals, such as call-handlers and receptionists, to safely triage patients in certain circumstances. It is important to note that the risk stratification

process is a tool to support prioritisation and clinical judgement still needs to be exercised to adequately treat and triage patients (Yeoh et al., 2011). Therefore, as was found in this study, equipping and expanding the 'triage team' to include community care providers (both healthcare and non-healthcare professionals) supports a stronger workforce infrastructure within a resource-poor environment. More variation within the workforce provides further opportunities for varied, expert-specific stratification tools to be used. This can reduce duplication and congestion within the healthcare system and support the transfer of care to the correct practitioners (Subash et al., 2004, Rosser et al., 2017).

At system level, stratification can also be used as a resource tool. In many clinical settings, risk stratification is used to help support efficiency and to optimise the use of resources (Yeoh et al., 2011). In the case studies, stratification was used to support care of the elderly by using a frailty index to adequately prioritise workforce and workload when undertaking medicine reviews to monitor care home patients. Stratification can play an essential role within strategic planning of healthcare within a system. Studies based in the United States and Canada have suggested that using strategies which support decision making can help reduce healthcare expenditure within the system without compromising on care quality (Fahrni et al., 2014, Wennberg et al., 2010, O'Connor et al., 2004, Claffey et al., 2012).

Stratification has been discussed at length. One area that needs to be further explored is the development of national stratification techniques that are in

line with contracts and can be used to incentivise community care providers to adequately triage patients. Currently, there are national targets which incentivise healthcare providers through CQUIN targets and QUIPP targets. Linking these with specific disease states, such as cardiac, frail and elderly for example, could support these large groups of patients on a national scale, in both care and financial capacities. As discussed, the Northumbria case study (Chapter 4, 4.2) used the frailty index to reach local frailty targets. However, a national scheme could have a bigger impact within a resource-poor NHS environment.

As discussed, these types of decision-making tools are used frequently within primary care. Most community pharmacists have used a screening tool to support conducting MURs (Cardwell Karen, 2018). Supporting community pharmacy to use a wider range of validated tools can facilitate triage and transfer of care for patients. However, critical to their usage, are the social and contextual factors associated; relationships, collaborations, leadership and understanding roles within and across networks are vital to the success of these tools in facilitating transfer of care for patients and effective utilisation of resources within the FICS.

8.2.3.3 Relationships

Relationships are important to all levels of the FICS. In the context of this study, relationships are discussed in the context of care providers. The case studies indicate that building relationships was particularly important in initiating and developing services. The new models of care showed that

developing relationships forms trust and promotes confidence between care providers, thereby facilitating service development. Trust is vital in service development, as it allows for those in the relationship to act with predictable behaviour (Meijboom et al., 2004). This also results in each party understanding the expectations of one another (Lewicki and Bunker, 1995). This is important since good inter working relationships propagate better patient outcomes, continuity of care and professional empowerment (Nandram and Koster, 2014, Boerma, 2006).

The case studies indicate that building relationships are key to forming links within and across organisations. These links are integral to the formation of care pathways to support patient flow and continuity healthcare delivery. Continuity is cited as an important factor associated with the transfer of patient information (Haggerty et al., 2003). Within this context, informational continuity is the transfer of information across organisations to support the continuity of patient care. It can be directly related to quality of care at different levels within the system and overall system stability (Boerma, 2006).

This study demonstrates the depth of relationships between stakeholders across community, primary and secondary care, such as GPs, pharmacists, care home staff and volunteer organisations. Understanding and collaborating through with various organisations underpin key system constructs. For example, one stakeholder described supporting GP home visits, triaging and referring patients to alternative healthcare professionals to 'free up' resource for the system. Dedicating time to work within the team, build relationships

and support the localised system, aided efficient continuity of patient care and added integrated stability to the overall system.

Strongly integrated primary and community care system relationships allow for a strong diverse workforce to support multifaceted complex patients within community care (Van Bilsen et al., 2008, Krothe, 1997, World Health Organisation, 2008). It is commonly reported that interprofessional barriers are present between community providers, affecting their interprofessional behaviours (Bradley et al., 2008, Ham and Walsh, 2013, Li et al., 2018).

Collaboration was a key theme discussed in all of the case studies. Stakeholders described collaboration as 'forming incentivised links' between organisations to support service development within the FICS. Providing 'incentivisation' assumes advantages for the parties involved, but the socioeconomic impact of these 'contractual agreements' can lead to hierarchical issues in terms of division of labour (Williamson, 1973). Collaborative links were formed in services across all three case studies and these links had a positive impact on the current commissioning and scope for further investment. Therefore it is critical to form collaborative links based on the already formed relationships, where trust and confidence have been built (Das and Teng, 2001, Meijboom et al., 2004).

Findings from the case studies indicate that, at system level, collaborative links across professions and organisations facilitate the alignment of national healthcare priorities. For example the formation of sustainability and transformation partnerships (STPs) proposed using collaborative action to

facilitate improvements in care and better management of resources (Alderwick and Ham, 2017). These partnerships support the formation of care pathways to facilitate healthcare delivery and stability of the FICS.

8.2.3.4 Understanding the roles of others

This study indicates that, when forming an ICS, many organisations such as local authorities and charity organisations overlap and are linked through service level (Figure 8.1) agreements or other collaborative efforts (Ham and Walsh, 2013). Community-based care in particular requires a combination of care provision, consisting of both healthcare, social care and other supportive services (Van Bilsen et al., 2008). Understanding the health system and the different roles within it are essential providing seamless care in an ICS (Ham and Walsh, 2013). Ling et al (2012) describe findings from a previous qualitative study exploring the views of various English integrated care pilots; this demonstrated the importance of understanding the roles of various stakeholders within the integrated care pilot. Notably, a lack of understanding led to difficulties in communication, in particular causing barriers to MDT working which could affect patient care and overall seamless care delivery. This agrees with the findings from the case studies, since misunderstanding of roles within the healthcare system was a barrier to providing seamless care and propagated destabilisation of the FICS.

The case studies indicate that variations of organisations involved in care provision enable more diverse care pathways to support patient care and flow through the system, thereby providing pathways for patients to be able to see

the correct practitioner or social care representative required for their needs. This is only available when there is seamless care; with care providers working together to support an ICS (Ham, 2018).

Continuous reformations of the UK health system changes pathways and roles within the system. An example of drastic health service changes occurred between 1997 and 2012, when a considerable change in NHS structure and roles occurred. This reformation had a large impact on the understanding and perceptions of roles and requirements of the redesigned NHS. During both the reformation proposed in the FYFV (2014), and in the findings from this study, transparency was key to understanding where new roles and responsibilities fit into the health system. This was linked with enhancing seamless care provision, thereby providing a measure of stability for a provisionally sustainable ICS.

8.2.4 Patient flow Management

A key construct which affects the internal mechanism of the CCFICs is the management of patients through the system. Patient flow has been described by a report published by the Health Foundation (2013) as "the how, where, when and who of care provision'. It describes that financial injections are not the only items needed to support patient flow. The case studies indicate that healthcare operations management and delivery of organisational tactics are needed to support the adequate flow of patients. There is a need to 'modify' healthcare services operations to support the flow of patients. This can be as minimal as reorganising community providers within localities of care to large

scale changes such as national reorganisation. It is about transforming inputs into outputs through operational management (Vissers and Beech, 2005).

This study indicates that supporting patient flow is critical to patient safety and supporting the system in terms of pressure management and financial sustainability. Lack of focus and consistency of patient flow management can risk affecting the supply and demand chain within healthcare, resulting in sub-optimal care delivery (Lovett et al., 2016). The new models of care in all three case studies provided an arena for a closed system whereby healthcare services could be aligned to support patient flow. The national agenda is currently focused on aligning healthcare services across primary and secondary care to support a fully integrated system. As indicated by the case studies, in order to achieve this, there needs to be an 'end-to-end' pathway for patients to follow (Ham, 2018, The Health Foundation, 2013). Many studies have compared modelling management systems of patient flow with the locomotive industry (Brideau, 2004). Although findings within this study suggest one size does not fit all in terms of patient care, (patients can be grouped in disease areas and localities in order to provide a more holistic population-based healthcare approach. In order to manage large volumes of patients and provide equitable healthcare for all. It is important to note that the individual needs of patients, as well as the population needs of patients, should be considered when discussing flow pathways in order to produce a successful end-to-end journey for patients, as discussed in the seamless care section (Section 8.1.1.1).

Each of the case studies have shown that services which support patient flow provide a seamless care strategy for patients. They are facilitated by a shared-care network built on a strong collaborative workforce infrastructure. The new models of care examined demonstrate that an essential aspect to facilitating the flow of patients is training and supporting clinicians to work at the height of their expertise. This will provide a larger qualified experienced workforce to manage the flow of patients, provide better patient care and decrease the pressure built within an already strained healthcare system (Rosser et al., 2017).

The importance of workforce development has been discussed earlier in this chapter. Improvements in quality of care are driven by a diverse, strong, skilled workforce. Inter- and cross-professional workforce development has already been discussed as an integral part managing workload, which includes patient flow management and seamless care provision. Using organisations such as the third sector, local government authorities and social care organisations are integral to supporting community care flow management.

The results demonstrated that when focusing on healthcare delivery and patient flow management, shared care strategies rely on the support of an MDT. Allied healthcare professionals have been widely regarded when discussing 'support of patient flow'. A recent NHS Improvement and NHS England document released in April 2018 discusses the importance of incorporating allied healthcare professionals within an ICS to support the patient flow. This is particularly important when preventing escalation of

patients to higher-risk health categories and avoidable hospital admissions (NHS Improvement and NHS England, 2018). However, as discussed, a large amount of investment would be required to facilitate training and development; therefore the construct of patient flow management relies heavily on the highly volatile relationship between flow, quality and cost within the CCFICS (The Health Foundation, 2013).

8.2.4.1 Population-based Flow

The World Health Organisation (2018) proposed a declaration on primary healthcare which included equal access, health promotion and population-based healthcare initiatives to support patients in primary care and encourage collaboration between multiple community providers to facilitate healthcare delivery. Providing population-based healthcare services facilitates care delivery to patients in large volumes (World Health Organisation, 1978, Rawaf et al., 2008, World Health Organisation, 2018). Providing local services to facilitate 'person-centred' treatment for patients in the case study populations allows for more patients to be treated and monitored (Darzi and Howitt, 2012). The case studies have demonstrated that primary care consists of a large proportion of low-risk category patients. Escalation of this group's disease states could significantly impact secondary care services. Therefore it is important to provide adequate population-based health services through collaborative efforts provided by multiple community providers (Rawaf et al., 2008). This demonstrates that the new models of care took a population-based healthcare approach, which had positive impacts on patient care. Community pharmacy can play a unique role in supporting these patients and,

linking with patient empowerment, can facilitate patients staying in the low-risk category for longer.

8.2.4.2 Focus on Prevention

A key area cited in the FYFV (2014) and NHS Long Term Plan (2019), was a large focus on the prevention agenda. Enabling and empowering communities is critical to addressing wide spread health inequalities and addressing population-based healthcare needs in line with local and national health priorities (NHS England, 2019). The Marmot Review (2010) demonstrates a lack of focus on prevention has a negative economic impact, can cause an increase in crime, and a lack of workplace productivity. Therefore, in order to support a sustainable ICS, it is critical to focus and invest in empowering and developing communities to support this agenda.

The Office for National Statistics (ONS) (2020) suggested that in 2018, 22% of deaths in the UK were avoidable. This means, those deaths could have been avoided by adequate public health services, primary prevention interventions and/or timely treatments. Each case study understood the importance of the prevention agenda and incorporated practices within the individual services. However, many public health services associated with prevention are funded by local health authorities, where funding is already strained. Therefore, services presented within this study demonstrated innovative practices to involve prevention education during healthcare delivery (Marmot et al., 2010).

At service level (Figure 8.1), the new models of care examined indicate prevention is critical to decreasing avoidable escalation to secondary care. A large proportion of the population require adequate community care provision to educate and empower patients to self-care and manage their conditions. This requires key elements of coordination and alignment of organisations and health priorities to facilitate actioning the prevention agenda (Boerma, 2006).

This study suggests primary care patients are mainly placed in low to moderate 'risk categories of illness'. In order to maintain the patients in those categories, coordinated care practices across disciplines are required to 'screen, monitor and follow-up' patients to identify conditions at early stages (Isles et al., 2000, Murchie et al., 2003, Oakeshott et al., 2003, Campbell, 2004).

Community care providers can support patients in managing their conditions through self-care and lifestyle advice in order to prevent secondary care admissions and negative effects on the patients' quality of life. Community pharmacy has a large role to play in this area due to their position and their outreach in the community.

8.2.5 Service Management

Service management is highlighted as a vital component in facilitating successful healthcare provision across the FICS. The World Health Organisation (2018) states that integrated care settings should be effectively managed to ensure 'optimal outcomes'. Management within an ICS requires

the ability to form links across professional groups and organisations, an understanding of the healthcare system and roles within it and to be able to delegate responsibilities. However, due to the multifaceted nature of management, it can be perceived as a barrier or an enabler to the implementation of integrated care (Miller and Stein, 2020). Many of the requirements mentioned have been discussed earlier in the chapter (Section 8.1.2), for example cross-professional links, understanding and leadership. At service level (Figure 8.1), findings indicate services should be personalised, for example to localities, needs of populations, and disease states. Van Duijn et al (2018) agree with these findings and suggest in order to take a holistic approach to person centred care, services should be tailored to particular groups, allowing 'persons' involved in the process of service delivery. Findings from the Rushcliffe case study (Chapter 4, 4.1), support this, since the eMAR system facilitated patient experience by having features which could be tailored to individual patients. Although Fillingham et al (2014), suggest the key to delivering tailored services, is through effective leadership and organisational collaboration. The case studies reported, organisational collaboration is required to build an integration care system, however there was perceived difficulty in delivering these types of services, due to challenges associated with collaboration and the perceived identity of the community pharmacy team.

Workforce is vital to service management provision, as described earlier in the chapter (Section 8.1.2). The case studies indicated workforce infrastructure and training requirements were key determinants of providing tailored

services. Identifying groups which require specialised services provides knowledge for resource division at meso-system level (between service and middle-management level) (Figure 8.1) and could support developing collaborative links between specialised practitioners at service level (Figure 8.1). However, if goals are not aligned amongst the stakeholders involved, it could negatively impact upon the key relationships required to support integrated care (van Duijn et al., 2018, Borgermans et al., 2017).

All of the case studies indicated that project management at service level (Figure 8.1) was important in relation to protecting and deepening formed relationships. They emphasised the importance of frequent meetings and discussions to facilitate service development, in particular when identifying what worked well and what did not go so well to facilitate service improvement (Fillingham and Weir, 2014).

Key stakeholders involved within the agency of project management provided better service provision and implemented key changes required to support service development. In the Principia evaluation, co-production was identified as a key element to support enhanced health in care homes (Lloyd et al., 2017).

Evaluation is a vital tool in facilitating service implementation, development, adaptation and management within a complex health system (Starfield et al., 2005, Harachi et al., 1999). This study indicates that evaluation is an important device in facilitating required changes to support positive evolution of the FICS. Appropriate and timely evaluations will provide efficient solutions

to care provision in a continually changing system, thereby increasing the probability of system stability at any one time.

At service level (Figure 8.1), my findings suggest that evaluation is a strong tool used by commissioners and stakeholders to secure funding of services and to produce outcomes of improvements to patient care. The Northumbria case study (Chapter 4, 4.2) had published evaluation data to support their care home service. Published evaluations of the care home vanguard (Rushcliffe) indicated that its successes have been attributed to "clinical leadership, managerial support, team-based care and an alignment of financial, professional workplace and values based incentives" (Iacobucci, 2019). This is vital, as it demonstrates the importance of evaluation as a measure of improvements in service provision. Ham et al (2013) agree and suggest evaluation can be used as a tool to demonstrate the 'success' of an integrated care model within the community setting. With adequate service management, tools and outcomes from service evaluations can be fed back and implemented into the system to modify the services to the changing healthcare environment (Rand Europe and Ernst and Young, 2012). It is important to note the approaches to evaluation are vital to adding useful evidence to an ongoing system. Approaches which include system leaders and 'on the ground' perspectives are welcomed, because it is important to provide recommendations that are tangible and support system development (Fillingham and Weir, 2014). Managing services is important, the case studies indicate that tailoring services, adequate workforce provision and good

quality, well-timed evaluations are key contributions required to manage services effectively within the FICS.

8.2.6 Quality and Safety

Healthcare services are under continual pressure from the current growth in population, the ageing population and the decrease in supportive finances. During this time of pressure, there is a risk that the quality and safety of care may be compromised in order to take on the increasing demand (Gardner et al., 2014). Maintaining quality and safety was integral to the case studies when developing and sustaining an ICS.

Effective implementation strategies, strong leadership and matching the workforce with the required competencies facilitate improvements in quality and safety within an ICS (Borgermans et al., 2017, Ling et al., 2012). Aligning health service contractual agreements are one way to maintain and, in some circumstances, improve quality and safety of care within primary care. The case studies indicated misalignment between the GP and community pharmacy contractual frameworks. Complex needs of patients are often treated by multiple healthcare professionals in the community. Misalignment of contractual responsibilities adds to the complex nature and difficulty in navigating around the healthcare system, for both healthcare professionals and patients. This can result in unmet needs for patients, hospitalisations and issues around patient safety (Boerma, 2006).

Incentivisation associated with contractual agreements is a common feature across the health system. The Commissioning for Quality and Innovation

scheme (CQUIN) supported by NHS England, sets out targets for care providers to improve quality through outcomes-based incentives (Scott-Thomas et al., 2017). This is a common feature in GP contracting in the UK and focuses on target-based quality indicators (McElduff et al., 2004). It is well known that financial incentives have been used to improve quality (Chaix-couturier et al., 2000). The case studies also indicated that incentivised changes are required to the community pharmacy contract in order to facilitate improvements in quality of care in the community. Currently, the community pharmacy contract is predominately a volume-based model and therefore the excess capital required to support new services in a dynamic health system is not available because it is locked in reaching volume-based targets. Stakeholders across the case studies have suggested that an outcomes or 'BLOC' model of payment, or engaging in an accountable care organisation funding structure, would be more suitable to support the changing needs and service requirements of an ICS

Financial investment is critical in supporting the evolution of an ICS. However, funding and quality are not mutually exclusive and there are various constructs that need to be present to support high quality and safe delivery of care. This study has shown that one main construct needed is a strong workforce infrastructure. A report developed by Health Education England suggests that with a *'Highly skilled workforce, effective multi-disciplinary teams and well developed IT systems, the NHS is in an unparalleled position to develop a modern primary healthcare system that is truly world class*.' (Roland et al., 2015). This quote speaks volumes as it demonstrates that in order to

form an ICS across the primary and acute sector, it is essential to develop a strong workforce. The development of the workforce is relayed in two strands; firstly developing organisations with enough staff to deliver quality care and secondly, training individual staff and upskilling them sufficiently to deliver care (Roland et al., 2015). This topic has been discussed extensively earlier in the chapter (Section 8.1.2), but it is clear a lack of a strong workforce infrastructure can pose a risk to safety and quality of service.

Feedback, monitoring and follow-up are essential when delivering quality and safety outcomes. In terms of implementation at service level (Figure 8.1), findings from the Rushcliffe case study (Chapter 4, 4.1) demonstrated the negative impact of lack of feedback and monitoring of new technology systems once implemented. This is crucial because the system was used as a tool to support medicines administration, therefore inadequate use could have had a negative impact on patient care. Continual feedback and monitoring is considered to be part of the quality and improvement process within integrated care delivery (Suter, 2009). Monitoring and follow-up can also be considered in relation to clinical outcomes. Following up patients' care is essential in reducing avoidable admissions to secondary care. However, one study undertaken in Denmark suggests continual follow-up is difficult to implement due to organisational barriers (Hjelmar et al., 2011). Lack of feedback and monitoring will impact the sustainability of services within the FICS, which in turn will impact the overall financial and stability of healthcare services.

An estimated 71% of medication errors occur in primary care. This is a large cause for concern since they are associated with potential avoidable mortalities (Avery et al., 2012, Elliott et al., 2018, Sandars and Esmail, 2003). Errors are more likely in the elderly population, due to increased polypharmacy and multiple morbidities (Elliott et al., 2018). Some medication errors in the elderly are caused through the dispensing and administration process (Rogers Stephen, 2014). Reporting and technology systems in the case study sites facilitated better quality and safety monitoring and distribution of medicines in the medication administration process. The use of technology has been cited as supporting efficiencies in both quality and safety in primary care by freeing up resources and providing time for practitioners to see patients (Bates and Gawande, 2003, Lainer et al., 2013, Roland et al., 2015). However, in the case studies, some technologies harboured their own risks in relation to misuse, it is therefore important to provide appropriate training and workforce infrastructure to facilitate its use (Odukoya and Chui, 2013) .

The use of technology in healthcare systems is heavily associated with IG and associated data sharing across various interfaces (as described earlier in this chapter, Section 8.2.2.4). Findings from all case studies indicate that appropriate data sharing agreements are vital to increase access to patient data and facilitate fluid movement of patient information across healthcare settings. This is essential in the provision of safe and effective patient care. IG heavily affects patient flow, transfer of care and provisions for an ICS (Suter, 2009).

To conclude this section, quality and safety of services and systems play an important role when forming an ICS. Developing safe systems such as reporting, and monitoring are a requirement to providing quality and safe care. Having contractual support in the form of financial incentives and data sharing agreements also provide a base for a healthcare system supported by quality and safe practices.

The previous sections discuss the overarching key components which affect the formation of the CCFICS. Key issues, such as integration, technology and transfer of care have been identified which impact upon the sustainability of the system. It has also highlighted potential roles and services for the community pharmacy team in the CCFICS.

8.3 The Role of Pharmacy within the CCFICS

The cross-case analysis identified the perceptions of pharmacy as highly variable across the wider healthcare network. Stakeholders demonstrated how these perceptions impacted upon their ability to obtain roles and, to an extent, commissioning of services due to the misunderstanding of pharmacy's level of competency in the wider healthcare environment. This highlighted a potential solution of developing competency-based training alongside cross-professional integrated support, in order to facilitate the development of recognised roles for the pharmacy team within the FICS. This would allow pharmacy to work at the 'height of their licenses' without being questioned on their capability to do so.

The identity of the pharmacy team was debated upon. In relation to pharmacy specific professionals, stakeholders commented on the difficulty of obtaining an identity within the FICS due to the sanctions imposed by the national community pharmacy contract. Therefore, community pharmacy has always been viewed as an outside source, rather than being integrated within the healthcare system. From the view of the wider healthcare professionals, the misunderstanding of roles and lack of pharmacy leadership present within the integrated representative platforms (e.g. STPs) has led to confusion about what pharmacy could bring and where they would fit into the FICS. It is therefore important to demonstrate identification and recognition of the roles of pharmacy within a community care shared-care environment through each of the key components which affect the internal mechanisms of the system.

8.3.1 Community Pharmacy Services in the CCFICS

The CCFICS provides a tightly knit network of links between care providers to support community care. The evidence presented so far has demonstrated essential components necessary to support community care provision within the FICS. This section focuses on the addition of an integrated community pharmacy level within the CCFICS.

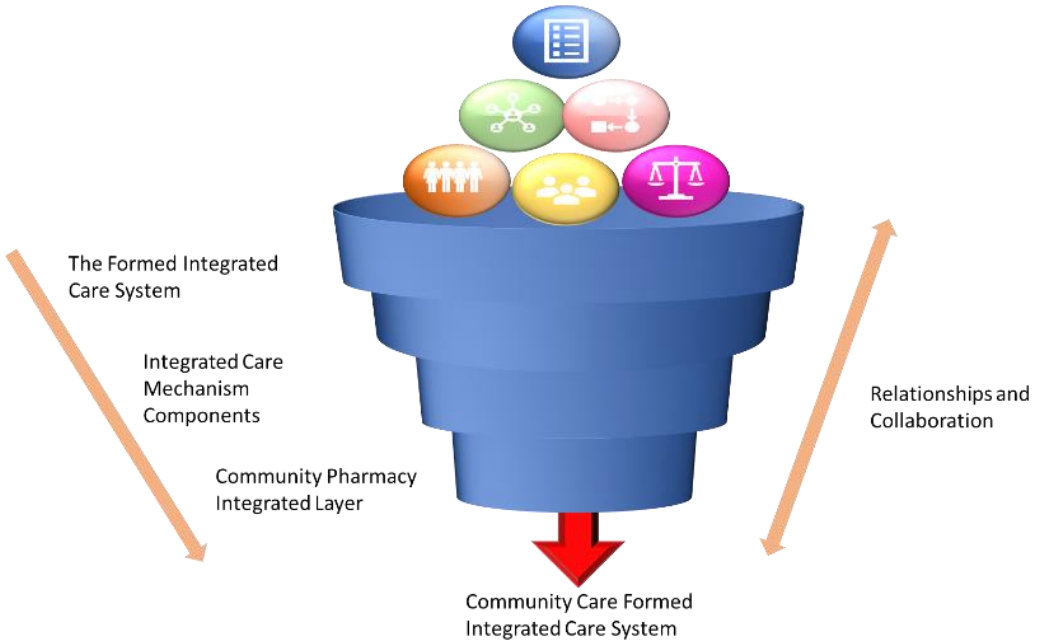


Figure 8.2 Key elements of the FICS which are integral to development of the Community Pharmacy Formed Integrated Care Layer

Pharmacy is a key care provider in any ICS (Hawthorne and Anderson, 2009). Community pharmacy specifically has a vital role in facilitating community care provision. The role of community pharmacy has significantly changed over years, as described in the literature review. Although competencies and the capabilities of pharmacy teams have expanded, it has been difficult for pharmacy to form collaborative links within the wider healthcare community due to 'divided' leadership. The CCFICS demonstrates areas where pharmacy can thrive within an ICS and key actions to take in order for pharmacy teams to be fully integrated within the wider healthcare network to facilitate stabilisation of community care.

8.3.2 Factors of Pharmacy Services in the CCFICS

Key service areas where the pharmacy team could support the CCFICS were evident across all three case studies and medicines management services are essential components of pharmacy-led services within the new models of care. These services include medicines management and optimisation, medicines waste management and medication error support. Vital areas needing pharmacy involvement within an ICS are services associated with the management of medicines, because health systems already face medicines-related challenges (such prescribing errors, poor adherence, interactions and poor communication of medicines information) (Scullin et al., 2007, Fylan et al., 2018).

8.3.3 Medicines Optimisation

Medicines optimisation has an important role within the community pharmacy service delivery role (Edwards et al., 2019) . It refers to the process of 'making the use of medication by patients as safe, effective and efficient as possible' (De Simoni Anna, 2012). The case studies indicate that medicines optimisation is about ensuring the correct medication is given and optimised for the individual patient. Although the medicines optimisation processes can additionally have a positive impact on reducing waste within the system and provide cost-effective savings within a resource-scarce environment (Bekker et al., 2018), the case studies demonstrate that cost saving should not be the sole focus when funding medicines optimisation, since cost savings may not be immediately seen.

Medicines reviews are linked with medicines optimisation and there is a vast array of evidence available supporting them and their benefits to patient care. They are used by clinicians to support understanding and use of medications by patients in order to improve safety and reduce potential harm (Holland et al., 2006). The case studies suggest community pharmacy has a place in delivering medicine optimisation and reviews to patients in association with other community care colleagues, such as *'doctors and dieticians'*. However, as described earlier in this chapter (Section 8.2.2.1), relaying recommendations and the transition of information between care providers needs to be more succinct in order to achieve the benefits, for example using new technology to support information transfer (Suter, 2009, Chen and de Almeida Neto, 2007).

Relationships are an important building block to any integrated system. As discussed earlier in this chapter (Section 8.2.3.3), relationships support service collaborations, the flow of information, and ultimately facilitate the patients' journey and the care they receive. Trust and confidence are key components needed to build strong and integrated relationships (Ham and Walsh, 2013, Li et al., 2018). Building relationships inter- and cross-professionally can help facilitate pharmacy's integration into the wider healthcare network, which will in turn, support services such as medicines optimisation and medicines waste. Developing relationships with those involved in medicines distribution and administration can help facilitate understanding of appropriate use and need. This will have an impact at system level, since the overall cost-savings and enhancement of patient care will feed back into the stability of the overall healthcare system.

Optimising patients' medication is linked with management of medication waste. In the case studies, regular monitoring and review of patients' medication was key to identifying medication requirements and therefore reducing accumulation of medication. Waste management is a global issue. One study shows that a focused approach by healthcare professionals in the community, along with understanding patients' medicine needs, can support a reduction in unwanted medication and waste (Jesson et al., 2005, Wheeler et al., 2017). Establishing medication waste management as a service is crucial in providing a cost-effective solution to support community care provision (Jesson et al., 2005). Financial savings from identifying and preventing medicines waste can be reinjected into the system to support other areas; for

example, in public health or the prevention agenda as mentioned above. This can aid to the stability and sustainability of the community care health system.

In 2009, medicines waste was identified as an estimated cost of £300m per year to the NHS, therefore more innovate ways are required to support the medicines waste initiative (Trueman et al., 2010) . At service level (Figure 8.1), the case studies indicated ways to initiate a medicines waste services through using new technology. The support of new technology can help prevent waste accumulation through paperless auditing and graphical reviews of medicines usage. This type of monitoring can help review and support medicines wastage in addition to facilitating improvements in quality and safety of care provision, as discussed earlier in this chapter (Section 8.2.6).

8.3.4 Medication Errors

Medication errors has been extensively discussed within the quality and safety section. Identifying medication errors has a significant impact on iatrogenic harm (Elliott et al., 2018). The Rushcliffe case study (Chapter 4, 4.1) aimed to support a decrease in potential medication errors by using technology. Pharmacists have a key role in the reduction of medication error service provision, which benefits patient care at service level and system level (Figure 8.1) economic savings (Bates and Gawande, 2003, Avery et al., 2012).

Key areas where pharmacy teams added essential insight into the required medicines management services were seen across the case studies. These services are vital in facilitating medicines-orientated service provision within a

CCFICS. Although the services mentioned above are not new, the way they have been delivered within the new models of care provide an alternative service delivery method, which could potentially be more efficient that the current delivery in certain settings.

8.4 The Role of Pharmacy

Understanding the roles of different care providers is essential to healthcare provision, as described earlier in this chapter (Section 8.2.3.4). Aligning perceptions of pharmacy inter-professionally and in the view of the wider healthcare system is essential for system leaders, commissioners and service providers to appropriately delegate resources to support pharmacy related care provision within the FICS.

The following sections discuss findings associated with the role of pharmacy, which affect its role and position within the wider ICS, in addition to affecting is place and service provision within the CCFICS.

8.4.1 Identity

Professional identity can be associated with specific roles and responsibilities (Ling et al., 2012). The workforce section presented earlier in this chapter (Section 8.1.2) discussed the importance of clarity in the delegation of roles and responsibilities to care providers, in order to increase efficiency and decrease duplication and confusion within an ICS. At system level, adequate leadership representation and clarity on the roles pharmacy can undertake, was required for system leaders within the case studies to understand where pharmacy fits into the wider ICS.

Stereotypes linked with social identification have a large impact on pharmacy and, in particular, community pharmacy in the wider healthcare system (Ashforth and Mael, 1989). As mentioned, prior, the identity of community pharmacy has commonly been associated with its volume-based contract, restricting community pharmacies ability to provide some local services (Chapter 7.3.1 and 7.4.2). Therefore, many stakeholders were perceived to be reluctant to form collaborative links with community pharmacy due to the financial misconceptions. Suggested solutions have been discussed in the contracts section of this chapter (Section 8.2.6), such as a review of the community pharmacy contract to support a better fit within an integrated system. The volume-based focus of the contract has caused issues with service alignment alongside other care providers within primary care, which negatively impacts seamless care provision in a CCFICS.

The current place of community pharmacy in the case studies is one that is 'siloed' and 'isolated'. Therefore, active effort is required to 're-integrate' community pharmacy into the wider healthcare community. Data suggests this can be done through providing clinical services that are more aligned with local health priorities. Integrating community pharmacy as a layer of the workforce to support the CCFICS provides an extra layer of expertise to community care. The 'shopkeeper' image of community pharmacy has caused concerns within the GP community in relation to extending prescribing authority and services of community pharmacy (Hughes, 2003). However, as extensively explained in the workforce and relationship sections of this chapter (Section 8.1.2 and 8.2.3.3), building collaborative exchanges with

various care providers based on trust and confidence, can demolish community pharmacy stereotypes and facilitate an enhanced shared care environment within the CCFICS.

The identity of community pharmacy is related to accessibility, clinical service supply and medicines distribution. These perceptions of community pharmacy are related to a wider understanding of the role of community pharmacy teams and their competencies. Anderson and Sharma (2020) describe these roles as extending further than traditional dispensing practices, to a more clinical focussed service provision. Findings from the case studies agree with this and suggest pharmacists have a wider scope of practice. However, it is clear that there is still a misunderstanding of the responsibilities that practicing pharmacists can undertake. Through structured training and integrated professional support, the community pharmacy team can have an exponential potential to join an integrated community care team.

8.4.2 Training

Training plays a large part in supporting and developing the workforce infrastructure, as discussed earlier in this chapter (Section 8.1.2.2). As mentioned above, a clear misalignment between the perceived roles of community pharmacy and the competencies the pharmacy workforce possess, has demonstrated an inaccurate professional identity of pharmacy to the wider healthcare network. Training was required in the case study sites to upskill the pharmacy workforce to match the increasing demands of the health system. Professionally building the workforce infrastructure adds to

the enhancement of patient care and delivery of health services (Rosser et al., 2017).

Training should be delivered continuously, in a mix of competency-based and integrated interdisciplinary face to face training provision. This will provide a robust platform to develop the pharmacy workforce in the CCFICS. Professional workforces should develop cross-professionally in order for all professions in the workforce infrastructure to evolve synergistically to support the changing dynamic healthcare system (Starfield, 1998). A lack of continual training in the Rushcliffe case study (Chapter 4, 4.1) led to a breakdown in service provision, whereas continual two-way training and feedback dialogue demonstrated better learning outcomes for the practitioners involved.

Training to support the workforce infrastructure is critical to supporting the CCFICS. Pharmacy specifically should change their training development to a more integrated training approach in order to support its growth in expertise in line with CCFICS health priorities and professional identity in the MDT and wider healthcare system.

8.4.3 New Roles

Role development is an important aspect in cultivating the workforce to facilitate building a strong infrastructure, as discussed. Evolving the role of pharmacy can support workload issues (Mann et al., 2018, Roland et al., 2015). A new role for pharmacy is providing a 'hub' role for pharmacists' community care delivery. Using 'hubs' to facilitate pharmacy provision by using telehealth in the United States has worked well in providing pharmacy

services to rural and remote communities (Peterson and Anderson Jr, 2004). This is notable, because it supports the idea of a strongly formed, integrated community system, which will provide accessible, equal healthcare delivery which aims to decrease health inequalities. The impact of this will feed into and add stability to the larger, dynamic healthcare system.

The role of community pharmacy is changing alongside national guidance and legislation (Department of Health and Social Care, 2019). Community pharmacy in the case studies had an opportunity to mould new roles to support the CCFICS. However, the reality is the risk of community pharmacy joining a fully accountable ICS and losing its autonomy as a care provider. As discussed earlier, hierarchies exist across healthcare systems and therefore 'equitable' funding may be difficult to attain in various localities due to the heavy dependence of commissioning on previous relationships and collaborations. Leadership is critical to steering community pharmacy and supporting the development of new roles, through securing investment and protecting its identity.

8.5 A Conceptual Framework for the Community Care Formed Integrated Care System

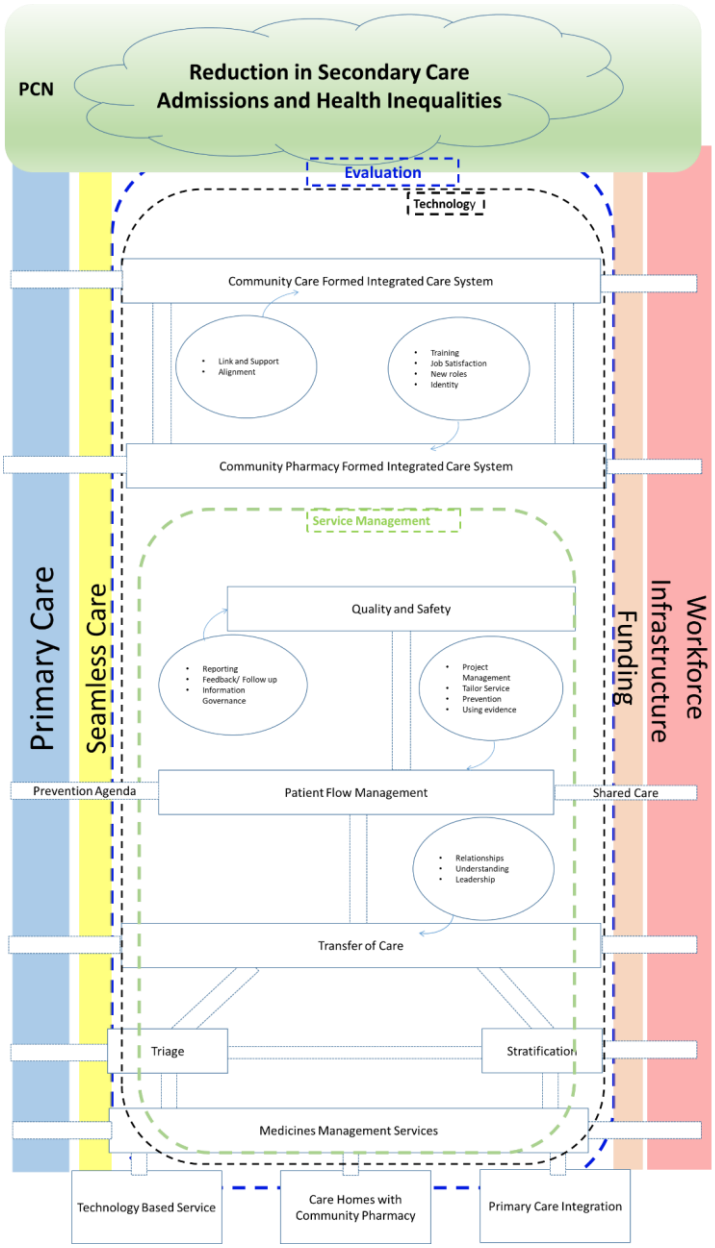


Figure 8.3 A conceptual framework of the Community Care Formed Integrated Care System (CCFICS)

Figure 8.3 demonstrates a conceptual framework developed from the findings of this study. The conceptual framework was derived from each stage of the analysis process (Chapter 3, 3.10). The framework aimed to describe the relationships identified and their impact on the CCFICS. The cross-analysis demonstrated key themes which impact the role and delivery of the community pharmacy team and services within an integrated system. Once these findings were mapped onto the Open Systems Theory framework, it visually identified which key themes effect the integrated care system and its sub systems. This conceptual framework focusses on two key sub-systems identified during this investigation. The two sub-systems are the community care integrated care system and the community pharmacy formed integrated care system. Key factors which impact the stability of these sub-systems are highlighted in figure 8.3, as medicines management services, triage, stratification, transfer of care, patient flow management, quality and safety (Chapter 8, 8.2). These factors are critical to the stability of the system and therefore are represented as key constructs in the conceptual framework. In order to maintain the stability of these constructs, key areas which need to be focussed on are visually represented as bubbles on the framework. These are directly derived from the data. These areas should be the main focus of policy makers, for example in order to maintain effective transfer of care, leadership, understanding and relationships are required between all stakeholders involved. The conceptual framework is to be used in primary care. Key overarching constructs required for the conceptual framework to be

effective are, workforce infrastructure and funding. Together with iterative evaluations and technology, the services provided in this sector propose to reduce the burden of admissions onto secondary care and health inequalities.

Figure 8.4 presents a checklist of components to aid stability of care provision at each level of the healthcare system (Figure 8.1). Managing the system-level components and service-level factors are a requirement to reaching an optimum 'equilibrated' state within the CCFICS. Reaching 'equilibrium' will provide better provisions for the stability of the system. Thereby, providing an environment to facilitate sustainability of services, which will lead to an overall increase in access to services, a reduction of health inequalities, and better ,overall, health and wellbeing in the community (Janssen et al., 2015).

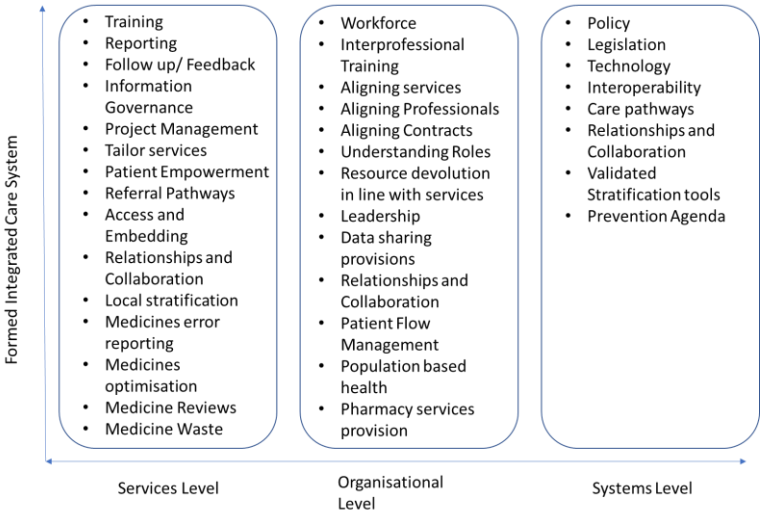


Figure 8.4 Checklist at each level to support the stability of the CCFICS

8.6 Strengths and Limitations

This study provides in depth insights into the new models of care and the role of the pharmacy team within them. Prior to considering the implications of the findings from this study, it is important to assess and summarise the strengths and limitations of the tools used to gather the findings (as described in Chapter 3, 3.8).

A key strength of this study was the use of multiple case studies to explore the phenomenon of the new models of care. Identifying and exploring multiple sites gave deep insight into the complex nature of health systems when employing the new models of care within each case, but also allowed for identification of congruence across each case in addition to a more reliable and robust study design (Baxter and Jack, 2008). The three case study sites explored the role of pharmacy across three different new models of care. This provided an understanding into variations in services, geography and community care provisions.

Although a limitation of case study methodology is reduced generalisability, due to their unique nature, it is important to note that the constructs which emerged from this study have transferability. This is vital because the findings from this study have a deep theoretical underpinning, which allows for the development of a conceptual framework to support policy recommendations, this is presented in figure 8.3. This framework provides a useful layout to support development of seamless community care service pathways within a climate of healthcare reform.

The use of multiple methods to collect the data was a vital strength of this study. Using interviews, observations and qualitative methods gave an in-depth view of the new models of care phenomenon. This was key due to the lack of existing literature on this topic. It was important to gather insights from participant experiences, the surroundings, literature and my own experiences in order to gain an understanding of the new models of care case studies. This data was then triangulated, which produced convergence of findings. For example, the cross-case analysis chapters (Chapters 5, 6 and 7) demonstrate key findings which affected each case study, these were key themes such as workforce, technology and relationships. This gave further insight and deep understanding of the new models of care and added to the rigour and trustworthiness of the study.

Each method of data collection used in this study has its own strengths and limitations. Interviews are a common form of data collection used in qualitative enquiry (Creswell, 2012). They are widely used in pharmacy practice research as a tool to explore a phenomenon. Both focus groups and interviews had been discussed in the Methodology chapter (Chapter 3, 3.11.2.1), but as explained, interviews were selected in this study to gain an understanding of individual experiences of the case study participants (Bryman, 2016). This was vital to build a clear picture of the intricate realities presented in and across each case.

Limitations of interviews include behavioural factors, such as the inability to fully observe the participant due to interviews being verbal and taking place

over a finite period of time. This study used semi-structured interviews, which may have influenced the direction of the interview. The interviews were individual and therefore could not be verified by other interviewees. However, to overcome these limitations, observations were undertaken as an additional method of data collection. Triangulation was then used to increase the rigour of the data collected. Once analysed this would give a deeper understanding of the phenomenon.

Observational data gave me an insight into areas that could not be described in the interviews. It allowed me to develop my own experiences and understanding of the new models of care case study sites. This was critical, since it gave a visual presence to the verbal data collected through interviews and document analysis. For example, when discussing the Rushcliffe case study (Chapter 4, 4.1), a key feature to eMAR service provision was understanding the problem of internet connectivity through the thick stone walls of the care home. This was only visualised once I had visited the care homes. Limitations of observational research were participants 'acting' whilst I was observing. Whilst I am confident that this was not the case, it can be perceived as a potential limitation. This would have affected the reality which was being constructed. Therefore, using interviews to triangulate the observed data is a good way to corroborate the findings from each data collection process.

Document analysis was used as an additional method of data collection. It provided insight into published and unpublished documents from the new

models of care case study sites. This was an important method to use, because many of the published documents were from government bodies, written in a particular style. Reviewing unpublished documents alongside the published, gave insight into the inner workings of the new models of care site. This added an additional layer of understanding and increased the rigour of the study. Limitations of document analysis can be considered as 'bias selectivity', however whilst this study was being conducted there were very few documents relating to the new models of care sites, therefore this limitation was reduced.

In terms of physically collecting the data, many sites were open to my visits and therefore access was not an issue. However, snowballing positioned the initial stakeholders as gate keepers to the case study sites. This may have added bias to which case studies were chosen, however it was vital to proceed through this route, in order to understand the depth of community pharmacy involvement as per the inclusion criteria (Chapter 3, 3.7.2). The Rushcliffe site had some issues with access in that the gatekeepers did not snowball contacts of the care homes or community pharmacy involved in this study. I therefore had to seek out alternative avenues to gain access to interview and visit the care homes and pharmacy. Distance was another key factor which affected access; Northumbria and Devon sites were far away and therefore pre-planning of visitation and interviews had to be arranged. This was difficult with Devon as stakeholders were hard to get hold of initially.

The duration of this study took place over a number of years. This can be perceived as a limitation, however, during this time the healthcare market evolved significantly, both on a national and global scale. On a national scale, observing the changes to healthcare over the years allowed for the impact and sustainability of the new models of care sites to be explored. Globally, the unprecedented pandemic of COVID-19 has had a major impact on healthcare delivery, in particular in the areas of digital health and collaborative care. Therefore, the importance of the factors identified in this study may have changed; however, exploring which factors were enhanced could be a focus of future research.

Although the methods undertaken in this study had strengths and limitations, I am confident that these were the correct methods to use in order to produce rigorous qualitative enquiry which answered the research question.

Chapter 9 Conclusion

9.1 Aims and Objectives

The aim of this study is to explore the current and future roles for pharmacy during a time of healthcare reform. The new models of care provided the right context to base this research in, because they provided a unique environment during a recent health reform. This resulted in the introduction of the Five-Year Forward View and vanguard models of care. The objectives of this investigation consisted of identifying and exploring factors which support and facilitate development and sustainability of new pharmacy services within community care in England.

9.2 The Formed Integrated Care System (FICS)

Demonstration of an ICS is key to the provision of sustainable integrated services. This study and literature provided evidence which suggested in order to support this type of system, attributes facilitating integration are required. Firstly, seamless care provision is critical to the development and sustainability of the FICS. However, barriers to seamless care provision consist of miscommunication between care providers and stakeholders within an MDT. Pharmacy has a vital role in facilitation of good communication between care providers.

Secondly, workforce is essential in the provision of integrated care. A strong workforce is vital to facilitate safe and efficient service delivery. The findings from the new models of care examined and the literature suggest, it is critical that the current workforce is upskilled cross professionally and to match the needs of the evolving healthcare system. This is not always feasible due to time and investment constraints. However, if the emphasis is not on training, it can have a negative impact on teamwork, attitudes and staff retention. This will build pressure in the system and adversely affect the stability of the FICS. Pharmacy has a key role in contributing to training and providing a shared understanding between professionals and commissioners. This will strengthen and stabilise the overall system.

9.3 Factors which Affect the Mechanism of the System

Understanding which factors will support the development and sustainability of new pharmacy services within the FICS is important. The key is to

acknowledge the main constructs that affect the internal mechanism of the whole system, because these will impact community care as well as the wider system. Findings from the study and the literature indicate the FICS is a dynamic healthcare system which is continually changing and adapting. In order to support integration and provide a sense of sustainability to a continually moving system, it is essential to provide key concepts and structures which add to the stability of the system. Data from this study and literature highlighted the external environment, integration, care pathways, patient flow management, service management and quality and safety, as significant themes which emerged from the data, which Impact the stability to the FICS.

9.4 The Role of the Community Pharmacy Team within a Community Care Formed Integrated Care System

Developing a strong community care network is a key finding in this research. Pharmacy plays a strong role in an integrated system, in particular within the community setting. The role of the community pharmacy team has continually changed over the years, as has their competencies and capabilities. There are key roles for the community pharmacy team to deliver services such as medicines optimisation and medicine reviews within an ICS. However, the depth of integration of these services within the wider system is significantly reliant on the relationships built within and across care providers.

The role of the pharmacist and pharmacy team within the wider healthcare system, was an essential finding in this study. Two key requirements

underpinned its integration within the wider ICS: identity and training. This research suggests the identity of pharmacy was critical to making connections within other care providers. Stereotypes of community pharmacy in particular have impacted assumptions made by other care providers on their ability to deliver services. This was found to be linked with the current NHS volume-based contract community pharmacy delivers and can negatively impact seamless care provision within the CCFICS.

Training was also an important finding in relation to developing the pharmacy workforce to suit the needs of the dynamic health system. Findings from this investigation suggested training should be continuous and a mix of competency-based training and interdisciplinary face to face provision. This is vital to aligning training across healthcare providers so they can develop in parallel to support the goals of the health system. Research suggests a more integrated approach to training will align competencies and enhance the professional identity of pharmacy within the MDT in the wider healthcare system.

9.5 Implications for Practice and Recommendations

9.5.1 Implications for Policy

The outcomes from this study have clear implications for future policy. The research identified the requirement for a 'whole system' approach to integrated care delivery. Key components from the new models of care identified areas which are essential to developing future initiatives to support a more integrated and aligned healthcare system. This study outlined local

systems which are responsible for delivering care to a geographical footprint, decreasing fragmentation and duplication of services. This increases access and enhances patient care. Policy makers need to reassess national structures, which deliver healthcare and devolve them to localised footprints and ensure recommendations take into account the needs of local health systems, to allow equal opportunities to deliver equitable healthcare.

The UK healthcare system is under immense pressure due to continual changes in policy, financial support and workforce provision. Necessary changes are essential to stabilising this system. This research demonstrated key components, which aim to reduce the pressure and provide a seamless route for integrated healthcare delivery. Development of referral pathways are key to seamless care provision (Chapter 8, 8.1.1.1). Therefore, policy makers should write policy to reflect clearer pathways for referral to best support the transfer of patients and healthcare information.

Understanding the requirements of the healthcare system and roles needed to support healthcare delivery is a key requirement of policy makers. Providing a stable workforce in line with policy recommendations is critical to fulfilling the needs of the system and providing sustainable healthcare delivery. A stable workforce is demonstrated as vital at all levels of the system, due to the continuous changing nature of healthcare systems (Luke and Stamatakis, 2012). Providing strong workforce provision, which can manage these changes is vital to sustaining the system (Starfield et al., 2005) (Chapter 8, 8.1.2). Policy makers and commissioners should review workforce

requirements and adequately recommend roles which will strengthen and stabilise the system. For example, providing recommendations on utilising community pharmacy and other allied healthcare professionals to adequately manage increasing workloads. This can be achieved by providing clear roles and responsibilities, as well as through appropriate referral pathways and communication, outlined in the study.

The NHS Long Term Plan (2019) describes the need for a varied workforce to combat increasing pressure built within the healthcare system. The need for a strong workforce infrastructure is vital, and essential to this are the links formed across the workforce. Relationships and collaborations are critical to effective workforce delivery. Collaborative action between care providers is linked with better alignment and delivery of national priorities in addition to better management of resources. Therefore, policy makers should make recommendations on pathways which build and link healthcare professionals across care providers, for example through regular meetings engaging all members at different levels of the system.

This research demonstrates the importance of continual evaluation of services. Literature cited suggests policy should be evidenced and recommendations should be made in line with results from evaluations (Baggott, 1997, Katikireddi et al., 2014). Outcomes from service evaluations represent the changing needs of the healthcare environment. Continuous monitoring, feedback and evaluations were essential to evolving the services in the new models of care sites. Policy makers and commissioners should use

outcomes from local and national evaluations to support their policy recommendations. This is vital to recommending proposals in line with the changing requirements of the healthcare system and national priorities. This are vital to health system development and sustainability (Fillingham and Weir, 2014).

9.5.2 Implications for Health Systems

Health systems are continually changing, the need for a strong ICS to support patient care is vital. A focus is needed on focussed areas which maintain good quality care provision in a changing healthcare system. This study demonstrated a strong primary and community care system is critical to sustaining health service provision.

Health systems are required to develop strong links across providers to support population-based healthcare delivery. The findings from this research indicate building appropriate pathways allows for better provision of risk management for patients (Chapter 6, 6.2.1.1). This will decrease pressure on secondary care services and save costs associated with avoidable admissions. Health system leaders need to input proposals, which will monitor, and risk manage patients to avoid unnecessary admissions. This can be achieved through training and utilising key professionals in the community care health system. For example, training pharmacists, care home staff and receptionists to identify, manage or refer these patients to be adequately managed.

Population-based healthcare is an important consideration in relation to system wide integrated care provision. It is important to view patients

holistically and under a person-centred umbrella, taking into account their health and social status. This can be delivered through integrated care working across a healthcare provider, which is critical to developing a strong seamless primary care system (Starfield, 1998). Health system leaders should focus on investing in all care providers such as primary care professionals and charity organisations to deliver population-based healthcare. For example, empowering community pharmacy to facilitate in management of patients with chronic conditions in line with GP referrals.

The need for training of all care providers within a healthcare system, was an important finding from this study. Lack of professional development of workforce, led to barriers to sustaining service provision. Adequate training provision is required to facilitate the growth of the workforce in line with national priorities and support future sustainability of the healthcare system. Significant investment is required to support the training needs of professionals within the health system workforce (Chapter 5, 5.4). System leaders should devolve investment into training the workforce to manage essential health priorities. Training was identified to be best delivered as a mixture of competency-based and integrated training. It should be delivered across professions, in order for all care providers to grow in parallel with each other to support national healthcare priorities (Boerma, 2006). To achieve this, health system leaders should work alongside key members in academia and in practice to develop vital collaborative training programs across different learning environments, to suit all training requirements.

Technology systems which support the transfer of care and triage of patients have been shown to be vital to enhance patient care (Chapter 6, 6.1.6). Health systems should invest in appropriate technology to provide good quality patient care. The COVID-19 pandemic has accelerated the formation of many new models of care, in particular the use of digital technology to facilitate care provision. Due to lockdown measures imposed by governments, many patients are alone, fearful and unable to access health services. This type of technology is known to support management of acute and long-term conditions (Segar et al., 2013, Cottrell et al., 2012). Evidence suggests technology used in the healthcare settings can facilitate and streamline patient flow (Devaraj et al., 2013, Boyer and Pronovost, 2010). In addition to providing training for all care providers within the system to utilise the technology appropriately. This should also be continually evaluated and fed back to policy makers to update national recommendations.

Barriers to technology were cited as issues around IG and data sharing agreements. These barriers affected the ability to deliver seamless patient care, because of the lack of fluid movement of patient information across providers. Health system leaders should provide adequate data sharing agreements to allow ease of movement of information across providers to support better healthcare provision.

Alignment of care providers to support seamless care provision is important to sustaining the wider health system. Misalignment of contracts of primary care providers, such as community pharmacy and general practice, has caused

fragmentation in service delivery (Chapter 8, 8.4.1). Health system leaders should review outdated contracts and update them to align better with local and national health priorities. For example, changing the community pharmacy contract to a service-focussed contract, will incentivise them to focus on high quality service delivery, which will enhance patient care provision and strengthen the community care system.

9.5.3 Implications for Pharmacy Practice

The pharmacy profession has a clear role within the new models of care and the dynamic healthcare system. Community care is an important area where community pharmacy would best support the system to facilitate its sustainability. Community pharmacy plays a vital role as gatekeepers to accessing services and information, forming lines of communication and improving collaboration and teamwork between the community pharmacy team and other care providers. For example, GP practices will facilitate increase knowledge and access of services. Additionally, these links will improve the identity and understanding of roles of the community pharmacy team in the wider healthcare system. Therefore, community pharmacy teams need to form better links with local care providers and promote their roles and competencies. This will be one step further into integrating community pharmacy in the wider ICS.

This study demonstrated a clear misunderstanding of pharmacy and its capabilities within the wider healthcare system (Chapter 7, 7.4.2). Forming relationships within and across the healthcare professions, can help facilitate

the integration of pharmacy across the wider healthcare system. Strong leadership is required from the pharmacy profession to facilitate building these relationships. Strong links across primary and secondary care will facilitate better care provision and stabilise the overall healthcare system. Community pharmacy has a large role to play in particular in community care due to its position of accessibility.

The role and capabilities of pharmacists has expanded over the years (Anderson, 2007). Pharmacists are now able to qualify as independent prescribers. This massively increases their scope of practice to support local commissioners deliver national healthcare priorities. Pharmacists need to increase their scope of practice to professionally develop and acquire these competencies to support the integrated healthcare system.

This research revealed that community pharmacy has a vital role to play in medicines management services, which are essential in community care provision (Chapter 7, 7.2). Pharmacists have an important role in the reduction of medication errors , which benefits patient care at service and system level economic savings (Bates and Gawande, 2003, Avery et al., 2012).

Professional identity can be associated with specific roles and responsibilities (Ling et al., 2012). At system level, leadership is critical to steering community pharmacy and supporting the development of new roles, through securing investment and protecting its identity. Clarity on the roles pharmacy can undertake is required in order to align their role with current health priorities and to support the ICS.

9.5.4 Implications for Research

This research presented a unique study exploring the potential roles and services of pharmacy at a time of healthcare reform. The position taken from a health systems point of view gave a unique perspective on the visibility of pharmacy within the wider healthcare system. This research highlighted several areas where further work is vital. The aim of this study was to explore potential roles and services of community pharmacy within a dynamic complex healthcare system. Key areas were emphasised where community pharmacy would be beneficial when integrated within the wider healthcare system, in addition to barriers which prevent their integration. There is a need to explore further, solutions to these barriers, for example in terms of contracting, what type of contract would best suit community pharmacy and how would that be delivered.

In terms of integration, further research is required on the depth of integration of community pharmacy within the wider healthcare system and what that model looks like. Referral pathways have been developed to support community pharmacy in facilitating patient triage through the CPCS (Community Pharmacy Consultation Service) referral service (Pharmaceutical Services Negotiating Committee, 2020). However, what new models of care can be developed to facilitate further integration of community pharmacy to support strong community care provision? What do these models look like? Which health priorities do they focus on and how will they be delivered?

A crucial area highlighted was the need for continual training and development of the workforce. Further research is required to develop competency-based training materials and approaches to integrated training pathways. Collaborating with other healthcare professionals and academics to develop multidisciplinary learning materials could facilitate training development. Potential areas of training could include, consultation skills, management of long-term conditions and clinical diagnosis of community care minor ailments.

From this research, it was difficult to find pharmacy practice research positioned within health systems theory. Further in-depth studies focussed on the roles of the pharmacy team within health systems research will facilitate further understanding of the position of pharmacy as a sector within an ICS.

Further research should explore the roles of community pharmacy post the COVID-19 pandemic. The unprecedented demands placed on community pharmacy healthcare delivery is well documented (Cadogan and Hughes, 2020). However, after the social distancing rules relax, what will be the requirement and provisions of community pharmacy healthcare delivery? In relation to this research, factors which have been highlighted to affect the CCFICS, may have altered in importance. Therefore, it is essential to research which factors have been enhanced in order to support healthcare delivery during and post COVID-19. This will be vital to understand as it will set the pathway for community pharmacy provision for the future.

9.6 Summary Conclusion

This study explored the new models of care case studies and identified key factors which affect the integration and sustainability in the wider healthcare network. The new models of care paved the pathway for localised services which reflected the needs of the geographical footprints. The case studies examined demonstrated important attributes that new models of care possessed, which supported their sustainability.

This research focussed on the wider health system view and concluded essential factors which facilitate the sustainability of health service provision within a dynamic complex health system. Integration was found to be a vital factor, aligning services and organisations across the system, which are important to delivering seamless, good quality patient care. Delivering adequate care relies on a strong workforce infrastructure, therefore training is required to develop the current professional workforce to support the system meet the healthcare needs and requirements.

The aim of this study was to explore the potential roles and services of community pharmacy during the new models of care program. This study demonstrated community pharmacy plays an essential role in community care provision. Specifically, in delivering medicines management services, such as medicines optimisation, medicines review and medicines waste. The position of community pharmacy on the high street presents them as gatekeepers to members of the community. Community pharmacy can increase access to services and provide services of support such as self-care. In relation to the

wider healthcare system, the identity of community pharmacy was variable. Therefore, defined roles and responsibilities for community pharmacy need to be clarified in order to clearly define their place within the ICS.

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Appendicies

Appendix 1 Ethical Approval

Copy of an email dated 27/04/2017

Hi Yasmin,

As your study is a service evaluation, it does not need a Declaration of Sponsorship. It also doesn't require REC review. The attached document will give you some information on service evaluation.

You will need to get agreement from the institutes/departments/practices etc where you are getting your participants.

Good luck with your research.

Many thanks.

Sandip Stapleton

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Differentiating clinical audit, service evaluation, research and usual practice/surveillance work in public health

RESEARCH	SERVICE EVALUATION*	CLINICAL AUDIT	SURVEILLANCE	USUAL PRACTICE (in public health)
The attempt to derive generalizable new knowledge including studies that aim to generate hypotheses as well as studies that aim to test them.	Designed and conducted solely to define or judge current care.	Designed and conducted to produce information to inform delivery of best care.	Designed to manage outbreak and help the public by identifying and understanding risks associated.	Designed to investigate outbreak or incident to help in disease control and prevention.
Quantitative research – designed to test a hypothesis. Qualitative research – identifies/explores themes following established methodology.	Designed to answer: "What standard does this service achieve?"	Designed to answer: "Does this service reach a predetermined standard?"	Designed to answer: "What is the cause of this outbreak?"	Designed to answer: "What is the cause of this outbreak?" and treat.
Addresses clearly defined questions, aims and objectives.	Measures current service without reference to a standard.	Measures against a standard.	Systematic, statistical methods to allow timely public health action.	Systematic, statistical methods may be used.
Quantitative research – may involve evaluating or comparing interventions, particularly new ones. Qualitative research – usually involves studying how interventions and relationships are experienced.	Involves an intervention in use only. The choice of treatment is that of the clinician and patient according to guidance, professional standards and/or patient preference.	Involves an intervention in use only. The choice of treatment is that of the clinician and patient according to guidance, professional standards and/or patient preference.	May involve collecting personal data and samples with the intent to manage the incident.	Any choice of treatment is based on clinical best evidence or professional consensus.
Usually involves collecting data that are additional to those for routine care but may include data collected routinely. May involve treatments, samples or investigations additional to routine care.	Usually involves analysis of existing data but may include administration of interview or questionnaire.	Usually involves analysis of existing data but may include administration of simple interview or questionnaire.	May involve analysis of existing data or administration of interview or questionnaire to those exposed.	May involve administration of interview or questionnaire to those exposed.
Quantitative research – study design may involve allocating patients to intervention groups. Qualitative research – uses a clearly defined sampling framework underpinned by conceptual or theoretical justifications.	No allocation to intervention: the health professional and patient have chosen intervention before service evaluation.	No allocation to intervention: the health professional and patient have chosen intervention before audit.	Does not involve an intervention.	May involve allocation to control group to assess risk and identify source of incident but treatment unaffected.
May involve randomisation.	No randomisation.	No randomisation.	No randomisation.	May involve randomisation but not for treatment.
Normally requires REC review. Refer to www.nres.npsa.nhs.uk/applications/apply/ for more information.	Does not require REC review.	Does not require REC review.	Does not require REC review.	Does not require REC review.

Appendix 2 Participant Information Sheet



Participant Information Sheet

(Final 1.0 10.05.2017)

Title of Study: A service evaluation of community pharmacy services within new models of care

Name of Researcher(s): Miss Y Karsan

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. One of our team 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 new models of care programme described in the Five Year Forward View set out the path for the NHS to increase its sustainability through better healthcare provision and managing costs. The purpose of this study is to perform a service evaluation by identifying and understanding the organisation and relationships behind success and integration of the new model of care. This research aims to explore a framework for successful integration in primary care.

Why have I been invited?

You are being invited to take part because you are a stakeholder within the new models of care programme. In order to fully understand the relationships and organisation behind the new model of care we would like to invite you to take part in our research.

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?

If you decide to take part, in this study, you will be invited to discuss the new models of care programme and your role. A confirmation letter/email will be sent to you confirming the details of the interview. The discussion based interview will last around 1 hour and will be at a time and location of your convenience. The new models of care programme are diverse and evolving landscape; therefore, you may be asked for a follow up discussion at a later date.

You will not have to answer any questions which do you not feel comfortable answering. If you are unable to attend, please contact us and we can rearrange. If you are unable to meet face to face, we can make alternative arrangements. All interviews will be audio recorded and with your permission we may use direct quotes from the interviews in research publications. Anonymity and confidentiality will be maintained throughout study.

Expenses and payments

Travel expenses will be offered for any additional costs incurred as a result of participation.

What are the possible disadvantages and risks of taking part?

There are minimal risks involved with this study as the study involves discussions on the new models of care programme.

What are the possible benefits of taking part?

The information from this study may not have any direct personal benefits, however it will help understand aspects of integration of community pharmacy within the new models of care.

What happens when the research study stops?

You will be notified when the research study stops and thanked for your involvement. All information collected will remain confidential and anonymous within the University of Nottingham archives

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to the researcher who will do their best to answer your questions. The researcher's contact details are given at the end of this information sheet. If

wish to discuss any concerns with someone other than the researcher with regards to this study, you may contact the ……..

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 which leaves the hospital 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 **** after the end of the study so that we are able to contact you about the findings of the study unless you advise us that you do not wish to be contacted). All 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 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.

What will happen to the results of the research study?

If participants would like a summary of the research, let the researcher know during the course of the research. The findings of the study will be published in journals and presented at conferences; all information collected through the interviews published will be anonymous.

Who is organising and funding the research?

This research is being organised by the University of Nottingham as part of a study for a Postgraduate doctoral award.

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.

Further information and contact details

Please feel free to contact us on the details below:

Researcher:

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Appendix 3 Consent Form

CONSENT FORM

Title of Study: A service evaluation of community pharmacy services within new models of care

Name of Researcher: Miss Yasmin Karsan

Name of Participant: Please initial box

1. I confirm that I have read and understand the information sheet 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 my medical care or 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 the discussion will be recorded and that anonymous direct quotes from the discussion may be used in study reports.

4. I understand that the information collected about me will be used to support
other research in the future and may be shared anonymously with other researchers.

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 4 List of Vanguard Sites with Potential Pharmacy Input

VANGUARD	Type of vanguard	LPC best Guess	NHS sub region 1	NHS sub region 2	COMMUNITY PHARMACIES
1.Wirral Partners	Integrated primary and acute care systems – joining up GP, hospital, community and mental health services	Cheshire and Wirral	CHESHIRE AND MERSEYSIDE		Potential collaboration with Pharmacy
2.Mid Nottinghamshire Better Together	Integrated primary and acute care systems – joining up GP, hospital, community and mental health services	Nottinghamshire	NORTH MIDLANDS		Potential collaboration with Pharmacy - GP practice pharmacy
3.South Somerset Symphony Programme	Integrated primary and acute care systems – joining up GP, hospital, community and	Somerset	SOUTH WEST		Looking at how we build a clinical pharmacy system that links acute, GP and Community Pharmacy together. Not much too report at present,

	mental health services				probably be end of this year before anything concrete develops
4.Northumberland Accountable Care Organisation	Integrated primary and acute care systems – joining up GP, hospital, community and mental health services	North of Tyne	YORKSHIRE AND THE HUMBER		Community based specialist pharmacy service. Working with community pharmacy to make interventions. Employing pharmacists within primary care to triage patients. Community pharmacists carrying out MURs in care homes.
5.Salford Together	Integrated primary and acute care systems – joining up GP, hospital, community and mental health services	Manchester	LANCASHIRE AND GREATER MANCHESTER		23 GP practice pharmacists in neighbourhood teams.

6.Better Care Together (Morecambe Bay Health Community)	Integrated primary and acute care systems – joining up GP, hospital, community and mental health services	Cumbria	LANCASHIRE AND GREATER MANCHESTER	CUMBRIA AND NORTH EAST	
7.North East Hampshire and Farnham	Integrated primary and acute care systems – joining up GP, hospital, community and mental health services	Hampshire and Isle of Wight	WESSEX		Potential collaboration with Pharmacy
8.Harrogate and Rural District Clinical Commissioning Group	Integrated primary and acute care systems – joining up GP, hospital, community and mental health services	North Yorkshire	YORKSHIRE AND THE HUMBER		
9.My Life a Full Life (Isle of Wight)	Integrated primary and acute care systems – joining up GP, hospital,	Hampshire and Isle of Wight	WESSEX		Potential collaboration with Pharmacy

	community and mental health services				
10.Calderdale Health and Social Care Economy	Multispecialty community providers – moving specialist care out of hospitals into the community	West Yorkshire	YORKSHIRE AND THE HUMBER		Planning to co-locate pharmacy services with other primary care providers. Through single point access and multidisciplinary team working.
11.Erewash Multispecialty Community Provider	Multispecialty community providers – moving specialist care out of hospitals into the community	Derbyshire	NORTH MIDLANDS		
12.Fylde Coast Local Health Economy	Multispecialty community providers – moving specialist care out of hospitals into the community	Lancashire	LANCASHIRE AND GREATER MANCHESTER		Concentrating on patients with co-morbidities. Uses MDT to develop goals and self-care plans
13.Vitality (Birmingham and Sandwell)	Multispecialty community providers – moving specialist	Birmingham	WEST MIDLANDS		Looking for pharmacists to run clinics in their GP surgery network.

	care out of hospitals into the community				
14.West Wakefield Health and Wellbeing Ltd	Multispecialty community providers – moving specialist care out of hospitals into the community	West Yorkshire	YORKSHIRE AND THE HUMBER		Partnered with Community Pharmacy West Yorkshire. They are designing an expanded primary care team including pharmacy. Commissioning of Pharmacy first service. Pilot of PURM service. Accelerated site which will engage with CPWY to reduce A+E 4 hour waiting times - Awaiting further information from Robbie)
15.Better Health and Care for Sunderland	Multispecialty community providers – moving specialist care out of hospitals into the community	Sunderland	CUMBRIA AND NORTH EAST		

16.Dudley Multispecialty Community Provider	Multispecialty community providers – moving specialist care out of hospitals into the community	Dudley	WEST MIDLANDS		No collaboration as yet
17.Whitstable Medical Practice	Multispecialty community providers – moving specialist care out of hospitals into the community	Kent	SOUTH EAST		No pharmacist within the GP federation in Whitstable, therefore no collaboration as yet.
18.Stockport Together	Multispecialty community providers – moving specialist care out of hospitals into the community	Stockport	LANCASHIRE AND GREATER MANCHESTER		Recently received a proportion of the transformation fund. Using pharmacy to work with MDT on Hip and Knee replacements
19.Tower Hamlets Integrated Provider Partnership	Multispecialty community providers – moving specialist care out of hospitals into the community	North East London	LONDON		Community Pharmacists to be trained as Independent prescribers
20.Better Local Care (Southern Hampshire)	Multispecialty community providers – moving specialist	Hampshire and Isle of Wight	WESSEX		Potential collaboration with Pharmacy

	care out of hospitals into the community				
21.West Cheshire Way	Multispecialty community providers – moving specialist care out of hospitals into the community	Cheshire and Wirral	CHESHIRE AND MERSEYSIDE		Potential collaboration with Pharmacy
22.Lakeside Healthcare (Northamptonshire)	Multispecialty community providers – moving specialist care out of hospitals into the community	Northamptonshire	WEST MIDLANDS		Working with Lloyds Pharmacy
23.Principia Partners in Health (Southern Nottinghamshire)	Multispecialty community providers – moving specialist care out of hospitals into the community	Nottinghamshire	NORTH MIDLANDS		Potential collaboration with Pharmacy
24.Connecting Care – Wakefield District	Enhanced health in care homes – offering older people better, joined up health, care and rehabilitation services	West Yorkshire	YORKSHIRE AND THE HUMBER		Potential collaboration with Pharmacy - Look further

25.Gateshead Care Home Project	Enhanced health in care homes – offering older people better, joined up health, care and rehabilitation services	Gateshead and South Tyneside	CUMBRIA AND NORTH EAST		
26.East and North Hertfordshire Clinical Commissioning Group	Enhanced health in care homes – offering older people better, joined up health, care and rehabilitation services	Hertfordshire	WEST MIDLANDS		
27.Nottingham City Clinical Commissioning Group	Enhanced health in care homes – offering older people better, joined up health, care and rehabilitation services	Nottinghamshire	NORTH MIDLANDS		

28.Sutton Homes of Care	Enhanced health in care homes – offering older people better, joined up health, care and rehabilitation services	Merton, Sutton and Wandsworth	LONDON		Pharmacist associated with each care home to deliver MURs. Pilot ended March 16'
29.Airedale & Partners	Enhanced health in care homes – offering older people better, joined up health, care and rehabilitation services	West Yorkshire	YORKSHIRE AND THE HUMBER		Telemedicine
30.Greater Nottingham System Resilience Group	Urgent and emergency care – new approaches to improve the coordination of services and reduce pressure on A&E departments	Nottinghamshire	NORTH MIDLANDS		SRG focussed on A+E only at the moment.

31.Cambridgeshire and Peterborough Clinical Commissioning Group	Urgent and emergency care – new approaches to improve the coordination of services and reduce pressure on A&E departments	Cambridgeshire and Peterborough	EAST		Community Pharmacist on SRG, no new information.
32.North East Urgent Care Network	Urgent and emergency care – new approaches to improve the coordination of services and reduce pressure on A&E departments	County Durham and Darlington	YORKSHIRE AND THE HUMBER		Pilot of PURM service and minor ailment scheme
32.North East Urgent Care Network	Urgent and emergency care – new approaches to improve the coordination of services and reduce pressure on A&E departments	Gateshead and South Tyneside	YORKSHIRE AND THE HUMBER		

32.North East Urgent Care Network	Urgent and emergency care – new approaches to improve the coordination of services and reduce pressure on A&E departments	Sunderland	YORKSHIRE AND THE HUMBER		
32.North East Urgent Care Network	Urgent and emergency care – new approaches to improve the coordination of services and reduce pressure on A&E departments	Tees	YORKSHIRE AND THE HUMBER		
33.Barking and Dagenham, Havering and Redbridge System Resilience Group	Urgent and emergency care – new approaches to improve the coordination of services and reduce pressure on A&E departments	North East London	LONDON		SRG is partnering with LPC. Looking to simplify pathways and increase the use of pharmacy, specifically with prevention and self-care.

34.West Yorkshire Urgent Emergency Care Network	Urgent and emergency care – new approaches to improve the coordination of services and reduce pressure on A&E departments	West Yorkshire	YORKSHIRE AND THE HUMBER		Awaiting more information from Robbie RE: accelerated site. Pharmacists involved within NHS 111
35.Leicester, Leicestershire & Rutland System Resilience Group	Urgent and emergency care – new approaches to improve the coordination of services and reduce pressure on A&E departments	Leicestershire	CENTRAL MIDLANDS		We are not involved directly except for some sub workstreams for better care together, including did oral technology adoption.
36.Solihull Together for Better Lives	Urgent and emergency care – new approaches to improve the coordination of services and reduce pressure on A&E departments	Solihull	WEST MIDLANDS		

37.South Devon and Torbay System Resilience Group	Urgent and emergency care – new approaches to improve the coordination of services and reduce pressure on A&E departments	Devon	SOUTH WEST		Partnering with community pharmacy, via the LPC to deliver enhanced UEC. To include locating primary care providers at A&E and Urgent Care Centres in at least two locations. D Bearman sits on Torbay system resilience group (SRG).
38.Salford and Wigan Foundation Chain	Acute care collaboration vanguard sites	Salford and Trafford	LANCASHIRE AND GREATER MANCHESTER		
39.Northumbria Foundation Group	Acute care collaboration vanguard sites	Gateshead and South Tyneside	CUMBRIA AND NORTH EAST		
40.Royal Free London	Acute care collaboration vanguard sites	North East London	LONDON		
41.Foundation Healthcare Group (Dartford and Gravesham)	Acute care collaboration vanguard sites	Kent	SOUTH EAST		

42.Moorfields	Acute care collaboration vanguard sites	North East London	LONDON		
43.National Orthopaedic Alliance	Acute care collaboration vanguard sites	Brent and Harrow	WEST MIDLANDS		
44.The Neuro Network (The Walton Centre, Liverpool)	Acute care collaboration vanguard sites	Liverpool	CHESHIRE AND MERSEYSIDE		
45.MERIT (Mental Health Alliance for Excellence, Resilience, Innovation and Training) (West Midlands)	Acute care collaboration vanguard sites	Birmingham	WEST MIDLANDS		
45.MERIT (Mental Health Alliance for Excellence, Resilience, Innovation and Training) (West Midlands)	Acute care collaboration vanguard sites	Dudley	WEST MIDLANDS		

45.MERIT (Mental Health Alliance for Excellence, Resilience, Innovation and Training) (West Midlands)	Acute care collaboration vanguard sites	Solihull	WEST MIDLANDS		
45.MERIT (Mental Health Alliance for Excellence, Resilience, Innovation and Training) (West Midlands)	Acute care collaboration vanguard sites	Walsall	WEST MIDLANDS		
46.Cheshire and Merseyside Women's and Children Services	Acute care collaboration vanguard sites	Cheshire and Wirral	CHESHIRE AND MERSEYSIDE		
47.Accountable Clinical Network for Cancer (ACNC)	Acute care collaboration vanguard sites	City and Hackney	LONDON		
47.Accountable Clinical Network for Cancer (ACNC)	Acute care collaboration vanguard sites	Ealing, hammersmith and Hounslow	LONDON		

47.Accountable Clinical Network for Cancer (ACNC)	Acute care collaboration vanguard sites	Manchester	LANCASHIRE AND GREATER MANCHESTER		
48.East Midlands Radiology Consortium (EMRAD) (Radiology)	Acute care collaboration vanguard sites	Nottinghamshire	NORTH MIDLANDS		
49.Developing One NHS in Dorset	Acute care collaboration vanguard sites	Dorset	WESSEX		
50.Working Together Partnership (South Yorkshire, Mid Yorkshire, North Derbyshire)	Acute care collaboration vanguard sites	Barnsley	YORKSHIRE AND THE HUMBER		
50.Working Together Partnership (South Yorkshire, Mid Yorkshire, North Derbyshire)	Acute care collaboration vanguard sites	Cheshire and Wirral	YORKSHIRE AND THE HUMBER		

50.Working Together Partnership (South Yorkshire, Mid Yorkshire, North Derbyshire)	Acute care collaboration vanguard sites	Doncaster	YORKSHIRE AND THE HUMBER		
50.Working Together Partnership (South Yorkshire, Mid Yorkshire, North Derbyshire)	Acute care collaboration vanguard sites	Rotherham	YORKSHIRE AND THE HUMBER		
50.Working Together Partnership (South Yorkshire, Mid Yorkshire, North Derbyshire)	Acute care collaboration vanguard sites	Sheffield	YORKSHIRE AND THE HUMBER		

Appendix 5 Interview Guide

What is your role?

What is your understanding of vanguards?

Can you describe the vanguard you are involved in?

Could you explain the new model of care happening in your area?

Could you describe the service within the vanguard site?

How did it start and come about?

How has it continued?

How are the patients chosen?

Who is involved in this decision?

What is the care pathway?

What from this model do you think is useful to primary care and the wider healthcare community?

How successful is this model? Why?

Success in terms of patients?

Success in terms of stakeholders involved.

Is there a framework which has been developed?

Could you describe it and draw it?

In your opinion what are the key facilitators to this service?

And the barriers to this service?

From a commissioning perspective in your opinion what do you think is being looked at?

Moving on to integration, could you define the aspects of integration used in this service?

What are the barriers and facilitators to this?

What is the impact of this service?

What would you say have been the influencers of this service?

And who?

Could describe who and which stakeholders are involved in the service?

Could you describe the relationships with them?

What are the outcomes? How are you measuring them? Are you using local or national metrics?

What do you think is being done differently in this model?

Appendix 6 Nvivo® Codebook

Name	Description
Access	
Accountable Care Organisation	
Admission to secondary care	
Age	
Attitudes	
Confidence	
Confusion	
Lack of knowledge	
Public perception	
Resistance to Change	
Audit Trail	
Barriers	
Structural issues	
Capacity	
Capped	
Care	
Continuity of care	
Seamless care	
Shared care	
Care homes	
Challenge	

Name	Description
Change management	
Change management (2)	
Clinical support	
Clinical Services	
Collaboration	
Communication	
Community	
Competition	
Consent	
Contract	
BLOC contract	
New Pharmacy Contract	
Demonstrating effectiveness	
Develop system using experts	
Early adopters	
Embed	
Evaluation	
Expectation	
Facilitators	
Feedback	
Fit for purpose	

Name	Description
Flexibility	
Follow up	
Funding	
Future	
Geography	
Hard work	
Health Economy	
Identity	
Impact	
Impact (2)	
Implementation	
Improving healthcare	
Improve efficiency	
Information governance	
Initiative	
Innovation	
Inspections	
Integration	
Integrated Care	
Iterative development	
Job Satisfaction	
Key contributor	

Name	Description
Leadership	
Legislation	
Local decisions	
Management	
Top down management	
Medication	
Medication review	
Medicine waste	
Medicines management	
Medicines optimisation	
Metrics	
Miss matched assumptions	
Modifications	
Monitoring	
Multidisciplinary Team	
National agenda	
necessity	
Needs of the system	
Needs of the system (2)	
New model of care (Vanguard)	

Name	Description
New role	
New ways of working	
NHS Long Term Plan	
No solution	
Occupancy levels	
One system	
Openness	
Opportunity	
Organisation	
Other care providers (non-healthcare professionals)	
Out of hours provision	
Outcome	
Overlap	
Passion	
Patients	
Patient empowerment	
Patient flow	
Patient journey	
Peer review	
Personalised medicine administration	

Name	Description
Pharmacy	
Community Pharmacy	
Pharmacy Technicians	
Politics	
Population-based health	
Positive Outcome	
Pre-emptive medicine	
Prescribing	
Pressure	
Preventative medicine	
Prevention	
Process	
Project management	
Quality and Safety Issues	
Reducing secondary care Admissions	
Referral	
Relationship	
Relocation	
Reports	
Reputation	

Name	Description
Resource	
Responsibility	
Responsible Pharmacist	
Risk	
Role development	
Safeguarding	
Safety	
Medication errors	
Security	
Services	
Duplication of services	
Replicating services	
Tailor services	
Shared experiences	
Sharing best practice	
Sharing Information	
Silo working	
Solution	
Stakeholder Support	
Stakeholders	
Statutory bodies	
STP plans	

Name	Description
Strategy	
Stratification	
Success	
Support	
Supporting GPs	
Supporting Patients	
Supporting primary care	
Sustainable	
Longevity and Sustainability	
Synergistic Relationship	
Teamwork	
Team support	
Technology	
A.I. Technology	
eMAR	
Technology faults	
Technician Led service	
Third Sector Organisations	
Time	
Time management	
Time wasting	

Name	Description
Training	
Transfer of Care	
Triage	
Trust	
Understanding	
Understanding roles of others	
Traditional role of working	
Understanding the health system	
Urgent care	
Using evidence to support new services	
Workforce	
Working together	
Workload management	

Appendix 7 Northumbria Case Study - Care Home Review Template

Northumbria Healthcare NHS
NHS Foundation Trust

VANGUARD CARE HOME DATA COLLECTION FORM			
PATIENT DEMOGRAPHICS			
Forename:		**Residing Home:**	
Surname:		**GP Practice:**	
Sex:		**Initial Review Date:**	
DOB:		**Initial MDT Date:**	
NHS Number:		**How patient was involved:**	

PATIENT OVERVIEW			
Cognition:			
No Issues ☐	Dementia ☐	Learning Difficulties ☐	Other_____ ☐
Mobility:			
Independent ☐	With Assistance ☐	Zimmer Frame ☐	Bed Bound ☐
Nutrition:			
Good ☐	Poor ☐	Variable ☐	Swallowing Issues ☐
Continence:			
No Issues ☐	Some Accidents ☐	Incontinent of Urine ☐	Incontinent of Faeces ☐
Medication Adherence:			
Good ☐	Poor (behavioural) ☐	Poor (swallow) ☐	Other_____ ☐
Capacity:			
Yes ☐	No ☐	Some ☐	Other_____ ☐
NOK Details:			

Northumbria Healthcare NHS
NHS Foundation Trust

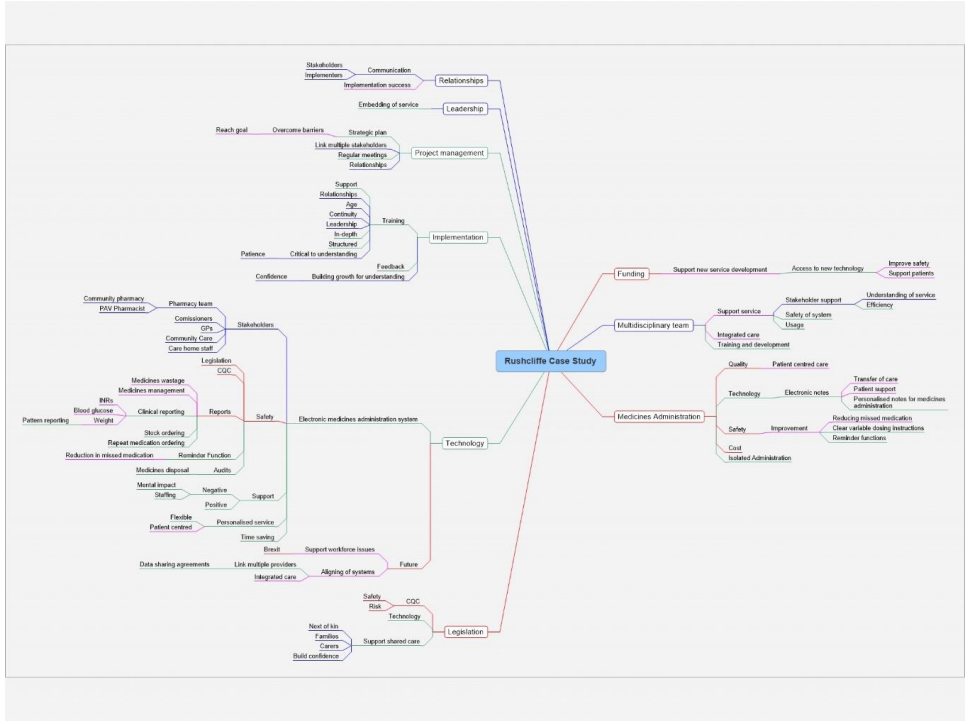
MEDICAL PROBLEMS			
1		**5:**	
2:		**6:**	
3:		**7:**	
4:		**8:**	

Drug Name:	Information:	Intervention Details: (Inc. made by who and reason)	Annual Cost Implication:

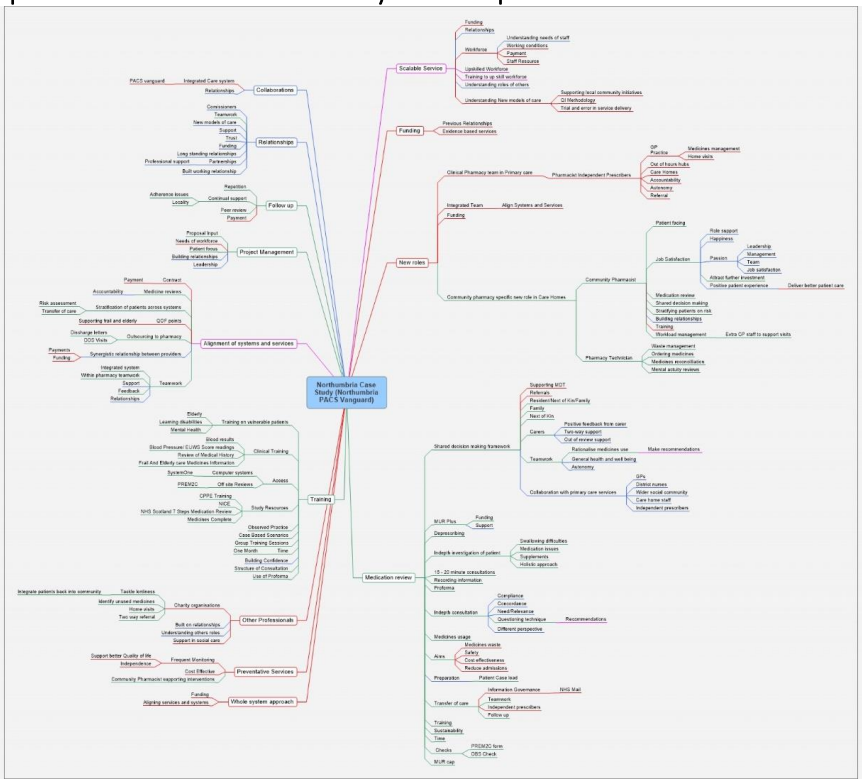
USEFUL INFORMATION	
E.g. Outstanding blood results, BP/HR, recent admissions/discharges, medication for review:	
Does the patient have an EHCP?	

FOLLOW UP	
Date of follow up: _____	
❑ Recorded on GP records ❑ Prescriptions updated ❑ Discussed with GP (if relevant) ❑ MAR chart updated ❑ Mental Health Team Referral ❑ Existing patient ❑ New patient ❑ Advice (tel/verbal/email)	Impact of follow up: ❑ Neutral Impact ❑ Positive Impact ❑ Negative Impact ❑ Other (include any details of ADE event/cause/action) _____ _____ _____

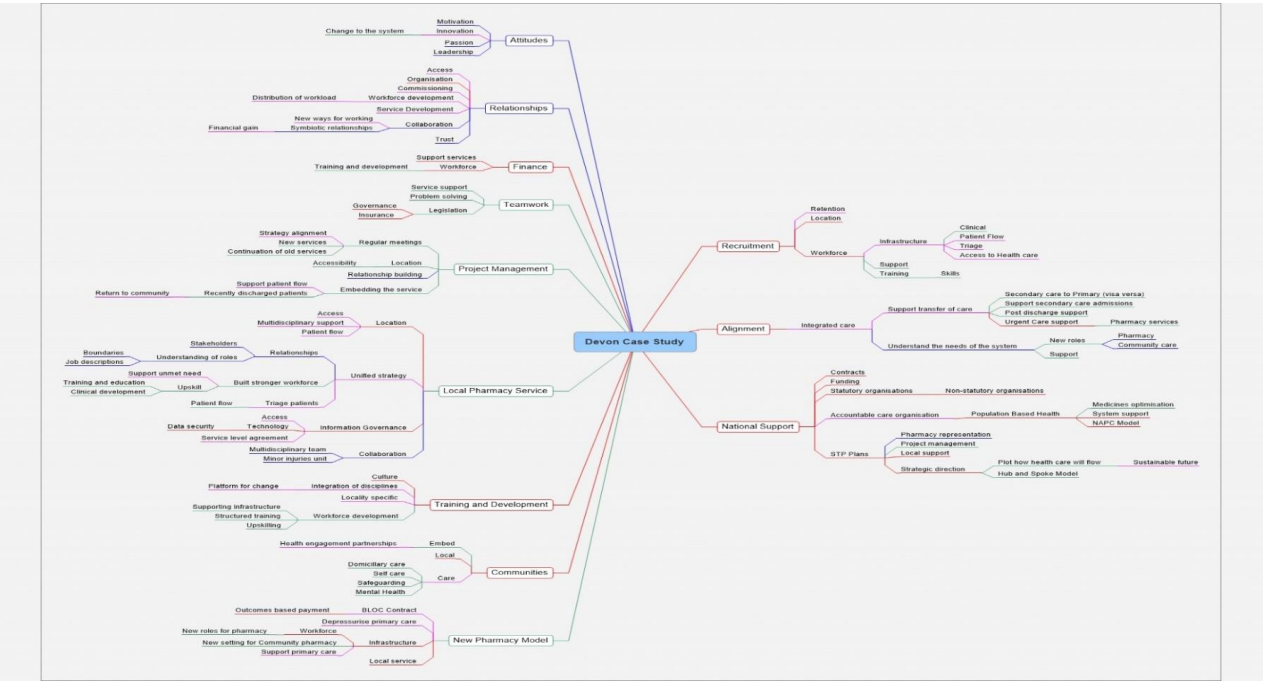
Appendix 8 Rushcliffe Case Study Mind Map



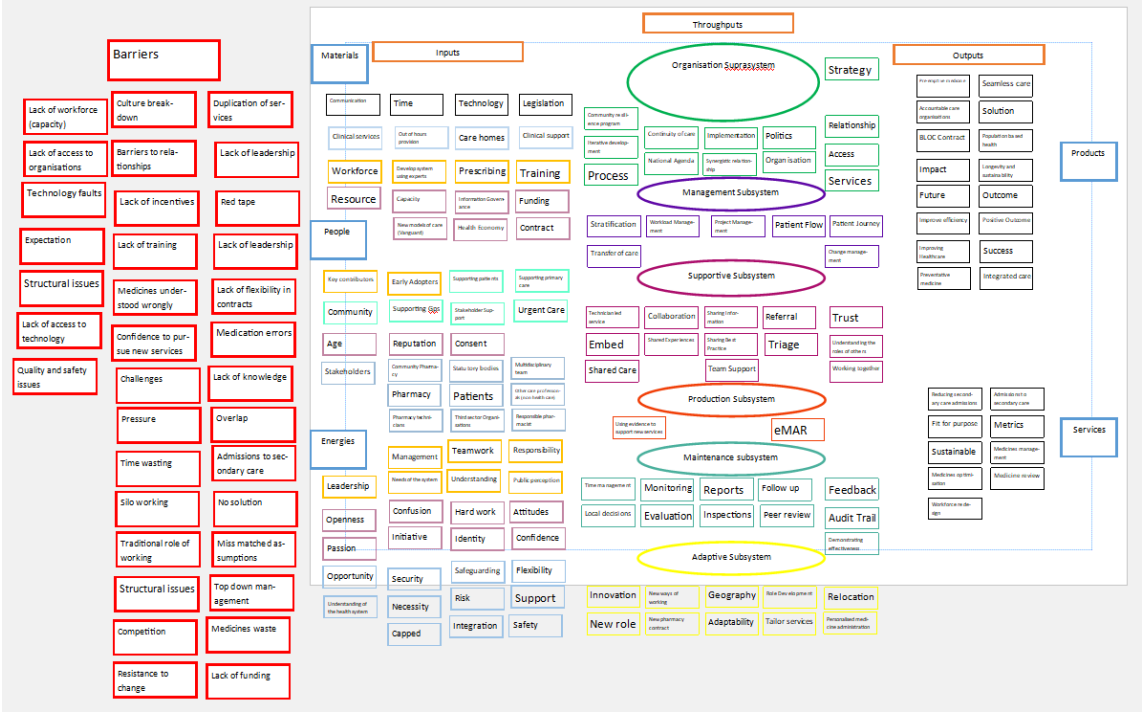
Appendix 9 Northumbria Case Study Mind Map



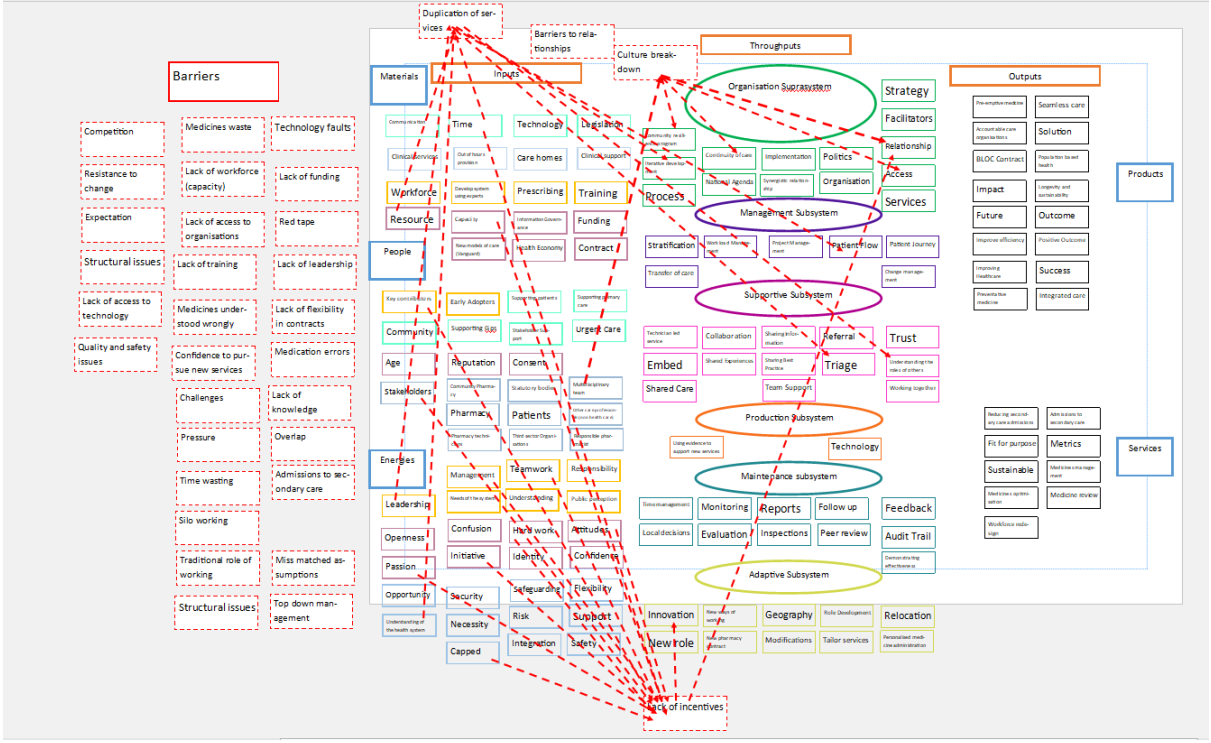
Appendix 10 – Devon Case Study Mind Map



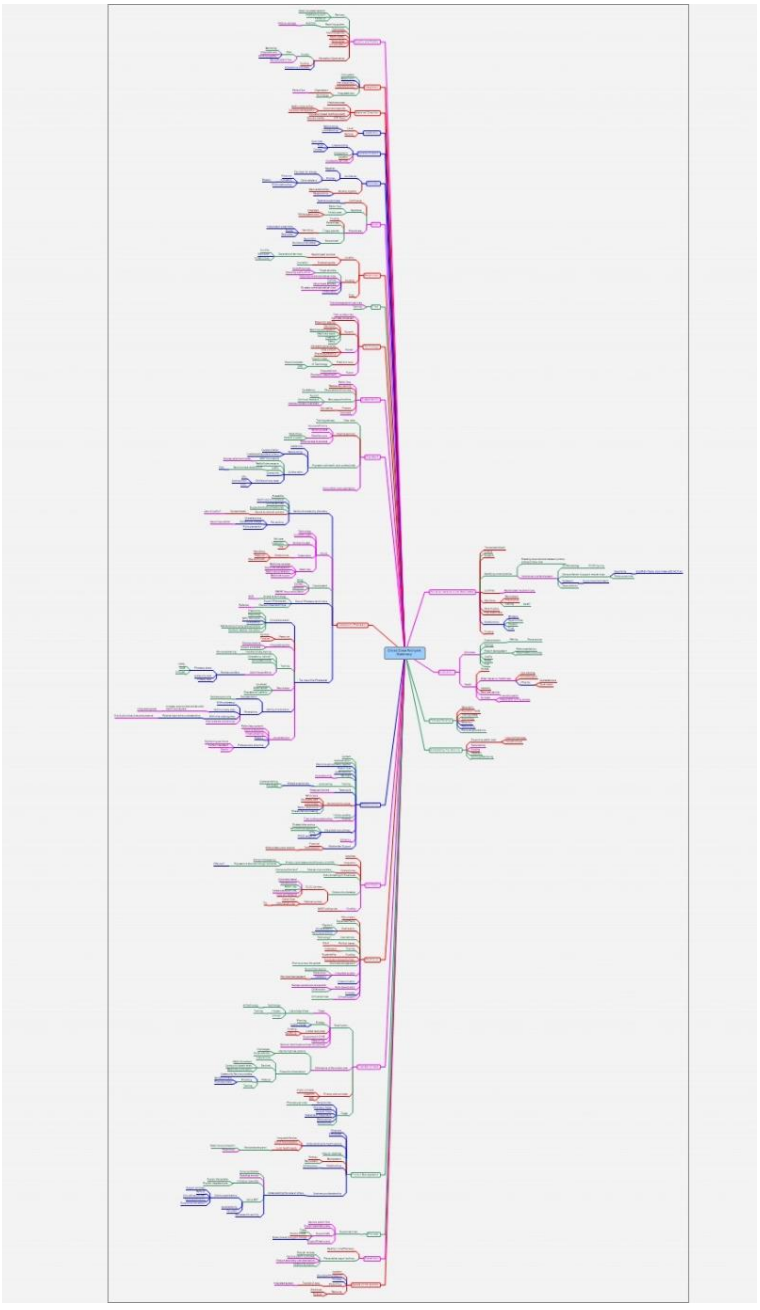
Appendix 11 Analysis using Open Systems Theory



Appendix 12 Analysis using Open Systems Theory Exploring the Barriers



Appendix 13 Cross-case Analysis Mind Map



Appendix 14 Rushcliffe Case Study Quantitative Analysis

Data analysis supported a larger evaluation undertaken by Capita for Principia Vanguard (Chapter 4, 4.1).

2017



Data analysis for eMAR system

YASMIN KARSAN

Method

Various methods were used during data collection, in order to create a timeline of events to reflect the analysis. The implementation month of eMAR is noted as T_0, months prior to implementation are denoted as T_{-4} (4 months prior to implementation), T_{-3} (3 months prior), T_{-2} (2 months prior) etc and subsequent months post implementation of eMAR are noted as T_1 (month 1), T_2 (month 2), T_3 (month 3) etc. Data collection consisted of focusing on three key areas: time saving, waste management and clinical benefit.

Data Collection

All data provided for this analysis was supplied by the eMAR implementation team and care home staff, therefore some data has not been recorded and cannot be accounted for. Data were collected using a range of methods consisting of collection of individual data from MAR sheets (prior to implementation) and generating reports from the eMAR system post implementation. A specific "time in motion" data tool was used to capture one particular time in each care home in three key areas (medication rounds, stock management and documentation). The medication round involved the same member of the implementation team observing the rounds in each home and recording the data. For stock management and documentation, this data was gathered from self-reporting from one member of the care home staff in each home. Data from the MAR sheets were collected by members of the implementation team between the periods of October 2016 to December 2016 and April 2017 to June 2017 and collated in Microsoft

Occupancy level per month per care home																		
T_{-4}			T_{-3}			T_{-2}			T_2			T_3			T_4		
OH	B	SP	OH	B	SP	OH	B	SP	OH	B	SP	OH	B	SP	OH	B	SP
41	38	*	41	41	*	41	39	*	36	39	35	36	35	34	39	38	29

Office Excel 2013 for analysis. Analysis took place within Microsoft Office Excel 2013 and SPSS 24.

Analysis

The analysis will focus on 4 key areas: Occupancy, time saving, waste and clinical benefit.

Occupancy

Table 1 describes the occupancy levels in each of the home pre and post eMAR implementation. The number of residents vary slightly within each home across each month.

Impact on Time

*'Table 1: Occupancy level of OH, B and SP before and after eMAR implementation (OH=Orchard House, B= Balmore, SP = St Peter's, *= Data not recorded)*

When required' medication report

Table 2 describes data demonstrating use of "when required" (PRN) medication. The frequency of recording of PRN medication administered initially increased slightly in OH post eMAR implementation (T_2 = 392 (10.8), however at T_3 (129 (3.6)) and T_4 (105 (2.7)) the frequencies reduced

considerably. B also had a noticeable reduction between T_2 (2562 (65.7) and T_3 (1120 (32.0) months.

The data is suggestive of slightly higher frequencies of PRN medication administered post eMAR implementation at month T_2 in OH. This may be reflective of the eMAR system's "alarm reminder" functionality, assisting care home staff in administering more PRN medication to the patients. In addition, these functions provided within eMAR prompt a dialogue with patients in order for the care home staff to ascertain whether PRN medication is needed a different process from pre-eMAR, potentially explaining the decrease seen from T_3 to T_4 in PRN medication given in all three homes.

New residents prescription request

Self-reported data from care home staff confirmed the time it takes for a new resident to obtain their prescription ranges from 3-4 days in each care home pre- and post- implementation of eMAR. This is suggestive that eMAR does not affect the prescription generation time.

			Number of PRN medication administered (average number per patient per month)
Time point	T_{-4}	OH	371 (9.1)
		B	2382 (62.7)
		SP	*
	T_{-3}	OH	286 (6.9)
		B	*
		SP	*
	T_{-2}	OH	328 (8.0)
		B	*
		SP	*
	T_2	OH	392 (10.8)
		B	2562 (65.7)
		SP	292 (8.3)
	T_3	OH	129 (3.6)
		B	1120 (32.0)
		SP	247 (7.3)
	T_4	OH	105 (2.7)
		B	1074 (28.3)
		SP	144 (5.0)

Table 2: Information of administration of 'when required' (PRN) medication before and after implementation of eMAR in OH, B and SP (= Data not recorded) (This data was collected from paper MAR sheets and reports from the eMAR system)*

"Time in motion" report

The time in motion data was collected jointly by a member of the eMAR implementation team and individual care home staff on duty. Each task involved different methods of data collection, the medication round consisted of a member of the eMAR implementation team recording details on medication rounds in 'real time' (on one occasion). Stock management and documentation information was self –reported and recorded by the individual care home staff on duty at that time. The types of homes involved in this pilot consisted of three residential homes (OH, BR and SP) and one nursing home (BN). This data was collected on a day chosen at random post

implementation. The data provides an indication only as it was only collected at one point of time, and varying times post implementation so difficult to compare. For information, data from a non eMAR home was added to this report – Peacemills (PM). PM is a residential care home and of similar size (38 beds) to the other care homes. PM uses paper MAR sheets as their only type of medication administration record.

Medication round

Table 3 depicts information in relation to the medication round. The data suggests the eMAR homes (OH, BR, BN and SP) took longer to complete the morning medication round per patient per medicine than the non-eMAR home (on the dates of measurement). SP took longer to complete each medication round per patient per medicine (M=0.05, L=0.54, T=0.18) in comparison to the other care homes. From further qualitative research it was suggested that at this time SP underwent structural and staffing changes which reflects the differences in the data. Looking further into the average administration time of medicines per patient per medication, the data suggests the 'lunchtime' round takes moderately longer, in some cases a 3 fold increase (BR M=0.09, L=0.33) in comparison to other times of day (although difficult to compare directly as could be due to differences between different members of staff within each care home). This could be indicative of the mandatory processes taking place during each medication round, and staff getting used to the system. These data represent a single data capture and therefore are indicative but are highly likely subject to noteworthy

variation (likely to have wide confidence intervals if the data were repeated several times for each care home).

		Total number of residents	Number of residents / medication round	Medication round in minutes (average/patient)		Total number of medication administered (average number of medicines per patient)	Average administration time of medicine in minutes/ patient/medicine
eMAR Home	OH	40	27	M	75 (2.8)	170 (6.3)	0.02
			19	L	23 (1.2)	26 (1.4)	0.05
			28	T	30 (1.1)	47 (1.7)	0.02
	BR	21	12	M	77 (6.4)	74 (6.7)	0.09
			5	L	10 (2.0)	6 (1.2)	0.33
			13	T	15 (1.2)	22 (1.7)	0.05
	BN	19	15	M	86 (5.7)	84 (5.6)	0.07
			14	L	30 (2.1)	19 (1.4)	0.11
			14	T	20 (1.4)	23 (1.6)	0.06
	SP	33	25	M	136 (5.4)	107 (4.3)	0.05
			7	L	30 (4.3)	8 (1.1)	0.54
			19	T	108 (5.7)	31 (1.6)	0.18
Non-eMAR Home	PM	37	37	M	62 (1.7)	185 (5.0)	0.01
			20	L	21 (1.1)	30 (1.5)	0.04
			32	T	45 (1.4)	67 (2.1)	0.02

Table 3: Time in motion study: Time taken to administer medication to residents at one point in time in OH, BR, BN, SP and PM (OH= Orchard House, BR = Balmore Residential, BN = Balmore Nursing, SP = St Peter's and PM = Peacemills, M= Morning, L= Lunchtime, T= Tea-time)

Stock management

The time relating to stock management per patient per medicine is variable between the eMAR homes (OH, BR, BN and SP) and non-eMAR home PM. The average time spent in relation to re-ordering stock per patient per medicine took twice as long in SP than the other care homes. Comparisons between similar size homes (OH (eMAR) and PM (non-eMAR)) suggested the average time spent on medication receipt and check-in per patient per medicine per four weeks is 3 fold greater in non-eMAR compared to eMAR. This data

suggests that eMAR may have a role in time-saving with regards to stock management. In relation to stock disposal, PM demonstrated slightly less time in relation to disposing of stock.

The data stored by eMAR allows for easily retrievable information in comparison to MAR sheets where it can be time consuming and less safe when patients have more than one MAR sheet, in particular when stock managing and monitoring wastage.

These results are dependent on the number of patients within the care home and the number of medicines each patient is on, this analysis was performed on the numbers displayed within the time and motion template for each home.

		eMAR Home				Non-eMAR Home
		OH	BR	BN	SP	PM
Time spent in Stock Management (Minutes per 4 weeks)	**Average time spent re-ordering stock**	52.5	55.0	55.0	130.0	60.0
	Average time spent reordering stock/patient/ medicine	0.20	0.22	0.23	0.66	0.25
	Average time spent on medication receipt/ check-In	60.0	75.0	75.0	120.0	210.0
	Average time spent on medication receipt and check in/patient/medicine	0.23	0.30	0.31	0.61	0.87
	Average time spent carrying forward medication before starting a new cycle	0.0	*	*	*	60.0
	Average time spent carrying forward medication before starting a new cycle/patient/ medicine	0.00	*	*	*	0.25
	Average time spent disposing of stock	17.5	*	*	50.0	10.0
	Average time spent disposing of stock/patient/ medicine	0.07	*	*	0.25	0.04

Table 4: Time in motion study: Time spent on stock management post eMAR implementation in OH, BR, BN, SP and PM (= Data not recorded) Data was collected with regards to "time spent dealing with monthly GP queries" and "time spent in dealing with pharmacy queries" for PM however not recorded for eMAR care homes. Anecdotal evidence from care home staff in BN suggested "With eMAR there are moderately less pharmacy based queries".*

Documentation

The average time spent on individual medication checks per patient per medicine per 4 weeks takes five times more time within the non-eMAR home (PM) than in the eMAR homes (OH, BR and BN). This may suggest having an electronic device recording medication information supports the task of individual medication checks per patient.

(Data was not available for St Peters. The numerical values used for this analysis are based on values produced during analysis of the 'medication round' data.)

		Time spent on Documentation (Minutes/4 weeks)			
		Time spent on auditing	**Time spent on Individual medication checks**	**Average time spent on individual medication checks/patient/ medicine**	**Time spent on Weekly medication checks**
eMAR Home	OH	60	60	0.23	1200
	BR	280	60	0.24	280
	BN	280	60	0.25	280
	SP	*	*	*	*
Non-eMAR Home	PM	240	240	1.00	240

Table 5: Time in motion study: Time spent on documentation at one point in time in OH, BR, BN, SP and PM (= Data not available*

Waste management

The method of data collection involved generating reports from eMAR with regards to medication which has been disposed of. The eMAR system records dates, times, medication, quantity disposed and reasons for disposal. The initial data is recorded by the care home staff when undertaking their daily checks of medication.

Out of stock medication recorded

Table 6 shows the number of 'out of stock' medication recorded between T_{-4} and T_4. The monitoring system within eMAR resulted in an increased recording of out of stock medication. This is suggestive that eMAR can facilitate in monitoring out of stock medication. In addition to recording numerical values and producing reports for auditing purposes, eMAR has an area for note recording, this can facilitate handover of care between staff to ensure the out of stock medication can be followed up easily, and alternative measures put in place.

			Number of out of stock medicines recorded (average per patient)
Time	T_{-4}	OH	5 (0.12)
		B	0
		SP	*
	T_{-3}	OH	0
		B	*
		SP	*
	T_{-2}	OH	11 (0.27)
		B	*
		SP	*
	T_2	OH	198 (5.5)
		B	*
		SP	15 (0.43)
	T_3	OH	153 (4.25)
		B	*
		SP	12 (0.35)
	T_4	OH	64 (1.64)
		B	*
		SP	36 (1.24)

*Table 6: Number of out of stock medication recorded between T_{-4} and T_4 from paper MAR and eMAR reports in OH, B and SP (OH= Orchard House, B= Balmore, SP = St Peters, *= Data not available')*

Medication disposal report

Table 7 describes frequencies and percentages of medication disposed of after eMAR was implemented in B and SP and before and after data for OH. Data before eMAR was implemented in B and SP was not available. A trend of decreased waste over time is seen in both tables. In OH at T_{-3} 58.7% (88) of waste was disposed of and at T_4 only 4.7% (7) was disposed of. At month T_2 the medication waste increased in B from 14.1% to 45.9%, at T_3 and T_4, this decreased to 26.5% (26) and 13.5% (25) respectively, showing eMAR having some control over waste management. Early data is suggestive that waste is reduced over time.

			Frequencies (%) of waste medication disposed of
Time	T_{-3}	OH	88 (58.7%)
		B	*
		SP	*
	T_{-2}	OH	50 (33.3%)
		B	*
		SP	*
	T_1	OH	*
		B	26 (14.1%)
		SP	*
	T_2	OH	1 (0.7%)
		B	85 (45.9%)
		SP	31 (54.4%)
	T_3	OH	4 (2.7%)
		B	49 (26.5%)
		SP	11 (19.3%)
	T_4	OH	7 (4.7%)
		B	25 (13.5%)
		SP	15 (26.6%)

Table 7: Frequency of waste medication disposed of between T_{+1} and T_4 in OH, B and SP (= Data not recorded, %= Frequency/Total medication disposed per home between T^{-3} and T^{+4}/100)*

Table 8 describes the top 10 medication disposed of with reasons for disposal before eMAR implementation in OH. The medications presented are commonly used within the care home setting, interestingly the levels of overstock are high (e.g. Calcichew D3, 9) in comparison to discontinued medication (4). Therefore, precautions can be taken to reduce over ordering of overstock medication to reduce cost and waste production.

	Discontinued Medication	Overstock	Passed away	Refused
Calcichew D3	4	9	0	0
Hydromol	11	0	0	0
Paracetamol	3	6	0	1
Laxido	2	6	1	0
Docusate sodium	4	2	2	0
Lactulose	3	4	0	0
Furosemide	6	1	0	0
Adcal D3	1	2	2	0
Co -codamol	2	2	0	0
Salbutamol	2	2	0	0
Other	60			
Total number of medication disposed of before eMAR implementation in OH	**138**			

Table 8: Top 10 medications disposed of in OH between T_{-2} and T_{-1} (Reasons for disposal differ from below due to this data containing from MAR sheets which are handwritten)

	Discontinued Medication
Paracetamol	2
Aspirin	1
Beconase	1
Calci D	1
Co-codamol	1
Donepezil	1
Fultium D3	1
Lactulose	1
Ramipril	1
Rivastigmine	1
Sertraline	1
Simvastatin	1
Total number of medication disposed of after eMAR implementation in OH	**13**

Table 9: Number of medications disposed of in OH between T_2 and T_6

Table 10 demonstrates the top 5 medications disposed of per reason. The data is combined from all three care homes (OH, B and SP). The reason relating to “discontinued medication” paracetamol and furosemide were the top 2 medications disposed of (7 and 5 respectively)

Resident deceased had “end of life care” medication as its top 4 medication (Hyoscine Butylbromide (7), Midazolam (7), Levomepromazine (6) and Morphine sulphate (6). This reflects normal palliative care practice.

Discontinued medication	Medicine	Paracetamol	Furosemide	Senna	Arjun Olive oil	Aspirin	Other	Total
	Frequency	7	5	4	3	3	47	69
Pharmacy error	Medicine	Laxido	Macrogol	*	*	*		
	Frequency	1	1	*	*	*	0	2
Resident deceased	Medicine	Hyoscine butylbromide	Midazolam	Levomep-romazine	Morphine Sulphate	Levothyroxine		
	Frequency	7	7	6	6	3	51	80
Resident discharged	Medicine	Paracetamol	Levothyr-oxine	Donepezil	Bisoprolol	Lansoprazole		
	Frequency	6	6	4	3	3	74	96
Returned to family	Medicine	Haloperidol	Allopurinol	Carelin e Easi MT	Cetraben	Depakote		
	Frequency	2	1	1	1	1	3	9

Table 10: Top5 medication disposed per reason in OH, B and SP post eMAR implementation between T_2 and T_6 (Combined data of all three care homes)

Table 11 lists the top 5 medication disposed of between T_{-4} and T_4, listing paracetamol as the primary disposed medication across all three care homes. From table 10 it can be inferred that the reason for high disposal frequency for paracetamol is due to 'discontinued medication'. Therefore, potentially if paracetamol was stored as central stock in the care home via 'homely

remedies policy', this could potentially reduce waste when paracetamol is discontinued per patient.

Medicine	Frequency
Paracetamol	26 (6.6%)
Calcichew D3	14 (3.5%)
Furosemide	14 (3.5%)
Docusate	12 (3.0%)
Hydromol	11 (2.8%)

Table 11: List of top 5 medication disposed across OH, B and SP between T_{-4} and T_4

Medication destruction report

Data from eMAR generated a medication destruction report. This consisted of information regarding refused and wasted medication, in addition to a report of "logging in of medication" after delivery (the medication from deliveries is required to be logged in by a member of staff). A total of 66 (23.8%) entries were entered as duplicates across the three care homes (OH, B and SP). The time stamps of these entries and the number of staff used to add medication on the system are variable. Therefore, although the system can automatically calculate medication to be reordered it requires initial precise entering in order to generate the correct figures. The percentage is low and therefore it can be suggested with minimal support this figure may reduce in order to lower medication wastage and aid the reordering process to provide a seamless line of care for the patient to receive the "right medication at the right time".

Clinical Benefits

Missed medication report

The recorded exception report displays missed medication and the reasons why. This data was collected manually before eMAR implementation, and via automatic reporting post eMAR.

Table 12 shows the frequency of missed medication recorded increased after eMAR was implemented for OH at T_2 (n=132, 3.7). This result is extensively more than cited at T_{-4} (n=34, 0.9), this decreased in T_4 (n=0). SP had a high frequency of missed medication recorded after eMAR implementation in T_3 (n=113, 3.3) this also decreased in in T_4 (n=22, 0.8). The high frequency of missed medication at T_2 (post eMAR implementation) could be suggestive of the system beginning to drive behaviours and therefore a decrease is seen towards T_4. (It would not have been accurately recorded on paper systems pre implementation).

			Number of missed medication (average per patient)
Time	T_{-4}	OH	34 (0.9)
		B	19 (0.5)
		SP	*
	T_{-3}	OH	26 (0.6)
		B	*
		SP	*
	T_{-2}	OH	45 (1.1)
		B	*
		SP	*
	T_2	OH	132 (3.7)
		B	*
		SP	63 (1.8)
	T_3	OH	79 (2.2)
		B	*
		SP	113 (3.3)
	T_4	OH	0
		B	*
		SP	22 (0.8)

Table 12: Number of missed medication in OH, B and SP between T_{-4} and T_4 (= Data not available)*

The top reason for missed medication (table 13) was "resident refused" (1553 (30.8%)). "Out of stock" (545 (10.8%)) and "Awaiting pharmacy delivery" (463 (9.2%)) also had high numbers associated. riptions (outside of the normal cycle), although this would need further investigation of the data. The most frequent medications which were marked "awaiting pharmacy delivery" consisted of paracetamol (103 (22.2%), docusate sodium (30 (6.5%) and Laxido orange (30 (6.5%). Where medication is requested mid-cycle, such as an acute visit, this may cause missed doses whilst delivery is awaited from the pharmacy. It is not known if these recorded events were as a result of acute visits or part of the normal repeat medication ordering cycles.

Reasons for missed medication	Frequency (%)
Resident refused	1553 (30.8)
Other - add note	766 (15.2)
Social leave dispensed	578 (11.5)
Out of stock – document action	545 (10.8)
Resident refused & wasted	485 (9.6)
Awaiting pharmacy delivery	463 (9.2)
Clinical decision	347 (6.9)
Hospitalised	229 (4.5)
Social leave	38 (0.8)
Nausea & vomiting	26 (0.5)
Hospitalised with medication	8 (0.2)
Clinical decision & wasted	6 (0.1)
Retrospective recording	1 (0.1)
Total	**5045 (100.0)**

Table 13: Reasons and frequency counts for missed medication in OH, B and SP between T_2 and T_4

The reasons for missed medication within the home highlighted some issues which could be reviewed. The highest number of missed medication were associated with refusal from the resident, this may be a harder issue to resolve however reasons such as “out of stock” and “awaiting pharmacy delivery” can be resolved by reviewing the processes in place. The top 3 medications highlighted within the “awaiting pharmacy delivery category” are commonly obtained non-prescription medication and could also be considered via a homely remedy policy.

Medicine	Frequency (%)
Paracetamol	103 (22.2)
Docusate Sodium	30 (6.5)
Laxido Orange	30 (6.5)
Multivitamin	18 (3.9)
Pilocarpine Hydrochloride	16 (3.5)
Adcal D3	15 (3.2)

Apixaban	12 (2.6)
Calci-D	12 (2.6)
Colecalciferol	12 (2.6)
Ferrous Fumarate	12 (2.6)
Total medication awaiting pharmacy delivery	**463 (100.0)**

Table 14: List of Top 10 medication related to "missed medication due to awaiting pharmacy delivery" across OH, B, SP between T_2 and T_4

Medicine	**Frequency (%)**
Paracetamol	112 (20.6)
Laxido orange	40 (7.3)
Docusate sodium	34 (6.2)
Fortisip bottle banana	25 (4.6)
Adcal d3	21 (3.9)
Co-Codamol	18 (3.3)
Furosemide	14 (2.6)
Jun olive oil	14 (2.6)
Lactulose	14 (2.6)
Calci-d	13 (2.4)
Total medication out of stock	**545 (100)**

Table 15: List of Top 10 medication related to "missed medication due to out of stock" across OH, B, SP between T_2 and T_4

The top 3 medication missed due to "out of stock" are paracetamol (112, 20.6%), Laxido orange (40, 7.3%) and docusate sodium (34, 6.2%). Due to current issues with medication manufacturing and supply, there has been increased difficulty in obtaining a number of medicines previously regularly available. The impact of stock shortages can affect both patients and the NHS, from a safety and cost management point of view.

Report Limitations

The data presented in this report was collated from various sources, these included paper MAR sheets, electronic reports from the eMAR system and self-reporting from various care home staff during one snaphot moment in time. There will also be differences in time spent completing activities between different members of staff, and at different points in time. The data can therefore provide some indication towards the use of eMAR however due to low number (and one off time studies), care should be taken when considering drawing any conclusions.

Conclusion

This report highlights three key areas the eMAR system has supported in. Staff time, waste management and clinical benefit are key performance indicators in the vanguards and aim to enhance care to older people in care homes. The time saving aspect highlighted that eMAR appears to save time for care home staff within stock management. This time saved can then be redirected to improving the quality of care for the individual residents in each care home. Waste management highlighted the amount of waste produced over time before and after eMAR implementation. This auditable information can provide valuable information to the care home and CCG with regards to managing waste more efficiently. The eMAR system has shown a decrease in waste production and therefore supports the agenda of 'reduction in cost of medication usage'. In terms of clinical benefits captured by eMAR, the reports focussed on 'missed medication reports'. These reports support aspects of the

current processes which need to change in order to improve clinical benefit for patients. Reducing the medication missed by patients, reduces delays in patient care and potential adverse reactions, potentially improving patient safety.