An action research evaluation to understand and inform the role of the Integrated Care Pharmacist across health and social care

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Abstract

Introduction
A research study was commissioned to understand and inform the new role of an Integrated Care (IC) Pharmacist, founded to work as part of the health and social multidisciplinary team (MDT) within the IC program for East Leicestershire and Rutland Clinical Commissioning Group (ELR CCG).

Aim
The aim of the study was to understand and inform this new role of the IC Pharmacist for ELRCCG and how to develop and sustain such a role.

Methods
A participatory mixed methods research strategy, which aligns with pragmatism as a philosophy was used. The qualitative arm of the mixed methods was predominantly underpinned by phenomenology and included interviews with two IC patients and seven professionals who were a core part of the integrated MDT and one focus group. For the quantitative arm, key performance indicators(KPIs) documented in line with the sponsor evaluation policy were analysed.

Findings
The six themes derived from the qualitative methods were: teamwork; accessibility and visibility; resources and enablers; reflection on the role functions; Impact of the role and evaluating performance of the role. For the quantitative results, all the KPIs were achieved, including a return of investment of 311%, a reduction of polypharmacy by the de-prescribing of 54 drugs, the completion of clinical medication reviews in 100% of patients and repeat prescription reviews in 37% of patients and the provision of four medication training sessions for the IC coordinators.

Discussion
The findings support existing literature by qualitatively and quantitatively showing how the role functions and positive outcomes achieved by pharmacists in integrated primary care roles can be extended to social and health integrated care teams. Role functions highlighted include provision of pharmaceutical care to patients and training and education to staff. Positive outcomes delivered by the IC pharmacists include participant empowerment and bridge building between health and social care professionals.Furthermore, this study contributes to existing knowledge by identifying enablers and showing how they can optimise these outcomes. A key enabler was to fully embed the IC pharmacist role within a health and social MDT and co-locating the MDT at a GP surgery, instead of remote offices . Ensuring effective teamwork which is facilitated by a shared agenda, role understanding, respect, accessibility and visibility is another important enabler. A third enabler identified as crucial to sustain the role, is funding to transform the model to a fully embedded GP hub pharmacist and technician team, to ensure holistic staff capacity. Finally, the study highlighted that the role could be evaluated through stakeholder feedback as well as the utilization of admissions avoidance figures after adjusting for assumptions.

Conclusion
In line with action research, both action and additional knowledge were achieved. Action was achieved by ultimately transforming and expanding two roles to twelve teams of pharmacists and pharmacy technicians. Additional knowledge contributed include the views of key stakeholders across health and social carer, including patients, regarding what exactly the IC pharmacist role is, how it is delivered and could be adapted to increase sustainability, what outcomes it delivers and how they can be evaluated. Further research is required to inform which of the models would be best suited for the local population.

ACKNOWLEDGEMENTS

Glossary	
Acronym or Term	**Definition**
Care plan	A single overarching plan that records the outcome of discussion between the individual being cared for and the professional responsible.
Carer	An individual who provides or intends to provide practical and long term emotional support to someone with a long-term condition.
CCG	**Clinical Commissioning Group** CCGs are clinically led statutory NHS bodies responsible for the planning and commissioning of healthcare services for their local area. They are responsible for about 60% of the NHS budget, commission most secondary care services, and play a part in the commissioning of GP services.
CSW	**Community Support Worker (CSW).** CSW refers to Council employees who work under supervision to deliver a person-centred social care service.
Commissioning	The means to secure the best care and the best value for local people. It is the process of changing objectives and needs, by specifying and procuring services for the local population, into required services
DH	**Department of Health in United Kingdom** The DH is responsible for strategic leadership and funding for both health and social care in England.
ELR CCG	**East Leicestershire and Rutland Clinical Commissioning Group** Statutory organisation with the responsibility for commissioning healthcare services for approximately 325,000 residents in East Leicestershire & Rutland. Further divided into three localities: Blaby & Lutterworth (BL), Melton, Rutland and Harborough(MRH) and Oadby & Wigston (OW)
GP	**General Practitioner or General Practice** **General practitioner** refers to a family doctor based in the community with primarily responsible for the provision of comprehensive and continuing generalist care to individuals seeking medical care. **General practice** is the specialty of the general practitioner.
GP Surgery or GP Practice	Refer to the location where the patients are routinely seen by the GP or member of the team e.g. nurses, healthcare assistants or increasingly pharmacists. GP practices closely collaborate with other healthcare professionals like health visitors, midwives, mental health services and social care services.
GP Hub	**General Practice Hub** Group of GP practices formally or informally coming together to pool resources for economy of scale and to share services.
GP Federation	**General Practice Federation** Group of practices working together within their local area, in some sort of collective legal or organisational entity.
Health care need	A need related to the treatment, control or prevention of a disease, illness, injury or disability, and the care or aftercare of a person with these needs, regardless of whether the tasks involved should be carried out by a health professional or not.
Holistic	In medical terms denotes a treatment or service which deals with the needs of the whole person, not just the injury or disease.
IP	**Independent or non–medical Prescriber.** Designation for healthcare professional other than a doctor or dentist in the United Kingdom, with the legal authority to prescribe medication, within their competency.
ICC	**Integrated Care Coordinators** These are social community support workers (as opposed to professional social workers), who were the coordinators in the East Leicestershire and Rutland model of the integrated care programme.
KPI	**Key Performance Indicator.** Used to evaluate the success of a projects, programs, other initiatives such as the integrated care pilot program.

LCC	**Leicestershire County Council** County council for Leicestershire which was originally formed in 1889 and has responsibility for adult social and non-primary health provision, for both east Leicestershire and west Leicestershire population. LCC was the employer of the social care coordinators for the integrated care pilot project.
Medicines Management	Is the clinical, cost –effective and safe use of medicines to ensure patients obtain maximum outcomes from required medication with minimum harm (MHRA,2004).
MRC	Medical Research Council
Multimorbidity	The presence of two or more long-term conditions in a person.
NHS	**National Health Service** Was launched in 1948 to provide free (at point of use) health care that is for UK residents. Over 98% of prescriptions in community pharmacy are under the NHS and NHS hospitals provide up to 80% of secondary care.
NHS CCF	**National Health Service Continuing Care funding** Synonymous with 'Continuing Care' or 'Fully Funded NHS Care'. This is 100% funding provided by the NHS for people in full time care who are assessed as having a "Primary Health need"
Outcomes	These are the change in health status following an intervention e.g. reduced pain, and increased mobility post knee surgery
Partners	Refers to everyone who has a professional interest and is directly involved in the design, development and delivery of a service
Patient	A person receiving or registered to receive health intervention treatment
Patient-centered	Denotes an organization's provision to support personalized care delivery.
PCT	**Primary Care Trust** PCTs were administrative bodies, responsible for commissioning primary, community and secondary health services from providers between 2001 to 2013. The approximately 303 PCTs were replaced by CCGs and NHS England
Pharmaceutical Care	This refers to the accountable delivery of medication therapy with the aim of achieving defined outcomes to improve the quality of life of a patient. The outcomes include: disease cure; symptom reduction or elimination, disease progression reduction or halting, disease or symptom prevention
Primary Care	This is the first level contact with people acting to improve health in a community. In the United Kingdom, all initial (non-emergency) consultations with doctors, nurses or other health staff are termed primary care as opposed to secondary healthcare or referral services. General practice is the building block of primary care in the UK.
ROI	**Return on investment** Measure of how much is gained or lost following an investment such as the integrated care pharmacists. It is usually expressed as a percentage of the net profit over the cost of the investment.
RPS	**Royal Pharmaceutical Society** The RPS (also referred to as RPharmS) is the dedicated body responsible for the leadership and support of the pharmacy profession in England, Scotland and Wales. It was created alongside General Pharmaceutical Council (GPhC) in 2010 from the Royal Pharmaceutical Society of Great Britain
Risk stratification	Segmenting a population to provide person-centred care to those most in need recognising resource constraints
Stakeholders	Refers to everyone who has a 'vested' interest in the service irrespective of their roles, responsibilities and contributions. Patients, carers and communities included
Social worker	A professional who works with other professions to play a key role in helping children, adults and families to take control of and to improve their lives in conditions where their security, safety or ability to participate in civic life are restricted.

Preface

This dissertation is titled "*An Action Research Evaluation to understand and inform the role of the integrated care pharmacist across health and social care*". The World Health Organization describes integrated care as care that is coordinated and centered around the patient and is the opposite of fragmented or episodic care (WHO, 2016). The following definition of integrated care was constructed by a patient and this has now been adopted by the Department of Health.

> *"My care is planned with people who work TOGETHER to understand me and my carer(s), put ME in control, coordinate and deliver services to achieve MY best outcomes".*
>
> *(*National Voices, 2013*)*

This research was completed between January 2016 and November 2017 resulting from a pilot study that I introduced whilst in my post as head of prescribing at the East Leicestershire and Rutland Clinical Commissioning Group (ELRCCG).

I made the case for the pilot study after identifying that the multidisciplinary team within the integrated care program blueprint, did not include a pharmacist. I highlighted that because most patients requiring integrated health and social input would be expected to be taking multiple medication, they or their carers may benefit from pharmaceutical input. In due course, two integrated care pharmacists were co-located in an office alongside a team of 12 social community support workers who were the main coordinators of the integrated care programme.

In view of the integrated care pharmacist role being new, the CCG agreed to commission a research study to evaluate and inform the role. Ultimately, I led the research and it became the focus of the project that I conducted in partial fulfillment of a doctoral thesis.

Conducting this research was challenging. However, it was extremely rewarding because in addition to answering the research questions, the participatory mixed methods methodology enabled timely development, evolution and expansion of the new pharmacist role, within the clinical commissioning group. It culminated in the funding of approximately twelve new whole-time equivalent pharmacists and supporting pharmacy technician roles, to provide integrated clinical pharmacy services in primary care, to the approximately 325,000 patient population of the East Leicestershire and Rutland Clinical Commissioning Group.

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Chapter 1

Introduction

CHAPTER 1: INTRODUCTION

Chapter Overview

This introductory chapter outlines the overall aim and rationale of the research and explains the concept, historical development and importance of integrated care within the wider context of health and social care provision in the NHS. The background includes '*A tale of two patients'* as illustrative fictitious case studies, with a view to help explain integrated care and demonstrate how it focuses upon the individual values and health needs of patients. The chapter also aims to explain the rationale for, and the eventual role of the Integrated Care Pharmacist. It is the latter that provides a focal point for evaluation. The chapter concludes by outlining the research objectives and the questions which this action research project seeks to answer.

1.1 INTRODUCTION TO CHAPTER 1

Pharmacotherapy or treatment with medication is the most common intervention in healthcare systems across the world (European Directorate for the Quality of Medicines and Healthcare, 2012). It is estimated that the NHS cost of pharmacotherapy increased from £13 billion in 2010/11 to £17.4 billion in 2016/17. This equates to an average annual growth of 5 percent (Ewbank, 2018). The main consumers of pharmacotherapy in the UK are the 26 million patients with long term conditions (LTCs), who are also the main drivers of cost and activity in the National health service (NHS) and social care (NHS ENGLAND, 2018).

There is very significant harm associated with pharmacotherapy which is escalating with the increase in complexity and volume of medication use (Cipolle et al. 2012; Strand et al.1990). Pharmacotherapy associated harm includes adverse drug reactions (ADR), medication errors and polypharmacy. ADRs were shown by a large UK study to be associated with 6.5% of emergency re-admissions, 72% of which were deemed avoidable with 2% leading to death (Pirmohamed et al. 2004). This is mirrored across the developed world with an Australian report showing that 12% of patients visiting their general practitioner (GP) had suffered from an ADR within the preceding six months (Roughead et al. 2013).

Pharmacotherapy for LTC patients is usually managed by a multitude of health and social care professionals (Clements, 2009). This is despite the prevailing suboptimal integration between the health and social care systems (Goodwin et al. 2012).
Therefore, there is a drive to move from fragmented to integrated health and social multidisciplinary, proactive and patient- centered care provision, in the primary care settings. (WHO, 2016; Bardsley et al. 2013; Rand et al. 2012). One of the ways of organizing integrated health and social primary care provision is through 'virtual wards'. This involves

the use of predictive modeling or risk stratification tools, to identify patients at moderate to high risk of emergency admissions. These patients are then provided proactive domiciliary care at home, by the integrated health and social multidisciplinary teams (MDT). The proactive care interventions are designed to mirror the daily practices and routines of care provision and monitoring in hospital wards (Bardsley et al. 2013).

Consequently, health and social integrated multidisciplinary teams (MDTs) are being funded and developed across the UK primary care setting. One of the biggest pioneer programmes of integrated care (IC) consisted of 16 department of health funded pilots which were evaluated by Rand et al (2012) between 2009 and 2011. The pilots were aimed at exploring different ways to provide IC to improve patient care and wellbeing. The published evaluation detailed some positive findings including the fact that IC led to process improvement including the increased use of care plans and the development of new roles. However, patients were less satisfied with the outcomes with some highlighting that IC resulted in a reduction in both access to their preferred doctor and nurse as well as involvement in their care planning. Nevertheless, it was noted that although reductions in planned admissions and outpatient attendance figures were reported, the cost of hospital use remained unchanged. There are several limitations of this evaluation study. Firstly, the 16 pilot sites received extra support as part of the pilot which most IC programs will not have access to. In addition, most of the evaluation data was qualitative and could thus have been biased because the participants could subconsciously try to provide a good impression. Also, the study did not mention any involvement of pharmacists as part of the multidisciplinary teams (MDT) described in the pilot programs. Finally, the design included the use of participant survey data alongside that of matched controls, instead of a randomized control trial. Similar findings were shown by the evaluation of 30 IC pilots by the Nuffield foundation which used quantitative methods and summative evaluation to find out whether the service models had an impact on service use and costs (Bardsley et al. 2013). A limitation of the Nuffield review was the limited focus on the three key aspects of clinical outcomes, improved safety and patient experience

However, despite the increasing acknowledgement that pharmacotherapy outcomes can be optimized by pharmacists as medicines experts, working within integrated health and social MDTs (Smith et al. 2014), there was no mention or description of the pharmacist role within these pilots (Rand et al. 2012). More recent publications describe the role of pharmacists in the process of integrating within these MDTs (Daloni, 2016; Freeman et al.2016; Stone and Williams, 2015). However, these authors do not detail how to develop, sustain or evaluate the role.

This study was thus designed to understand and inform the new role of the IC pharmacist within East Leicestershire and Rutland (ELR) and how to develop and sustain it. It was also aimed at developing a process for evaluating the role. The study focused on the following:

- Defining the role of the pharmacist within the integrated health and social MDT.

- Understanding the stakeholder's perception of the outcomes that the integrated care pharmacist attempts to achieve and how this can be measured.

- Understanding how to overcome the barriers and promote the facilitators to develop, expand and sustain the role.

1.1.1 The East Leicestershire and Rutland Integrated Care Pharmacist role

The East Leicestershire and Rutland **(**ELR) IC programme was launched in 2012. As part of the programme, LTC patients whose risk of deterioration would be increased without proactive support and review, are identified, using a risk assessment/stratification tool (Bardsley et al. 2013). Patients can also be referred by their health care professional based on their knowledge of the patient's history. Each stratified patient is contacted by their local IC coordinator, who is a social community support worker by profession. The IC coordinator explains the programme and "admits" consenting patients to *"a virtual ward"*. These patients become IC patients which basically means that they receive a period of intense multidisciplinary care that mirrors hospital care, although they remain at home, as described above. In line with the IC process, their care is planned and delivered by a community MDT of health and social professionals, in liaison with the patient and their carers.

The initial model of the ELR IC plan which was informed by the Rand et al (2012) report, did not include a pharmacist as part of the MDT, although most of the stratified patients would have been expected to be on multiple medication. After recognizing that this was a gap, the plan was revised and pharmacists were included as a core part of the ELR integrated MDT. The final ELR Model is illustrated below in figure 1.1

Figure 1.1: Integrated Care Model for East Leicestershire and Rutland
(East Leicestershire and Rutland CCG, 2014)

Draft Integrated Care Model for East Leicestershire & Rutland CCG

NHS East Leicestershire and Rutland Clinical Commissioning Group
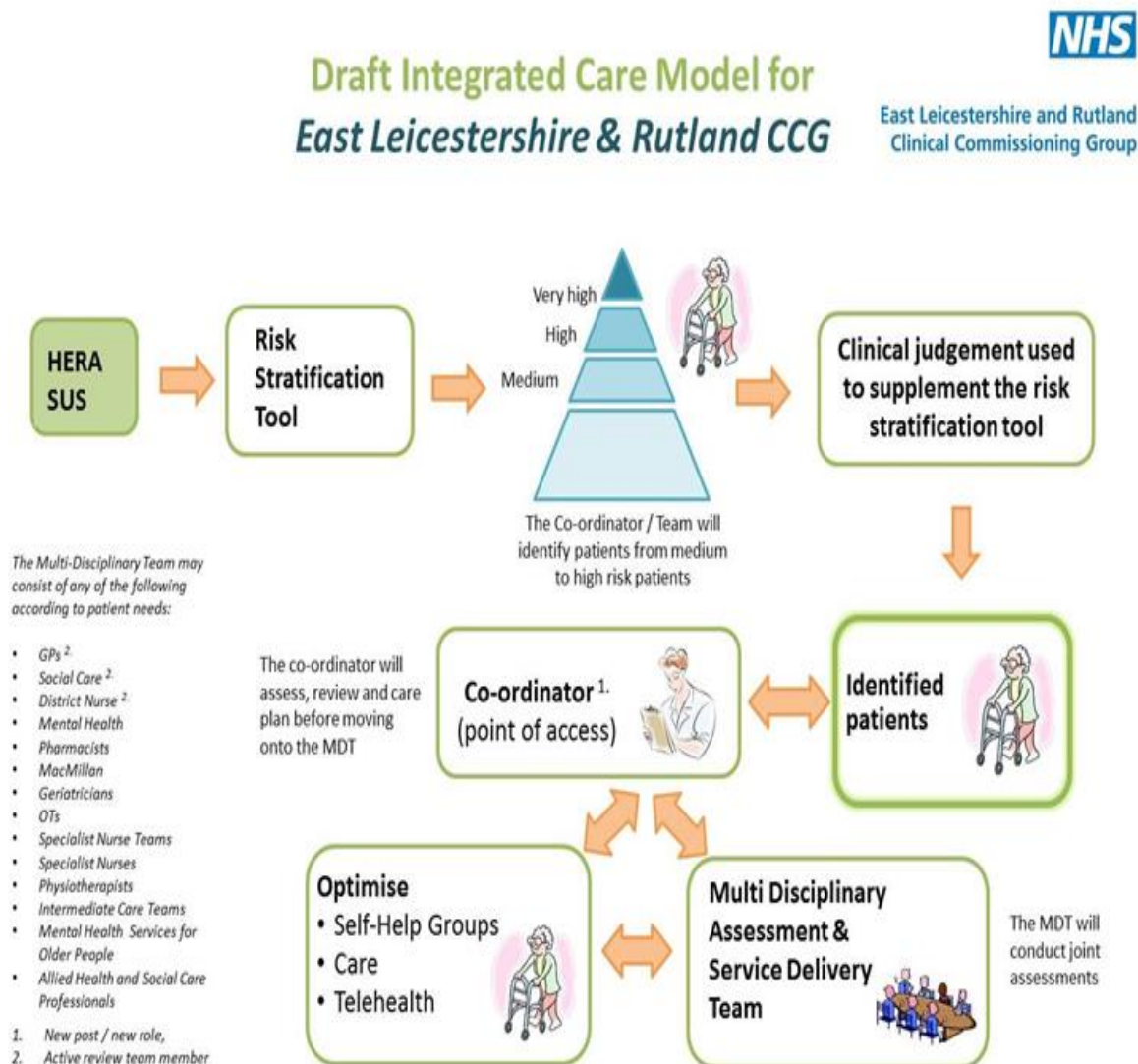
HERA= Business information support provided by Hera group information system

SUS = Secondary Uses Service comprehensive repository for healthcare data in England

The 33 GP practices in ELR CCG at the time were grouped to form 12 practice hubs or "virtual wards" and each hub was allocated an MDT. In line with this, following a pre-pilot with one pharmacist , two IC pharmacists were employed to support the practice hubs.The two pharmacists were based with the team of 12 IC coordinators, in the IC team office. Table 1 below details the ELR IC hubs, associated practices and IC pharmacist allocation to the hubs.

Table 1.1: Integrated Care Pharmacists and Coordinators alignment

Vitual Ward (VW)/ Practice Hub	Number of GP practices in hub	ELR CCG Locality	IC Pharmacist weekly hours for hub/virtual ward	IC Coordinator for Hub
Hub/VW 1	3	Blaby & Lutterworth	IC Pharmacist 1 for 6 hrs	IC Coordinator 1
Hub/VW 2	3		IC Pharmacist 1 for 6 hrs	IC Coordinator 2
Hub/VW 3	2		IC Pharmacist 1 for 5 hrs	IC Coordinator 3
Hub/VW 4	2		IC Pharmacist 1 for 5 hrs	IC Coordinator 4
Hub/VW 5	3	Melton Rutland & Harborough	IC Pharmacist 2 for 7 hrs	IC Coordinator 5
Hub/VW 6	3		IC Pharmacist 2 for 7 hrs	IC Coordinator 6
Hub/VW 7	2		IC Pharmacist 2 for 5 hrs	IC Coordinator 7
Hub/VW 8	2		IC Pharmacist 2 for 5 hrs	IC Coordinator 8
Hub/VW 9	2		IC Pharmacist 2 for 4.5 hrs	IC Coordinator 9
Hu/VW 10	3	Oaby & Wigston	IC Pharmacist 2 for 3 hrs	IC Coordinator 10
Hub/VW 11	3		IC Pharmacist 2 for 3 hrs	IC Coordinator 11
Hub/VW 12	3		IC Pharmacist 2 for 3 hrs	IC Coordinator 12

The IC pharmacist role for this research was derived from the role of clinical pharmacist in general practice, with some modifications as described in section 1.2.5 below.

The initial job description of the pharmacists evolved overtime as they settled into their role and could regularly re-assess the priorities. They worked closely with the IC Coordinators for their patient population and both were mutually accessible to each other and eventually developed a close working relationship and became part of the same team. As part of this, they routinely discussed each patient ahead of the multidisciplinary review, the IC coordinator also provided useful informal background information regarding the MDT colleagues ahead of meetings, which helped the pharmacist to plan better.

Access to the patients and other MDT professionals for the IC Pharmacist was facilitated by the IC Coordinator. As a result, the IC Pharmacists could fulfil their role functions (e.g. medication query resolution) with minimum delay.

Appendix one outlines the agreed workflow/pathway for the IC pharmacist role which was developed in consultation with the MDT, at the start of the pilot. The pathway included the following key steps:

- IC patients requiring IC pharmacist input were identified by any of the MDT members using either the risk stratification tool or clinical judgement
- Patients were referred to IC pharmacist via email

- IC patient medical records were reviewed by pharmacist and relevant social care information provided by the IC coordinator
- Appointments were made for the medicines review as convenient for the patient. One out of three options were chosen: domiciliary visit; telephone discussion or appointment at the GP surgery.
- Clinical medication review was conducted by the IC pharmacist
- Recommendations following the review were actioned in liaison with the appropriate care professional and followed up

In addition, the IC Pharmacist ensured that the IC coordinator, alongside the other multidisciplinary colleagues were regularly updated with the relevant medicines related information relating to their patients. The pharmacist also provided medicines-related training in areas that were mutually agreed to be beneficial. These included inhaler counselling, medicines administration and medication risk management.

As a core member of the integrated MDT, the IC pharmacists had regular and direct access to all the other MDT professionals. However, they liaised most frequently with the GPs, practice nurses and IC coordinators because their roles have varying degrees of prescribing, dispensing, or administration of medicines, outside the regular meetings. For some of the wards, a few weeks after the IC Pharmacist commenced, the Pharmacist and IC Coordinator decided to set up a regular informal sub- group meeting to review the post medicines review recommendations completed by the pharmacist. The pharmacist's medication review record and action plan or pharmaceutical care plan (Appendix 2) was used to discuss these patients at the meeting. The care plan was invaluable and accelerated the progression of the overall patient care plans, as illustrated in the fictitious case studies below.

Therefore, unlike the clinical pharmacist in GP practice role, the job purpose and functions of the IC pharmacist role were purely focused on the cohort of patients identified as part of the IC pilot pathway, whereby they provided holistic pharmaceutical care for IC patients. The IC pharmacists lead the co-design, implementation and monitoring of the therapeutic plan, ensuring that the desired outcomes were followed through and documented. The integration and co-location with the IC Coordinator of the program enabled the pharmacists to achieve this.

The actions the IC pharmacists took to deliver pharmaceutical care included medication reconciliation, education and training as well as clinical medication reviews which incorporated adverse drug reaction reviews, therapeutic drug monitoring and drug

information provision. Furthermore, they designed, completed and explained medication support tools such as medication record charts and handouts for patients and MDT colleagues like the IC Coordinators and Community Nurse (Appendix 3).

In conclusion, the IC Pharmacist role was flexible and adapted as required in line with the needs of the population and all stakeholders, in recognition of the fact that each general practice team/hub was different. This was planned in alignment to other core services to enable some consistency and to ensure regular evaluation and updates of the model when required. The constant review and change cycle was required for the participatory mixed methods methodology to enable the research questions to be answered.

1.2 BACKGROUND TO THE RESEARCH

This section elaborates on the existing knowledge of key themes related to the concepts that influence the role of the IC pharmacist, explaining how these interconnects to lead to the research questions. It commences with a fictitious illustration of integrated care provision titled a "tale *of two patients*". This is followed by a review of other components that influence how the pharmacist should approach the care of patients within an integrated multidisciplinary environment. These components are long term conditions (LTC), which are the main driver of cost and activity in the health and social care. Next is a discussion of pharmacotherapy, the most common intervention in LTC management (NHS, 2014; Goodwin et al. 2012). Then, pharmacotherapy failings such as polypharmacy, medication errors and wastage, adverse drug reactions, and non- adherence (Strand et al. 1990) are reviewed. The section ends with a review of how the IC pharmacist as the medicines expert should contribute to the management of pharmacotherapy failings.

1.2.1 A tale of two patients "Paul and Gill-two different stories /experiences of care"

"*The absence of joined up or integrated care, is the greatest frustration experienced by Patients and their carers*" (National Voices, 2013).

Therefore, one of the greatest contributions towards improving patient safety and quality of life that health and social care services could make, is to successfully deliver integrated care. To illustrate this, Box 1 below details two contrasting stories of care provision for two fictitious LTC patients; Paul and Gill, who are husband and wife. Although both lived together and were registered with the same general practice surgery, the husband received integrated care, whilst the care provided to the wife was fragmented.

Figure 1.2: A tale of two patients: Paul's story

Paul

Paul is a 66 years old retired teacher who lives with his 59 years old wife Gill. They have lived in the same bungalow for 35 years. Their only daughter moved to Canada 10 years ago

Paul suffers from both chronic lung and ischaemic heart diseases and both are managed by 10 long-term medication. Gill notices that Paul has become forgetful and anxious and takes him to their GP. The GP writes off Paul's symptoms saying they "*come with old age*" and prescribes diazepam. Gill however insists on getting an expert opinion and Paul is referred to a specialist. He is diagnosed with Alzheimer's after two appointments at the hospital 40 miles away. He is prescribed additional medication for Alzheimer's.

Overtime, Gill, assumes the role of Paul's carer. As part of this role she must:
- take him regularly to his clinic appointments
- manage and administer his medication
- assist him with his daily routines
- take over his chores e.g. managing the bills & shopping

Because it is unsafe to leave Paul alone, she must also:
- take him to all her appointments
- stop her twice a week get together with her friends for coffee and swimming

The health professionals they meet regularly for reviews and medication fail to notice that they are not coping. Two months later, Gill gives Paul double the dose of all his medication to "make up" for forgetting the previous day. These make Paul drowsy and he falls down the stairs, fractures his ankle and is admitted to hospital. His care is managed by the multidisciplinary team including doctors, nurses, social workers and physiotherapist. The hospital ward pharmacist is not a core member of the multidisciplinary team but reviews and reconciles Paul's medication and makes some recommendations highlighting discrepancies in Paul's records. One week later, they are informed that although Paul is physically fit for hospital discharge he would be discharged to a residential home. They are also told that based on the assessment Paul is not deemed eligible for public funding and would have to self-fund his social care cost of £1900 per week.

Paul and Gill insist that he should be discharged home, instead of the residential home. The hospital social worker proposes an alternative option to discharge Paul home under the new pilot programme called "*integrated care*". This means that although he could be discharged home, he would be "*admitted to a virtual ward*" implying that his care would be provided by a community multidisciplinary team. Core members of the team would be a general practitioner, nurse, pharmacist and the social community support, worker who will coordinate Paul's integrated health and social care plan. Paul agrees and is discharged

Following his discharge, in line with the integrated care process, the IC Coordinator liaises and streamlines all Paul's reviews and treatment appointments. The Coordinator is also copied henceforth on all communication, organizes the regular care planning meetings and completes all agreed administrative actions to deliver Paul's integrated care plan. One key task is to prioritise support actions to enable Paul stay at home for as long as possible. An urgent action to enable this is a domiciliary clinical medication review by the Integrated Care Pharmacist. The Pharmacist visits their home and completes a clinical (level 3) medication review; detailed in table 1 below.
Four of Paul's medicines are discontinued by the doctor in line with the pharmacist's recommendation. The Pharmacist also rings Paul regularly thereafter, to communicate and explain changes and to check if he has any concerns or questions.

In parallel to this, the coordinator
- organises a reassessment for continuing care that shows that Paul is eligible for NHS continuing care because his primary care need is 'health'. Consequently, his care can be funded 100%;

- manages his integrated care plan which is reviewed and updated monthly during the multidisciplinary team meeting;
- completes home assessments and equipment to facilitate mobility e.g. getting in and out of the bath;
- arranges access to any multidisciplinary team member as required;
- provides a lap top and tutorial on how to use the webcam for calls to their daughter and grandchildren. Paul tells his daughter that when she calls how happy he is that he is independent again and feels supported and empowered. The decision is taken that residential home admission is no longer required. It is agreed that his integrated care would be maintained for at least one more year.

An illustration of Paul's web of care is detailed below in Figure 1

Paul's web of care
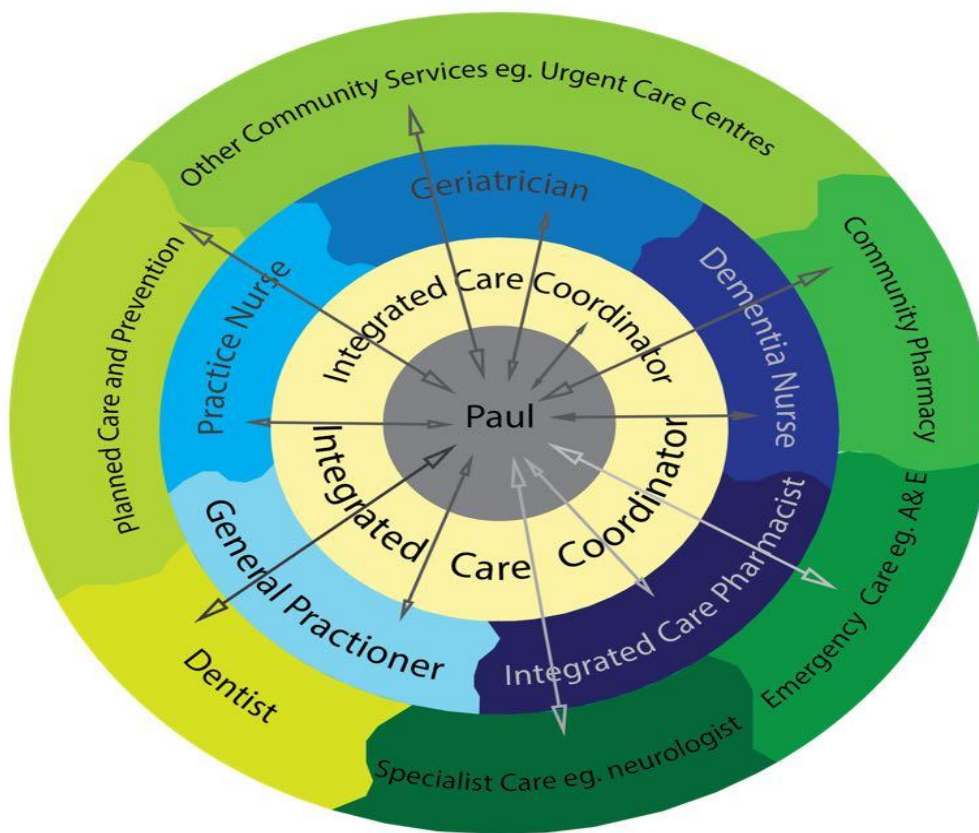
Illustration by Naafi Okunaye

Figure 1.3: A tale of two patients: Gill's story

Gill

Gill is a 59 years old retired secretary who lives with her 66 years old husband Paul. They have lived in the same bungalow for 35 years. Their only daughter moved to Canada 10 years ago

Gill suffers from rheumatoid arthritis and type 2 diabetes which are managed by four regularly prescribed long-term medicines. Gill is independent and becomes her husband's carer after he is diagnosed with dementia and starts getting forgetful. As his carer, she must take him everywhere. After she realizes that it is unsafe to leave him alone, she also
- stops going out for twice weekly get together with her friends;
- organises for their groceries to be delivered;
- only leaves the house for clinic or hospital appointments.

The health professionals they meet regularly for reviews and medication do not ask and fail to notice that they are not coping. Six weeks later, Gill gets depressed and anxious is prescribed two more medicines for these. They make her drowsy and forgetful. She continues as Paul's carer.

Two months later, Gill decides to give Paul double the dose of all his medication to "make up" for forgetting the previous day. These make him drowsy and he falls down the stairs, fractures his ankle and is admitted to hospital. Gill feels guilty and upset about her mistake and this makes her even more depressed.

Ten days later after some negotiation, Paul can be discharged home under a new pilot programme called "integrated care".

Paul improves steadily under the programme.

Gill asks if she could also be enrolled into the programme but she is told that she does yet meet the criteria. She is assigned a carer to support her with some basic tasks. However, unlike Paul, Gill
- receives her monthly prescriptions packed and delivered in a dossette box;
- organises and attends her review appointments with the GP, diabetic nurse, practice nurse hospital specialist, dietician and optometrist.

A few weeks later, Gill receives a letter from the GP surgery informing her that her medication for gastritis (caused by the painkiller for arthritis) has been changed to what she understands to be a cheaper one. Gill does not like the taste of the new one and therefore stops taking it. Her gastritis and diabetes gets worse. She is started on insulin. She struggles to understand all the advice she is given and how to use her insulin and take her medication.

Four months later, Gill still has
- insufficient understanding of most of her medication because the nurse only discussed diet and insulin monitoring during her appointment;
- to repeat herself when she attends every clinic appointment with the different specialist which she still must organise;
- to try to remember to communicate changes that the hospital make to her care to the GP staff because it often does not get communicated;
- only minimum understanding of what her blood tests and targets mean;
- no copy of a diabetic care plan;
- to pay for her social care.

Gill also
- forgets to take her evening medication regularly and is unsure how to use most of her medication;
- is deteriorating; her diabetes, gastritis, depression and arthritis are getting worse and she is now also obese.

The GP asks the new practice pharmacist if she could visit and review Gill's medication. The pharmacist visits and completes a comprehensive clinical medication review. All actions are detailed in table 1.2 below.

Urgent action was required to provide Gill with medication counselling. However, the pharmacist encounters the following barriers:

- Access to the GP and diabetic nurse is difficult.
- She leaves messages and their responses are both slow and conflicting.
- The pharmacist finds out that a diabetic consultant letter with a medication change and another from the chiropodist had been misplaced.
- Gill's care professionals are not part of a bespoke multidisciplinary team. There are also no regular meetings or a coordinator and therefore the pharmacist must chase everyone individually to progress actions.

Gill is also offered appointments that have clashed and ended up spending long hours on the phone trying to reschedule.

Six months later, whilst still awaiting resolution of the issues the practice pharmacist raised, Gill is admitted to hospital with hypoglycaemia. In hospital, tests also showed a gastric bleed. The decision is taken that she should be discharged to a nursing home, until she can cope better.

- An illustration of Gill's web of care is detailed

Gill's web of care
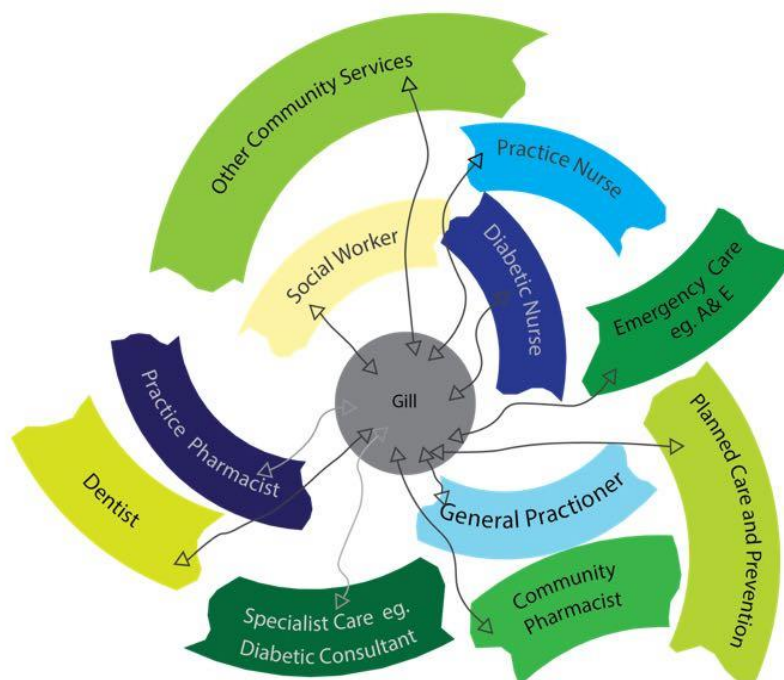
Illustration by Naafi Okunaye

After the six-month period, Paul and Gill are surprised at how different their care has been.

With regards to pharmaceutical care provision, Paul's pharmacist worked as part of an

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integrated MDT and had better access to the team members. This enabled timely resolution of actions required to optimise his medical treatment ensuring that that his care was streamlined, effective and recurrent. Overall, they felt that Paul's care was integrated, coordinated and individualised as illustrated in his web of care in Figure 1.2 above. Consequently, his outcomes were achieved and he felt empowered, independent and satisfied, at the end of the six-month period.

On the other hand, Gill's, pharmaceutical care was provided by a pharmacist who was not part of any multidisciplinary team and thus struggled to gain access and results from a similar but disconnected cohort of health and social care professionals. This was because the processes were uncoordinated and fragmented as illustrated in her web of care in Figure 1.3 above. Gill's care was neither integrated, coordinated nor individualised. Accordingly, her condition deteriorated by the end of the six-month period. The table below summarizes the pharmaceutical care for Paul and Gill.

Table 1.2: Summary of Pharmaceutical Care provided to Paul and Gill by their pharmacists

	Pharmaceutical Care provided to Paul	Pharmaceutical Care provided to Gill

Initial Actions	The IC Pharmacist reviewed all medicines and identified drug related problems.
	Urgent problems identified. Paul
	• was taking the same medication twice as prescribed under both brand and generic name
	• was still on an antiplatelet called clopidogrel which should have been discontinued two years prior.
	• was unsure how to obtain continuous supply of his Alzheimer drug supplied initially by the hospital
	• was still taking three drugs intended for short term hospital use only
	• had bags of hoarded unused medication indicating non-adherence
	The IC Pharmacist commenced resolution of the drug related problems and prevention of future drug related problems by
	• Completing a medication record chart for Paul to use. Chart detailed why, when & how to take his 12 medication
	• Counselling him on medication use e.g. inhalers
	• Assessing him for suitability of packing and using a dossette box and showing him how to pack it
	• Suggesting strategies to improve adherence eg taking medication after brushing teeth
	• Explaining how all medication work, common ADRs and coping strategies effects
	• Giving him a "green bag" to put all his up-to-date medication in to ensure they are all in one place to be taken for GP or hospital visits
	• Explaining how to obtain Alzheimer medication
	• Collecting and discarding old stock of medication
	• Drafting a pharmaceutical care plan with recommendations and outcomes
	Recommendations included
	✓ Discontinuing clopidogrel which would reduce gastritis
	✓ Discontinuing gastritis treatment when improved
	✓ Discontinuing painkillers, laxative and antiemetic
	✓ Considering discontinuing diazepam
	   • Presenting draft plan and recommendations to GP and implementing
		The practice pharmacist reviewed all medicines including hoarded old stock and identified drug related problems
		Urgent problems included the fact that Gill
		• had no understanding of her blood tests and targets
		• had no copy of a diabetic care plan
		• did not understand how to take medication including insulin
		• Was non – adherent with her medicines
		• Was generally getting worse
		• had not stopped tablet nor increased insulin as recommended by specialist
		The practice pharmacist commenced resolution of all drug related problems and prevention of future drug related problems by
		• Completing a medicine record chart for her use. Chart detailed why, when & how to take all the medication
		• Counselling her on how to use her medication especially her insulin
		• Discussing the problems with her newer gastritis medication and explaining it was just as effective and proposing a capsule form to mask the taste.
		• Liaising to organise diabetic nurse appointment for joint completion of her diabetic care plan
		• Suggesting adherence strategies
		• Explaining how all medication work, common ADRs and coping strategies
		• giving her a "green bag" to put all her up-to-date medication in to ensure they are all in one place to be taken for GP or hospital visits
		• Drafting recommendations for the GP and the diabetic nurse
		Recommendations included
		✓ Actioning request on consultant's letter
		✓ Ensuring she attended diabetic patient education session
		✓ Changing her gastritis medication to the capsule format
		✓ Reviewing her antidepressant and anxiolytic medication
		✓ Urgent meeting to jointly agree and complete care plan
		   • Implementing outcomes of recommendations made

Follow up actions	The integrated care pharmacist • Communicated changes to Paul and community pharmacist • Answered questions regarding changes • Ensured ongoing supply	The practice pharmacist • Updated Gill re the delays • Explained & answered questions regarding changes

1.2.2 HEALTH AND SOCIAL INTEGRATED CARE

The contrasting fictitious stories above exemplify how the experiences, pharmaceutical care and pharmacotherapy outcomes for LTC patients can be optimized by an IC pharmacist working as part of an MDT.

What is integrated care?

Integrated care has become an international catchphrase and has several synonyms including proactive, coordinated, continuous, collaborative, shared, transmural, intermediate or seamless care. It is basically an umbrella designation which comprises of a range of programs with different scopes and values aiming to tackle fragmentation (Stein and Reider, 2009).

The World Health Organization (WHO) in its position paper defines integrated care as:

> "*A concept bringing together inputs, delivery, management and organization of services related to diagnosis, treatment, care, rehabilitation and health promotion. Integration is a means to improve services in relation to access, quality, user satisfaction and efficiency.*"

(Gröne et al. 2001)

This early definition by WHO from over 15 years ago, shows the complexity of the concept. It highlights that it involves both processes as well as outcomes. One decade later, the concept had been put into practice in the form of several pilots across the UK. One of the main conclusions from one of the evaluation reports of the UK pilots (Rand et al. 2012) and WHO was that integrated care represents "*a locally adaptable assortment of integrating activities*" instead of one fixed model (WHO, 2016; RAND et al. 2012).

To further underscore how complicated the concept is, a review of the literature on integrated care revealed over 175 other definitions and a huge variation of models (Armitage, 2009; Lloyd and Wait, 2005). Moreover, integrated care has different categorizations and typologies and these are organizational, functional, service and clinical (WHO, 2016; Lewis et al.2011). In addition, in the health care setting, two different dimensions of integration have been defined. The first is horizontal integration which refers to integration across community services like GP practices and community nursing and social care services. Vertical integration is the second and is integration between primary and secondary care settings (RAND et al. 2012).

With this many levels and groupings for integrated care, it is evident that the term would have different meanings to different people, dependent on what stakeholder type they are as described in the WH0 (2016) report. Administrators in governmental organizations as the first stakeholder type, generally base their definitions on processes, coherency of funding, administration and inter-sectoral collaboration. The second stakeholder types which are care professionals generally focus their definition around the aligning of the functions of health or social systems. This includes the coordination of MDTs, building in evaluation and feedback and ensuring that change management is effective. The third and arguably the most important stakeholder group is patients and the public with more personalized definitions.

> *"My care is planned with people who work TOGETHER to understand me and my carer(s), put ME in control, coordinate and deliver services to achieve MY best outcomes"*

(National Voices, 2013)

This definition highlights the importance of integrated processes, specifically recommending the inclusion of MDT work. It also stipulates coordination of care, highlighting that integrated care is the opposite of fragmented care. It concludes by specifying that the outcome should be optimized. This patient -user led definition has been adopted by the English government. Choosing a patient definition correlates with the numerous publications recommending patient and carer involvement in integrated care schemes. This ensures that their needs and expectations are met (WHO, 2016; RAND et al. 2002; Kodner and Spreeuwenberg, 2002). Consequently, this user led definition was chosen as the definition of focus for this research.

In conclusion therefore, integrated care is best understood as a team of health and social care professionals working proactivley and collaboratively to deliver coordinated, and personalized care that is patient centered around and designed to meet the needs and preferences of both the patients and their carers (NHS England, 2013).

What is the history and implications of health and social disintegration in the United Kingdom?

"*Too often the complex needs of many vulnerable people have taken second place to a system plagued by boundaries, barriers and turf wars.*"

(Alan Milburn, UK health minister, 1998)

The boundaries referred to above by the UK health minister at the time, are those that exist between the health and social care systems, which are legally distinct. He highlighted this because disintegration between health and social care was prevalent at the time. Currently,

although there is a drive and progression towards improvement, disintegration and fragmentation remain the rule, rather than the exception (DH et al. 2017).

These boundaries widened progressively since the creation of the National Health Service (NHS) in 1948, which separated health and social care provision and are often denoted "*the Berlin wall* "of health and social (Clements, 2010). Since the creation of the NHS, three key themes resulting from constant ongoing changes within the health and social systems, have had an influence on partnership between health and social care.

The first theme is the creation of a quasi- market which resulted from the introduction of GP fundholding and the splitting of the NHS into providers and commissioners in1990 (Silcock et al. 2004). GP fundholding was superseded by primary care groups (PCGs) which were later replaced by primary care trusts (PCTs) which then evolved into clinical commissioning groups (CCGs), who are currently the lead NHS commissioners. General practices have emerged from these changes as provider businesses, contracted by their local CCGs. The implication of this development for this research is that after GP provider contracts started including prescribing incentives, the role of the primary care pharmacist(PCP) was conceived (Silcock,2004). The initial role functions of the PCP were completion of clinical and administrative jobs for GP practices or primary care organizations. Over time the focus has evolved in line with NHS priorities, to more patient centered work roles (Bradley, 2018). An example is the clinical pharmacist in GP practice role. The integrated care pharmacist is another derivative of the PCP role and is illustrated in figure 1.4 below.

The first implication of this development is that GPs have become both employers as well as colleagues of other care professionals like nurses, social care workers and pharmacists. This is eradicating most of the historic issues caused by their secondment to general practice, including insufficient managerial and professional support, a different accountability system, different employment terms and different approaches and philosophies. However, on the flipside, hierarchical structures and power struggles have increased alongside this employer-employee relationship between GPs and fellow care professionals. This is deterring collaboration and team working (Schadewaldt et al. 2013). The second implication is that the increasing co-location of these care professionals is enabling mutual access and visibility and facilitating MDT and patient centered working (Freeman, 2016; Jorgenson et al. 2014)

The second theme is the shift from market competition in the NHS, which was introduced by GP fundholding, to collaboration, which was facilitated by the amalgamation of health and social budgets, authorized by the Health act of 1999. Further changes over the years

facilitated even more collaboration and culminated in the creation of the Health and Well-being boards in 2012. Following this, CCGs and local authorities were obliged to launch health and social integrated care programs. Consequently, informed by the published evaluation of the national IC pilots (Rand et al. 2012), the integrated care pioneer program was commenced in 2013 England. It involves twenty-five funded IC pioneer sites tasked with investigating innovative methods to improve integration between health and social care over five years (Mays, 2016). Most CCGs including ELR CCG, commenced their integrated care pilot around the same period. The CCG pilots are further enabled by the Better Care Fund (BCF) which was the first mandatory pooled budget across health and social and has become instrumental in expediting collaboration and integration (Humphries, 2015)

The third theme is that over the years, the NHS overstretched itself from predominantly focusing on the treatment of sickness in a manageable number of people, to prioritizing prevention of sickness, in an undefined number of frail people (DH, 2012; Clements, 2010). This was aggravated by the fact that it has become fundamentally more difficult to distinguish the "sick" from the "frail or "disabled". Overtime, it thus became increasingly apparent that the original design of the NHS had become neither suitable nor sustainable for the population. Furthermore, other associated factors such as the rising cost pressures resulting from people living longer with complicated needs and whilst suffering from several illnesses, as well as innovative and expensive treatment, exacerbated the situation. Consequently, over time the NHS has had to gradually redefine its role to be able to cope with these. A basic change is that NHS funding for social care requirements has become restricted to the sick in hospital whilst funding for the frail and disabled has been transferred either to social services or the patients themselves. (DH, 2012).

A major implication of this shift from treatment of sick patients, to prevention of sickness for this study is that the roles of community social carers is expanding significantly, as they inherit the traditional duties of district nurses, for patients not eligible for NHS health funding. Amongst these inherited duties are certain aspects of medicines management. As a result, pharmacist and social carers are having to work closer together to deliver the therapeutic goals of their patients. The nature of the joint working is evolving with the role changes for both the social carers and pharmacists. Hence, one of the main role functions of the IC pharmacist job was to provide both proactive and reactive medication related training and support to the IC coordinators who were social support workers by profession.

Consequently, it was recognized that these unprecedented pressures and challenges indirectly resulting from the social and health care divide, had led to the "*tipping point*" (DH,

2017). Therefore, breaking down the health and social care barrier was included as a key objective in the NHS five-year view which outlines the NHS plans (NHS England, 2014, DH, 2014).

How should integrated health and social care be delivered?
"*Any integrated model development is strongly contextually-bound, nearly impossible to replicate and can only be successful if it does account for unique needs and characteristics of the population it aims to serve*"

(WHO, 2016).

This recommendation from the World Health Organization is based on research that shows that there is no ideal IC model that should be replicated and one size cannot fit all. Therefore, the model for each IC program should be locally determined and co-designed with key stakeholders. Furthermore, because there are too many different existing models to choose from, commissioners are recommended to build their models on '*discovery and not design'* (DH et al. 2017). Consequently, the ideal starting point is to use published recommendations from the literature to inform local pilots.

The most up-to-date comprehensive publication is the final report of the early evaluation of the Integrated Care and Support Pioneers Program (Erens et al. 2016). The ongoing evaluation is aimed at assessing how successful all 25 pioneer IC sites are in the provision of coordinated care, improved patient experience and outcomes in a cost-effective way. The evaluation comprises several strands. The first strand is a survey to obtain the perceptions of participants regarding barriers and facilitators which affect achievement of the desired outcomes. Barriers highlighted included financial constraints (58%); incompatibility of information technology systems for patient information sharing (46%); contradictory national government policies (40%); insufficient funding for innovative services (39%); staff shortages (33%). Facilitators mentioned comprised having a robust local leadership (76%); building good work liaisons between important local partners (60%); involving patients (55%); and having a bottom-up approach to ensure changes are driven by local staff (52%) (Policy Innovation Research Unit, 2016). These barriers are mostly features of formal organizational structures and systems requiring national solutions whilst the facilitators relate to leadership, vision, trust and shared values which are under local control. Furthermore, although all pioneers reported that progress in achieving the 15 outcomes had been made, most of it was non-substantial. Most of the interim achievements were focused on the setting up and implementation process instead of the outcomes like care quality improvement or admissions reduction. The evaluation will proceed for three more years.

Pending the final outcome of the evaluation of the pioneers, some essential guiding principles to optimize integration have been identified from existing literature. These include ensuring schemes are patient centered and informed (Wait, 2015) commissioner driven, flexible, monitored and coordinated by integrated multidisciplinary teams (Curry and Ham, 2010). Like most of the UK models, the ELR model includes most of the elements of these guiding principles. This was described and illustrated in section 1.1.1 above.

In conclusion, irrespective of the model used, care provision to LTC patients by MDTs are essential for intergrated care to succeed. Consequently, the next section focuses on integrated health and social MDTs, in relation to this study.

1.2.3 INTEGRATED MULTIDISCIPLINARY TEAMS

Multidisciplinary working:

" *involves appropriately utilising , skills and best practices from multiple disciplines and across service boundaries to redefine, rescope and reframe health and social care delivery issues, reach solutions based on an improved collective understanding of complex patient needs*"

(NHS England, 2014).

To support the different health and social organizations to set up MDTs, guidance was published by NHS England in 2014. The guidance details four multidisciplinary care models ranging from model one which is uni-disciplinary with separate record keeping and communication to model 4 which is transdisciplinary with no barriers. The MDT model within which the IC pharmacist for this pilot was situated is Model 3. Model 3 involves a core team of members from different organizations working closely together to provide care.

Integrated MDTs have been shown to be effective in providing support for LTC patients as well as their carers(Erens et al. 2016; Rand et al. 2012). The support they provide include learning opportunities, information sharing as well as improved communication, collaboration and facilitation to ensure patient understanding of the care process (Christie et al. 2015). These lead to continuity and coordination of care which is required to achieve a positive patient expereince as well as other outcomes like reduced hospital admissions (WHO,2010 ; Thornhill et al. 2008).

However, the literature highlights several obstacles preventing the development of effective MDTs. These include regulatory, funding and jurisdical issues which is preventing capable and dedicated care professionals from working cohesively together(Thornhill et al. 2008). Reasons range from "turf" wars (Clements,2010) to fear of liabilty and malpractice issues.

However a metaanalysis of studies suggest that individual MDTs could enhance teamwork despite these barriers by developing a shared vision and goals, formalised processes, IT systems and fostering a sense of belonging (Mulvale et al. 2016).

Specifically in relation to pharmacotherapy, multi-professional involvement is recommended as important to increase the effectiveness of clinical medication reviews (Blenkinsopp et al. 2012). The literature highlight that if the pharmacist is based in a practice and has access to other health professionals as part of joined up services (as is the case with MDT working), communication will be enhanced, making it easier to implement any medication changes resulting from medication reviews (Desborough and Twigg, 2013; Blenkinsopp et al. 2012). Clinical medication reviews are the most common role function of the IC pharmacist job in managing pharmacotherapy in LTCs. Furthermore, the first of the six steps in a recently published EU project on polypharmacy management is a recommendaton to ensure multidisciplinary clincial and policy leadeship in health care systems.(Scottish Government Polypharmacy model of care Group, 2018). Consequently, the next section progresses to review first LTCs, followed by pharmacotherapy including clinical medication reviews and polypharmacy.

1.2.4   Long term conditions and pharmacotherapy

Long term conditions

A long-term or chronic condition is an illness that is currently impossible to cure but which can however be controlled by either medication or other treatments (DH, 2010). Examples include diabetes, chronic obstructive pulmonary disease and dementia.
LTCs are amongst the biggest challenges faced by the NHS. One of the main reasons is the fact that although more people are living longer due to advances in healthcare, their lifestyles are not necessarily healthy (DH, 2012).

Research shows that 14% of people under 40 years and 58% of people over 60 years have at least one LTC. Additionally, it is estimated that in the UK, there are over 26 million people living with a minimum of one LTC and about 10 million living with two or more (Sanderson and White, 2018). It is also approximated that 25% of over 60 year olds have two or more long term conditions. These over 60 years old account for 50% of appointments in GP practices, 64% of all appointments in outpatient appointments and more than 70% of hospital bed days. In addition, it is worth noting that 70% of the health care budget is spent on supporting LTC. (NHS, 2014). These figures show that patients with LTCs are the main drivers of cost and activity in the NHS and social care (Goodwin et al. 2011). Therefore,

addressing long term conditions and its consequences has become paramount (DH et al. 2017) and "meeting their needs" is described as the core business of the National Health Service (NHS, 2014; RPS, 2013).

A further consequence is that pharmacotherapy is rising alongside the aging population as evident by the rise in the cost of medicines of 28.4 percent from £13.0 billion in 2010/11 to £18.2 billion, in 2017/18 (NHS digital, 2018).

Pharmacotherapy

Pharmacotherapy is defined as "*a complex system integrated by interdependent joint processes, carried out by different actors, whose objective is to prevent, control and solve a patient's health problem*" (Strand et al.1990). This highlights that therapy with medication instead of being simply a theoretical independent sequence of events, is in fact a complicated series of processes involving multidisciplinary stakeholders or "players". However, pharmacotherapy can also lead to failures manifested by drug related problems (Salazar-Ospina et al. 2012; Strand et al.1990). Two main types of pharmacotherapy failures are defined. The first is non-achievement of therapeutic goals due to an ineffective therapeutic strategy whilst the second is unexpected drug related harm. These failures are multifaceted including non- adherence, adverse drug reactions (ADRs), medication errors, medication wastage and polypharmacy and are discussed next.

Non-adherence

Research shows that most patients are non-adherent with their medication especially when newly started (Barber et al. 2004). Two systematic reviews estimated that 20-60% of patients are non- adherent to their medication and LTC patients are the most implicated. (Kripalani et al. 2007; Garfield et al. 1999). Adherence to pharmacotherapy is also estimated by the World Health Organization to be 50% among patients with LTCs (WHO, 2003a).

Adverse Drug reactions (ADRs)

Hallas et al (1990) divided ADRs into three categories: ADRs which are "*definitely avoidable*"; ADRs which are "*possibly avoidable*" and ADRs which are "*unavoidable*". A meta-analysis of prospective studies from the 1990s estimated that ADRs are responsible for 5% of hospital admissions and fatal ADRs are the sixth leading cause of death after heart attacks and other causes (Lazarou et al.1998). However, Pirmohamed et al (2004) later criticized this study highlighting that the calculated death rate resulted from extrapolated admission rates from 1994, although the ADRs data was from studies prior to 1981.

They then conducted a much larger prospective study in two large general hospitals in the UK, involving 18,820 patients aged over 16 years over a six-month period (Pirmohamed et al. 2004). Their study showed ADRs to be associated with 6.5% of emergency re-admissions, 72% of which were deemed avoidable (for example through clinical medication reviews by pharmacist), with 2% leading to death.

They emphasized in their conclusion that

"*We concentrated on ADRs causing hospital admissions and did not evaluate the burden caused by ADR occurring while patients are in hospital, or ADRs in primary care that did not result in hospital admission, which may at least double the figures presented here*".

(Pirmohamed et al.2004)

Their statement regarding doubling the 6.5% ADR related readmission figures is very relevant for this study because it is the basis for a fundamental assumption detailed in the data analysis section (3.2.2), that 10% of medication errors/discrepancies resolved by the IC pharmacist, resulted in one avoided admission.

However, the limitations of the study include the fact that the decision to assign an admission as ADR related was subjective and therefore each patient was assessed twice. Moreover, it is not possible to be completely certain that a particular drug caused an ADR. Additionally, of significance is the fact that a more recent publication attribute 11% of unplanned admissions to medication harm (Scottish Government Polypharmacy model of care Group, 2018)

Medication errors

In a recent report, WHO highlights that there are over 26 definitions for medication errors (WHO, 2016). A comprehensive definition is that by The United States National Coordinating Council for Medication Error Reporting and Prevention which defines medication errors as:

> "…*any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing, order communication, product labelling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring, and use.*"
>
> (National Coordinating Council for Medication Error Reporting and Prevention, 2015)

A review of all reported medication incidents between 1 January 2005 and 31 December in the UK, concluded that they represented 9.68% of all patient safety incidents (Cousins et al. 2012). This study also showed that thirteen therapeutic groups accounted for 46% of the

incidents, if outcomes of death or severe harm are excluded. More recently, Parand et al (2016) conducted a narrative systematic literature review spanning 1946 to 2013 which included 33 studies in which carers had main responsibility for preventing/causing medication administration error (MAE) in patient homes. The study showed that domiciliary carer MAE are between 1.9 to 33% of medications administered by 12 to 92.7% of carers. The MAEs included dosage errors, wrong medication or time, omitted administration, and incorrect administration route. Factors that contributed ranged from age of carer or patient, storage issues, understanding of instructions to communication medication factors. Training and equipment were shown as possible interventions to reduce MAEs. The authors recommended further studies to explore these and other ways of reducing MAEs.

Medicines Waste

The national evaluation of the scale, causes and costs of waste medicines highlighted that medicines waste is around £300 million per year in primary care in the UK and half of this is avoidable. (York Health Economics Consortium, University of York, and the School of Pharmacy, University of London 2010). The root causes of medicines waste include patients' conditions improving before medicines used, change of therapy, death, supply processes like repeat dispensing and failure in support of vulnerable patients.

Polypharmacy

Polypharmacy refers to the use of multiple medication by an individual and is prevalent in LTC patients. Masnoon et al (2017) conducted a meta-analysis reviewing 110 articles that define polypharmacy and found a total of 138 such definitions. These highlights why there is no universally agreed definition for it. However, the most common definition is when a patient takes five or more concomitant regularly taken medications (Ong et al. 2017). Polypharmacy is very common and increasing because of the aging population and associated multi-morbidity. Between 2002 and 2012, the average number of prescribed items per head increased from 12.4 to 18.7(NHS Digital, 2013). As shown by a UK study, the prevalence continues to rise progressively: 12 % of patients were dispensed at least 5 drugs in 1995, escalating to 22% in 2010; whilst 1.9 % of patients were dispensed at least 10 drugs in 1995, rising to 5.8 % in 2010 (Duerden et al. 2013). Generally, polypharmacy increases the incidence of adverse drug effects which could spiral and lead to even more polypharmacy if medication is prescribed to treat the adverse effect. Furthermore, it enhances the probability of medication error, intentional and unintentional non – adherence, medicines waste and cost.

The surge in pharmacotherapy mentioned above, is also associated with a rise in these described pharmacotherapy failures. In the next section the role of the pharmacist working to resolve these drug related problems in primary care, collaboratively as part of a health and social integrated MDT is discussed.

1.2.5   The Integrated Care Pharmacist role in management of long term conditions

There is growing evidence demonstrating that because pharmacists possess expert drug knowledge, skills and experience, they are best placed to lead on strategies to reduce the pharmacotherapy failures described above, which would improve the quality of pharmacotherapy (Avery et al. 2012; Barber et al. 2009). These strategies are underpinned by the concept of clinical pharmacy which was introduced in the late 1960s and the associated philosophy of pharmaceutical care which was established in the 1990s. (Ahmed et al. 2010). In addition, medicines management and medicines optimisation are two related concepts that are often confused with clinical pharmacy and pharmaceutical care (Tweedie and Jones, 2001).

Clinical pharmacy has several definitions including that of the American College of Clinical Pharmacy (ACCP):

> "*A health science specialty that embodies the application, by pharmacists, of the scientific principles of pharmacology, toxicology, pharmacokinetics and therapeutics to the care of patients.*"

> (American College of Clinical Pharmacy, 2008)

Hepler (2004) describes how clinical pharmacy should be viewed as complementary rather than incompatible to pharmaceutical care, by explaining how the former is a form of pharmacy practice to achieve the patient centered outcomes of the later. This highlights the patient centered focus of pharmaceutical care which is defined as:

> "*The responsible provision of drug therapy for the purpose of achieving definite outcomes that improve a patient's quality of life*"

> (Hepler and Strand, 1990)

Through the provision of pharmaceutical care aimed at reducing the pharmaceutical failures detailed above, the IC Pharmacist should be able to contribute to the management of LTCs. Pharmaceutical care involves:
1. A review of all medicines and identification of drug related problems and desired outcomes

2. Completion of actions to resolve all drug related problems and prevent future drug related problems
3. Completion of follow up actions
4. Monitoring of the outcome achievement

Pharmaceutical care to reduce these pharmacotherapy failures of non-adherence, ADRs, medication errors, polypharmacy and waste is supported by some key processes. These include clinical medication reviews including deprescribing, medicines reconciliation, patient counselling, and increased communication, education of stakeholders, process optimization and risk management. Pharmaceutical care contributes towards achieving the goals of medicines optimisation which are to ensure that "the *right patient, get the right choice of medicine, at the right time"* (RPS, 2013).

Medicines Optimisation is defined as "*a patient-focused approach to getting the best from investment in and use of medicines ….and requires a holistic approach, an enhanced level of patient centered professionalism, and partnership between clinical professionals and a patient*"

(RPS, 2013)

Medicines optimisation is a more patient centered term compared with medicine management which, as explained by Barber (2001), views both the patients and the drugs as "*objects*" to be managed with the fundamental aim of supporting the achievement of the predominantly economic goals of medicines management. Furthermore, medicines optimisation involves professionals across the health and social care system and patients collaborating (RPS, 2013), which is in line with the integrated care concept.
To facilitate description, the actions of the IC pharmacist to provide pharmaceutical care, aimed at achieving medicines optimisation, are grouped below into patient directed, multidisciplinary team directed and practice /system directed actions (Sharma, 2016; Freeman et al. 2016; Sharma, 2015).

Patient directed actions of the IC pharmacist
The most common patient –directed actions are clinical medication reviews and medicines reconciliation which are completed as part of pharmaceutical care.

A medication review is an umbrella term describing an organized and analytical examination of a patient's medication, with the aim of jointly agreeing with them, the best way of optimising their medication, whilst simultaneously reducing the failures of pharmacotherapy

(Shaw et al. 2002). Three types of medicines reviews are described: prescription review; compliance and concordance review and clinical medication review. (Blenkinsopp, 2012). The clinical medication review type which is the relevant type for this study, is also referred to as a level 3 medication review and involves a face to face with the patient. It is also more comprehensive than a level 0 review which is usually adhoc and unstructured or level 1 (paper based without medical records) or level 2 which uses the medical records in the absence of the patient. (Task Force on Medicines Partnership and NCMMSP, 2008).

The benefits of monitoring the benefits and risks of treatment with several medications in primary care by periodically reviewing treatment was initially highlighted in the 1990s (Zermansky, 1996).

A few years later, other studies (Holland et al, 2007) and those in the literature review by Zermansky and Silcock (2009) highlighted that although no robust evidence of admissions avoidance had been demonstrated by medication reviews, no reports had showed patient harm from the intervention. Furthermore, it was consistently suggested that falls and hospital admissions could have been reduced, leading to drug cost savings as a minimum. As a result, they made the conclusion that clinical medication review could be both valuable and cost effective. They finalized by recommending a robust, multicentre, clinical trial with clearly described and carefully chosen interventions and outcome measures.

Similarly, Blenkinsopp (2012), following an evaluation of published systematic and structured reviews highlighted that although clinical medication review leads to an improvement in the process outcomes of prescribing such as polypharmacy, appropriate medicine formulation and medication choice, no robust health economic studies demonstrating achievement of stronger outcomes such as reduced mortality or hospitalization were found. However, a small study demonstrating   reduced hospitalization for some patient categories was mentioned (Roughead et al .2009 cited in Blenkinsopp, 2012). The conclusion was drawn that the evidence suggests that clinical medication reviews could lead to an improvement of knowledge and adherence in patients. Consequently, currently, it is generally accepted that clinical medication reviews are valuable especially when there is multi-professional involvement.

In practice, the IC pharmacist completed pharmaceutical care plans (Appendix 3) as part of the clinical medication review process. The care plans were used to document and follow up on actions aimed at achieving defined patient goals. A pharmaceutical care plan was completed for the fictitious patient Paul and is detailed in table 1 above.

A medication review is also usually part of medicines reconciliation which is a method of producing the most correct and comprehensive list of medications that the patient is taking. The list should include the name, dosage, frequency, and route of the drugs. The list is then compared to the admission or discharge prescription, with the aim of ensuring that the correct medication is provided to the patient throughout (The Institute of Healthcare Improvement, 2011). Transdisciplinary collaboration between a pharmacist and a doctor as part of medicines reconciliation has been shown to make discharge prescriptions safer and more comprehensive (Holland, 2015). Medication reconciliation has been shown to prevent harm and medication errors by both primary and secondary care prescribers (CQC, 2009). A more recent study also showed that medicines reconciliation led to reduced hospital admissions (Mekonnen et al, 2016). Consequently, medicines reconciliation is a key task of the IC pharmacist role considering IC patients are moderate to high risk and likely to move across care settings.

Regular clinical medication reviews aimed at de-prescribing are recommended for patients at risk of polypharmacy (Scottish Government Polypharmacy model of Care Group, 2018; Duerden et al. 2013). Polypharmacy as highlighted above, increases the incidence of adverse drug effects which could spiral and lead to even more polypharmacy if medication is prescribed to treat the adverse effect (Ong et al. 2017). Furthermore, polypharmacy also enhances the probability of medication error, intentional and unintentional non – adherence, medicines waste and cost. De-prescribing refers to measures to reduce polypharmacy and has been shown to improve outcomes (Duerden et al. 2013). Therefore, discontinuing prescribed medication, where the risk outweighs the benefits is recommended. Deprescribing reviews should be focused on the elderly, psychiatric patients, patients taking five or more drugs at a time, patients with more than one doctor or pharmacy, patients recently discharged, those with comorbidities, low educational level and impaired dexterity or vision those with multiple doctors and chemists, recently hospitalized patients, individuals with concurrent comorbidities, low educational level, and those with impaired vision or dexterity. Burge et al (2012) advice to consider a palliative approach where required and to stop medication which is no longer appropriate. The IC pharmacist used guidance such as STOPP/START (O'Mahony et al. 2015), BEERS criteria (BEERS, 1997) or the seven steps (Scottish Government Polypharmacy model of Care Group, 2018), to guide deprescribing reviews. Other recommended approaches to reduce polypharmacy include training experts to manage co-morbidity and geriatric patients, as well as researching processes to focus pharmaceutical care provision on empowering patients to make informed choices.

The most common relevant actions include MDT meeting input and output, drug information provision, training, communication and query answering (Freeman et al. 2016). These actions support the fourth principle of medicines optimisation which recommends that professionals should make medicines optimisation a part of routine practice and take every opportunity to intervene to ensure patient empowerment with their medication (RPS, 2014). Furthermore, the National Institute of Clinical Excellence (2015c) recommends that all social and health care professionals should check any information regarding medication therapy that is recorded as well as follow up any problems regarding medicines management for their patients. These professionals also include social care workers who administer medication for patients in the community considering that domiciliary medication administration error rates by carers, are a cause for concern (Parand et al. 2016). Recommendations to reduce risks and patient harm from carer MAE include carer training, home medication checks, increased communication between carers and healthcare professionals and deprescribing. The pharmacist also liaised with other non-core MDT professionals e.g. community pharmacists as part of pharmaceutical care provision.

Practice/practice system directed actions of the IC pharmacist

The IC pharmacist role for this research was predominantly patient –centered because the role was not located in the GP practice. Therefore, tasks primarily related to the practice and practice system such as drug cost optimisation through auditing and medication switches from brand to more cost-effective generics, managing repeat prescriptions to reduce waste and developing formularies were not part of the job description. However, these were completed opportunistically during pharmaceutical care provision.

1.2.6 The history of the IC pharmacist role development

Pharmacy roles are diversified and have evolved significantly over the past 15 years. The three main roles are community, hospital and primary care pharmacy. The two which are relevant are discussed next.

Community Pharmacists

Community pharmacists made up approximately 72% of the pharmacy workforce in 2013 (Phelps et al.2015). Historically, the main task of the community pharmacist was to dispense and supplying medicines. Currently, although these remain the main noticeable aspect of their role, community pharmacists also advise patients on wellbeing, the treatment of illnesses, sale of '*over the counter*' remedies as well as the use of prescribed medicines

(RPS, 2013). This is line in with a current shift from the traditional product oriented focus to a patient-centered focus.

However, the provision of these patient centered services remains challenging because of geographical and digital isolation of community pharmacists which results in limited access to patient medical records and other care professionals (Blenkinsopp et al. 2012). The restricted access to the MDT is partly because community pharmacists are generally not considered as a core part of the primary care team. (Hughes and McCann, 2003). Such views may pose barriers to building relationships with clinical colleagues, particularly GPs, who commonly perceive pharmacists as "shop-keepers" (Hughes and McCann, 2003). Nevertheless, in recognition of how crucial it is to realize the full potential of the community pharmacy, several schemes have been introduced over the years.

Primary Care Pharmacist 1: Medicines management/prescribing advisory pharmacist
As described in section 1.2.2 above, in the early 1990s, with the advent of fundholding and GPs later become providers, there was an increased realization that prescribing advice and medicines management by pharmacists, could enable achievement of prescribing incentive payments. This was accompanied by national efforts to increase the cost effectiveness of primary care prescribing. Efforts involved setting annual prescribing budgets for all NHS GP practices and the appointment of local pharmaceutical advisors. These pharmaceutical advisors used detailed comparative prescribing statistics of individual GP practices and demographic profiles of the communities served, to drive improvement in prescribing in primary care. The role later developed to include the developing of prescribing guidelines and formularies across both primary and secondary care.

However, because of limited capacity, prescribing advisers were unable to review prescribing in the individual GP practices for whom they had overall budgetary responsibility. Consequently, a new role - the GP practice-based pharmacist came into existence to bridge the gap. Currently, the pharmaceutical advisor role has evolved to that of a pharmaceutical specialist in public health with lead responsibility for establishing the pharmaceutical needs of their assigned population and ensuring it is delivered. This is achieved predominantly by commissioning appropriate services such as the IC pharmacist role for this research.

Primary care pharmacist 2: (Clinical) general practice pharmacist role
The practice pharmacist has been defined as

> '*A pharmacist who delivers professional services from or within a general practice medical center with a coordinated, collaborative and integrated approach with an overall goal to improve the quality use of medicines of the practice population*'
>
> (Freeman et al 2014).

As mentioned above, this role evolved from the pharmaceutical advisor role. Overtime however, informed by research showing that clinical pharmacy outcomes from hospitals could be realised in primary care, there has been a gradual transformation of the role priorities. The research includes for example the PINCER study which showed that a pharmacist led review could significantly reduce the risk of prescribing and monitoring errors for certain key drug classes (Avery AJ et al. 2012). These data, coupled with the national shortage of GPs and the increasing recognition of the pharmacist skillset, is shifting the focus of the practice pharmacist role to one which is more patient –centered and clinical. Although this role development is new in the UK, international studies show outcomes of improvement in medication, patient health and economy of this evolving clinical pharmacist in GP role (Tan et al. 2013; Dennis et al. 2009; Dolovich et al. 2008; Zermansky et al. 2001). However, although this new role is based in the GP practice, the scope does not fully enable holistic patient –centered care.

Primary care pharmacist 3: Integrated care pharmacist role.

The third primary care pharmacist role which is that of the Integrated Care Pharmacist and focus of this research. It has evolved from the clinical pharmacist in GP role described above. The three main differences are that,

- the pharmacist is a core member of the integrated health and social MDT
- the role functions are exclusively patient- centred;
- care is proactively provided to select group of medium to high risk patients.

Figure 1.4 below summarizes how the IC pharmacist role has developed from historic primary care pharmacists (PCP) roles over time.

There are three fundamental reasons for this change in role function: multidisciplinary collaboration is required for pharmacotherapy to be fully effective as mentioned above; patients are living longer and requiring more health, including medication and social care services and consequently the need for medication is rising.

Statistics show that almost every individual who is 65 years old and above requiring social carer support with their daily living activities is taking at least one prescribed medicine (DH,

2012). Increasingly social carers are routinely tasked with the administration and delivery of medication to support these patients as mentioned above. IC pharmacists provided training and support to the carers which has been shown to be beneficial for the patient (NICE, 2015a)

Figure 1.4: Development of the integrated care pharmacist role overtime

PCP Role 1:
Prescribing advisory pharmacist
(located in CCG/PCT)

Role focus
-cost effectiveness of prescribing
-formulary & guideline development

PCP Role 2:
General practice pharmacist
(located in practice or PCT/CCG)

Role focus
-repeat prescription reviews
-level 3 medicines reviews
-formulary and guideline adherence

PCP Role 3:
Integrated care pharmacist
(located in social care office/GP)

Primary Role focus
Pharmaceutical care that is
-patient-centred
-embedded in intergrated MDT including social carer
-proactive care
-level 3 medicines reviews

Secondary role focus
-formulary and adherence
-waste reduction

1.3 RESEARCH QUESTIONS

Two UK models of IC pharmacists in multidisciplinary team involving social care are described in the literature. One describes part of the pharmacist role as providing "professional *advice and support to other health and social care professionals on the safe prescribing, handling and administration of medicines*"as well as "*facilitating collaborative working between multidisciplinary teams/agencies*" (NICE, 2015a).

However, although the pharmacist roles described are integrated, they do not appear to be a core part of a multidisciplinary team, delivering patient-centered and proactive care (NICE, 2015a; NICE 2015b)

Furthermore, the pharmacist role description and evaluation is not included on evaluation reports of national pilots of integrated care (Daloni, 2016; NHS, 2016; Rand et al 2012). Therefore, although different variants of an IC pharmacist roles are developing in retrospect, they are in their infancy and are neither adequately researched nor defined. Further knowledge is required to inform the development of the IC pharmacist role which is fully embedded as part of a health and social MDT. The literature highlight the need to inform the development of the clinical pharmacist integrated in general practice, as well as to evaluate its benefits and sustainability (Bond & Hopf 2014; Freeman et al. 2012; Ackerman et al. 2010).

Further research into the IC pharmacist role will help define it as well as inform the development of practical tools such as job descriptions, person specification templates and training and mentorship for the role which have all been highlighted as key role facilitators by existing literature (Freeman, 2016; Farrell et al. 2010). Furthermore, the knowledge from research will inform strategic planning and sustainability of the role.

The research is also important for the following reasons:
1. It presents the views and ensure the participation and "voice" of the patients who are the key "actors", in the development of this new health and social integrated pharmacist roles.
2. In line with the participatory action research design, the stakeholder participants will inform regular reviews and proposals to the commissioners which will support the wider transformation of primary care pharmacy services.

To enable achievement of these aims , five research questions were developed and are outlined below.

Question 1: What is the role of the pharmacist in integrated care?

Question 2: What is the stakeholder's perception of the outcomes that the integrated care pharmacist attempts to achieve?

Question 3: How can such outcomes be measured?

Question 4: How does the current integrated care pharmacist perform against these outcomes?

Question 5: How can the role of the integrated care pharmacist be sustained?

Chapter 2

Methodology

CHAPTER 2: METHODOLOGY

Overview of chapter 2

This chapter outlines the different methodologies and considerations used for this study. The chapter starts with a description of the literature review strategy. This is followed by a brief description of how the fictitious patient cases were developed. Next, the research philosophy and research design considerations are outlined. A pragmatic approach regarding adopting an over-arching research philosophy was taken. From an epistemological standpoint, I adopted a phenomenological approach because I felt it was important to gain an understanding of the 'lived experience' of the stakeholders – that is the pharmacists and non-pharmacists in relation to working as (or with) the integrated care (IC) pharmacist. Therefore, both pragmatism and phenomenology underpinned the research strategy which is a variant of participatory action research (PAR). This is because PAR naturally embraces the involvement of stakeholders in the design and execution of the research. This variant of PAR is called participatory mixed methods research (PMMR). In line with PMMR, a mixture of qualitative and quantitative methods was used. The rationale, features and quality considerations of these methods are reviewed. The chapter concludes with an acknowledgment of my reflexivity, as the main researcher.

2.1 METHODOLOGY FOR LITERATURE REVIEW STRATEGY AND CASE DEVELOPMENT
The Literature review strategy

A literature review informed the background and development of the aims, questions and the methodology for this research. Following early recognition that the topic involved several overlapping concepts, it became apparent that a literature review strategy was required. The literature review enabled the existing knowledge and key themes relating to the role and concept of integrated care to be identified. It also facilitated the identification of other factors linked to the concept of integrated care, the role of the pharmacist role within this and how these themes are interconnected.

The literature review highlighted that reducing the key issues and cost of long-term conditions is a national priority and requires integrated health and social care provision for patients. It also showed that most patients with long-term conditions are on several medications, which in turn may create other problems. Therefore, pharmacists as medicines experts, working as part of an integrated health and social multidisciplinary team can significantly contribute to reduce the failures whilst maximizing the benefits of pharmacotherapy. This should, in turn, improve the overall outcome of patients with long-

term conditions. However, there is a knowledge gap of how the pharmacist should work to achieve this.

There is a wealth of published literature on integrated care, integrated health and social care, long-term conditions, the roles of the pharmacists and multidisciplinary working. Therefore, to review all the relevant literature and provide a comprehensive background a strategy was required. The timescale that I adopted for the searches ranged from between1940 and 2017 so that a complete view of the history of health provision and the evolution of the role of the pharmacist could be obtained.

The search terms used were

- Integrated health and social care
- Multidisciplinary teams
- Integrated pharmacist
- Primary care pharmacist
- Clinical pharmacist in GP practices
- Long term conditions
- Pharmacotherapy
- Polypharmacy
- Pharmaceutical care
- Medicines use reviews
- Medicines reconciliation
- Medicines optimization
- Quality of GP prescribing

The specific databases searched were: Medline; Embase; Social science index and Pubmed Furthermore, the following websites were searched: Department of health; National institute of clinical excellence; Social Care institute of excellence and Royal Pharmaceutical society.

The searches were also supplemented with other articles identified by the authors, including several articles recommended by experts in the field. In addition, specific journals relevant to each area were searched individually and include: British Medical Journal; Pharmaceutical Journal and the International Journal of Integrated Care.

The abstracts of all the articles were assessed for relevance after which the list was narrowed significantly by discarding articles not directly relevant to the role of the IC pharmacist. The literature on the initial list enabled definition and clarification of my research questions as well

as identification of what ongoing research was relevant and necessary. This relevant literature was searched and reviewed throughout the writing of the introduction chapter. This enabled iterative redrafting of the literature review, culminating in the final list of references.

Methodology for development of fictitious patient cases

Two fictitious patient cases were created to illustrate the concept of integrated care and the IC pharmacist role within the integrated MDT. The entirety of the patient details and medical history including the medication information were based on my detailed knowledge of a variety of previous patient cases as well as case studies from textbooks and guidelines identified during the literature review. The cases illustrate the differences between integrated and fragmented care and the different pharmacist roles. Integrated care is as a team of health and social care professionals working proactivley and collaboratively to deliver coordinated, and personalised care that is patient centred around and designed to meet the needs and preferences of both the patients and their carers. Fragmented care delivery on the other hand is neither coordinated nor personalised and usually without a defined team.

2.2 THE RESEARCH PHILOSOPHY

As the researcher, I subscribe to the recommendation by Guba and Lincoln (1994 p.105) and ensured that the most suitable underpinning philosophy was chosen to guide the choice of research strategy. Therefore, my philosophy is reflective of the underlying assumptions that I made regarding the basis for the research strategy. These assumptions are epistemological, ontological and axiological in nature (Guba & Lincoln, 1994). Epistemological assumptions are concerned with what I see as representing acceptable human knowledge in this study of the role of the integrated care pharmacist. Ontological assumptions are to do with the way in which I viewed the real events during the research process. Axiological assumptions are about how my beliefs and core principles guided this research (Saunders et al., 2015a, chapter 4 pg. 121). Although a multitude of research philosophies are associated with these assumptions, the most relevant are positivism, interpretivism (encompasses phenomenology and interactionism) and pragmatism. (Saunders et al. 2015; Brown et al. 2003)

Positivism is associated with collecting unbiased, measurable and objective facts. By contrast, interpretivism, which encompasses phenomenology and interactionism, is based on the interpretation of everyday social roles, in accordance with the meanings humans ascribe to these. Pragmatism is the middle ground and advocates working with multiple philosophies if required, to answer the research question.

Personally, in line with interpretivism, I believe that stakeholder experiences and ascribed meanings are invaluable in the generation of knowledge. Moreover, for this research I needed to accept that the outcome would have an impact upon the integrated care team itself and therefore it was crucial that any changes in practice should be informed by the qualitative data derived from depth interviews of the stakeholders. However, as a pharmacist, I believe that some things are factual and measurable as advocated by positivism. Furthermore, to answer some of the research questions, I had to acknowledge that there needed to be a place for utilizing quantifiable and objective unbiased data. Therefore, my personal underpinning philosophy is pragmatism as it allows both interpretivist as well as positivist underpinnings ((Saunders et al.2015; Tashakkori and Teddlie, 1998:26). Figure 2.2 below summarizes the relationship between the research philosophy, strategy and methods.

Figure 2.1: Relationship between the adopted philosophy, research strategies and methods for integrated care pharmacist research

Research Philosophy
- **Pragmatism**
- Phenomenology

Research Strategy
- **Participatory Mixed Methods research (PMMR)**

Research Methods
- **Qualitative**:
- interviews x 9
- Focus group x1

- **Quantitative :**
- Analysis of documented key performance indicators (KPIs) data

2.2.1 Pragmatism

Pragmatism as a research philosophy argues that research is aimed at providing answers and therefore has little value if it provides data but fails to produce results that answer the research questions (Crombie, 1996). Pragmatism allows the use of both objective data and subjective knowledge (mixed methods) to obtain the necessary knowledge to answer the research question. This is because it holds the view that answering research questions is paramount and therefore more important than the underlying philosophy or method (Tashakkori and Teddlie, 2003). Furthermore, it recommends that hypothetical concepts like

'truth' and 'reality' should be discarded alongside the constraints of choosing between positivism and phenomenology (Tashakkori and Teddlie, 2003). This is especially important for research into the IC pharmacist role, which has the overarching goal of positive transformation.

Therefore, to gaining an understanding of the role of the IC pharmacist which was the focus of this research, I made the decision to adopt a phenomenological approach. Phenomenology would enable a description of the 'lived experience' of the stakeholders who were also research participants. The next section offers a summary of the philosophical position that is known as phenomenology and explains why it is especially suitable as an underpinning research philosophy for this study.

2.2.2 Phenomenology

Phenomenology was introduced in 1900 by Husserl as a new philosophy that was in contact with "*concrete living experience*" as opposed to "*abstract metaphysical speculation wrapped up in pseudo-problems*" (Moran, 2000). It is focused on directly investigating phenomena, obtaining a better picture of it and then describing it, as was consciously experienced and constructed by people, without necessarily attempting to identify the causes. (Denscombe, 2014; Van Manen, 1990).

Phenomenology, as an overarching philosophy, is particularly helpful in the present study because it enables the researcher to consider what it is like to be an IC pharmacist or health care professional, working alongside such a pharmacist within a multidisciplinary team (MDT) setting. Thus, by adopting a phenomenological approach it is possible to develop concepts that may be helpful regarding informing future developments in health care practice.

Husserl guides researchers in the sense that, while thinking phenomenologically, it is important to "*Bracket"* an awareness or thought so that any personal interpretations of data are neither contaminated by personal experiences, predilections or viewpoints, or by existing theories. (Denscombe, 2014).

Whilst conducting this research, I was also working within my professional role as Head of Prescribing of East Leicestershire and Rutland clinical commissioning group (ELR CCG). I therefore worked alongside IC Pharmacists as their manager, and indirectly with the IC coordinators and doctors. Furthermore, I was responsible for reviewing the administrative documents for the project including data that was later collated into reports, which I

subsequently presented to the ELR CCG board sub-groups, for approval. I therefore acknowledge that there was potential for bias as part of this research project and accept my role and professional background should not be "*taken for granted",* "(Benner,1994). In view of this, I decided to adopt the approach of Heidegger which is that of hermeneutic phenomenology that also incorporates pragmatism. It contrasts with the original 'transcendental' version of phenomenology that was originally described by Husserl. By taking this approach, I could accept that my own background knowledge could be considered within the overall picture, as described by Benner (1994).

2.3 THE RESEARCH DESIGN: PARTICIPATORY MIXED METHODS RESEARCH

Having adopted a phenomenological approach through which I could view and analyze research data, I now needed to devise a practical means by which the data could be collected. The purpose of this section is therefore to outline the Participatory Mixed Methods Research (PMMR) that I used within a framework of action research. It is logical to assume that like action research, PMMR is also well suited in fluctuating research settings which involve the development of roles or services such as this research (Babar, 2015). Furthermore, PMMR allowed a flexibility of methods which in turn enabled a thorough understanding of the issues which occurred in the complicated settings and could have been overlooked by other approaches. Additionally, I felt that the participatory nature of PMMR facilitated the co-production of knowledge by the stakeholders including both the integrated MDT members and the sponsor.

There is a plethora of definitions for action research. However, the following definition seemed the most applicable

"A *systematic inquiry that is collective, collaborative, self-reflective, critical and undertaken by the participants of the inquiry. The goals…. are understanding of practice...in order to improve practice"* (McCutcheon and Jung, 1990 pg.148).

Action research is different to conventional research because instead of being viewed as undesirable and discouraged, interventions are welcome as part of research.

The underlying intervention for this research was the new role of the IC pharmacist, for the generation of new knowledge to inform simultaneous service transformation. New from the intervention was derived from both quantitative and qualitative data as part of the PMMR design, described above. Quantitative data was synthetized from the Key performance indicators (KPIs) collected by the IC pharmacists as part of their role, whilst qualitative data originated from interviews and a focus group with stakeholders, regarding the role.

This IC pharmacist intervention was operationalized in four key phases which align with the Medical Research Council (MRC) guidance and framework for the development of complex interventions. The MRC framework was deemed suitable because this research is regarding

a new role in the medical setting, within a program of integrated care that is also relatively new. It is thus logical to conclude that it is a complex medical intervention. The four key phases of the MRC framework are outlined below (MRC, 2000)

i. **The feasibility phase:** This involved writing and presenting a business case to the ELR CCG board, requesting funding for the IC Pharmacists.

ii. **The development phase**: This was the pre-pilot phase and involved a pre-pilot IC pharmacist working with the IC Coordinators for six months and documenting data that enabled planning for the actual pilot. The data informed the job description, required hours, office base and the key performance indicators to record. During this time, the pharmacist was based both in the CCG office and the IC team office whilst the memorandum of understanding with the integrated care managers, regarding office space and work equipment and line management responsibilities was finalised.

iii. **The Implementation phase**: This was the actual active period during which most of the pharmaceutical care was delivered by two IC pharmacists whose recruitment and induction were informed by the data from the above phases. It involved an iterative cycle of the four main steps of the action research intervention, which was repeated three monthly over nine months i.e. three quarters. I decided that as acknowledged by Meyer et al (2000), the cyclical and recurrent partnership working would help bridge the gap between theory and practice in this health care setting.

- **Step 1 - Planning**: involved developing the IC Pharmacist role focus for the next quarter
- **Step 2 - Action:** involved the provision of pharmaceutical care and documenting of KPIs as required by the evaluation policy of the sponsor
- **Step 3- Research or observation**: involved analysing the documented KPIs and participant feedback and summarising these with recommendations in the next quarterly pilot project report for the strategy and planning committee.
- **Step 4 - Reflection**: the quarterly pilot report was reviewed and discussed by the CCG and used to inform the next quarter or phase of event.

IV. The evaluation Phase: This was the period when the interviews and focus groups were conducted at the end of the pilot.

These phases and steps are illustrated in Table 2.1 below

Table 2.1: Illustration of the integrated care pharmacists PMMR phases

TIMELINE	MRC PHASES	DESCRIPTION/ILLUSTRATION OF EVENTS
0 - 3 months (pre-pilot)	Feasibility phase	1. Business case for funding developed and presented to CCG board sub-group 2. Business case approved and KPIs agreed 3. One pharmacist recruited to pilot the process
4 - 6 months (pre-pilot)	Development phase	Pre-pilot pharmacist working for three months and documenting information to inform final job description, required pharmacist hours per hub, work base, KPIs and work pathway
7 - 9 months (quarter one of pilot)	**Implementation phase:** Actual intervention phase consisting of three cycles of three months duration each. Each cycle consisting of 4 steps: **1. Action:** Provision of pharmaceutical care to IC patients by IC Pharmacists and documentation of data for KPIs by IC Pharmacist	
10 - 12 months (quarter two of pilot)	**2. Research:** Data transformed to KPIs by IC Pharmacist and used by myself and IC Pharmacist, to write quarterly update report. Reports include recommendations informed by participants **3. Reflection:** Report presented by myself and IC Pharmacist every quarter, to the CCG strategy and planning committee. Report reviewed and	
13 - 15 months (quarter three of pilot)	discussed by committee and outcome used to inform planning **4. Plan:** Outcome of reflection used to plan next quarter or phase QUANTITATIVE (KPI) DATA	
16 - 18 months (post IC pilot)	**Evaluation phase:** 1. Interviews and focus group 2. Data from both used to inform next stage Qualitative data	9 interviews 1 focus group
Months 19 onwards	1. GP hub pharmacist and technician model developed. 2. GP hub pharmacist and technician model evaluated	Pilot of GP hub pharmacist (x4) and technician (x4) model (Team to deliver IC pharmacist role functions)

Illustration by Naafi Okunaye

Figure 2.1 above exemplifies the PMMR process for the integrated care pharmacist research, showing the MRC phases and associated intervention cycles. These phases are

depicted as distinctive phases to aid understanding. However, it must be acknowledged that in practice, there was some fluidity and overlap of the phases.

In addition to the intervention processes illustrated above for the IC pharmacist research, there are other important characteristics of PMMR. These are partnership and participation and the use of quality and mixed methods.

Partnership and participation

To successfully complete participatory research and produce the required knowledge to effect change, it is essential for the researcher and participants to develop a partnership (Babar, 2015). The partnership should be built on a trusting relationship that promotes participation. For this research, this was enabled by co-locating the integrated care pharmacist in the same office as the integrated care coordinators who also enabled access to the other participants. Other relevant aspects of partnership include the level of partnership, the researchers position within the research, organization and other factors and how relationships where established and maintained (Babar, 2015). Regarding positionality, six positions are described including middle position and reciprocal collaboration (Herr and Anderson, 2005). Also of relevance is the researcher's hierarchical position within the organizations. As the researcher for this study, my positionality was reciprocal and my hierarchical position was the head of prescribing. This facilitated increased participation because of the natural integration of my job function and that of most of the other participants. The associated risk of reduced pharmacist participant freedom to withhold consent because I was their line manager was minimalized by delegating their recruitment to another manager. Furthermore, the participant information and consent sheet highlighted their right to withhold consent with no repercussions (appendices 4 and 6). I made sure they were reminded of this prior to every research related meeting.

To create and maintain involvement and participation, care was taken to build relationships based on trust, give and take and respect, from the beginning. Tactics used included informal liaison with gatekeepers like the coordinators, ongoing communication with emails and meetings, researcher pro-activeness and flexibility as recommended in the literature (Smith, 2010). These had to be sustained as required because the agreed goals, resources and processes evolved over time and required renegotiation and management of participant expectations. The importance of these was also impressed upon the IC pharmacists who were the face of the medicines quality team of the CCG within the IC programme and could indirectly affect partnership relationships.

Table 2.1 above, also show that the desired outcomes of for the IC programme for the CCG as sponsor necessitated the use of mixed methods for this PMMR research. These mixed methods were utilized to execute the four MRC phases and comprehensively answer the research questions. In line with action research which is about ongoing transformation, some of the research questions were answered during the research (Olson and Jason, 2015). Therefore, the mixed method methodology, which was a fundamental part of the PMMR strategy, is described next.

2.3.1 Mixed Methods as part of the Participatory Mixed Methods Research

As mentioned above, mixed methods were used for this research because they are a key part of PMMR and aligned with the pragmatism (Tashakkori and Teddlie, 2003). It became apparent from the beginning that a mix of methods would allow the flexibility to choose the most suitable methods to answer the research questions which are predominantly practical in nature. The mixed methods used were qualitative and quantitative. Quantitative methods were required for the role evaluation in line with the ELR CCG policy as explained above. Qualitative data were also required to aid understanding of the change processes and enable answering of the "why" and "how" research questions. These answers necessitate participation of the stakeholders and their qualitative narratives regarding their views based on their lived experience, of why and how the integrated pharmacist helps to achieve the outcomes of integrated care. Thus, the qualitative data, derived in this manner was designed to complement the quantitative data required for the CCG evaluation (appendix 13).

The main disadvantage of mixed methods is that unlike designs that use single methods, using several methods can be painstaking and demanding during execution of the different phases. Furthermore, deciding the sequencing of the methods can be complicated. Additionally, consideration should be given to the purpose for mixing the methods.

Priority and sequence of mixing

To facilitate the sequencing decision and add rigor to the mixed methods, several typologies and categories are described. (Babar, 2015; Driscoll et al. 2007). The two factors to be considered when choosing the typology is allocating priority and deciding the order of implementation. The first factor considers whether equal priority is allocated to either the quantitative or qualitative aspect or whether one is given a greater weighting. The second factor is the order of implementation which could either be simultaneous or sequential. (Creswell, 2003; Morgan, 1998; Tashakkori & Teddlie, 1998)

In simultaneous studies, the data collection and analysis is parallel followed by merging of data derived from both, leading to a comprehensive picture. On the other hand, in sequential studies, qualitative and quantitative data is collected in different phases and then linked in different ways. Morse (1991) suggested a system to represent the different designs using the abbreviations *quan* and *qual* to represent the quantitative and qualitative parts, respectively. As per the system, the method with the greater weight is denoted in capital letters (i.e. QUAN, QUAL) whilst the lower weight method is written in lower case (i.e. quan, qual).

For this research, sequential typology (quan→QUAL) as described by Creswell et al. (2003) was used. Quantitative data which had a lower weighting because qualitative methods were required to answer most of the research questions, was collected throughout the 9 months of the pilot. The higher weighted qualitative data was predominantly collected during the interviews and focus groups after the end of the pilot. These different methods are discussed next and their alignment to the research questions illustrated in table 2.1 below.

Table 2.2 Research Methods and research questions alignment

	Research question	**Main research method utilised**
Question 1:	What is the role of the pharmacist in integrated care?	**Qualitative**: Interviews & focus group **Quantitative:** documented Key performance indicators data
Question 2	What is the stakeholder's perception of the outcomes that the integrated care pharmacist attempts to achieve?	**Qualitative:** Interviews & focus group
Question 3	How can such outcomes be measured?	**Qualitative:** Interviews & focus group **Quantitative:** documented Key performance indicators data
Question 4	How does the current integrated care pharmacist perform against these outcomes?	**Qualitative:** Interviews & focus group **Quantitative:** documented Key performance indicators data
Question 5	How can the role of the integrated care pharmacist be sustained?	**Qualitative:** Interviews & focus group **Quantitative:** documented Key performance indicators data

Purpose of mixing methods

For this research, I considered the three common reasons for mixing methods as described in the literature (Pope and May, 2006). The first reason is for complementarity which is about using mixed methods to unveil viewpoints that are different to enable a clearer picture. The second is for development and involves using one method to assist another. For example,

utilizing in-depth interviews to inform questionnaire design. The third reason is for triangulation whereby the findings from two or more different methods are compared to each other. The reason for using mixed method for this research was for complementarity (not triangulation) because the interviews added more insight into how the KPI data and other anecdotal qualitative participant feedback could inform future practice.

2.3.2 Quality Considerations for PMMR strategy and methods

There were certain quality considerations that needed to be considered for this PMMR research. These are divided into three main groupings because they vary, based on the method;

- Quality considerations for participatory research
- Quality considerations for qualitative methods
- Quality considerations for quantitative methods

Quality considerations for participatory research

Quality considerations are important for action research to counter any claims that the methodology was unscientific. However, the usual quality criteria of validity used by positivists or trustworthiness recommended by interpretivist researchers or are not suitable (Herr and Anderson, 2015). This is because neither consider participant engagement or action. Also, generalizability and representativeness were not amongst the quality considerations because it is argued that action research is context specific. Therefore, the methods should be adapted to the local context to obtain similar results. Consequently, different aspects of validity are proposed and those considered relevant for this research are discussed.

The first, is outcome validity which is the achievement of the goal which was accomplished for this research and discussed in chapter 5 below. Democratic validity is the second and was achieved because the results obtained are relevant and useful in the setting of primary care were the stakeholders are situated. The third criteria, process validity was also realised because the methodology was appropriate for the research questions. A final crucial quality consideration is transformatory action and involves ensuring that the research leads to transformation and change. There was significant transformation from this research as evident by the fact that the two initial posts were transformed and ultimately multiplied to the equivalent of twelve full time pharmacists and pharmacy technician posts.

<u>Quality considerations for qualitative methods</u>

The relevant quality considerations for qualitative methods are validity, reliability as well as two alternatives of trustworthiness and reflexivity (Smith, 2010). These alternatives are proposed because it is argued that validity and reliability should be less important as there is usually no measurement in qualitative research and several accounts instead of one absolute truth (Lincoln and Guba, 1985). The debate is that these alternatives align better with interpretivism, which is the underpinning paradigm.

Validity in qualitative interviews and focus groups, refer to the extent to which questions can prompt responses that would enable the researcher to answer the research question (Silverman, 2006). To ensure validity, the topic guide was developed and piloted and was used with flexibility to ensure comprehensive discussions. To further enhance validity confidentiality was ensured as detailed in the ethics section in chapter two, by making sure that participants in interviews and focus groups could openly discuss the questions with no apprehension of being overhead. To ensure reliability for the qualitative methods, care was taken to make sure that the wording and phrasing of questions were as consistent as possible. The researcher also clarified any ambiguous or unclear information. Furthermore, all interviews were conducted by one researcher; in similar setting for each stakeholder group. It was not practical to ensure the exact same location because the participants worked or lived in different locations.

Trustworthiness consists of four Credibility, Transferability, confirmability and dependability. Credibility was established by presenting the results to participants for confirmation during the focus group to ascertain that the investigator correctly understood their world. Transferability which assured by providing a thick description of the process is facilitated by the detailed description of all processes in chapters 2 and 3. Confirmability which can be achieved by limiting researcher bias, was enhanced by an acknowledgment and awareness of my bias as described in the reflexivity section. Dependability was ensured by preserving all the records. It was however impossible to organise peer editing which the gold standard, due to time constraints is.

<u>Quality considerations for quantitative methods</u>

The quality considerations that were deemed relevant for the quantitative arm of this research were validity, reliability, generalizability and comprehensibility of the key performance indicator data (Babar, 2015; Denscombe, 2014)

The concept of validity for quantitative research refers to whether an indicator that is devised to gauge a concept really measures it. (Bryman, 2004). For this research, validity was

determined by the extent to which seven of KPIs documented by the IC pharmacist as part of their role, supported the answering of the relevant research questions. These seven KPIs were.

1. KPI 1: Return of investment of minimum 2, following pharmaceutical care
2. KPI 2: Reduction of polypharmacy.
3. KPI 3: Completion of clinical medication review for all referred patients
4. KPI 4: Completion of medicines reconciliation for all IC patients as required
5. KPI 5: Provision of domiciliary clinical medication review as required.
6. KPI 6: Provision of repeat prescriptions review for all IC patients.
7. KPI 7: Provision of medication training sessions to IC Coordinators every two months.

KPI 1 assumed that approximately 10% of hospital admissions result from ADRs, based on a speculation by Pirmohamed et al (2004) that the 6.5 % figure for admissions caused by ADRs in their study can be doubled. The rationale is because the research did not appraise the burden caused by ADRs in primary care that did not lead to admissions or those that happened whilst the patients were in hospital. For the remainder six KPIs, the assumption was made that all the data was captured correctly by the IC pharmacists. It was acknowledged that these assumptions could potentiality reduce the validity and reliability of the data.

Therefore, several steps were taken to ensure that the KPIs were valid enough to answer the research questions. To begin with, a proposal to use these seven KPIs was presented to the ELR CCG committee in charge of medicines management and quality. The committee membership included two CCG GP (one of whom was the prescribing lead GP and chair), the IC team manager, two senior CCG pharmacists, the quality lead nurse and myself as the CCG head of prescribing. Next the proposal was debated and the seven KPIs were agreed as valid and suitable. Thenceforth, the documented KPIs were monitored, reviewed and approved quarterly and at the end of the scheme, by the same committee (Appendix 10 details the end of scheme report). Also, any resulting proposals for further transformation resulting from the KPIs was agreed with the committee and presented in a new business case to the CCG board for approval. Finally, the data was presented and debated with the focus group for comment and validation.

It must be acknowledged however that although the CCG committees and focus group agreed that the seven KPIs were the most practical, two cautionary comments are highlighted. The focus group emphasized the fact that KPI one could be an underestimate as it missed some outcomes that are not quantifiable such as the "domino effect" of changing

one's practice for all subsequent patients (Appendix 10: Focus Group line 256 -262). Furthermore, it was mentioned by the CCG committees that admissions avoidance was used by several other interventions which could lead to double counting.

Reliability is the extent to which data collection tools produce data that is relatively consistent and replicable (Silverman, 2006). Reliability was ensured for this research by using a standard data collection template that had was ratified by CCG committee mentioned above. Reliability was further enhanced through the quarterly scrutiny and challenge of the documented KPI data by the same committees and validation of the collated data as reasonable by the focus group.
However, it must be acknowledged that because the data was not primarily collected for research there is a possibility that the data was not quite comprehensive. Furthermore, there could be some bias because of the conflict of interest of the data collectors.

These validity and reliability issues were mitigated by the regular presentation and defending of the data to the multidisciplinary CCG committee and the focus group.

The data was also considered representative because several variables were documented. Additionally, it was considered generalizable because it was randomly collected across all the geographical areas, age groups and gender type of IC patients.

2.4 REFLEXIVITY
Considering the interpretative underpinnings and qualitative methods used for this research, to acknowledge possible bias, a discussion of my reflexibility as the reporter is important (Smith, 2010). My reflexivity describes the self-examination process I have completed to acknowledge how my point of view or "*conceptual baggage* "has influenced the entire research process (Kirby and McKenna, 1989). It is important because as argued by *Steedman (1991) "'knowledge cannot be separated from the knower'*. Furthermore, "*Personal knowledge"* is one of the four levels of knowing described in nursing and it concerns a confrontation and portrayal of one's real and distinct personality (Brown et al., 2003).
Reflexivity is also paramount for this research because it is involved with contextual production and reproduction of meanings. Therefore, as is argued, acknowledging and raising my awareness of this will mitigate on any personal influences through all the research stages and reduce any effect on the outcome. This could reduce the risk and extent to which the findings can be deemed to be an "artefact" of the methodology (Smith, 2010).

Therefore, as the main researcher I acknowledge my bias which resulted predominantly from my 15 years of experience as a pharmacist. Of even more specific significance is the bias resulting from my role as Head of Prescribing of the sponsor organization, at the time of this research. As part of this role, one of my agreed objectives was to ensure that all schemes would be cost effective and would add value. Although this was a potential conflict of interest, it also provided the extra motivation and patience required for the PMMR strategy. Furthermore, it afforded me with access to the key stakeholders that enabled the pilot to proceed. Also, it is my view that having a good working relationship with most of the participants was an advantage in making them feel less inhibited. Nevertheless, I remained conscious of the risk of cohesion, throughout the process and therefore took actions to mitigate against it. The actions included explaining to all participants verbally and in the participant information leaflets that they had the right to withdraw with no ramifications (Appendices 4 and 6). In addition, verbal and signed consent was obtained from all participants before the interviews and focus group (Appendices 5 and 7). Moreover, ethics approval was obtained from both the NHS research and the DeMonfort university ethics committees (Appendix 9). Detailed ethical considerations for this research is detailed in section 3.3 below.

In addition, to further mitigate against my bias and conflict of interest, I ensured that the KPI data was exclusively collected by the pharmacists and there was audit trail for the documented data. Also, the IC Pharmacists and Coordinators co-authored/contributed to the quarterly reports. Furthermore, to maintain focus during the interviews and focus groups, topic guides were used (Appendix 8). Moreover, the focus group provided an opportunity for transparency because the interview and quantitative data were presented and discussed at the focus group.

A final personal influence on the research to be acknowledged is my experience and skill in the fabrication of case studies, which developed during my role as a co- author of a patient centered pharmacology text book. As part of this role, I developed over 14 patient centered cases aimed at enhancing understanding of pharmacology by making it patient centered. This experience inspired the writing of two fictional patient cases as part of the thesis write-up with the aim of illustrating the concept of integrated care.

To conclude, all the assumptions which I made about human knowledge coupled with the real experiences during the research process and how the research was guided by my personal beliefs and principles inevitably shaped the research questions and methodology as well as the interpretation, discussion and the conclusions derived from the data.

CHAPTER 3

RESEARCH METHODS

CHAPTER 3: RESEARCH METHODS

Overview

Chapter two presents the underpinning considerations and steps to operationalize the methodologies, underpinning philosophy and strategy for the research, outlined in chapter 2. The general considerations of the methods are discussed first. This is followed by an outline of the methodological stages. To conclude the chapter, the ethical considerations are discussed.

3.1 CONSIDERATIONS FOR USE OF RESEARCH METHODS

3.1.1 Qualitative Methods

The qualitative methods used were semi – structured interviews and a focus group. These were useful to answer four out of five research questions because these were deemed more suitable than other methods considered such as questionnaires for several reasons. The first reason is that a detailed understanding of the believes, feelings and meanings the participants ascribed to their experiences was required to understand and inform the role of the Integrated Care Pharmacist (Denscombe, 2014). Interviews and focus groups give participants a chance to provide their interpretation in their own words, describing and justifying the circumstances as they see it. Secondly, it gives them the flexibility to express, clarify, prompt and explore information which was needed to gain a comprehensive insight and increase validity. Thirdly, it was determined that the patient participants who were predominantly elderly and relatively infirmed, could struggle to read and understand the issues and questions if summarised as closed questions on a questionnaire. Finally, it was essential to choose methods that were cost effective, flexible and simple to run, considering that this was an academic research with a single researcher. Therefore, the decision was taken to use interviews and a focus group because these would facilitate open questions, affordable space and equipment and time.

However, it must be acknowledged that interviews and focus groups also have some disadvantages. Firstly, they can be time-consuming to run and subsequently analyze. Secondly, reliability can be reduced because of the interviewer effect which could influence interviewee involvement. Denscombe (2014) highlights that interviewee participation has been shown to be influenced by the sex, age, race, appearance and accent of the interviewer. This could have had an effect for this research because as the researcher who also conducted the interviews, I am black African whilst most of participants were Caucasians. Thirdly, the differing contexts of each interview which was unique, made it difficult to guarantee full consistency and objectivity. Fourthly, the tape recorder could have

led to inhibition of the interviewee and it could have invaded people's privacy if handled without tact. Finally, interviews could be costly when time and travel expenses are considered.

These were mitigated as follows: I prepared by reading up on the pitfalls of interviews and focus groups, to refresh my knowledge and experience gained during the qualitative interviews I conducted for the thesis for my master's degree. I also made sure that I spoke clearly, was tactful and avoided prompting and putting words in the respondent's mouth. I used a small unobtrusive recorder positioned discretely. The sponsor refunded my cost of travel.

Participant characteristics

The main data sources were the transcribed qualitative interviews with nine participants and one focus groups with six out of the nine participants. All the participants were based in primary care; the staff participants were employed by one of four different organizations as detailed on table 3.1 below.

Two out of the nine participants were patients who were registered with two of the 32 GP practices that made up the 12 "virtual wards" of the ELR CCG integrated care programme. One pharmacist worked full time whilst the other worked 3 days a week and this was taken into consideration with work load allocation. The rest of the staff participants worked full time. IC General Practitioner 1 (GP1) was more embedded and proactive in integrated care than IC General Practitioner 2(GP2).

Table 3.1 below presents a participant profile for the interviews and focus groups.

Table 3.1: Participant Profile for Interviews and focus group

Type	Gender	Virtual Ward	Employer /base	Degree of integration	Hours per GP Practice	Session attended
IC Pharmacist 1	Female	one to three	ELR CCG IC office	Completely	4	**Interview & focus group**
IC Pharmacist 2	Female	four to eleven	ELR CCG IC office	Completely	4	**Interview & focus group**
IC GP1	Male	eleven	Gp practice	Completely	37.5	**Interview & focus group**
IC GP2	Male	four	Gp practice	Partially	37.5	**Interview only**
IC coordinator 1	Female	one	IC office	Completely	12.5	**Interview & focus group**
IC coordinator 2	Female	six	IC office	Completely	12.5	**Interview & focus group**
IC coordinator 3	Female	eight	IC office	Completely	12.5	**Focus group only**
Patient 1	Male	one	Hub 4	n/a	n/a	**Interview only**
Patient 2	Male	five	Hub 1	n/a	n/a	**Interview only**
Community nurse (CN)	Female	six	LPT	Completely	12.5	**Interview only**

The actual methods are discussed next.

Interviews

Interviews were chosen as one of the methods for the reasons outlined above as well as a few additional reasons. The first additional reason is because the response rate is usually higher than questionnaires (Denscombe, 2014) and the second reason is that there were three types to choose from: structured, semi-structured and unstructured. In structured interviews, as the interviewer, I would have kept tight control of both the questions and answers and have pre-coded the possible answers. The advantage is that data analysis would have been facilitated but the disadvantage is that the richness of the data would have been compromised because the amount and quality of the data would have been limited. Moreover, structured interviews would have restricted the perception and experience of the participants making it inappropriate for phenomenology which is intended to get the interviewee to describe and explain their thinking and experience in a way that they are enabled to see things from their own perspective. Furthermore, some of the other benefits outlined above would have been diminished. Consequently, structured interviews were discarded as an option.

Unstructured interviews would have been the other extreme and entailed the introduction of a topic from which the conversation would have been anticipated to grow. The data would thus have been deeper as I would have been less structured allowing more open and broader questions. However, there is a risk that I would have lost control and failed to obtain answers to fundamental questions if the participants did not discuss them. A further disadvantage is that the data analysis would have been extremely challenging and time consuming. Consequently, because the study was aimed at informing the role of the integrated care pharmacist, obtaining relevant answers was paramount. Therefore, unstructured interviews were decided as being unsuitable.

Semi-structured interviews were considered a compromise because although I would retain a list of items to be discussed or questions to be answered, a degree of flexibility in the order of discussions addressed, would allow the development and addressing of issues (Denscombe, 2007). Open questions could be used to allow the participants to explore matters in depth. Furthermore, they would afford participants room to mention issues they find important and relevant. In addition, they would be   given the chance to provide their version in their own words whilst describing and justifying the situation as they see it. This would allow for the collection of more sophisticated data (Cormack, 1990).

Therefore, for the reasons outlined above, semi-structured, face to face, tape recorded interviews were decided as the method for the data collection. Tape recording was deemed useful to make it possible for me to ensure that i could check my understanding of what was said. This is crucial because care must be taken to ensure that what is heard, is what is said instead of a partial interpretation resulting from assumptions or deductions. The tape recording could also be used to check validity, ensure reliability (if repeated) and prove key elements of trustworthiness (Denscombe 2014).

Focus Groups

The focus group format is usually a hybrid between unstructured and semi-structured interviews and have other unique advantages and disadvantages. Focus groups were designed originally for market research (Babar, 2015) but overtime, they have become more common in health service research. The added advantage includes the fact that focus groups are the preferred method for exploratory research such as this research, when interaction between participants would produce data and insights that would be less accessible without group interactions.

The two main additional disadvantages of focus groups which were considered are that firstly some participants may withhold experiences, opinions or feelings that they think might be unpopular, sensitive or private. Secondly, a vocal minority might dominate discussions making them less representative.

For this research, these issues were addressed using an adaptation of a structured technique as recommended in the literature (Smith, 2010) as well as a questioning strategy that encouraged and facilitated free discussions (Babar, 2015; Denscombe, 2014). In practice these were achieved by starting the focus group with a presentation of the themes from the interviews. A slide of the summary was left on the screen as a holding slide to generate discussions. Furthermore, as the researcher and facilitator, I prompted less vocal participants to express their opinions and discuss freely by using a combination of open and prompting questions alongside the study guide in appendix 8. A co –facilitator was also present and provided general assistance with note taking, place mapping, refreshments and the overall smooth running of the focus group.

3.1.2 Quantitative Method: Utilization of documented quantitative data

The quantitative arm comprised of analysis of key performance indicators (KPI)s) data, which was routinely documented by the Integrated Care Pharmacists for the sponsor evaluation. This analysis was required to support the answering of three of the research

questions. Secondary analysis of existing data is common for service evaluation and audits, to appraise certain domains of health care such as medicines use and patient outcomes (Babar, 2015; Denscombe, 2014). For example, records of changes in the use of medicine can be analysed in line with this method, to improve medicines use. Therefore, this method was chosen as the most practical quantitative method.

However, because the data were not collected by myself it was crucial to ensure that any quality concerns were suitably mitigated. These concerns include the reliability, validity, comprehensiveness generalizability of the data which were considered and guaranteed as described in section 2.3.2 above.

3.2 RESEARCH PHASES

The research was conducted in four stages as follows: -
- Stage 1: Qualitative One -to One Depth Interviews
- Stage 2: Utilization of documented quantitative data
- Stage 3: Focus group

3.2.1 Stage 1: Qualitative one to one interviews

Recruitment and Sampling

Recruitment of participants is a very important in research. However, deciding on the most effective recruitment strategy is often very challenging (Babar, 2015; Archibald and Munce, 2015). Identifying these challenges is crucial to inform mitigation. The most common challenges that are relevant for this study include obtaining consent, accessing participants, working with gatekeepers, participant expectation, interview venue and characteristics of recruiter. These are discussed next.

Obtaining consent

Recruitment could be hindered if participants have concerns about confidentiality and become hesitant to disclose their experiences (Archibald and Munce, 2015). This was a potential consideration for the MDT members who were participants in this study. This is in case they felt uncomfortable to fully express themselves because the researcher was more senior in the organization. The implication for the study would be incomplete data. Therefore, the patient information made it clear that participant was entirely voluntary with no consequences for no or withdrawn consent.

Accessing participants

Occasionally the initial recruitment strategy may need to be modified to boost enrollment. For this study, the initial decision to send recruitment information via post was modified to include emails and phone calls. This significantly increased the number of participants.

Another consideration is that participants who are easiest to recruit are often the "expert "and proactive participants with an agenda instead of a typical and average participant.

Furthermore, for this study because of challenges accessing some of the participants, the sampling strategy was changed from purposeful to convenient sampling. There is therefore a risk that this reduced generalizability and increased bias of the findings.

Gatekeepers

Gatekeepers are often crucial to recruitment in gaining access to participants. However, there are several issues associated with gatekeepers which could hinder the process. These include reduced commitment of gatekeepers if they have conflicting priorities and limited time, and how they are perceived by participants.
The IC coordinators for this study were gatekeepers for patient and GP recruitment. Although they were busy and required reminders to recruit patients, because most of the patients valued them, they were willing to grant consent. However, the delay let to the loss of some patients who could have consented because their condition deteriorated during the delay. Also in recognition of the potential of the patient feeling coerced, the patient information leaflet detailed that consent was voluntary.

Participant expectations

This could be a deterrent for participants who are expected to participate whilst at work or otherwise occupied. This challenge resulted in the loss of one nurse and one IC coordinator who cancelled twice due to last minute conflicting work priorities.

Interview location

This has been shown to be a consideration because participants are unlikely to accept to be enrolled for a location they would struggle to access. The researcher for this study was flexible and could organise locations that suited the participants' interpersonal relationships are recognized as important to recruitment, although this is not highlighted in standard textbooks. Important aspects regarding this are familiarity, suitability of the recruiter, and

existing relationships with participants or liaisons and these can be either facilitators or barriers. These played a key role for this study. Other similar strategies such as following up consented participants regularly to agree a date and enhancing relationships and trusts which had already been built were also utilized. Furthermore, as the recruiter I was enthusiastic and worked hard to show my capability. I also demonstrated other important qualities like such as integrity, compassion and conscientiousness which have been identified as enablers (Archibald and Munce, 2015)

Ensuring that the participants were suitable for the study (Coyne, 1997) was deemed very important. Sampling was initially purposive and aimed at recruiting at least eight representative members of the integrated health and social multidisciplinary team, (MDT) plus three patients (Sandelowski, 1995). However, for practical reasons resulting from organizational changes, the decision was taken to progress with a convenience sample of two IC Pharmacists, two IC Coordinators, two GPs, two patients and one community nurse. The participants were selected from two different geographical locations within the clinical commissioning group. The selected participants consisted of the best balance to ensure richness of data and a good understanding of the phenomena.

Recruitment of patient participants

The inclusion criteria were that the patient must have been risk stratified as medium or high risk and "admitted "into one of the virtual wards of the integrated care scheme. They also must have been provided with a pharmaceutical care service by the IC Pharmacist. The sampling and recruitment steps were as follows:

1. A list of three times the required patient participants from the pool of all patients who met the inclusion criteria was completed by the team leader of the integrated care, to ensure representation of participants fitting the inclusion criteria.
2. A participant Information leaflet (PIL) (appendix 6), consent form (appendix 7) and a stamped addressed envelope was sent to every patient on the list. The PIL explained that patients willing to participate should send the completed consent form to myself using the stamped addressed envelopes.
3. After receipt of their consent forms, patients were telephoned by the researcher to agree a convenient interview time and venue. This was done on a first come, first served basis because of time constraints.
4. Ultimately three interviews were scheduled.
5. One patient cancelled due to ill-health and another could only participate via telephone.
6. Finally, two interviews were conducted.

The Topic Guide for the patient interviews was designed to include questions regarding their understanding and experiences of the goals of integrated care as well as the role of the pharmacist and any barriers, enablers, outcome measures and long term role developments issues. (Appendix 8)

Recruitment of staff participants

The inclusion criteria for the staff participants were that they should be a member of an integrated MDT, which included an IC pharmacist and Coordinator as core members. The recruitment steps were as follows:

1. Both IC pharmacists were given a staff PIL, consent form and a stamped addressed envelope by the IC team lead. Their recruitment was conducted by him instead of myself because I was their line manager and therefore they may have felt obliged to participate. The PIL explained that participation was voluntary and that if they were willing to take part, they should send a completed consent form to myself using the stamped addressed envelopes.

2. A list and contact number and email address of double the number of other staff participants required was obtained from the Integrated Care Team Lead.

3. An electronic version of the staff PIL and consent form was sent in an email to everyone on the list. The PIL explained that participation was voluntary and if the staff member was willing to participate, they should send an email and a copy of the signed consent form, to the address on the PIL.

4. One integrated care coordinator and one GP emailed to express an interest initially

5. They, were both immediately contacted by myself via email, to agree a mutually convenient time and place for the interview

6. Following two reminder emails sent to the nurses on the list and other GPs and coordinators, one further GP, two coordinators and two nurses were recruited.

7. Two of the appointments were rescheduled and one of the nurses and one coordinator cancelled.

8. Six weeks later, seven staff participants had been interviewed

The Topic guide for the staff interview included questions regarding their understanding of the goals of integrated care as well as the pharmacist role and the barriers, enablers, outcome measures, long term development and sustainability. (Appendix 8)

Interview Venue:

Stakeholders were interviewed at venues agreed during the recruitment which were quiet, comfortable and private to minimize distractions and ensure confidentiality and reliability. One patient was interviewed at home and the other patient was interviewed over the telephone, after a failed appointment at their home and due to time constraints. Both GPs, one IC Pharmacist and Coordinator, were interviewed in a private consultation room at the GP practice., The second pharmacist and other two IC coordinators were interviewed in the meeting room in their team office. The nurse was interviewed in the meeting room in the community nursing team office.

Prior to each of the staff interviews, a sign was put up on the outside door of the interview rooms reading, "*Please do not disturb, meeting in progress*". The researcher's mobile phone was switched off for the duration of the interviews. During the interviews with the community nurses, there was disturbance from adjacent rooms which meant that audio recordings had to be abandoned. In place of recordings, the researcher made detailed written notes.

The telephone interview with the patient also presented some challenges although the patient was very articulate, vocal and communicative and the duration of the interview and sufficient data was obtained.

3.2.2 Stage 2: Utilization of documented quantitative data

As described above in section 2.3.2, the quantitative data for the research comprised seven key performance indicators (KPIs) derived from the key performance indicators (KPIs) documented by the IC pharmacists as part of their role. These are detailed in section 4.2 below.

These KPIs were monitored and reviewed quarterly by the ELR CCG committee in charge of commissioning strategy and planning. At the end of the pilot, they were collated into an end of scheme report (appendix 10). A key assumption in the analysis and use of the data was that one out of every ten medication errors /discrepancies (10%), resolved by the integrated care pharmacists as part of their role, and led to the avoidance of one hospital admission. The assumption was conceived in a meeting with the two IC Pharmacists, one IC Coordinator and one IC GP. It was ratified by the CCG strategy and planning committee. This assumption was based upon literature stating that the 6.5 % figure reported as the percentage of hospital admissions which are "medication related harm" can be doubled. The rationale for this is because the research did not appraise the burden caused by ADRs in primary care that did not lead to admissions or those that happened whilst the patients were

in hospital (Pirmohamed et al. 2004). It is acknowledged that this suggestion by Pirmohamed et al (2004) that the percentage could be doubled, is entirely speculative.

However, for practical reasons and because this was debated and agreed by an MDT as well as ELR CCG (sponsor) stakeholders, the 10% assumption was used to develop the formula in Figure 3.1 below. The limitations of these assumptions are presented in section 4.2 below.

Figure 3.1: Formula for calculation of hospital admissions cost avoidance

Cost of avoided admissions =

$1 \div 10$ x total number of recommendations made by integrated care pharmacist **x** cost of one emergency admission

The formula in Fig 3.1 was used to compute the cost of avoided admissions. These savings from avoided admissions was added to other savings to arrive at a figure for total savings for the 8.5 months' duration of the pilot.

Figure 3.2: Calculation of interim savings

Total annualized savings =

£55,300 (*Estimated annualized savings from medicines stopped or amended*)

+ £29,030(*Estimated annualized savings from unused medication from patient home*)

+ £193,536 (*Estimated annualized savings from medicines related admission avoidance derived using formula above*)

=£277,893

Savings per month = £277,893 $\div 12 = 23,157$

Savings for 8.5 months of scheme = 23.157 x 8.5 =£196,840

Figure 3.3: Calculation of spend

The total cost of the pilot =

£20,565 (pro- *rata cost of 9 months of 0.6WTE of Band 8a – WTE cost of £45,707*) +

£27,309 (*8 months of 1WTE Band 8a –WTE cost of £40.964 per annum*)

= £47,874 (Total *cost of 1.6 WTE Band 8a for 8 months*)

Then the overall cost of the pharmacists was deducted from the savings to arrive at the net savings.

Figure 3.4: Calculation of net savings

Net SAVINGS= £196,840- £47,874 = £148,966

These figures were used to work out the overall cost effectiveness of the integrated care pharmacist pilot expressed as return of investment (ROI) which was of the KPIs reported in chapter 4.

3.2.3 Stage 3: Focus groups

The focus group was attended by six participants: two IC Pharmacists, three IC Coordinators and one IC GP.

Recruitment of focus group participants

The inclusion criteria for the staff participants included that they should be members of the multidisciplinary team that included an IC Pharmacist and Coordinator as core members. The inclusion criteria for the patient participants included that participants should have received pharmaceutical care from an IC Pharmacist.

The recruitment process was carried out as follows;

1. All interview participants were invited to attend during their interviews. All nine agreed to be part of the focus group.
2. Four weeks before the focus group meeting date, the seven staff participants were sent an email reminder with the patient information leaflet and consent form attached and the two patients contacted by telephone.
3. Six participants confirmed they could attend. None of the patient could attend because one was not feeling well enough to travel the 40 minutes and the other had a competing priority.
4. Attempts to recruit other integrated care patients who met the inclusion criteria were not successful.
5. Finally, the six participants attended the focus group.

The focus group commenced 10 minutes later because one participant was delayed. I started with introductions to break the ice. I then followed with a presentation of a summary of the themes derived from the nine interviews as well as the key performance indicator data. These generated discussions that lasted for the remaining 75 minutes generating data

that contributed significantly to the themes presented in chapter four. Refreshments were supplied at the start and half way through with assistance of the co-facilitator.

3.3 ETHICAL CONSIDERATIONS

In line with recommendations to consider potential ethical issues before commencing a research study, the relevant ethical issues were considered. This recommendation is to ensure the protection of both the participants and the researchers (Denscombe, 2014). Consequently, for this research, all the potential issues were discussed and acknowledged in line with the processes of the DeMonfort University and NHS research and ethics committees. Subsequently, ethical approval was obtained from committees (Appendix 9) A reflection, guided by ethical principles (Carr, 1994) and how the considerations were applied to my research is presented below.

Recruitment: Discomfort or feeling obliged to participate

To mitigate any perceived pressure by the participants to take part in the research, the staff were not recruited by their line manager. In addition, they were all given participant information leaflets which further emphasized their right to withdraw consent at any time without affecting their normal working relationship with their line manager.

Safety, protection and convenience

Safeguarding assurance for the patient participants who are vulnerable was assured by the fact that as the main interviewer, I possess a Disclosure and Barring Services (DBS) certificate which confirms that I am certified to interact with vulnerable individuals. I am also a registered pharmacist with the General Pharmaceutical Council. My own personal safety was enhanced by ensuring that my manager was aware of the time and location of the interview conducted at a patient's home.

Data protection and storage

Care was taken to ensure that all the data protection requirements were fulfilled in the following way;

- Only required data was assessed and this was anonymized as much as possible
- Data were stored in encrypted memory sticks and locked in secure offices, accessible only to myself. Electronic records were password protected and backed up. Raw and analysed data will be kept for five years in accordance with university, CCG guidelines and requirements of the ethics committees.

- Direct identifiers were kept to a minimum and were separated from any traceable information and all the data for the analysis which I derived from the interviews and focus groups are presented to ensure anonymity.
- Every step was taken to be ensured that the research complies with the Data Protection Act as detailed in the appendices 4 and 6.

Confidentiality and Anonymity of Data:

To ensure confidentiality, interviews were undertaken in a private meeting or consultation room either in at a GP practice or social care office or within the home of the patient. Identifier codes were used instead of participant names and all identifiable information was anonymized.

Disclosure of bad practice

Participants were also informed in the PIL that confidentiality could not be maintained if they provided information where disclosure is in the overriding public interest or where there is a legal duty to disclose, for example by court order and where there is a statutory basis which permits disclosure. They were reassured that they would be notified in the case of any disclosure if there is any risk to themselves or others

3.4 DATA ANALYSIS

The data analysis was divided into sections according to whether the data were qualitative or quantitative.

Qualitative data Analysis

The steps of the data analysis were completed as follows:

1. I uploaded the interview and focus group recordings onto my laptop and stored electronically in labelled folders alongside copies of the notes I made during the interviews. The copies were also all backed up on iCloud.
2. An independent contractor and I transcribed all the recorded interviews verbatim. The independent contractor was recommended by a colleague and was hired because my work and family constraints did not allow time to personally transcribe the recordings.
3. I checked all the transcriptions against the interview notes for accuracy.
4. I imported the transcriptions electronically into a software called Nvivo.
5. I read the transcriptions several times, immersing myself in them such that I could occasionally relive the actual interviews and hear the participant voices
6. Whilst reading through each transcript, words, phrases and sentences which appeared potentially significant to the participant's perception and experiences were

coded and assigned to the nodes. Nodes are virtual receptacles where coded material is gathered in one place and assisted me to decipher and organise emerging patterns and ideas. The reflective diary was used to help identify significant phrases and non-verbal cues. The initial codes and nodes were quite many and overlapping.

7. I re-read the transcripts several times and reorganized the themes.
8. I drafted and presented a copy of the interim themes to my supervisor for comments at a meeting during which we agreed some slight alterations
9. I reorganized the themes and coding into the final themes presented below in chapter four.

Quantitative data analysis

As described above, secondary data documented by the pharmacist was translated into seven KPIs and analysed using the methodology described in section 3.2.2 above,

In line with the ELR CGG evaluation policy and action research.

CHAPTER 4

FINDINGS

Chapter 4: Findings

Overview of chapter 4

This chapter describes the findings that emerged from the mixed methods and data analysis described in chapter 3. The emergent themes from the interviews and focus group are discussed first (Original transcripts attached as appendix 10). This is followed by a presentation of the quantitative findings that summarize the key performance indicators data documented by the integrated care pharmacists during the study period.

4.1 Qualitative Findings

The qualitative methods aimed to inform the role of the integrated care (IC) pharmacist as well as how to evaluate, develop and sustain the role.

Emergent Themes

Six main themes, which covered the participants' experiences and views regarding the role of the IC Pharmacists, were identified from the interviews and the focus group.
These themes are:

1. Teamwork
2. Accessibility and visibility
3. Resources and enablers
4. Reflection on Integrated Care Pharmacist role functions
5. Impact of Integrated Care Pharmacist within multidisciplinary team
6. Evaluating performance of Integrated Care Pharmacist role

This research study provides a unique insight into the perspectives and experiences of patients, nurses, IC coordinators, Pharmacists and GPs, about the role of the IC Pharmacist. Although the perspectives are similar for most of the themes and subthemes, there is a clear disparity of perceptions between the cohort that were fully embedded within the multidisciplinary team and had worked closely with the integrated care pharmacists and those that had not (GP2 and CN). The themes are shown in figure 4.1.

Figure 4.1: Summary of themes derived from interviews and focus group

Theme 1 – Teamwork: Shared vision, goals & agenda; Working in tandem; Understanding, appreciation & respect of MDT roles; Holistic care; Communication; Patient & carer inclusion

Theme 2 – Visibility & accesibility: Visibility & accesibility of pharmacist; Accesibility of GP; Accesibility of IC Coordinator; Accesibility of patient; Accesibility of patients record

Theme 3 – Resources & enablers: Funding; Co-located, fully integrated and resourced Gp hub pharmacy team; Optimum positioning in pathway; Information technology; Domicilliary and drop-in medication reviews; Self-referral route for all patients; Training

Theme 4 – Reflection on IC Pharmacist role functions: Pharmaceutical care; MDT education and training; Developing & diseminating aids; Information source; Liason & advocacy; Medication waste reduction; Prescribing; Audit; Cost rationalisation

Theme 5 – Impact of IC pharmacist role: Patient empowerment & satisfaction; Staff empowerment and satisfaction; Increased medication safety; Bridge-building between health & social care; Cost rationalisation; Expedited resolution of queries; Extra support for MDT; GP time saved; Increased MDT awareness; Awareness raising of pharmacist abilities

Theme 6 – Evaluating performance of IC pharmacist role: Patient feedback; MDT feedback; Patient outcomes; MDT time saved or gained; KPIs documentation; Financial savings; Review changes made

<u>Theme 1: Teamwork</u>

Several issues relating to the functionality of teamwork emerged from the interviews and focus group. These included demonstrable evidence of having a unified agenda, shared values, understanding and an appreciation of the role of the IC Pharmacist and other professionals within the integrated care pathway. Additionally, working in tandem, respect and trust as well as inclusion of carers and patients as team members were mentioned by the participants.

The importance of having a shared agenda and vision was acknowledged by the health care professionals.

"The experience I have had we all got on very well we were all on the same page and actually work well as a team. I could see that if your agendas were very different you might clash because we all come at something from a different angle and actually your motive and experience is different"
(Appendix 10, GP 1 interview lines 190 -193)

GP 1 explained why the team should also work in tandem.
"I think it worked better because sometimes what I find is when we work separately changes are made to medication and the pharmacist may not necessarily understand why that drug was picked or the history behind it. And so, changes are made which then make the patient unhappy. Whereas the way we did it this time they were reviewed, it was all done with the patient and then we came and discussed it. And you could work in tandem so I think it was more successful."
(Appendix 10, GP 1 interview lines 138-143)

The importance of respecting, understanding and appreciating the roles of colleagues when faced with dilemmas whilst working as part of an MDT was indirectly highlighted by IC pharmacist 1.

"...because we have not really had many nurses involved and they are quite often … band seven, so they know quite a lot anyway. You always feel that you might be, it's probably wrong, but you might be treading on their toes. And it's more difficult here. the respiratory reviews because they are not really done very well. But you can't tell someone you are not doing them very well. It's finding out how you can be a part of that team and influence what they are doing without criticizing what they are doing.
(Appendix 10, IC Pharmacist 1 Interview lines 248-253)

Several participants acknowledged the pharmacist's role as medicines expert within the team
"And then advocating for that, the medication aspect particularly because that's our area of expertise within the multi-disciplinary environment.
(**Appendix 10, IC Pharmacist 2 Interview lines 93-94)**

"Support, advice, because quite often when it's a medication related query its felt that the GP is the person that is going to be able to answer that query the best, whereas

> *actually a pharmacist is probably more appropriate to answer a medication related*
> *query than a GP"*
> (**Appendix 10, GP 2 interview lines 217-220)**

GP2 however also queried the reported overall value of the pharmacist claiming that time saved by pharmacists was a lot less than reported, because the GP occasionally had to subsequently spend "extra" time resolving queries raised by the pharmacists for a few patients. This was discussed in the focus group during which GP1 expressed a contrasting view. GP1 argued that the pharmacist output was under-valued as any extra time spent was worthwhile and part of the GPs role using patients seen in outpatients as an analogy

> *"I would have to take five or ten minutes out to speak to the pharmacist but if its*
> *stopping someone from having a CPD exacerbation that I need to go and do a home*
> *visit for and that's going to take me 45 minutes. So, its quid pro quo…. Yes, you had*
> *to have the discussion and change some notes a bit and do some other things but I*
> *can't think of an example where I thought it made my life that much more difficult "*
> *(***Appendix 10, GP 1 in focus group lines 309-315***)*

> *"… It's my role as GP to my patients in outpatients, I have to change the notes,*
> *update the notes and implement it. It's no different, all …. That the pharmacist is*
> *going to the house - speaking to them - looking at their meds coming back and*
> *saying this is what I advise, update the notes. It's not any different"*
> (**Appendix 10, GP 1 in focus group or interview lines 357-358***)*

GP1 was more integrated within the MDT and had much more of an established professional relationship with trust and respect with the pharmacist and other MDT professionals than GP2. It was also expressed that where a key MDT member e.g. GP was not engaged, it was difficult to make progress.

> *"Also, one or two GPs are not too quite on board so it's difficult to proceed without*
> *the rapport."*
> (**Appendix 10, IC Coordinator 2 interview lines 350-351**)

Teamwork was facilitated when clear benefits that would result from the changes proposed by the pharmacist had been experienced. This often brought the other MDT professionals to the same page.

"Initially I was unsure what a pharmacist could contribute because there was no description of their responsibilities so it took me a while to appreciate what they could bring on board as I always thought they mostly dispensed medication and a chemist could do that. However now I have worked with our pharmacist I can see the significant contribution"

(Appendix 10, Community Nurse Interview lines 58-62).

Participants also explained how working as a team would support holistic care delivery through delegation and use of individual skills to achieve the common goal.

"I think it's useful in terms of getting a bit more of a holistic care. So, the problem is at the moment patients have more and more problems, we have less and less time and so in a perfect world some of the more complicated patients you would want to spend half an hour or forty minutes with them, look through all the aspects of physical mental health all the sorts of signs, now the house is, how they are. But the reality is you don't have that much time and where integrated care comes in you have got the skills of lots of different people, plus the time that they can then actually look at it properly. And so, it's just good at getting a sort of more rounded holistic care".
 (Appendix 10, GP 1 interview lines 19-26*)*

Furthermore, working as part of a team increased the pharmacist's awareness of other services and resources available to patients. It also increased their appreciation of the role of the social care coordinators.

"I didn't realize you could get an assessment and find out what would be useful for people. So, the coordinators know a lot about everything they really do, and it's not until you talk to them that you know what is available for patients. And I think that awareness …that you can talk to other people about somebody and they will have an idea that you didn't know existed. Or if you did know you wouldn't know how to access it. So, there are all sorts of things that I didn't know was available for patients. So, I think the coordinator is really useful because otherwise you are going to end up still working in your own little area,"
 (Appendix 10, IC Pharmacist 1 interview lines 316 to 332*)*

The importance of communication was mentioned several times as important for team work because there was a communication breakdown because the IC pharmacists were unable to attend multidisciplinary team meetings regularly due to insufficient capacity and conflicting priorities.

"Yes, I send my cases to R (IC Pharmacist 2) I don't actually get to meet her and she is not able to come to the meetings so there is, that is a problem because there is a lack of communication. And at that surgery they don't get to understand how it all fits in with the team".

(Appendix 10, IC Coordinator 2 interview lines 205-208*)*

Finally, the carer's roles as part of the MDT was acknowledged by both patients whose role within the MDT was also recognized following prompting.

"... also my wife- she looks after me, she is my main carer, and she really looks after me as my main carer"

 (Appendix 10, IC Patient 1 interview lines 25-26)

"I think maybe yes, I hadn't thought about patients being part of the integrated care team, particularly if you had expert patients. So, for example you have a patient with COPD who is identified as somebody who you would want to proactively manage an expert patient would be excellent at being able to promote self-care and self-management, so yes, I hadn't thought of that"

(Appendix 10, GP 2 Interview lines 115-119)

Theme 2: Visibility and accessibility

Ensuring regular and reliable direct access and visibility of the pharmacist and all MDT members was a facilitator mentioned by all participants. The funding for the pharmacist role which was the research focus was four hours per week on average for each virtual ward or hub which was made up of approximately three practices. This equated to a half day each week per practice which was insufficient for full integration because some of the MDT members would either forget there was a pharmacist or decided it was safer not to assume they would be available.

The knock on effect of thisro was highlighted by Patient 1

"I can't contact her – well I can contact her but I have to go through the system of our doctor through reception to ask for her and I might have to go through MH (GP practice*) because the system they use… could go to any of the receptionists of the three surgeries and somebody in the other branches might not know who she is because she is only based at one. That's the only downfall I feel- its contacting her directly*

 (**Appendix 10, IC Patient 1 Interview lines 170-175***)*

The IC Coordinators also expressed the importance of pharmacist visibility and accessibility

> *"Yes, when the two pharmacists worked in our office you knew that they were there, and you could get them if you needed them"*
> **(Appendix 10, IC Coordinator 2 interview lines *233-234)***

> *"I think more access would be good as she only worked twice a week and could not attend all MDTs. So, one is reluctant to refer any patients in case there is a delay as it is hard to predict when she will get to it, though she did try to respond to all queries when she was around. It would also be useful to work in the same office.*
> **(Appendix 10, Community Nurse interview lines 143-145)**

Accessibility to the GP was another barrier mentioned by all the pharmacists and coordinators because the pharmacist and coordinators are not based at the GP surgery.

> *"But to be able to just catch somebody if you are not based in a surgery you can't just catch them with a, like I know Dr. M (*name withheld for confidentiality*) he is around about 2 o'clock so I can race down if I have just got one query and he can just answer it for me. Whereas some of the others I have just asked the technicians to book me a block half hour next week so I can just go to one GP and just work my way through everything I need to. So, I think you just need to be able to be around and if you are not that's a big barrier"* **(Appendix 10, IC Pharmacist 1 interview 287-291***)*

The coordinators and pharmacists mentioned that the pilot made the coordinators more accessible to the pharmacists which indirectly facilitated access to patients.

Obtaining access to the practice was another barrier experienced by some of the participants.

> *"I guess one barrier mentioned by my colleague is difficulty in getting access in the practice- access to the working space like a desk or a computer. Some practice receptionist is not very accommodating so you could have wasted trips"*
> **(Appendix 10, IC Coordinator 2 interview lines 347-351**)

Finally, Patient one suggested that all patients and not only the frail and elderly should have access to the pharmacist.

> *"I am a pensioner but there are people younger than me on medication who need the service and should have it. You need a mixture of ages – no point having all old people or you would be there all day"*
> **(Appendix 10, IC Patient 1 Interview lines 361-363**)

Theme 3: Resources and enablers

The absence of sufficient amounts of numerous key resources was identified as a barrier. These included funding, regular ongoing and embedded pharmacist capacity, information technology, training and role development. A few enablers such as co-location of the MDT, transformation of the role, updating the referral routes and re-positioning the pharmacist in the pathway, were recommended to optimise the output.

The community nurse touched on all this during her interview when she was asked what barriers she had experienced whilst working with the integrated care pharmacist. Availability of more funding would enable increased capacity with more pharmacist hours per practice to reduce spreading a few pharmacists thin across multiply practices from extensive geographical locations. One pharmacist per practice as a minimum was suggested to provide the required capacity.

> *"...More funding would be great to have one in every practice every day of the week just like other health professionals if you think that most patients are on medicines"*
> **(Appendix 10, Community Nurse interview lines 145-150)**

More capacity would also make it possible for more patients to be "admitted" to the virtual ward and benefit from the integrated care and pharmacist service.

> *"Well it would be lovely if every surgery had a pharmacist and again to know that you could get in contact with that pharmacist where they are, where they are based. And you do know that you are fitting in with the other work that they are doing at the moment. When we had them before that was what they were doing, it was just great."*
> **(Appendix 10, IC Coordinator 2 interview lines 308-311)**

Finances would also provide more time for the pharmacist to provide domiciliary visits when required as this was mentioned as an enabler.

"And I suppose time is a massive, massive thing, if you are going out to patients homes it takes a long time to review them when you are in their home."
(Appendix 10, IC Pharmacist 1 interview lines 292-293*)*

"They are probably not as relaxed (at the surgery*) and they haven't got all their medicines and you can't see the situation that they live in. And that makes a lot of difference because S (*IC Coordinator 1*) has come back from a couple and she said its chaos in that house, there is stuff everywhere, she says it's no wonder they don't know what they are taking. You just get a feel for that person better in their home. But I think you only really need that for the difficult patients"*
(Appendix 10, IC Pharmacist 1 interview lines 302-305)

The less difficult patients could receive pharmaceutical care by attending appointments or drop in clinics at the practice.

"Yes, that's what I would like to do moving forward, rather than, home visits will,….. but if I can get people to come in and see me I was thinking about trying to do some drop in, bring your bag"
*(***Appendix 10, IC Pharmacist 2 in focus group lines 454-459)**

It was also expressed by the IC Pharmacists and Coordinators that being based in the same location (co-location) would be a facilitator because everyone becomes more familiar and approachable.

"I think it fits it really well the model of being in the GP practice because you are in there with the healthcare professionals and the patients as well as the professionals find it quite useful..."
(**Appendix 10, IC Coordinator 1 lines 30-32**)

The professionals all thought that co-location would reduce the challenging process of organizing access to the practice for the IC Pharmacists and Coordinators who were based in the IC team office.

All participants said they would like the role to continue and be developed and they made numerous suggestions of key enablers. This included transforming/assimilating the role which would entail creating a clinical pharmacist in GP practice role that included and prioritized the role functions of the IC pharmacist as well as a pharmacy technician support

role. It was suggested that these new roles would facilitate sustainability of the role functions.

> "..*You have got everyone else as part of a team within a practice you haven't got pharmacists and pharmacist has never been seen as part of the team, they just are somebody who works in the shop. Or if it's prescribed advice then its someone who's on your back to make you reach indicator targets and save money. But there has never really been anybody that has said well have you thought about looking at this, I just think you need to be part of the team. So to develop the role you need to make patients and members of health care team know what pharmacists can do. And you can only do that by having someone in here and doing it. So its chicken and egg isn't it, you can't show somebody what you can do unless you are in there and you can't get in there because no one is willing to take a punt are they and say let's see if this works. …*
>
> **(Appendix 10, IC Pharmacist 1 interview lines 339-345)**

> "..*But having tried working with pharmacy technicians, it's probably better to delegate this to them than the coordinators. …..and if there was anything we thought just by looking at it they want to talk to a patient we would tell the technicians and then they would go and do that before their visit. So, then they would know, they would be sort of pre-armed. But then additionally we would also have referrals after they had been into the home, that was more about physical issues and getting mixed up and it wasn't so much about reviewing their medicine and saying what they were and weren't taking. But having new technicians they are probably better placed to do that than the coordinator. Because there is always a problem with an additional knowledge set that they hadn't got, and to a certain extent the techs (pharmacy technicians) could probably answer some of those questions.*
> **…"**
>
> **(Appendix 10, IC Pharmacist 1 interview lines 184-193)**

Nevertheless, there were concerns that it might not be doable for the proposed GP hub practice pharmacist to do it all. However, it was concluded that it might be possible if the role were embedded in such a way that some of the functions were routine.

"…*But whether you can do that and be part of a group of practices and just cover integrated care or poly pharmacy or whatever I think it's too big a role to be in a practice and do all the CCG work and the prescribed. So basically, just making sure that you have got proper prescribing within a practice and individual medication reviews. Because once you do the bulk of the work it's just maintenance really and new patients and medicines reconciliation when patients come into practice all that sort of thing...*"

(Appendix 10, IC Pharmacist 1 interview lines 348-353)

Overall however, they felt it was inevitable that the role function would become embedded as part of the role of a pharmacist, based in a GP practice.

"My feeling is that in five to ten years' time every single practice will have a full-time pharmacist that is the way it's going. And in which case the model of integrated care is going to use the practice pharmacist isn't it? So, in an ideal world you may have a dedicated pharmacist to the integrated care bit. I suspect the realistic …it's just going to become the new model, the standard…."

(Appendix 10, GP 1 in focus group lines 1245-1251)

Another process related change suggested was to position the pharmacist earlier in the pathway.

"I think what might help facilitate it is if there was a discussion with the pharmacist before they went. It might speed up their process because I think sometimes they come back and a lot of the questions were like I could have let them know before they went. So actually, I wonder if the process would be better if we discussed the patient, the pharmacist and the GP, in the meeting you discussed the patient, just had a look at the medicines before and highlighted perhaps things that I think are issues and what they think are issues. And if there is any immediate odd prescribing say you can say well the reason for that is because so and so. And it might make the pharmacist's job easier because they go out with the knowledge"

(Appendix 10, GP 1 interview lines 227-235)

Regarding Information technology, insecure emails was raised several times as a barrier

"There is a problem with things like secure emails, sending the information across to the pharmacist. At the moment, I send it to through our social care emails to our team support who then has got secure email and then sends it out to R (Pharmacist 2). So

that's a problem, it is the confidentiality and data protection I think really, one of the biggest barriers"
 (Appendix 10, IC Coordinator 2 interview 216-220)

Other facilitators suggested included broadening the identification process to include more patients as well as having several other practical and flexible options for the location of the medication review e.g. over the phone, drop in clinics, bespoke clinics and domiciliary as required

Theme 4: Reflection on Integrated Care Pharmacist role functions

All the participants shared their opinions regarding the role functions of the IC Pharmacist. These subthemes included pharmaceutical care, medicines information, triage, education and training and awareness raising, prescribing, auditing, cost rationalization and waste reduction. Pharmaceutical care was comprised of example de-prescribing, empowering patients, medication reviews, safe prescribing and making every encounter count.
 The IC coordinators shared their experiences of how the IC pharmacist provided pharmaceutical care and occasionally rationalizing cost simultaneously.

"There was a case where [the] pharmacist was going in and looking e.g. - meds not ordered for long time to understand what was going on - if not taking meds to dig further and find out is it side effect or what exactly going on - someone on diabetes getting prompt to check if taking insulin - do they suffer from pain and are they taking any medication for it -do they use inhalers? If so what colors and how often
(Appendix 10, IC Coordinator 1 interview lines 174-180)

"They will go through the medication that patients are on as a matter of course. So, when I send out a letter, once a patient has said yes they want me to go and see them, I then send that information to R (IC Pharmacist 2) and then they look at all the medication just to make sure that they are not on something they have been on for years that they don't need to be. They can look by the various results whether they are taking the medication. …I would imagine well I know they do they look at cost as well. Things like the nutrition drinks I know some are on and they were able to put it down to the powdered ones which are cheaper."
 (**Appendix 10, IC Coordinator 2 139-146**).

Medicines reconciliation was also a key service delivered by the pharmacist as part of pharmaceutical care.

> *"Yes* (responding to question regarding whether medication in Figure 4.1 below belonged to one patient*) she (patient) had been in and out of hospital quite a few times and every time she came out of hospital they gave her some different stuff. So, it was changed so she didn't want to take that but then she also had trays from hospital that were different to the trays she had previously from her GP so she had stacks of trays as well. Not sure which one she should be taking and then things that had been stopped but carried on being ordered. There were more cupboards with pills in than there were cupboards with food in the kitchen."*
> (**IC Pharmacist 2 in focus group line 181-186**)

Figure 4.2: Obsolete medication recovered from a patient's home following medication review by IC Pharmacist 2

The community nurse also explained how the IC pharmacist provided education and training using dossette box as an example.

> *".. They (*IC pharmacists*) came along and things like dossette boxes it (medication) went in to explain why they think d*ossette boxe*s are not always such a good thing. Some patients need them, explaining that, it made sense. To a lot of people, it's like oh dossette box that's the answer but there is more to it than that. So yes, that was really interesting, yes, any sort of information that you can get has got to be good. So*

yes they (IC pharmacists) were always able to help out and explain things to us."
(**Appendix 10, Community Nurse Interview lines 223 -227)**

GP 1 illustrated the legacy effect following the IC pharmacist education of MDT colleagues.

"I think it's educational for us all because all of us are involved in prescribing, using drugs and noticing the side effects and whether they are being used properly…. But even from a nurse point of view I would think they are involved in suggesting drugs or often with dressings …And I think so all of us could get something out of it. Particularly education but also, I think if nothing else it reminds you that you need to be aware of the effect the drugs are having and the cost and the side effects and all those sorts of things. So actually not only for the patients you discussed but when you go and look at other patients it helps those ones …for example with something about metformin and B12 deficiencies which I had never come across but that was picked up in one of the med reviews and actually that's been useful in seeing other patients so it does spill on to other people.
 (**Appendix 10, GP 1 interview lines 170 -181**)

The IC coordinators and community nurse found the medication related summary prompts the pharmacist developed and handed out to them following educational sessions as "aide memoires' to be very useful.

"The pharmacist developed this into prompts for us to check when we go to patient. With us not having a medical background, it was great to get this advice from someone else"
(**Appendix 10, IC Coordinator 1 lines 182-183**)

Theme 5: Impact of Integrated Care Pharmacist role

Every single participant reported satisfaction with the IC pharmacist role and repeatedly expressed that the role should be sustained and rolled out. Of note is the fact that when asked for any further comments as the final question of the interview, all non-pharmacist participants spontaneously requested that the role be reinstated. Throughout the interview and focus group, they highlighted the positive impact that the pharmacist input had for all stakeholders. The positive impact included patient satisfaction and empowerment, increased medication safety including de-prescribing, financial savings, bridge building function, extra support and time saved for MDT and awareness raising of the pharmacist skills.

"…it was really good when we had the pharmacist input and then when they left it was a big hole in our role really".
(**Appendix 10, IC Coordinator 3 at focus group lines 56-58**)

Both patients shared their experience of satisfaction and empowerment following medication reviews by the IC pharmacist.

"She went through all the medication I was taking at that particular time and it has been reduced – which is great for me because if I don't need to, I don't want to be taking them. People should not be taking tablets they don't need to be taking"
(**Appendix 10, IC Patient 1 interview lines 279-284**)

"She also gave me a medicine reminder chart and helped me write in it. I use it to fill my dossette box myself and my daughter use it to help sometimes. So, someone who helped with my medicine".
(**Appendix 10, IC Patient 2 interview lines 105 -107**)

Patient 2 also shared how the pharmacist advocated for him
"She also was kind and told the chemist driver to wait because sometimes by the time I get to the door they had gone and I had to keep ringing the chemist as I ran out sometimes."
(**Appendix 10, IC Patient 2 interview line 107 -109**)

The impact the IC pharmacists made on raising awareness regarding medication and falls risk was described by GP1
"Yes, because I found doing the project i learned about falls risk I can say before I joined the project I didn't know anything about it and I think a lot of GPs I came across the patch they have heard of it but not actively stopping things because they didn't necessarily know how. And when you add it all up and show someone a particularly at risk patient I think people become a little bit more aware. And being in the know, now I can see GPs who are leading on that risk there she is a lot more proactive at reviewing medication with the falls risk. And things like that you wouldn't be able to quantify"
(**Appendix 10, IC Coordinator 2, line 265-271**)

The GP explained how the pharmacists made a positive impact to the care of almost every patient they discussed.

"I can't think there was one patient that we discussed that there wasn't a change made to their medication or an improvement made or a problem found. So, I think that alone highlights, if you can look at all those, there wasn't any that they looked at said the patient understands everything they are taking, they have got no side effects and all these drugs are perfectly safe. There was no one patient that happened to. I think what stuck out to me was that the fact that oh gosh there is a role for this because it does make a difference. And not just from a cost point of view but actually just from a best care and safety point of view I think it makes a difference to the patients"
*(***Appendix 10, GP 1 interview lines 297-304***)*

The pharmacists were also described by social coordinators as having a bridging role in the MDT, binding health and social professionals together.

"And it was only when we got K (IC Pharmacists 1*) and R (IC* Pharmacist 2*) that you realised what a big role, what a big contribution they make to our job. I think it's as well just somehow having R (Pharmacist 2 at the meeting with the doctor it just seems to make it a complete picture almost. I do tend to feel in other surgeries (without IC pharmacists) that I am still sitting there with my social care hat on and there is the health. But with R (IC Pharmacist 2) there, she seemed to be the person that joins us together"*
*(***Appendix 10, IC Coordinator 2 lines 336-341***)*

Their value also immediately became apparent to MDT members who encountered their role and input for the first time.
*"Yes, when I had my meeting with Dr. S and R (*names withheld for confidentiality*) they really interact well, it makes such a difference having R (*IC Pharmacist 2*) there. …. and also, the clinical lead nurse she sits in it and she was like wow this has been a real education"* (**Appendix 10, IC Coordinator 2 lines 185-189**)

Furthermore, the community nurse explained how useful it would be to have regular ongoing access to one pharmacist per GP practice.

"*Well it would be lovely if every surgery had a pharmacist and again to know that you could get in contact with that pharmacist where they are, where they are based. And*

you do know that you are fitting in with the other work that they are doing at the
moment. When we had them before that was what they were doing, it was just great."
(**Appendix 10, Community Nurse lines 212-215**)

However, three out of the ten participants described some less positive aspects, although most of these had to do with the overall integrated care service and not the pharmacist role specifically. The first aspect was that a patient got bewildered by too many visits from care professionals.

"It's too many people coming and I feel bewildered. Every day someone else comes
and I don't know who, which is why I did not open the door when you came last
week. One person came and when they heard the dog bark before I opened the door
they had left and I had been waiting all day so they could look at the railing "
(**Appendix 10, IC Patient 2 interview lines 116 -119**).

This patient's experience was discussed in the focus group and the coordinators acknowledged that some patients could initially have more visits that reduce overtime. However, the coordinators always endeavored to streamline any visits to ensure that all necessary prior communication with the patient as required.

The second concern was conflicting advice given to patient 1 by the integrated care pharmacist and the community pharmacist. Following discussions in the focus group it was concluded that this is a possible risk when patient care is delivered by multiple professionals. This does not always mean that any one is incorrect as it is likely that the advice was accurate at that point in time and context and could have changed with circumstances.

It was suggested that to mitigate, health and social professionals should explain to patients that advice can change with time as more facts or up to date results become available.

Theme 6: Evaluating performance of Integrated Care pharmacist role

All ten participants included patient feedback amongst their list of how to evaluate the role. Other methods suggested was using quantitative matrices like cost savings, time saved and staff feedback.

"I think feedback from patients is definitely a big one, it would be interesting to re
review the changes and what happens to those changes that are made that are
actioned by pharmacists. I think feedback is the biggest thing, that's all I can think of"
(**Appendix 10, IC Pharmacist 2 interview lines 207-209**)

However, cost savings and other quantitative methods or financial savings was deemed inappropriate.

> *"…. I think feedback from patients the users and the rest of the team is the biggest indicator of whether something is working or not. And you can't do that in the short term. I don't think you can do it by numbers of inventions or amount of money saved, I think you just do it by asking somebody do you feel better about your medicines, do you feel more able to cope, do you feel healthier because you are not taking something or you are taking something. And I suppose you can't quantify that can you, in terms of questionnaires and that sort of thing"*
> **(Appendix 10, IC Pharmacist 1 interview lines 327 -333)**

This aligns with the findings of the evaluation of the IC pharmacist role in line with the East Leicestershire and Rutland CCG evaluation policy described below.

4.2 Quantitative findings

The quantitative findings were derived following analysis of seven KPIs data routinely documented by the integrated care pharmacist for the sponsor -ELRCCG evaluation, as described in sections 2.3.2 and 3.2.2 above. This was in line with the sponsor evaluation policy.

Table 4.1 is a collation of the comprehensive data collected by the IC pharmacists over the entire eight and a half months' duration of the pilot.

Table 4.1: Comprehensive data collected by IC Pharmacists

Description	TOTAL
Total number of patient reviews	238
Number of reviews conducted in patient's home	20
Number of telephone reviews	56
Number of reviews with suggestions made	209
Total number of suggestions made	708
Number of suggestions agreed	541
Number of suggestions disagreed	34

Number of suggestions awaiting GP respond	133
The number of patients reviewed who have been recently discharged from hospital whose medicines have been reconciled	23
Number of Antipsychotics and Benzodiazepines stopped (not indicated for psychosis)	0
Number of drugs changed (dose/strength/form)	66
Prescription directions changed (including amendments to dossette)	6
Quantity changed/synchronised	27
Repeat lists tidied/repeats stopped	89
Monitoring suggested	
i) Follow up/review due	45
ii) Blood pressure	8
iii) Blood test	29
Unnecessary medicines stopped	
i)Total stopped	54
ii) Average per patient stopped	
iii) Range (of medicines stopped per patient)	1-4
Falls Prevention	
i) Anxiolytics (reduced/stopped)	11
ii) Anti-muscarinics (reduced/stopped)	7
iii) Analgesics (optimised)	23
iv) Antihistamines (reduced/stopped)	7
v) Antidepressants (reduced/stopped)	3
vi) Antihypertensives (optimised)	4
vii) Diuretics (reduced/stopped)	2
viii) Calcium and Vitamin D (started)	8
High risk drugs	
Warfarin	
NOACS	
Methotrexate	2
NSAIDS	2
Important information communicated	
i) Allergies	
ii) ADR	42

The data was summarised into the seven relevant KPIs detailed in table 4.2 below.

Table 4.2: Summary of outcome of key performance indicators

	Key performance indicator	Outcome	
	(238 IC patient reviews resulting in 708 suggestions)	**Achieved Yes/No**	**Figure/Percentage**

1	**Achievement of return of investment of minimum 2 Calculations**
	1) Net Savings
	   £196,840 (Total savings by IC pharmacist for 8.5 months)
	   – £47,874(Total IC Pharmacist cost for 8.5months)
	   = 148,966
	2) Return of investment £148,966 ÷£47,874 x 100% = 311 %
		Yes	3.1
			(311%)
			
			£625.9 per patient

2	Reduction of polypharmacy	Yes	54 drugs
3	Completion of clinical medication review for all referred IC patients	Yes	100%
4	Completion of medicines reconciliation as required	Yes	23 out of 238 (9.6%)
5	Provision of domiciliary clinical medication review as required	Yes	20 out of 238 (8.4%)
6	Provision of repeat prescriptions review as required	Yes	89(out of 238 37%)
7	Provision of medication training sessions to IC coordinators every two months	Yes	4

Assumptions for Key Performance Indicators

The seven KPIs detailed above were based on three main assumptions. The first assumption was that all integrated care patients have a medium to high risk of hospital admissions. This is because the risk stratification tool used to identify the patients was underpinned by the Johns Hopkins University Adjusted Clinical Groups (ACG) algorithm an established tool that identifies multi morbidity and other indicators as drivers for emergency admissions. The second assumption is that as described in section 3.2.2 above, approximately 10% of hospital admissions result from ADRs. This was based on speculation by Pirmohamed et al (2004) that the 6.5 % figure for admissions caused by ADRs in their study could be doubled. Their rationale for this suggestion is that the research did not appraise the burden caused by ADRs in primary care that did not lead to admissions or those that happened whilst the patients were in hospital (Pirmohamed et al. 2004). Thirdly, it was assumed that the cost of an emergency admission is £1792. This figure was validated

by the CCG finance team, based on the average actual cost from the relevant health care resource group codes.

These assumptions raise some discussions and have some implications for the findings. To begin with, the suitability of using admissions avoidance could be debated considering that the evidence base to use it as an outcome of clinical medication reviews by pharmacists in the UK is not robust (Blenkinsopp et al, 2012). However, Zermansky and Silcock (2009) highlighted some consistency in aggregated data showing that falls and reduced admissions could have been reduced alongside modest savings, following medication reviews. Another consideration is that admissions avoidance is used by several other healthcare interventions and this could increase the risk of double counting. Consequently, other options like counting patients on high risk medication such as warfarin or measuring changes in clinical markers (such as control of HbA1c in people with diabetes) or quality of life indicators were considered as options. However, these were deemed impractical because of the limited patient numbers and time constraints. Therefore, in consideration of the point raised by the focus group participants that 10% could be an underestimate of savings, if the "domino effect" of a lifelong change in practice is considered (Focus group line 256 -262), KPI one was deemed suitable.

Limitations

However, there are some limitations to be acknowledged, regarding the use of this KPI data as the quantitative data for this study. Firstly, the KPI data was derived from secondary analysis of data collected as part of the IC pharmacist role functions. Therefore, there is a possibility that the data could be biased because of the conflict of interest or incomplete. These risks were partly mitigated by using a standard template. Furthermore, the data was jointly collated by both IC pharmacists after which it was presented and challenged by a sponsor committee. Secondly, the data was neither sufficient nor suitable to be used for statistical tests which is the gold standard for quantitative data. Thirdly as explained above the use of the first KPI which was return of investment of 10% is potentially controversial pending robust research outcomes.

However, these limitations were mitigated by obtaining approval from the sponsor organization to use the KPIs as mentioned previously which is in alignment with the action research design. The fact that these assumptions were also utilized on the successful business case to secure ongoing funding for more of these roles further confirms that these limitations could be theoretical in nature and deemed negligible in practice.

Summary

The qualitative findings highlight the considerations which patients and their professional carers believe should inform how the social/health integrated care pharmacist role should be developed, sustained and evaluated. The six themes derived from the qualitative methods were: teamwork; accessibility and visibility; resources and enablers;reflection on the role functions;Impact of the role and evaluating performance of the role. These added more insight into how the quantitative data could be utilised to sustain and develop the IC pharmacist role.

Similarly, the quantitative findings complement the qualitative data by providing figures to exemplify the role function and impact of the IC pharmacists. Furthermore, the quantitative findings illustrate the recommendations from the qualitative findings on how to evaluate the role performance using KPIs. All KPIs were achieved, including a return of investment of 31%, a reduction of polypharmacy by de-prescribing 54 drugs, completion of clinical medication reviews in 100% of patients, repeat prescriptions reviewed in 37% of patients and the provision of four medication training sessions for the IC coordinators.

Therefore, it can be concluded that the qualitative and quantitative findings achieved complementarity of mixed methods (not triangulation). These findings are discussed alongside existing evidence in the next chapter

CHAPTER 5

DISCUSSION

Chapter 5: Discussion

5.1 INTRODUCTION TO DISCUSSIONS

Integrated care in the context of this study as described in chapter one, is a multidisciplinary team (MDT) of health and social care professionals, working proactivley and collaboratively, to deliver coordinated patient centered care, which is designed to meet the needs and preferences of both the patients and their carers (NHS England, 2016). Patients and practitioners both agree that integrated health-social care provision empowers the patient and provides better outcomes. Consequently, integrated care programs have become mandatory and are rapidly developing across the United Kingdom (Rand et al.2012; NHS, 2016).

However, although the pharmacist role within these integrated care programs is increasingly recommended and described, research to adequately inform the role, the impact it achieves and how it should be developed and sustained in the UK has not been found in the literature.

This chapter presents a discussion of the new perspective informed by the findings of this study, under the six themes identified in chapter four. These are: effective teamwork; accessibility and visibility; resources and enablers; reflection on the integrated care pharmacist role functions, impact of the role within the multidisciplinary team and evaluating the performance of the role.

5.2 DISCUSSION OF FINDINDGS

Theme 1: Teamwork

The findings highlight key factors that are essential in the views of the participants, to ensure that the multidisciplinary team within which the pharmacist works, can achieve its goals. These factors include having a shared agenda, goals and visions, working in tandem, having respect, awareness and an understanding of the different MDT roles as well as communication.

These factors are like those that are highlighted by Mitchell et al (2014) as important for a team which they define as "*two or more people who are allocated definitive roles or functions and are interdependent on each other as they interact dynamically and flexibly to achieve mutual goals for a specified period*" (Mitchell et al.,2014). In alignment with the findings from this study, Mitchell et al (2014) also highlight that a high-performing team is crucial for the delivery of patient-centered, integrated, and effective care.

Similar factors were shown by Jorgenson et al (2014) in their qualitative study of pharmacists during their integration into 23 existing primary care teams in Canada. The study design was one-on-one telephone interviews with pharmacists, doctors and nurse practitioners from the 23 teams. Thematic analysis of the interview transcripts was utilized by four different researchers to determine key themes. Amongst the seven emergent themes were relationships, trust and respect and pharmacist role definition. The conclusion was drawn that these were very important facilitators to support the integration of the pharmacists.

The strengths of the study include the fact that different sizes and types of primary care practices were included which increases generalizability of the findings. Furthermore, bias was hugely reduced by using four researchers for the thematic analysis. There were also some limitations of the study. Firstly, the study was conducted in Canada which has a different health system to the UK which diminishes the transferability of some aspects of the findings. Secondly the participants did not include patients or social support worker who are key participants for this study. Thirdly, telephone interviews could have slightly reduced the quality of the data because the interviewer could have missed non- verbal communication cues. However, most of the emergent themes were similar to the findings of this study.

The Royal Pharmaceutical Society (2013) in its description of medicines optimisation, specifies that *"… a holistic approach…and partnership between clinical professionals and a patient"* is required. Furthermore, the society specifically highlights that medicines optimisation involves professionals across the health and social care system working together collaboratively and much more closely with patients. Numerous studies highlight that pharmacists have the skills and experience to optimise medicines outcomes in different ways (Freeman et al. 2016). Therefore, it is logical that pharmacist is a core member of the integrated health and social multidisciplinary team providing patient centred and coordinated care for patients with long term conditions. This would ensure the required access to the rest of the multidisciplinary team and patient medical records as well as capacity, to execute the required strategies.

The predominant focus of pharmacy roles is pharmacotherapy management in pharmaceutical care provision. Pharmacotherapy as described in chapter one, is a complex process, involving "players" from a multitude of different disciplines. These multidisciplinary players include doctors, nurses, pharmacists as well as social carers. Literature findings are like the participant views in describing that to maximize the outcomes of pharmacotherapy for patients with chronic disease, it is imperative that these multidisciplinary "players" interact as

part of a cohesive multidisciplinary team with mutual respect, trust, communication and collaboration. (Kassianos et al.2015; De Stampa et al.2014; Weiss, 2007; San Martín-Rodríguez, 2005; Murphy, 2004). Other studies highlight that shared goals and values which are other factors suggested by the study participants are also crucial.(Freeman et al. 2016; Kassianos et al.2015; Weiss, 2007; San Martín-Rodríguez, 2005; Murphy, 2004).

Both the literature and this study highlight inadequate understanding, respect and appreciation of the pharmacist role as a barrier. It can be argued that inadequate respect for the pharmacist role was shown by GP2's comment that the IC pharmacists did not save GP time. This could be interpreted as signifying that in his perception, pharmacists are subordinates as opposed to partners to the GP. This is supported by a qualitative study that describe how GPs have professional hierarchical dominance over pharmacists because they have the power to "*define the limits*"of the pharmacist's work (Hughes and McCann, 2003). A community pharmacy participant in the above study explained that pharmacist and GPs are not equal because despite their degrees, pharmacists must impotently wait for GP prescriptions to start their work.

Elston & Holloway (2001) describe how conflict can be created amongst GPs, nurses and practice managers because of "*professional identities*" and "*traditional power structures*". In the present study, IC Coordinator 2 alluded to this "power structure when she mentions how her job was made complicated by non-engagement of some GPs. However, as expressed by the participants in this research study, this barrier can be reduced by improving communication and increasing role awareness and appreciation.

An inadequate understanding of the role is described in the study by Hughes and McCann (2003) in which a GP admits a lack of awareness of what the pharmacist training and continuing professional development entails. The GP in the study is of the impression that a significant percentage of pharmacy training is about sales of items like lipstick and cough linctus and that their knowledge is not necessarily updated.
In similarity to the literature, most of the participants in the present study admitted having made the same assumptions when they were initially informed that an IC pharmacist would join the team. However, as shown by the findings, after the IC pharmacist showed them that they could optimise patient medication, their MDT colleagues became more aware and appreciative of them as team members.

The IC pharmacists in this study took the decision to create and circulate an outline of their main role pathway (appendix one), soon after commencing the role. The pathway was

consulted and agreed with the MDT before it was finalized. This strategy is like the strategy utilized by a team of Australian pharmacists integrating into a GP practice. The pharmacists in the study raised awareness, trust and respect of their role at the outset by scheduling individual meetings with MDT members during which they explained and discussed their job descriptions (Jorgensen et al. 2014). In addition, they provided the MDT colleagues with a copy of their job role summaries. Freeman et al (2016) in their study, also suggests how pharmacists can ensure that they can be utilized in patient centered roles without being viewed as being a threat. They achieved this by explaining how pharmacists could free up time they spend on medicines management so they could focus on their main roles. In another study, pharmacist integrating in a UK practice are advised to start by clarifying their role remit and priority with the GPs, making sure it matches their skillset (Jorgenson et al. 2014). This was also suggested as a way forward by participants in this study.

A unique aspect of the present research study is that the IC pharmacist had core membership and integration within health and social care MDTs instead of just integration within the GP practice, which is the case in many of the studies previously described. Therefore, the findings add to existing knowledge by describing how the IC pharmacist can work with a social support worker within an MDT setting to provide pharmaceutical care. This joint working between the IC pharmacist and coordinator is very important considering that the input of social support workers in domiciliary medication administration as well as error rates is up to 33% and increasing (Parand et al.2016). Actions suggested to reduce the rates are carer training, home medication checks, communication and deprescribing. The IC pharmacists in this study provided all of this as part of their role.

Parand et al (2016) also highlighted that a significant number of the errors were made by informal carers who were relatives or friends. Also, it is estimated that between three and five people will be carers sometime in their life in the United Kingdom. Furthermore, it is predicted that because of the aging population and drive to maintain care in the community, the percentage of carers will increase by 60%, during the next thirty years. This is relevant for this research because the findings highlight that patients suggested that carers should be considered as part of the MDT, which was not the case for the ELRCCG integrated care programme. Therefore, the available evidence research draws attention to the fact that the IC pharmacist role should potentially include medication related education and training for non-professional carers. Further research is recommended to inform the role of the IC pharmacist in supporting non-professional carers.

Theme 2: Accessibility and visibility

All the participants explained how increased accessibility or visibility of the professional MDT members and the patients would make them more efficient and consequently improve patient outcomes of integrated care. IC Pharmacist 1 described how occasionally when she worked at one of her practices, she planned her lunch/tea breaks to coincide with that of the GP lead for integrated care. This increased mutual accessibility to discuss patient medication related queries for which she needed the GPs input to resolve. This action increased rapport and became their informal meeting time. Unfortunately, because IC pharmacist 1 only went to the practice maximum twice a week, this access route could not be maximized as she could have done if all the MDT members had been co-located at the GP practice.

A similar approach was deployed by a team of Australian pharmacists to improve integration in the GP practice where they were employed (Jorgenson et al. 2013). They called the approach "*strategic loitering"* whereby they commandeered a workstation for themselves within or near a busy area of clinic such as the nursing station, instead of a private room tucked away. To make themselves even more visible and approachable, they also purposefully attended team meetings, ward rounds and even social events like lunches with other team members, regularly.

The participants of this study also highlighted that accessibility and visibility would be improved by co-locating all the members of the MDT team at the GP surgery. The benefits of co-locating pharmacist in GP practices were published over two decades ago by Campbell and Saulie (1998) who highlighted in their United States of America based study, that pharmacists providing pharmaceutical care in a physician's office removed or reduced a lot of the barriers to pharmaceutical care. This is supported by an Australian study that suggested that the irrelevance of pharmacists to patients was reduced when the pharmacist is employed by the practice. This international picture is mirrored in the UK where over the years, the numbers of practice based clinical pharmacists have increased as the role aim has shifted from prescribing budget rationalization to more patient centered outcomes. Currently, NHS England is working to fulfill its commitment made in the "*General Practice Forward View*" publication to fund over 1,300 clinical pharmacists based in GP practices by March 2019 (NHS England, 2014). Therefore, the number of pharmacists co-located in practices is rapidly growing.

Co-locating the MDT at the GP practice also increases access to patients records which was mentioned as an issue if the GP receptionist who is usually the gate-keeper withheld access to the practice for the pharmacist or IC coordinator who were not based at the practice. Lack

of access is described by Freeman et al (2012) in their study including 58 participants in five focus groups aimed at seeking stakeholder's opinions regarding integration of pharmacists in GP practice. A further advantage of co-location described in the literature and indirectly alluded to in the present study is the increase of tacit knowledge which is knowledge that is hard to transfer to the next person by spoken or written text (Goffin, 2011). Personal contact and regular interaction that would happen if the IC pharmacist was based in the practice for example is required to transmit tacit knowledge which would in turn improve rapport.

To conclude, there are several studies supporting the findings from the present research that explain why and how pharmacists in working in GP practices (including IC pharmacists and the new clinical pharmacists in the NHS England scheme), could increase their integration within the MDT and the GP practice. Therefore, in future pharmacists should increase accessibility and visibility by being innovative, proactive and purposeful.

Theme 3: Resources and enablers

The study findings bring to light or underline in some cases, several resources and enablers that the participants emphasize would enable and facilitate sustainability of the role. The resources include funding and information technology (IT). These resources would enable the facilitators required to sustain the role as recommended by the participants. These facilitators include training, liaising with community pharmacy, re-positioning the pharmacist in the pathway and co-located, fully integrated and resourced GP hub pharmacy team, in addition, teamwork, accessibility and visibility would be enhanced through co-location as described above.

The literature highlights several barriers that will be eradicated by these resources and enablers including funding shortage, administration, inter-professional divisions, perverse financial incentives, and inadequate access to patient records (DH et al 2017). These individual resources and enablers are discussed below individually

Funding

The importance of funding is supported by other research that concluded that lack of guaranteed and continuous funding for the integration of pharmacist is the biggest barrier to realization of this important goal (Tan et al. 2014; Freeman et al. 2012). The quantitative data also supported how funding is key, as evident from the fact that the first key performance indicator(KPI) to convince the sponsor which was East Leicestershire and Rutland CCG (ELR CCG), was the confirmation of significant savings i.e. a return on investment of minimum two. The study findings pointed out that to sustain the role, minimum one IC pharmacist per GP

hub was required. Therefore, 12 pharmacists in total would be essential for ELR CCG. It was estimated that the minimum required funding to employ 12 pharmacists would be £491,568 (£40.964 x 12 hubs) per year. This is a significant cost and it was therefore crucial to ensure the maximum role performance by delivering the other key facilitators emphasized by the stakeholders. Furthermore, it was important to convince the sponsors of why allocating £491,568 to IC pharmacist roles should be prioritised over other conflicting priorities. In line with the action research methodology, the sponsor procedure was followed and a comprehensive business case including details of the other facilitators described below was completed and presented to the sponsor funding committee.

Information Technology

Another important enabler suggested by all stakeholders is information technology such as access to medical records, email, and direct phone numbers for the IC pharmacists and coordinators. It was explained that more IT would improve communication which will in turn support teamwork. Access to medical records is mentioned in the literature as one of the barriers to community pharmacists getting more involved in clinical roles requiring access to patient notes (Blenkinsopp, 2012). Another important IT tool mentioned as important by the participants is the "tasking" functionality on the GP IT systems which they used as it facilitated and expedited communication resulting in more timely resolution of outstanding queries. This research is the first published study to advocate the use of this enabler to improve the effectiveness of a health and social integrated care team.

Community Pharmacy

The involvement of community pharmacists in IC was suggested as a possible enabler by the pharmacists. This aligns with recommendations in the literature (Jorgenson, 2013) explaining how liaising with the community pharmacist would improve communication and uptake of existing community pharmacy services like the New Medicines Service which could improve adherence (Elliott et al. 2008,). More liaison would support the current shift from the traditional product oriented focus to a patient-centered focus for community pharmacy. Furthermore, community pharmacist is the specified role in one of the few national publications that specifically recommends a pharmacist in integrated care. (NICE, 2015).

However, the degree of integration possible is limited by the digital isolation of community pharmacists which results in limited access to patient medical records and other care professionals (Blenkinsopp et al. 2012). It was also acknowledged following discussion during the focus group that because most GP practice populations were served by

numerous pharmacies, it would be impractical for all these pharmacists to attend MDTs and be fully involved. Another reason for their restricted access to the MDT is partly because community pharmacists are generally not considered as a core part of the primary care team (Hughes and McCann, 2003). A compromise suggested by the IC pharmacists is that community pharmacists could be commissioned to provide domiciliary medicines reviews and other functions if IT access could be facilitated. This was also taken forward for discussions.

Training

Training for the pharmacist team was also mentioned by both GPs as a facilitator for the role. They explained that primary care training would be beneficial as well as ongoing continual development support like the quarterly sessions organized by the CCG for all other health professionals. This is supported by literature highlighting that pharmacist providing clinical roles as part of integrated GP practice teams need an understanding of primary care and an appreciation of the other roles and challenges they face. They also need to be assertive and proactive (Ackerman et al.2010).

Re-positioning the IC pharmacist input in the pathway

It was highlighted by the several participants that it would be useful to change the integrated care pharmacist role pathway to ensure that the pharmacist reviewed patient notes jointly with the coordinator and GP before completing the medicines review. The IC pharmacists, coordinators and GP1 all thought that this would save time and prevent queries down the line. This practical suggestion is an exclusive contribution of this study because current published studies regarding the IC pharmacist or similar roles do not mention this.

Transforming IC pharmacist role into GP hub clinical pharmacist role supported by pharmacy technician

Following discussions by the stakeholders regarding how best to mitigate the funding barrier whilst progressing the other facilitators, it was agreed that the most practical and affordable course of action at the time would be to assimilate the IC pharmacist role functions within a clinical GP pharmacist hub role. The role would be full time and embedded within the practice. This had been recommended by the participants as an option, if the other supporting facilitators could be guaranteed. These other relevant facilitators included sufficient capacity, co-location of the MDT and integration within the GP practice and creating the role of a support pharmacist technician.

The role function of pharmacy technicians in clinical pharmacy is outlined by Boughen et al (2017) as including domiciliary medicines reviews, and medicines management in care homes. Other relevant non-clinical advanced tasks mentioned are complaints management and training and development support. Although most of the current evidence for this clinical pharmacy technician role is in secondary care, it is being extrapolated to primary care.

It was suggested by the IC pharmacists that a pharmacist and technician working as a team full time and supported by administrators would ensure capacity to deliver both the patient – centred and integrated care MDT directed role functions of pharmacists. Patient directed roles include clinical medicines and deprescribing reviews, including domiciliary, medicines reconciliation. MDT directed functions are MDT meeting input, training and education. Furthermore, if supported by the other facilitators it was mentioned that the "hub" team could also fulfil some of the practice/practice system directed functions. Practice/practice system directed functions are auditing and cost-effective switches, managing repeat prescriptions to reduce waste and developing formularies. It was cautioned during the focus group that this role transformation could dilute the IC pharmacist role delivery. However, following a discussion regarding the issue it was concluded that all the tasks could be delivered if the teams had sufficient capacity for the patient population. Furthermore, it was highlighted that as an embedded team with routines and processes, several of the function would be set up and just require maintenance.

Consequently, following stakeholder reflection, six months after the start of the study, the decision was taken to transform the IC pharmacist role to a full-time GP hub clinical pharmacist role, working in a team with a support technician at month nine. The stakeholders were convinced that this would represent a practical culmination of all the resources and enablers suggested above. It was also considered that transforming the role would provide more alignment to national plans, to promote more clinical pharmacists in general practice to fulfil similar functions as a major solution to help resolve the GP shortage in the UK as outlined in the NHS five years forward view (NHS,2014). In similarity to the proposed hub clinical pharmacist role, the emerging clinical pharmacist in GP practice is also a further evolution of the primary care pharmacist role. Both roles are partly derived from the practice pharmacist role which had in turn developed from the pharmaceutical advisor role as illustrated in figure 5.1 below.

Figure 5.1: Evolution of the GP hub clinical pharmacist role

PCP Role 1:
Prescribing advisory pharmacist
(based in PCT/CCG)
Role focus
-cost effectiveness of prescribing
-formulary & guideline development

PCP Role 2:
General practice pharmacist
(based in GP practice or CCG/PCT)
Role focus
-repeat prescription reviews
-medicines reviews
-formularadherence
-precribing budget

PCP Role 3:
Integrated care pharmacist
(based in social care office)

Primary Role focus
Pharmaceutical care that is
-patient-centred
-embedded in intergrated MDT **including social care**
-proactive care
-level 3 medicines reviews

Secondary role focus
-formulary and adherence
-waste reduction

PCP Role 4:
GP hub clinical pharmacist
(supported by technician, based in GP practcie **)**
Primary role focus
Patient & MDT directed functions including
Pharmaceutical care that is
-patient-centred
-embedded in intergrated MDT **including social carer**
-proactive care
-level 3 medicines reviews

Secondary role focus
-formulary adherence
-audits
-prescribing budget
-waste reduction

This proposal for the GP hub pharmacy team called the GP hub medicines quality team was thus progressed in two phases:

Phase 1

▪ Four teams commenced the new roles as a 12-month pilot. Each team was assigned to a GP hub, supported by practice administrative staff. The teams were employed by the ELR CCG and seconded and embedded as part of the GP practice team. The role remit was the delivery of patient, MDT and practice directed functions as described above and in appendix 12. The job outline of the hub pharmacy team emphasised that the integrated care role function should be a role priority. To fulfil these role functions, the GP hub pharmacist role should therefore be a core member of the practice social and health integrated MDT to ensure holistic patient –centered care. The pharmacist and technician team would be based at the GP practice as recommended by the study, instead of the IC office. Although it was acknowledged that mutual visibility and accessibility to the IC Coordinators would diminish, the overall benefits would be better.

Furthermore, the long-term plans were to co-locate the IC coordinator at the GP practice eventually.

▪ The pilot evaluation after the 12 months (appendix 13) provided key recommendations that informed stage 2. The two most important recommendations were that more capacity was required and practice ownership and acceptance of the team was required.

Phase 2

▪ Informed by the evaluation results of phase 1, a business case highlighting the need for more capacity was submitted to ELR CCG. Funding was requested for one full time pharmacist and technician per practice focusing predominantly on patient and MDT functions. The business case was approved with some caveats for implementation. This included practices working together in hubs to pool resources and enable bigger pharmacy teams. Furthermore, to increase practice ownership, the funding was given to each practice to use exclusively to employ the pharmacist and technician. Each team would be provided administrative support by the practice administrative staff who also received medication training provided by the CCG

Practices were also encouraged to contribute funding to employ more pharmacist and technicians and to bid for NHS England funding for more clinical pharmacists to join the team.

However, a key deviation from the business case was that the teams were requested to also prioritize the practice /practice system functions due to external pressures to make financial savings to help bridge the national NHS funding deficit.

▪ The teams were also supported through the provision of mandatory quarterly continual professional development training funded by the CCG.

The first training session included a joined presentation by the main researcher and the integrated care team lead highlighting the interim results of the study and the importance of prioritizing the integrated care role functions. They were also given the contact details of their IC coordinators to set up a meeting. A similar presentation was delivered to all the CCG prescribers at their session which was planned on the same day.

Although phase 2 has not been formally evaluated, literature reports support the recommendations for more capacity, for example aligning with the NHS England scheme, to get a bigger team to optimise outcomes. Helmsley (2017) describe a model of a team of six pharmacists, three senior pharmacy technicians and eight administrative medicines management operators working in a GP practice hub in Lancashire. Two pharmacists out of the six are funded as part of the NHS England scheme. Also in support of more funding for a dedicated role is an integrated care pharmacist scheme based in London that bares

similarity to the IC pharmacist role in this research. (NICE 2016). This model describes how the initial part time post was doubled to a dedicated full time post which was further increased to 1.5 whole time equivalent. The evaluation highlights the need for senior pharmacist supervisory support. The NHS England clinical pharmacist in GP surgery scheme also specifies a senior pharmacist as part of the team, supporting the more junior team. The literature also describes a model of vertical integrated care across primary and secondary care, including a fully embedded pharmacy team working across both sectors (Baqir, 2018). This is however in its infancy and neither adequately described, evaluated or researched. Furthermore, a vertical integration model is not currently developed in Leicestershire. Therefore, there is no supporting framework for any integrated care pharmacy role functions. However, it is recommended that this model which theoretically represents complete integration should be considered for the future.

Following the above review of the findings from the ELR pilot scheme alongside models in the literature, a new model which brings together all this element is suggested as a pilot for action based research in the short to medium term. The recommended model would include a dedicated specialist integrated care pharmacist role embedded within and supported by a GP hub pharmacy team with other pharmacists and technicians like the minimum capacity of one whole time equivalent pharmacist and technician per 30,000 population (Duggan et al. 2017). The action research will inform local practitioners to enable a decision regarding which model of integrated pharmaceutical care would be the most suitable to meet the requirements of the local population.

Theme 4: Reflection on Integrated Care Pharmacist role functions
This study found that the predominant role of the IC pharmacists was to provide pharmaceutical care to IC patients and medicines related information, training and support to all health and social multidisciplinary team members. The participant experiences and perceptions confirmed that the IC pharmacist provides pharmaceutical care by completing distinct role functions. These functions included clinical medicines and deprescribing reviews, medicines reconciliation, medicines information and adherence support. Both patients highlighted how useful they found the medication record card the IC pharmacist completed for them. However, it was apparent that two of the stakeholders who were less integrated with the MDT (General practitioner 2 and the community nurse) required more time to be convinced that the role of the IC pharmacist could fulfil these functions.

Although the types and degrees of integration are different, the discoveries from this study reflect the role of the integrated care pharmacist that has been documented in the literature. A meta-analysis of 38 studies showed positive results for both primary outcome as well as clinical markers measures related to LTC management and quality use of medicines (Tan et al 2014), for pharmacists co-located and integrated in general practice delivering a variety of interventions. Furthermore, the IC pharmacist role outcomes as shown by the evaluation KPI support the increasing acknowledgement that pharmacotherapy outcomes can be optimized by pharmacists as medicines experts, working within integrated health and social multidisciplinary teams, in new roles (Daloni et al 2016, Freeman et al 2016, Stone and Williams 2015).

The evidence also supports the strategies/approaches mentioned by the participants which were utilized by the pharmacist to perform the roles. These include medication reviews, medicines reconciliation, patient counselling, and increased communication, education of stakeholders, process optimisation and risk management (2010 Barber et al. 2009). As discussed in chapter one , although medication reviews have been shown to lead to a reduction in polypharmacy and an increase in the use of more appropriate medicines formulation and choice, robust evidence of admissions avoidance and cost savings have only been demonstrated with medicines reconciliation (Mekonnen et al. 2016; Blenkinsopp, 2012, Holland et al. 2007).

In their meta- analysis to ascertain whether pharmacist –led medication review which had only been shown to improve prescribing outcomes also reduced hospital admissions and deaths in older people, Holland et al (2007) searched 11 electronic databases. The inclusion criteria included randomized controlled trials in any setting, of patients over 60 years, with the aim of improving drug regimens and patient outcomes. They concluded that pharmacist-led medication reviews neither reduced mortality nor hospital admission in older people. The limitations of the study however included the fact that only 17 of the 32 studies provided data on the primary outcome of hospital admissions and some did not include numerical data despite reporting that no difference was observed. Furthermore, only a small proportion of studies fulfilled all the quality criteria which raises the question of whether some of the studies may have been susceptible to bias. A very relevant limitation for this study is the fact that studies designed to improve knowledge and adherence were not evaluated although these might have a considerable qualitative impact on older patients, and it would be best to use qualitative methods to evaluate them. This study findings have shown that stakeholders hold the view the medication reviews indirectly prevent hospital admissions.

The Blenkinsopp (2012) literature review discussed in chapter one had similar findings to the existing published literature. However, the publication did not include the number and inclusion criteria of studies reviewed. The publication recommended multi-professional involvement in clinical medication reviews which is very relevant to this study which has shown that stakeholders believe that the IC who worked as part of an integrated MDT, improved patient outcomes.

The pharmacists in this study highlighted that clinical medication reviews could be completed at scheduled IC pharmacist drop- in clinics whereby patients would bring their medication for clinical medication review by the pharmacist. Patients unable to attend would get domiciliary reviews. There are a few literature citations of positive outcomes from medication reviews for example the Guys and St Thomas scheme reporting 207 medication reviews and identifying 467 medicines related problems (2.3 problems per patient).

Medicines reconciliation is a form of medication review which as mentioned in chapter one, has been shown to prevent harm and medication errors by both primary and secondary care prescribers (CQC 2009). A recent systematic review and meta-analysis to reduce hospital admissions (Mekonnen et al, 2016) provided evidence for a reduction in hospital admissions, which has been hard to find for other forms of medication review. Mekonnen et al (2016) involved 21,342 patients across 17 studies, eight of which were randomized, as part of their meta-analysis. The results were a substantial reduction of 67%, 28% and 19% in adverse drug event-related hospital revisits (RR 0.33; 95% CI 0.20 to 0.53), emergency department (ED) visits (RR 0.72; 95% CI 0.57 to 0.92) and hospital readmissions (RR 0.81; 95% CI 0.70 to 0.95) in the intervention group than in the usual care group, respectively. There was no statistically significant difference following the subgroup analysis. There were two key limitations to the study. Firstly, some of the outcomes evaluated showed a huge difference in the statistics which could not be explained. Secondly non-controlled studies were also included which could have increased the overall bias. Medicines reconciliation was one of the main roles of the IC pharmacist that contributed the positive outcomes.

In addition, there is de-prescribing which is a process by which unnecessary drugs identified using some validated criteria such as Beers (American Geriatric Society,2012) or STOPP/START are considered for discontinuation in agreement with the patient. The benefits of deprescribing have been described in a study of 70 older patients prescribed on average 7.7 drugs of which 58% were discontinued, with an 81% success rate, no long term adverse effects as well as approximately 90% health improvement (York Health Economics Consortium, 2010). It is recommended that patients at increased risk of polypharmacy like

integrated care patients should have a medication review regularly with a view to stop medication which is no longer appropriate Burge et al (2012).

Medicines related training and education for those involved in medicines prescribing and administration was reported to have bene very useful by the participants. This is supported by the literature highlighting that administration errors for home medication made by carers could be a severe patient safety problem (Parand et al.2016). They found that the errors made are like those in other settings and recommend that the domiciliary setting should be prioritized for developing interventions such as training, to patient safety.

A supporting study is the Care Home Use of Medicines Study (CHUMs) which showed that 69.5% of care home residents had one or more medication errors (Barber et al. 2009). The main causes of harm caused by medication as shown by the study were prescribing, monitoring, administration and dispensing. Relevant factors for this research shown to contribute to the harm mentioned above in the CHUMS study were: high workload of staff, insufficient medicines training; absence of team work among staff, practice and pharmacy; disorganized ordering systems; incorrect medicine records and preference for verbal communication; and challenges with filling and checking medication administration systems. Although error rates were not measured in this study, the findings show that knowledge of MDT staff, some of whom would administer home medication increased.

Additionally, a major implication of the changes in the NHS regarding handing over responsibility for social funding for the frail to the social system is that the roles of community social carers has expanded significantly as they inherit the traditional duties of district nurses for patients not eligible for NHS health funding. Amongst these inherited duties, are certain aspects of medicines management. To ensure safety, training, team work and support is required. As a result, pharmacist and social carers work increasingly in collaboration to support patients. The nature of the collaboration is evolving with the change in responsibilities devolved to the social carers and the pharmacist. Part of the training provided by the integrated care pharmacist covered the importance of robust communication and documentation, checking for incomplete or incorrect information on discharge letters, checking and recording allergy status, checking for incorrectly prescribed or dispensed drug, strength or frequency. This study findings showed that most of the MDT stressed that this role function is important to take forward.

Another study highlighting the benefits of the provision of medicines related education, is PINCER which was shown to contribute significantly to reduce medication errors in GP practices (Avery et al.2012). It was a large cluster randomized partially blinded study whereby practices were allocated to either a simple feedback which was computer-generated for at-risk patients (control) or a pharmacist-led information technology intervention (PINCER), composed of feedback, educational outreach, and dedicated support. The primary outcome of the study was the percentage of patients who had had any of three clinically important errors at 6 months after the intervention. The clinically important errors were: non-selective non-steroidal anti-inflammatory drugs (NSAIDs) prescribed to patients with a history of peptic ulcer without co-prescription of a proton-pump inhibitor; β blockers prescribed to patients with a history of asthma and patients prescribed long-term angiotensin converting enzyme (ACE) inhibitor or loop diuretics to patients 75 years or older without assessing their urea and electrolytes in the preceding 15 months. 72 general practices with a total of 480,942 patients were randomized. At the six months' follow-up, the patients in the PINCER arm were significantly less likely to have been prescribed a non-selective NSAID if they had a history of peptic ulcer without gastro protection (OR 0·58, 95% CI 0·38–0·89); a β blocker if they had asthma (0·73, 0·58–0·91); or an ACE inhibitor or loop diuretic without appropriate monitoring (0·51, 0·34–0·78).

The main strengths of PINCER include the sample size and random allocation which makes it generalizable. Bias was reduced by the partial blinding and computer allocation. Furthermore, the outcomes were clinically relevant outcomes and tested. It is also possible that the overall effect could have been underestimated because the feedback used for the control practices is actually superior to the standard. However, PINCER had some limitations: there was some variation between the practices and those that signed up were likely to be training practices; the study was only powered for an assessment at 6 months and the PINCER outcome of medication error was a surrogate marker for adverse drug reaction. Finally although it has been shown to be effective in behavior altering (Thompson et al.2000), the cost-effectiveness of the educational outreach used has not been evaluated.

Educational outreach, is similar to the training method used by the IC pharmacist and the findings of this study highlight that this was also effective.

Although all these studies are useful in confirming some of the study findings regarding the role, none of them contain any detail of what the IC pharmacist role entails and how it is delivered, as perceived and experienced by a wide range of key stakeholders. (NHS, 2015; Rand et al. 2012). Consequently, this study makes a significant contribution to existing

knowledge by detailing what the stakeholders including patients, perceive as the important role function are and how they are delivered.

Furthermore, unlike the other published studies and schemes, this study shows how the integrated care pharmacist can work in an MDT with a social care support worker as coordinator to achieve outcomes. Furthermore, the pharmacists shared an office with the social support workers /coordinators for and developed a close relationship with them. In addition, they supported them with training provision, discussing each patient before visit and providing summary cards and a reactive query answering. This liaison with the social coordinator is important for three fundamental reasons: It is becoming increasingly evident that multidisciplinary collaboration is required for pharmacotherapy to be fully effective; patients are living longer and requiring more health (including medication) and social care services and consequently the need for medication is rising.

Statistics show that almost every individual who is 65 years old and above requiring social carer support with their daily living activities is taking at least one prescribed medicine (DH 2012). Increasingly social carers are routinely tasked with the administration and delivery of medication to support these patients. Studies have shown that pharmacists can support social carers to improve the safety of these tasks (Barber, 2009).
Therefore, practitioners tasked with planning integrated care schemes, should consider the importance of including pharmacists as a core members of the integrated care MDTs. They should also plan regular medication training and support sessions for the MDT especially the social support workers and nurses.

Theme 5: Impact of Integrated Care Pharmacist within multidisciplinary team
There was a consensus among the stakeholders that the impact of the IC pharmacist role was predominantly positive. Their input increased patient and multidisciplinary team (MDT) satisfaction and empowerment, increased medication safety, financial savings, bridge building and time saving. Finally, the participants reported that the pharmacist performance against the outcomes was excellent. This was supported by the quantitative data, although the data should be confirmed in a larger study utilizing more direct indicators.

Both patients described how the medication review and receipt of the medication record cards (Appendix 3), alongside an explanation of their medication, empowered and enabled them to improve the way they took their medication. This shows that patients recognize that pharmacists working in integrated MDTs can have a positive impact on their adherence and outcome. This finding is consistent with Bell et al (2007) highlighting how adherence is more

desirable than compliance because it includes active discussion, giving the patient the freedom to make choices. Adherence is described as the '*extent to which the patient's behavior matches agreed recommendations from the prescriber' (*Horne et al. 2005). The patients in this study, following active discussions with the IC pharmacist wrote down and followed the prescribers' recommendations. The patient's feedback that the medication record cards empowered them, is in line with findings from Smith et al (1997) demonstrating that patients like to receive written information regarding their medication.

In addition, the nurse and integrated care coordinators emphasized that the medication summary information handouts the pharmacist produced for them as aid memoires, significant empowered them to have discussions with patients. These discussions as explained by Bell et al (2007) could improve adherence. To further illustrate this positive impact of the IC pharmacist, the IC coordinators all had examples of how patient harm was reduced and adherence improved following the pharmacist input.

 An additional dimension regarding the extent of the pharmacist's impact was mentioned by GP1 who stated that the actual outcomes achieved by the pharmacist's input was significantly more than could be recorded. He explained that this was because of the snowball effect of changing practice forever after education by the pharmacist on a specific area pharmacist.

The above positive experiences are supported by a published study that showed that pharmacists integrated in GP practices providing pharmaceutical care improved outcomes such as reduced medicines problems, more timely outcomes, reduced polypharmacy and increased adherence, (Freeman et al. 2014). Several other studies have shown that pharmacists are integral in ensuring safe, clinically effective and cost- effective use of medicine (Jorgenson et al. 2013; Duerden, 2013; Avery et al. 2012; Blenkinsopp et al.2012; Dennis et al. 2009). However, none of these studies include the views and experiences of non-pharmacist or GP stakeholders such as patients, nurses and social support workers. Therefore, this study also contributes the perspective of these other stakeholders.

A distinctive additional knowledge from this study which is not mentioned in any of the published literature is the fact that that the IC pharmacist's presence at MDT meeting bridged the gap between health and social. The IC coordinator elucidated how the usual "them and us" disappeared when the pharmacist was present. There is a lot in the literature describing how the "berlin wall" and turf wars between health and social is compromising patient care (Clements, 2010). The fictitious patient cases described in chapter one further

illustrate how this can affect the outcome of pharmaceutical care. This study shows how the pharmacist's impact goes beyond the pharmaceutical to enable other wider goals of integrated care.

Theme 6: Evaluating the performance of Integrated Care Pharmacist role

The participants recommended that the role should be evaluated predominantly using patient feedback, supported by MDT opinion and patient outcome measures. The quantitative findings indicated that key performance indicators could be used to support short term and local evaluation of the role.

All participants held the view that the outcomes contributed by the integrated care pharmacist should be measured by utilizing patient feedback. Additionally, MDT feedback, monitoring patient improvement as well as using KPIs such as cost savings and GP time saved. The KPIs used for this research, were also suggested as tools to measure outcomes. However, although the KPIs used are suitable for small action research, bigger interventions would require outcome measures with more rigor for quantitative research.

Existing literature describe some results which are partially consistent with this study findings. Deeks et al (2018) for example, estimates that dependent on the exact role function, 37.4 hours per month of GP time could be estimated as saves by a pharmacist working 37.5 hours per week. Several participants in this study went further and emphasized that the real positive impact of the IC Pharmacist is under-measured because their input results in a permanent positive change in the professionals practice preventing numerous subsequent patient harm.

The study findings also aligned with the debate regarding why pharmacist input is measured by these matrices whilst the input of other care professional colleagues e.g. nurses, GPs, social carers are not. Further research including more pharmacist and patient input regarding how to measure the outcomes, would help clarify this debate.

This research provides a successful methodology of quantifying of the pharmacist input to reduce hospital admissions in addition to the medication cost which is usually the only savings calculation in pharmacy practice. Of importance is the fact that admissions avoidance from pharmacist input was calculated, presented and accepted by commissioners. This enabled significant transformation and sustainability of the role because without assurance of a return on investment, the pilot would probably have failed the evaluation considering the cost pressures on commissioning groups. This is significant

considering that interim reviews of national pilots that do not include an outcome for pharmacist and thus not very useful to inform pharmacist role planning

This methodology could be utilized by pharmacist to strengthen their arguments in written funding request reports regarding potential or actual outcomes of their practice research, making their rationale more robust and convincing to commissioners.
However, further quantitative research is recommended to triangulate the findings and support and promote change in practice.

CHAPTER 6

CONCLUSIONS

Chapter 6: Conclusion

Introduction

The primary aim of this study was to understand and inform the new role of the IC pharmacist and how to develop and sustain it. Qualitative and quantitative methods were utilized within a variant of action research design called participatory mixed method research. The former utilized interviews and a focus group to produce data which culminated into six main themes following analysis. The later was secondary analysis of KPI data routinely documented by the IC pharmacist for sponsor pilot evaluation. The individual findings of the mixed methods achieved complemented each other to fully answer the five research questions as summarised on the table below.

The role of the IC pharmacist as informed by this research, is to provide pharmaceutical care to the integrated care patient cohort as well as medicines related information, training and support to all health and social multidisciplinary team members. The IC pharmacist provides pharmaceutical care predominantly by completing clinical (level 3) medication and de-prescribing reviews, medicines reconciliation, medicines information and adherence support tools such as medication record cards and summary sheets. The provision of these role functions results in increased patient and multidisciplinary team (MDT) satisfaction and empowerment, increased medication safety, financial savings, bridge building and time saving.

Additionally, key resources and enablers to increase performance and therefore sustainability of the role were identified by the participants. These include funding, information technology, effective teamwork, increased visibility and accessibility and training, pharmacy technician support and transforming the role into the GP hub clinical pharmacist role. A key enabler constructed from the study finding and current literature to make the job role more sustainable was to embed the role function within a new model of a GP hub pharmacy (also called medicines quality) team. Furthermore, it was recommended that the role should be evaluated predominantly using patient feedback, supported by and MDT opinion and patient outcomes. Further to this, participants reported that the pharmacist performance against the outcomes was excellent. These qualitative findings were supported by quantitative data collected as key performance indicators which could also be used to support short term local evaluation of the role.

6.1 CONTRIBUTION TO KNOWLEDGE

This study made some new significant additions to knowledge regarding the role of the IC Pharmacist. Firstly, this integrated care pharmacist pilot unlike other published research of integrated care, provides a description of what the IC Pharmacist role is and how it is delivered, as perceived by non-pharmacist or GP stakeholders, including patients and social community support workers (NHS, 2015; Rand et al. 2012). The study findings elucidate exactly what role functions the participants thought were important and explained why they had that believe. Additionally, they described the positive impact of these roles, based on their experience and how these could be evaluated and sustained. The second addition is knowledge of how the integrated care pharmacist could work with a social care support worker within a multidisciplinary team to provide support to optimise patient care. The third contribution is the findings that the medication record cards and medication summary cards significantly empower IC patients and professionals respectively. Fourthly, a locally "tried and tested" methodology to enable quantification of hospital admissions avoidance savings resulting from the role of the IC Pharmacist has been made available. This could be used to supplement the medication cost savings which is the predominant cost savings calculated in pharmacy practice. Including an estimated figure for the IC Pharmacists' input to admissions avoidance in the business case to the commissioners, enabled funding that led to significant transformation and sustainability of the integrated pharmaceutical care in East Leicestershire and Rutland. The fifth contribution is the bridge building effect that the IC pharmacist inadvertently had on the "berlin wall "between health and social which existed within the MDTs. This is beneficial for the delivery of the wider integrated care goals. The final additional contribution to knowledge is how the recommended priority role functions could be delivered within other IC models or programmes, if the other enablers are guaranteed.

In overall conclusion, in line with action research, action was achieved ultimately by transforming and expanding two IC Pharmacist roles to twelve teams of pharmacists and pharmacist technicians, based at and embedded into a wider GP team providing holistic integrated health and social pharmaceutical services to all patients in East Leicestershire and Rutland as part of a model that continues to be evaluated and updated as required. Furthermore, additional knowledge was contributed by bringing to light the views and experiences of non – GP or pharmacist members of health and social intergrated multidsiciplinary teams especially those of patients, regarding what exactly the IC Pharmacist role is, how it is delivered, what outcomes it delivers and how the role functions can be evaluated and adapted to increase sustainability.

6.2 RECOMMENDATIONS FOR FUTURE RESEARCH

This study represents a starting point that should be used to explore this developing role of the IC Pharmacist. The following is recommended as work that could be developed to inform the future.

1) Qualitative research to Inform the ongoing roles of the GP hub clinical pharmacist and pharmacy technician, which were derived from the IC Pharmacist role. Research is required to inform these two new roles and how to further develop the model overall.

2) Action based research of a pilot of a model of a dedicated IC Pharmacist role, integrated within and supported by a GP hub pharmacy team including pharmacists and technicians. This model has been described in the literature and would align with the ongoing NHS England scheme to increase the number of clinical pharmacists in general practice. The proposed model would be like that of other allied professional roles that make up multidisciplinary teams of the NHS integrated care programme. The action research would inform how to develop a local version of this literature acclaimed model.

3) Comparative research to ascertain which of the two models (GP hub pharmacy team delivering the functions of the IC pharmacist role or dedicated IC Pharmacist role embedded) is more effective at achieving the goals of integrated care.

4) Exploratory local research to inform how to deliver integrated pharmaceutical care as part of vertical (across primary and secondary care) integrated care programmes.

These will inform and support local practitioners in deciding which of the different models would be the most suitable to meet the pharmaceutical and wider requirements of the local population.

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References

ACKERMANN, E., WILLIAMS, I.D. and FREEMAN, C. (2010) Pharmacists in general practice: A proposed role in the multidisciplinary team. *Australian Family Physician,* 39 (3), pp. 163-4.

AHMED, S.I., HASAN, S.S., HASSALI, M.A. (2010) Clinical pharmacy and pharmaceutical care: a need to homogenize the concepts. *Am J Pharm Educ,* 15 (74) pp.10:193g.

AMERICAN COLLEGE OF CLINICAL PHARMACY. (2008) The definition of clinical pharmacy. *Pharmacotherapy,* 28(6), pp. 816–817.

AMERICAN GERIATRICS SOCIETY. (2012) Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. *Journal of the American Geriatrics Society,* 60 (4), pp. 616-631.

ARCHIBALD, M.and MUNCE, S. (2015) Challenges and Strategies in the Recruitment of Participants for Qualitative Research. Research gate online.
[Online] https://www.researchgate.net/publication/299483270_Challenges_and_Strategies_i n_the_Recruitment_of_Participants_for_Qualitative_Research [Accessed 20/01/16].

ARMITAGE, G.D. et al. (2009) Health systems integration: state of the evidence. *International Journal of Integrated Care*, 9(2)
[Online] http://www.ijic.org/article/10.5334/ijic.316/ [Accessed 20/01/17].

AVERY, A.J. et al. (2012) A pharmacist-led information technology intervention for medication errors (PINCER): a multicentre, cluster randomized, controlled trial and cost-effectiveness analysis. *The Lancet,* 379 (9823), pp. 1310-1319.

AVERY, A., BARBER, N., GHALEB, M, DEAN, FANKLIN B,, ARMSTRONG, S,, CROWE, S., DHILLON, S., FREYER, A., HOWARD. R., PEZZOLESI. C., SERUMAGA. B., SWANWICK. G., TALABI, O. (2012b). *Investigating the Prevalence and Causes of Prescribing Errors in General Practice: PRACtICe Study*. General Medical Council [online]. Available at: www.gmc-uk.org/about/research/12996.asp [Accessed 21/07/16].

BABAR, Z. (2015) *Pharmacy practice research methods*. 1st ed. Cham: Adis.

BAKER, R. (2011) King's Fund report on improving the quality of care in general practice. *BMJ (Clinical Research Ed.),* 342 (242), pp. d1932.

BARBER, N, PARSONS, J., CLIFFORD, S. *et al.* (2004) Patients' problems with new medication for chronic conditions. *Qual Saf Health Care,* **13 (172)** [Online] https://qualitysafety.bmj.com/content/13/3/172?ijkey=187fd8233da01c8aecefe b46d4c6abb8825fa8e2&keytype2=tf_ipsecsha [Accessed 12/02/16].

BARBER, N.D. et al. (2009) Care homes' use of medicines study: prevalence, causes and potential harm of medication errors in care homes for older people. *Qual Saf Health* Care,18, pp 341–6.

BARBER, N. (2001) Pharmaceutical care and medicines management – is there a difference? *Pharm World Sci*, 23(6), pp 210–211

BARDSLEY, M. STEVENTON, A. SMITH, J. and DIXON, J. (2013) *Evaluating integrated and community-based care How do we know what works?* The Nuffield Trust. London. [Online] https://www.nuffieldtrust.org.uk/files/2017-01/evaluating-integrated-community-care-web-final.pdf [Accessed 29/02/17].

BAQIR, W.(2018) Impact of an integrated pharmacy service on hospital admission costs [Online] https://www.pharmaceutical-journal.com/research/perspective-article/impact-of-an-integrated-pharmacy-service-on-hospital-admission-costs/20204550.article [Accessed 26/06/18].

BAUM, F., MACDOUGALL, C. and SMITH, D. (2006) Participatory action research. *Journal of Epidemiology and Community Health,* 60 (10), pp. 854-857.

BEERS, M.H. (1997) Explicit Criteria for Determining Potentially Inappropriate Medication Use by the Elderly: An Update. *Archives of Internal Medicine,* 157 (14), pp. 1531-1536.

BELL, S.J. et al (2007). Concordance is not synonymous with compliance or adherence *British Journal of Clinical pharmacology*, 64;5, 710-711

BENNER, P. ed. 1994. Interpretive phenomenology: embodiment, caring and ethics in health and illness. London: Sage.

BLENKINSOPP, A., BOND, C. and RAYNOR, D.K. (2012) Medication reviews. *British Journal of Clinical Pharmacology,* 74 (4), pp. 573-580.

BOND, C.M. and HOPF, Y. (2014) Do our pharmacy standards promote integrated care? *The Canadian Journal of Hospital Pharmacy,* 67 (1), pp. 5-6.

BOON, H. et al. (2004) From parallel practice to integrative health care: a conceptual framework. *BMC Health Services Research,* 4 (1), pp. 15.

BORENSTEIN, J.E. et al. (2003) Physician-pharmacist co-management of hypertension: a randomized, comparative trial. *Pharmacotherapy,* 23 (2), pp. 209-216.

BOUGHEN, M. et al. (2017) Defining the Role of the Pharmacy Technician and Identifying Their Future Role in Medicines Optimisation. *Pharmacy: Journal of Pharmacy Education and Practice,* 5 (3).

BRADLEY, F., SESTON, E., MANNALL, C., CUTTS, C. (2018) Evolution of the general practice pharmacist's role in England: a longitudinal study *Br J Gen Pract* 68 (675): e727-e734. Available online on https://bjgp.org/content/68/675/e727 [Accessed 01/11/18].

BROWN, B., CRAWFORD, P. and HICKS, C. (2003) *Evidence-based research: dilemmas and debates in health care*. Maidenhead: Open University Press.

BRYMAN, A. (2004) Social *Research methods. Second Edition*.: Oxford University Press.

BURGE, F., LAWSON, B. and MITCHELL, G. (2012) How to move to a palliative approach to care for people with multimorbidity. *British Medical Journal,* 345.

CAMPBELL, R.K. and SAULIE, B.A. (1998) Providing Pharmaceutical Care in a Physician Office. *Journal of the American Pharmaceutical Association (1996),* 38 (4), pp. 495-499.
CARE QUALITY COMMISSION (2009) *CQC 2009 NHS must do more to prevent harm to patients from prescribed medicines after leaving hospital, says.* England: CQC. [Online]

http://www.cqc.org.uk/news/releases/nhs-must-do-more-prevent-harm-patients-prescribed-medicines-after-leaving-hospital.

CARR, L. (1994). The strengths and weaknesses of quantitative and qualitative research: what method for nursing? Journal of advanced nursing 20(4):716-21

CASTELINO, R.L., BAJOREK, B.V. and CHEN, T.F. (2009) Targeting suboptimal prescribing in the elderly: a review of the impact of pharmacy services. *The Annals of Pharmacotherapy,* 43 (6), pp. 1096-1106.

CIPOLLE, R.J., STRAND, L and MORLEY, P.C (2012). Drug Therapy Problems. In CIPOLLE, RJ et al, (McGraw-Hill Education, LLC)
*Pharmaceutical Care Practice: The Patient-Centered Approach to Medication Management Services,*3rd ed. USA

CLEMENTS, L. (2010) NHS funding for continuing health care in England: the revised (2009) guidance. *Social Care and Neurodisability,* 1 (1), pp. 39-47.

COUSINS, D.H., GERRETT, D. and WARNER, B. (2012) A review of medication incidents reported to the National Reporting and Learning System in England and Wales over 6 years (2005-2010). *British Journal of Clinical Pharmacology,* 74 (4), pp. 597-604.

COYNE, I.T. (1997) Sampling in qualitative research. Purposeful and theoretical sampling; merging or clear boundaries? *Journal of Advanced Nursing,* 26 (3), pp. 623-630.

CRESWELL, J.W. (2003) Research Design Qualitative, Quantitative, and Mixed Method Approaches. Sage Publications, Thousand Oaks.

CROMBIE, IK. (1996) The pocket guide to critical appraisal: a handbook for health care professionals. London: BMJ.

CURRY N, HAM C (2010). *Clinical and Service Integration: The route to improved outcomes.* London: The King's Fund.

DALONI CARLISLE (2016) *New care models: the role of pharmacy in vanguard pilots.* [Online] https://www.pharmaceutical-journal.com/news-and-analysis/features/new-care-models-the-role-of-pharmacy-in-vanguard-pilots/20201579.article [Accessed 18/03/18].

DAVID CALDERÓN-GUZMÁN et al. (2016) Prescription and. *Saudi Pharmaceutical Journal,* 24 (2), pp. 213-219.

DEEKS et al, (2018) Clinical Pharmacists in general practice. *British Journal of General Practice,*68 (672): 320. [Online] https://doi.org/10.3399/bjgp18X697625 [Accessed 15/04/17].

DENNIS, S. et al. (2009) What evidence is there to support skill mix changes between GPs, pharmacists and practice nurses in the care of elderly people living in the community? *Australia and New Zealand Health Policy,* 6, pp. 23.

DENSCOMBE, M. (2014) *The good research guide: for small scale, social research projects.* Fifth; 5 ed. Maindenhead: Open University Press.

DEPARTMENT OF HEALTH and DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT NHS ENGLAND (2017). *Health and social care integration.* England: Department of Health.

DEPARTMENT OF HEALTH (2012) *Long term conditions compendium of information.* Third ed. England: DH. [Online] https://www.gov.uk/government/publications/long-term-conditions-compendium-of-information-third-edition [Accessed 22 /09/16].

DEPARTMENT OF HEALTH (2012) *National Framework for NHS Continuing Healthcare and NHS-funded Nursing Care* England: DH.
[Online] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/213137/National-Framework-for-NHS-CHC-NHS-FNC-Nov-2012.pdf [Accessed 21/10/16].

DEPARTMENT OF HEALTH (2010) *Improving the health and well-being of people with long term conditions.* London: DH.

DESBOROUGH, J., TWIGG, M.J. (2013) Pharmacist-led medication reviews in primary care. Reviews in Clinical Gerontology 24(01):1-9

DE STAMPA, M. et al. (2014) Multidisciplinary teams of case managers in the implementation of an innovative integrated services delivery for the elderly in France. *BMC Health Services Research,* 14, pp. 159.

DOLOVICH, L. et al. (2008) Integrating family medicine and pharmacy to advance primary care therapeutics. *Clinical Pharmacology and Therapeutics,* 83 (6), pp. 913-917.

DRISCOLL, M et al. (2007) Merging qualitative and quantitative data in mixed methods research: How to and why not. [Online] digitalcommons.unl.edu [Accessed 22 /10/16].

DUERDEN, M., AVERY, T., PAYNE, R (2013) Polypharmacy and medicines optimisation Making it safe and sound kings fund.
[Online] https://www.kingsfund.org.uk/sites/default/files/field/field_publication_file/polypharmacy-and-medicines-optimisation-kingsfund-nov13.pdf [Accessed 22 /09/15].

DUERDEN, M., AVERY, T., MILLSON, D. and SMART, S. (2011). *The quality of GP prescribing.* The King's Fund. London [Online] www.kingsfund.org.uk/projects/gp-inquiry/prescription- management [Accessed 17 /03/16].

DUGGAN, C. et al. (2017) Why pharmacists need advanced practice specialist residences: the UK–Australia story. *Pharmaceutical Journal.* Available online *https://www.pharmaceutical-journal.com/your-rps/why-pharmacists-need-advanced-practice-specialist-residences-the-ukaustralia-story/20202766.article.* [Accessed 22/05/18].

EAST LEICESTERSHIRE AND RUTLAND CCG (2014). *Draft integrated care model for East Leicestershire and Rutland CCG.*

ELLIOTT, R. (2009) Non-adherence to medicines: not solved but solvable. *Journal of Health Services Research & Policy,* 14 (1), pp. 58-61.

ELLIOTT, R., BARBER, N., CLIFFORD, S., HORNE, R. and HARTLEY, E. (2008) The cost-effectiveness of a telephone-based pharmacy advisory service to improve adherence to newly prescribed medicines. *PharmacyWorld and Science*; 30 (1): 17-23.

ELSTON, S. and HOLLOWAY, I. (2001) The impact of recent primary care reforms in the UK on interprofessional working in primary care centres. *Journal of Interprofessional Care,* 15 (1), pp. 19-27.

ERENS B, WISTOW G, MOUNIER-JACK S, DOUGLAS N, JONES L, MANACORDA T, MAYS N. (2016) *Early evaluation of the Integrated Care and Support Pioneers programme. Final Report.* London: Policy Innovation Research Unit.
[Online] http://www.piru.ac.uk/assets/files/Early_evaluation_of_IC_Pioneers_Final_Report.pd f Accessed 22/05/17].

EUROPEAN DIRECTORATE FOR THE QUALITY OF MEDICINES & HEALTHCARE (2012). Pharmaceutical Care Policies and Practices for a Safer, More Responsible and Cost-effective Health System. EDQM France.
[Online] https://www.edqm.eu/medias/fichiers/policies_and_practices_for_a_safer_more_res ponsibl.pdf [Accessed 22/05/17].

EWBANK, L., OMOJOMOLO, D., SULLIVAN, K. and MCKENNA, H. (2018) *The rising cost of medicines to the NHS What's the story?*
[Online] https://www.kingsfund.org.uk/sites/default/files/2018-04/Rising-cost-of-medicines.pdf. [Accessed 22/05/18].

FARRELL, B. et al. (2010) Shifts in expectations: Evaluating physicians' perceptions as pharmacists become integrated into family practice. *Journal of Interprofessional Care,* 24 (1), pp. 80-89.

FARRELL, B., DOLOVICH, L., AUSTIN, Z. and SELLORS, C. (2010)) Implementing a mentorship program for pharmacists integrating into family practice: practical experience from the IMPACT project team. *Can Pharm J,* 143(1), pp 28–36.

FREEMAN, C. et al. (2016) The practice pharmacist: a natural fit in the general practice team. *Australian Prescriber,* 39(6), pp. 211-214.

FREEMAN, C. et al. (2012) Integrating a pharmacist into the general practice environment: opinions of pharmacist's, general practitioner's, health care consumer's, and practice manager's. *BMC Health Services Research,*12, pp. 229.

GARFIELD, F.B. and CARO, J.J. (1999) Compliance and hypertension. *Current Hypertension Reports,*1 (6), pp. 502-506.

GENERAL PHARMACEUTICAL COUNCIL (2014) *Registrant survey 2013.*United Kingdom: MIT Press, 47.

GLADWELL, M. (2000) *The tipping point: how little things can make a big difference.* Boston, Little, Brown

GLASBY, J., MARTIN, G. and REGEN, E. (2008) Older people and the relationship between hospital services and intermediate care: results from a national evaluation. *Journal of Interprofessional Care,* 22 (6), pp. 639-649.

GLASBY, J., LITTLECHILD, R. and CAMPLING, J. (2004) *The health and social care divide: the experiences of older people.* Rev. 2nd ed. Bristol: Policy.

GLENDINNING, C. and COLEMAN, A. (2003) Joint Working: The Health Service Agenda. *Local Government Studies,* 29 (3), pp. 51-72.

GOFFIN, K. and KONERS, U. (2011) Tacit Knowledge, Lessons Learnt, and New Product Development. *The Journal of Product Innovation Management,* 28 (2).

GOODWIN, N and SMITH, **J** (2012). The evidence base for integrated care. The King's Fund and the Nuffield Trust. [Online] : http://www.nuffieldtrust.org.uk/sites/files/nuffield/evidence-base-for-integrated-care-251011.pdf. [Accessed 22/01/17].

GOODWIN, N. et al. (2012) *Integrated care for patients and populations: Improving outcomes by working together*. England: Kings Fund.
[Online] https://www.kingsfund.org.uk/sites/default/files/integrated-care-patients-populations-paper-nuffield-trust-kings-fund-january-2012.pdf. [Accessed 22/01/17].

GOODWIN N, CURRY N, NAYLOR C, ROSS S, DULDIG W (2010). Managing people with long-term conditions: The King's Fund.
[Online] https://www.kingsfund.org.uk/sites/default/files/field/field_document/managing-people-long-term-conditions-gp-inquiry-research-paper-mar11.pdf [Accessed 22/01/17].

GOSDEN, T. and TORGERSON, D.J. (1997) The effect of fundholding on prescribing and referral costs: a review of the evidence. *Health Policy (Amsterdam, Netherlands),* 40 (2), pp. 103-114.

GRÖNE, O., GARCIA-BARBERO, M. and WHO EUROPEAN OFFICE FOR INTEGRATED HEALTH CARE SERVICES. (2001) Integrated care: a position paper of the WHO European Office for Integrated Health Care Services. *International Journal of Integrated Care,* 1 (1).

GUBA, EG., & LINCOLN, YS. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), Handbook of qualitative research (pp 105-117). Thousand Oaks.CA. Sage

HALLAS, J et al. (1990) Drug related hospital admissions: the role of definitions and intensity of data collection, and the possibility of prevention *Intern Med*; 228, pp 83–90.

HEMSLEY, S. (2017) Pharmacists in GP practices: the role of the medicines management team (2017). *Pharmaceutical Journal.*[online]: [Online] https://www.pharmaceutical-journal.com/careers-and-jobs/careers-and-jobs/career-feature/the-medicines-management-team-a-sustainable-approach-to-pharmacist-and-gp-collaboration/20203611.article. [Accessed 28/01/17].

HEPLER, C.D. (2004) Clinical pharmacy, pharmaceutical care, and the quality of drug therapy. *Pharmacotherapy*, 24(11), pp 1491–1498.

HEPLER, C.D. and STRAND, L.M. (1990) Opportunities and responsibilities in pharmaceutical care. *American Journal of Hospital Pharmacy,* 47 (3), pp. 533-543.

HERR, K. and ANDERSON, G.L. (2015) *The action research dissertation: a guide for students and faculty*. 2nd ed. Thousand Oaks, California: SAGE.

HIGGINS, N. and REGAN, C. (2004) A systematic review of the effectiveness of interventions to help older people adhere to medication regimes. *Age and Ageing,* 33 (3), pp. 224-229.

 HOLLAND, D M. (2015) Interdisciplinary collaboration in the provision of a pharmacist-led discharge medication reconciliation service at an Irish teaching hospital. *Int J Clin Pharm,* 37(2), pp 310-9.

HOLLAND, R., DESBOROUGH. J., GOODYER. L., HALL,S., WRIGHT,D., YOON,K., LOKE,Y.K. (2007) Does pharmacist-led medication review help to reduce hospital admissions and deaths in older people? A systematic review and meta-analysis.

Journal of Clinical Pharmacology, 65(3), pp 303-316

HORNE, R., BARBER, N., ELLIOT, R., MORGAN, M. (2005) *Concordance, adherence and compliance in medicine taking*. England: NCCSDO.
[Online] http://data.theeuropeanlibrary.org/BibliographicResource/2000002480606.

HUGHES, C.M. and MCCANN, S. (2003) Perceived interprofessional barriers between community pharmacists and general practitioners: a qualitative assessment. *British Journal of General Practice,* 53 (493), pp. 600-606.

HUMPHRIES, R. (2015) Integrated health and social care in England – Progress and prospects. *Health policy,*119, pp. 856-859. [Online] https://ac.els-cdn.com/S0168851015001177/1-s2.0-S0168851015001177-main.pdf?_tid=2695e3a0-d2e1-41bc-96f5-2334842222c8&acdnat=1543395024_f1e5a19887d409e3d6f5ac075664392c[Accessed 22/01/17].

INSTITUTE FOR HEALTHCARE IMPROVEMENT *Institute for Healthcare Improvement: Medication Reconciliation to Prevent Adverse Drug Events*.
[Online] http://www.ihi.org:80/Topics/ADEsMedicationReconciliation/Pages/default.aspx [Accessed 08/05/18].

JOHRI, M., BELAND, F. and BERGMAN, H. (2003) International experiments in integrated care for the elderly: a synthesis of the evidence. *International Journal of Geriatric Psychiatry,* 18 (3), pp. 222-235.

JORGENSON, D. et al. (2014) Integrating pharmacists into primary care teams: barriers and facilitators. *The International Journal of Pharmacy Practice,* 22 (4), pp. 292-299.

KASSIANOS, A. et al. (2015) "Partners rather than just providers…": A qualitative study on health care professionals' views on implementation of multidisciplinary group meetings in the North-West London Integrated Care Pilot. *International Journal of Integrated Care,* 15 (3).

KING, G., KEOHANE, R.O. and VERBA, S. (1994) *Designing social inquiry: scientific inference in qualitative research*. Chichester; Princeton, New Jersey: Princeton University Press.

KINGS FUND (2011) [Online] https://www.kingsfund.org.uk/sites/default/files/improving-quality-of-care-general-practice-independent-inquiry-report-kings-fund-march-2011_0.pdf Accessed on 09/12/16]

KIRBY, S, L. and MCKENNA, K. (1989). Experience, research, social change: methods from the margins. Toronto. Garamond Press

KODNER, D.L. and SPREEUWENBERG, C. (2002) Integrated care: meaning, logic, applications, and implications – a discussion paper. *International Journal of Integrated Care,* 2 (4).

KRIPALANI, S., YAO, X., HAYNES, R.B. (2007) Interventions to enhance medication adherence in chronic medical conditions: a systematic review. *Archives of Internal Medicine,* 167 (6), pp. 540-550.

LAZAROU, J., POMERANZ, B.H. and COREY, P.N. (1998) Incidence of adverse drug reactions in hospitalized patients: a meta-analysis of prospective studies. *Jama,* 279 (15), pp. 1200-1205.

LEWIS G, CURRY, N. and BARDSLEY, M. (2011b) *Choosing a Predictive Risk Model: A guide for commissioners in England.* Nuffield Trust.

LLOYD, J., WAIT, S. (2005) Integrated Care. A Guide for Policymaker. In: *European Social Network Conference; Edinburgh, 5th of July 2015.* London: Alliance for Health and the Future.

LOW, L., YAP, M. and BRODATY, H. (2011) A systematic review of different models of home and community care services for older persons. *BMC Health Services Research,* 11, pp. 93.

LYMBERY, M. (1998) Care Management and Professional Autonomy: The Impact of Community Care Legislation on Social Work with Older People. *The British Journal of Social Work,* 28 (6), pp. 863-878.

MASNOON, N., et al. (2017) What is polypharmacy? A systematic review of definitions. *BMC Geriatrics,* 17 (17), pp. 2-10.

MASON, A.et al. (2015a) *Integrating funds for health and social care: an evidence review.* London, England: SAGE Publications. [Online] http://journals.sagepub.com/doi/full/10.1177/1355819614566832 [Accessed 27/02/18].

MAYOH, J. and ONWUEGBUZIE, A.J. (2015) Toward a Conceptualization of Mixed Methods Phenomenological Research. *Journal of Mixed Methods Research,* 9 (1), pp. 91-107.

MAYS, N. (2016). *Evaluation of the Integrated Care and Support Pioneers Programme: conclusions of the early evaluation and latest findings from the longer-term evaluation at King's Fund Integrated Care Summit 2016, 11 October 2016.* [Online] https://www.kingsfund.org.uk/sites/default/files/media/Nicholas_Mays_3B.pdf. [Accessed 27/01/17].

MCCUTCHEON, G., and JUNG, B. (1990). Alternative perspectives on action research. Theory into Practice, 29(3),144-151

MEAD, N. and BOWER, P. (2002) Patient-centred consultations and outcomes in primary care: a review of the literature. *Patient Education and Counseling,* 48 (1), pp. 51-61.

MELANIE BOUGHEN et al. (2017) Defining the Role of the Pharmacy Technician and Identifying Their Future Role in Medicines Optimisation. *Pharmacy* 5 (3), pp. 40. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5622352/

MITCHELL, G. (2014) Adherence to medications: Towards a shared understanding. *Nurse Prescribing,* 12 (11), pp. 564-568.

MITCHELL, P. et al. (2014) Core principles and values of effective team-based health care. *Journal of Interprofessional Care,* 28 (1), pp. 79-80.

MORAN, D. (2000) *Introduction to Phenomenology.* 1st ed. New York: Routledge Ltd - M.U.A.

MORGAN, DL. (1998) Practical Strategies for Combining Qualitative and Quantitative Methods: Applications to Health Research. [Online] https://journals.sagepub.com/doi/10.1177/104973239800800307 [Accessed 17/02/16].

MORSE JM. RN PhD (1991). Approaches to qualitative-quantitative methodological triangulation. Nursing *Research* (40), 2,120-123

MEDICAL RESEARCH COUNCIL. (2000) A framework for the development and evaluation of RCTs for complex interventions to improve health. London: MRC, 2000

MEKONNEN, A.B., MCLACHLAN, A.J., BRIEN, J.E. (2016) Pharmacy-led medication reconciliation programmes at hospital transitions: a systematic review and meta-analysis. *J Clin Pharm Ther* [Online]: http://onlinelibrary.wiley.com/doi/10.1111/jcpt.12364/full. [Accessed 18/03/17].

MORSE, JM. (1991) Approaches to qualitative-quantitative methodological triangulation. *Nursing Research*, (40) 2, pp. 120-123.

MULVALE, G., EMBRETT, MG., RASAVI, SD. (2016) *Gearing Up' to improve interprofessional collaboration in primary care: A systematic review and conceptual framework*. Family Practice 17(1)
[Online]: https://www.researchgate.net/publication/305480495_%27Gearing_Up%27_to_improve_interprofessional_collaboration_in_primary_care_A_systematic_review_and_conceptual_framework [accessed 28/11/18].

MURPHY, E. (2004) Case management and community matrons for long term conditions*. Bmj,* 329 (7477), pp. 1251-1252.

NAMAGEYO-FUNA, A et al. (2014) Recruitment in Qualitative Public Health Research: Lessons Learned During Dissertation Sample Recruitment. Qualitative Report. 19:4

NATIONAL CANCER REGISTRATION AND ANALYSIS SERVICE (2009). Multi-disciplinary Team (MDT) Development.[Online]. Available from http://www.ncin.org.uk/cancer_type_and_topic_specific_work/multidisciplinary_teams/mdt_development.[Accessed on 24/03/17].

NATIONAL COORDINATING COUNCIL FOR MEDICATION ERROR REPORTING AND PREVENTION. (2015) What is a medication error? New York, NY: National Coordinating Council for Medication Error Reporting and Prevention; [Online]: http://www.nccmerp.org/about-medication-errors. [Accessed 18/03/17].

 NATIONAL INSTITUTE OF CLINICAL EXCELLENCE (2015a) *Integrated Care Clinical Pharmacist for Frail Older People: Case Management and Enhanced Rapid Response*. [Online] https://www.nice.org.uk/sharedlearning/integrated-care-clinical-pharmacist-for-frail-older-people-case-management-and-enhanced-rapid-response [Accessed 18/03/18].

NATIONAL INSTITUTE OF CLINICAL EXCELLENCE (2015b) *Integrated care clinical Pharmacist GSTT@home service*.
[Online] https://www.nice.org.uk/sharedlearning/integrated-care-clinical-pharmacist-gstt-home-service [Accessed 18/03/18].

NATIONAL INSTITUTE OF CLINICAL EXCELLENCE (2015c) *Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes | Guidance and guidelines | NICE*. [Online] https://www.nice.org.uk/guidance/ng5 [Accessed 18/03/17].

NATIONAL INSTITUTE OF CLINICAL EXCELLENCE (2015d) *Older people with social care needs and multiple long-term conditions | Guidance and guidelines | NICE.* [Online] https://www.nice.org.uk/guidance/ng22 [Accessed 18/03/ 17].

NATIONAL VOICES (2016) *Principles for integration* England: National voices. [Online] https://www.nationalvoices.org.uk/sites/default/files/public/publications/principles_for _integrated_care_20111021.pdf [Accessed 28/05/16].

NATIONAL VOICES (2013) *Narrative for person centred coordinated care.* England [Online] https://www.nationalvoices.org.uk/sites/default/files/public/publications/narrative-for-person-centred-coordinated-care.pdf [Accessed 28/06/16].

NEILSON, A.R. et al. (2015) Pharmacist-led management of chronic pain in primary care: costs and benefits in a pilot randomised controlled trial. *BMJ Open,* 5 (4), pp. e006874.

NHS (2016) *NEW CARE MODELS: Vanguards - developing a blueprint for the future of NHS and care services.* London: NHS England. [Online] https://www.england.nhs.uk/wp-content/uploads/2015/11/new_care_models.pdf [Accessed 28/06/17].

NHS (2014) *Five Year Forward View.* England. Available at https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf. [Accessed 29/06/17].

NHS DIGITAL (2018). Prescribing Costs in Hospitals and the Community England 2017/18 https://files.digital.nhs.uk/4E/6B214D/hosp-pres-eng-201718-report_v2.pdf [Accessed 29/02/18]

NHS DIGITAL (2016) Prescriptions Dispensed in the Community, Statistics for England - 2005-2015 - NHS Digital. [Online] https://digital.nhs.uk/catalogue/PUB20664 [Accessed 15/03/18].

NHS DIGITAL (2014) *Hospital Prescribing: England, 2013-14.* [Online] https://digital.nhs.uk/data-and-information/publications/statistical/hospital-prescribing/hospital-prescribing-england-2013-14 [Accessed 22/04/18].

NHS DIGITAL (2013) *Prescriptions Dispensed in the Community, Statistics for England - 2002-2012 - NHS Digital.* [Online] https://digital.nhs.uk/catalogue/PUB11291 [Accessed 18/03/18].

NHS ENGLAND (2018) Making the case for personalised care. Weblog[Online]. 25th January. Available from https://www.england.nhs.uk/blog/making-the-case-for-the-personalised-approach/. [Accessed 29/02/18].

NHS ENGLAND (2016) *People helping people: Year two of the pioneer programme* [Online] https://www.england.nhs.uk/pioneers/wp-content/uploads/sites/30/2016/01/pioneer-programme-year2-report.pdf[Accessed 29/06/17].

NHS ENGLAND (2014). *MDT Development - Working toward an effective multidisciplinary/multiagency team.* [Online] https://www.england.nhs.uk/wp-content/uploads/2015/01/mdt-dev-guid-flat-fin.pdf [Accessed 20/09/15].

NHS ENGLAND (2013) *Integrated Care: Our Shared Commitment - GOV.UK.* [Online] https://www.gov.uk/government/publications/integrated-care [Accessed 18/03/18].

NHS ENGLAND. *Better Care Fund*
[Online] https://www.england.nhs.uk/ourwork/part-rel/transformation-fund/bcf-plan/
[Accessed 18/04/17].

O'MAHONY, D. et al. (2015) STOPP/START criteria for potentially inappropriate prescribing in older people: version 2*. Age and Ageing,* 44 (2), pp. 213-218.

OLSON, B, D., AND JASON, L.A. (2015) Participatory Mixed Methods Research
The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry
Ed. Sharlene Nagy Hesse-Biber and R. Burke Johnson

ONG, G. et al. (2017) Clinician agreement and influence of medication-related characteristics on assessment of polypharmacy*. Pharmacology Research & Perspectives,* 5 (3), pp. n/a.

OSTERBERG, L. and BLASCHKE, T. (2005) Adherence to medication*. The New England Journal of Medicine,* 353 (5), pp. 487-497.

PARAND, A. et al. (2016) Carers' Medication Administration Errors in the Domiciliary Setting: A Systematic Review*.,* 11 (12), pp. e0167204.

PATTON, M.Q. (1990) Qualitative evaluation and research methods (2nd ed.). Newbury Park, CA: Sage.

PHELPS, A.et al. (2014) *GPHC registrant survey 2013 main report* [Online] https://www.pharmacyregulation.org/sites/default/files/gphc_registrant_survey _2013_main_report_by_natcen.pdf. [Accessed 26/11/16].

PIRMOHAMED, M. et al. (2004) Adverse drug reactions as cause of admission to hospital: prospective analysis of 18 820 patients. *BMJ (Clinical Research Ed.),* 329 (7456), pp. 15-19.

POLICY INNOVATION RESEARCH UNIT (2017). *Evaluation of the Integrated Care and Support Pioneers Programme (2015-2020). Results from the first survey (spring 2016) of Pioneer key informants.* [Online]
https://piru.lshtm.ac.uk/assets/files/First%20key%20informant%20survey%20report.pdf
[Accessed 26/02/18].

POPE, C. and MAYS, N. (2006) *Qualitative research in health care*. 3rd ed. Oxford: Blackwell Publishing.

POTTIE, K et al. (2009) Pharmacist's identity development within multidisciplinary primary health care teams in Ontario; qualitative results from the IMPACT project. *Res Social Adm Pharm*, 5(4), pp 319–326.

PUGH, S. R., MEANS, H., MORBEY AND R. SMITH. (2003) *From Community Care to Market Care: The Development of Welfare Services for Older People*, Policy Press, Bristol, 2002, 202 pp.

RAND EUROPE, ERNST AND YOUNG, LLP. (2012) National evaluation of the DH integrated care pilots. [Online] www.rand.org/randeurope/research/projects/integrated-care-pilots.html. [Accessed 23/03/15].

REASON, P. and BRADBURY, H. (2008) *The SAGE handbook of action research: participative inquiry and practice*. 2nd ed. London: SAGE

ROUGHEAD, L., SEMPLE, S. and ROSENFELD, E. (2013) *Literature Review: Medication Safety in Australia*. Australia: Australian Commission on Safety and quality in healthcare.

ROUGHEAD EE, BARRAT JD, RAMSAY E, PRATT N, RYAN P, PECK R, KILLER G, GILBERT AL. (2009). The effectiveness of collaborative medicine reviews in delaying time to next hospitalisation for heart failure patients in the practice setting: results of a cohort study. *Circulation-Heart Failure*, 2, pp 424–8.

ROYAL PHARMACEUTICAL SOCIETY (2013) Medicines optimisation; Helping patients to make the most of medicines*. Primary Health Care,* 23 (3), pp. 22.

SALAZAR-OSPINA, A. et al. (2012) Clinical pharmacy, pharmaceutical care: concepts, philosophy, professional practice and its application to the colombian context/farmacia clínica, atención farmacéutica: conceptos, filosofía, práctica profesional y su aplicación en el contexto colombiano*,19 (1), pp.* 109. [Online] http://aprendeenlinea.udea.edu.co/revistas/index.php/vitae/article/view/7108/10662 [Accessed 26/06/17].

SANDELOWSKI, M. (1995). Sample size in qualitative research. *Research in Nursing & Health*, 18(2), pp 179-183.

SANDERSON, J. and WHITE. (2018) Making the case for the personalised approach [Blog]Speakers at Long Term conditions (LTC) Summit at the QEII in London [Online]:https://www.england.nhs.uk/blog/making-the-case-for-the-personalised-approach/ [Accessed 29/01/18].

SAN MARTÍN-RODRÍGUEZ, L. et al. (2005) The determinants of successful collaboration: a review of theoretical and empirical studies. *Journal of Interprofessional Care,* 19 Suppl 1, pp. 132-147.

SAŠA, J. (2016) *All you need to know about GP practice pharmacists*: Pharmaceutical. Available from: https://www.pharmaceutical-journal.com/careers-and-jobs/careers-and-jobs/career-feature/all-you-need-to-know-about-gp-practice-pharmacists/20201042.article [Accessed Jun 26/06/ 18].

SAUNDERS, M., LEWIS, P. and THORNHILL, A. (2015a) *Research methods for business students*. Seventh; 7 ed. Harlow: Pearson Education.

SAUNDERS, M., LEWIS, P. and THORNHILL, A. (2015b) *Research methods for business students*. Seventh; 7 ed. Harlow: Pearson Education.

SAW, P.S. et al. (2015) Health care consumers' perspectives on pharmacist integration into private general practitioner clinics in Malaysia: a qualitative study*. Patient Preference and Adherence,* 9, pp. 467-477.

SCHADEWALDT, V., MCINNES, E., HILLER, JE., GARDNER, A. (2013) Views and experiences of nurse practitioners and medical practitioners with collaborative practice in primary health care - an integrative review. *BMC Fam Pract*. 14(1), pp 132. [Online] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3846155/ [Accessed 22/02/16].

SCOTTISH GOVERNMENT POLYPHARMACY MODEL OF CARE GROUP. (2018) Polypharmacy Guidance, Realistic prescribing 3rd Edition. Scottish Government. [Online] https://www.therapeutics.scot.nhs.uk/wp-content/uploads/2018/09/Polypharmacy-Guidance-2018.pdf [Accessed 18/09/18].

SHAH, S.N.H., ASLAM, M. and AVERY. (2001) A survey of prescription errors in general practice *Pharmaceutical Journal*, 267, pp 860–862.

SHAW, S., ROSEN, R. and RUMBOLD, B. (2011) *What is integrated care? An overview of integrated care in the NHS* England: Nuffield Trust. [Online] https://www.nuffieldtrust.org.uk/files/2017-01/what-is-integrated-care-report-web-final.pdf [Accessed 29/01/18]

SHARMA, R. (2016) Overview.
[Online] *https://www.myhealth.london.nhs.uk/system/files/CS05_Pharmacists%20in%20general%20practice_RaviSharma.pdf.*
[Online] https://www.myhealth.london.nhs.uk/system/files/CS05_Pharmacists%20in%20general%20practice_RaviSharma.pdf [Accessed 24/01/18].

SHARMA, R. (2015). *Helping newly registered pharmacists to work in general practice.* *Pharm J* ,294 (7848) [Online] https://www.pharmaceutical-journal.com/careers-and-jobs/career-qa/helping-newly-registered-pharmacists-to-work-in-general-practice/20067630.article[Accessed 18/03/18].

SHAW, J et al. (2002) *Room for Review Medication review.* United Kingdom)
[Online] http://myweb.tiscali.co.uk/bedpgme/CG/Room%20for%20Review%20-%20Medication%20review.pdf [Accessed 22/02/18].

SILCOCK, J., RAYNOR, D.K., PETTY, D. (2004) The organisation and development of primary care pharmacy in the United Kingdom. Health Policy 67(2), pp 207–214.

SILVERMAN, D. (2006) *Interpreting qualitative data: methods for analyzing talk, text and interaction.* 3rd ed. London: SAGE.

SMITH, F. (2010). *Conducting your pharmacy practice research.* 2nd ed. Great Britain: Pharmaceutical Press

SMITH, J., PICTON, C. and MARK DAYAN, D. (2014) *Now more than ever Why pharmacy needs to act.* Online https://www.nuffieldtrust.org.uk/files/2017-01/now-more-than-ever-web-final.pdf [Accessed 22/02/17].

STEEDMAN, P. (1991) On the relations between seeing, interpreting and knowing. In F. Steier (ed.) Research and Reflexivity London: Sage

STEIN, K.V. and REIDER, A. (2009) Integrated care at the crossroads – defining the way forward, *International Journal of Integrated Care* 9, pp 1–7.

STEVENSON, F.A. (2011) Concordance: what is the relevance for pharmacists? *International Journal of Pharmacy Practice,9(2)*

STEWART-BROWN, S. et al. (1995) The effects of fundholding in general practice on prescribing habits three years after introduction of the scheme. *BMJ Clinical Research,* 311 (7019), pp. 1543-1547.

STONE, M.C. and WILLIAMS, H.C. (2015) Clinical pharmacists in general practice: value for patients and the practice of a new role*. The British Journal of General Practice:* 65 (634), pp. 262-263.

STRAND, L.M. et al. (1990) Drug-related problems: their structure and function*. DICP: The Annals of Pharmacotherapy,* 24 (11), pp. 1093-1097.

TAN, E.C.K. et al. (2013) Stakeholder experiences with general practice pharmacist services: a qualitative study. *BMJ Open,* 3 (9), pp. e003214.

TASHAKKORI, A. & TEDDLIE, C. (2003). Handbook of Mixed Methods in Social &. Behavioral Research. Thousand Oaks: Sage. Creswell, J. (2003)

TASHAKKORI, A. and TEDDLIE, C. (1998) *Mixed methodology: combining qualitative and quantitative approaches*. Thousand Oaks, Calif; London: Sage.

TASK FORCE ON MEDICINES PARTNERSHIP AND THE NATIONAL COLLABORATIVE MEDICINES MANAGEMENT SERVICES PROGRAMME. (2002) Room for review. A guide to medication review: the agenda for patients, practitioners and managers. London; Medicines Partnership. Available on http://www.cff.org.br/userfiles/52%20-%20CLYNE%20W%20A%20guide%20to%20medication%20review%202008.pdf. [Accessed 20/09/16].

TEDDLIE, C. and TASHAKKORI, A. (2009) *Foundations of mixed methods research: integrating quantitative and qualitative approaches in the social and behavioral sciences*. Thousand Oaks, CA; London: SAGE.

THE INSTITUTE OF HEALTHCARE IMPROVEMENT (2011) How-to Guide: Prevent Adverse Drug Events by Implementing Medication Reconciliation. 2011. http://www.ihi.org [Accessed 20/09/16].

THOMSON O'BRIEN, M.A. et al. (2000) Educational outreach visits: effects on professional practice and health care outcomes. *The Cochrane Database of Systematic Reviews,* (2), pp. CD000409.

THORNHILL, J., DAULT, M., CLEMENTS, D. (2008) CHSRF Knowledge Transfer: Ready, Set … Collaborate? The Evidence Says "Go," So What's Slowing Adoption of Inter-Professional Collaboration in Primary Healthcare? *Healthcare Quarterly,* 11 (2), 14-6. [Online] https://www.longwoods.com/content/19609 [Accessed 21/10/16].

TOMLINS, F.G. (1964b) The Gillie Report. *British Medical Journal,* 1 (5378), pp. 305.

TWEEDIE, A. and Jones, I. (2001) What is medicines management? *Pharm J,* 2(**266**), pp 248

VAN MANEN, M. (1990) *Researching lived experience: Human science for an action sensitive pedagogy*. Albany: STATE UNIV. OF NEW YORK Pr.

WEISS, K.B. (2007) Managing complexity in chronic care: an overview of the VA state-of-the-art (SOTA) conference. *Journal of General Internal Medicine,* 22 Suppl 3, pp. 374-378.

WELSH GOVERNMENT (2017) *An annual report including information on prescription items dispensed and net ingredient cost.* [Online] http://gov.wales/statistics-and-research/prescriptions-general-medical-practitioners/?lang=en [Accessed 21/01/17].

WILLUMSEN, E., AHGREN, B. and ØDEGÅRD, A. (2012) A conceptual framework for assessing interorganizational integration and interprofessional collaboration. *Journal of Interprofessional Care,*26 (3), pp. 198-204.

WINTLE, H. (2017) Letters to the Editors. *IEEE Electrical Insulation Magazine,* 33 (4), pp. 6.

WORLD HEALTH ORGANISATION EUROPEAN OFFICE FOR INTEGRATED HEALTH CARE SERVICES (2001). *Integrated Care. Working Definition*

WORLD HEALTH ORGANISATION. (2016) Medication error.
[Online] http://apps.who.int/iris/bitstream/handle/10665/252274/9789241511643-eng.pdf;jsessionid=67B5035909944DC2F835D2BE27833ED7?sequence=1 [Accessed 21/01/17].

WORLD HEALTH ORGANISATION REGIONAL OFFICE FOR EUROPE. (2016) *Integrated care models: an overview.*
[Online] http://www.euro.who.int/__data/assets/pdf_file/0005/322475/Integrated-care-models-overview.pdf [Accessed 21/01/17].

WORLD HEALTH ORGANISATION (2003a) *Adherence to long term therapies. Evidence for action.* Switzerland: WHO.
[Online] http://www.who.int/chp/knowledge/publications/adherence_full_report.pdf [Accessed 21/01/2018].

WORLD HEALTH ORGANISATION (2003b) *Adherence to long-term therapies: evidence for action.* London, England: Elsevier.
[Online] http://apps.who.int/medicinedocs/en/d/Js4883e/2.html. [Accessed 22/12//2016].

YORK HEALTH ECONOMICS CONSORTIUM, UNIVERSITY OF YORK, AND THE SCHOOL OF PHARMACY, UNIVERSITY OF LONDON (2010). *Evaluation of the Scale, Causes and Costs of Waste Medicines.* York: University of York and London: School of Pharmacy, University of London. [Online] www.pharmacy.ac.uk/ lead-in/documents/News/Evaluation_of_NHS_Medicines_Waste__web_ publication_version.pdf [Accessed 15/01/17]

ZERMANSKY AG, SILCOCK J. (2009) Is medication review by primary care pharmacists cost effective? Pharmacoeconomics. 27:11–24.

ZERMANSKY, A.G., and SILCOCK, J. (2001) Is medication review by primary – care pharmacists for older people cost effective? A narrative review of the literature, focusing on costs and benefits. *Pharmacoeconomics.* 27 (1), pp 11-24.

ZERMANSKY, A.G. et al. (2001) Randomised controlled trial of clinical medication review by a pharmacist of elderly patients receiving repeat prescriptions in general practice. *BMJ (Clinical Research Ed.),* 323 (7325), pp. 1340-1343.

ZERMANSKY AG. (1996) Who controls repeats? *Br J Gen Pract.* (46)643–7.

Appendix 1

Outline of pathway of Integrated Care Pharmacist's key role

Pharmacist Role in Integrated Care Pilot

Co-ordinator interaction with patient identifies need for medication review

GP or other member of Integrated Care Team identifies need for medication review

Referral made by emailing a prompt for the pharmacist to call the referring member of ICT staff

Appointment arranged with patient (if applicable carer/relative to be present)

Referral for medication review may be prompted by:

- Patient expressing a desire to have better understanding of medicines or expressing concerns over medicines

-Patient showing signs of confusion or non-compliance over medicine taking

-Patient unable to manage medicines due to physical problems e.g. removing medicine from packaging or managing to use inhalers etc

-Patient complaining about unwanted effects of medicines

Patient notes accessed for BT results, medication lists, relevant letters, READ coded diagnoses.

Face to face medication review with patient is conducted, giving the patient the opportunity to discuss all their medications, how they take them, how they order and receive them, what their beliefs are about medication taking, what they understand about risks and benefits. It is also an opportunity to identify any OTC medicines being taken and see if there is any stock piling of medicines or out of date medicines in the patients home.

Any suggested changes are agreed with patient and unwanted medicines removed from patients home for disposal (with consent)

Unwanted medicines taken to community pharmacist for disposal (signature obtained)

Pharmacist records the review in the patients notes, tidies up record. If applicable the pharmacist will liaise with the integrated care GP about any suggested medication changes, or liaise with the co-ordinator for the patient case to be discussed at next MDT meeting.
Medication review paperwork may be scanned onto GP clinical system

Follow up to medication changes is managed by pharmacist or GP as appropriate

Appendix 2

Template of integrated care pharmaceutical care plan

Appendix 2: Template of integrated care pharmaceutical care plan

Pharmacist Medication Review Record & Plan (Pharmaceutical Care Plan)

Name and NHS Number	xxx	GP Practice	xxx
Address	xxx	Pharmacist Completing Review	xxx
Community Pharmacist Address	xxx	Date of Review	
Current Medical Problems			
Recent Monitoring (U+Es, LFTs, Lipids, BP etc)			
Known allergies/sensitivities/contra-indications			

Medication

Medicine	Dose and frequency	Understanding of medicine purpose	Problems experienced

* These tablets are no longer prescribed

<u>Comments</u>

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Patient Understanding of Medicines

Question	Y/N	Comments
		143
Do you take all the medicines listed?		
Do you administer your medicines yourself or does someone help or prompt you?		
Do you know what each medicine is for?		
Are you taking any other medicines not prescribed by your doctor? E.g. OTC medicines or herbal remedies.		
Are you taking any medicines prescribed and supplied by the hospital?		
Where do you keep your medicines in the home?		
Do you have a green bag? (supply one with an explanation if the patient does not have one)		
Do you have any medicine in the home that you no longer use? (medicines that have been stopped or that the patient could not tolerate)		
Do you have too many of some medicines and not enough of others? (synchronise medicines where possible)		
Do you have any specific concerns about your medicines?		

Additional comments
(Are there any signs/symptoms which need to be brought to the attention of the GP?)

Access Issues

Question	
How do you order and collect prescriptions?	
Do you remember to order your medicines?	
Have you recently run out of any medicines?	
Do you order all of your medicines together or at different times?	
Do you use a regular pharmacy for all your prescriptions?	
How do you order and collect your prescriptions from the surgery?	
Does the pharmacy order your prescriptions for you? (record detail of how this works)	
Do you collect your medicines from the pharmacy or are they collected by someone else?	
Does your pharmacist deliver your medicines?	

Comments

Actions required	Y/N	Intervention Score	Actions required	Y/N	Intervention Score
Prescription ordering service?			Prescription delivery service?		
Prescription collection service?			Prescription synchronisation?		
Other (specify)?					

Physical Issues

Can you read all the labels on your medicines?	
Can you open the containers?	
Can you push tablets or capsules out of blister packs, pick up small tablets, halve tablets?	
Can you measure liquid medicines?	
Can you use eye drops and inhalers correctly? (demonstrate)	
Can you swallow your medicines without difficulty?	

Compliance Aids

Do you ever forget to take your medicine?	
What methods do you use to help you remember to take your medicines?	
Does anyone help you to take your medicines? Who?	
Does the person who helps you with your medicines remind you to take it? Or actually give it to you?	
Is the person who helps you available every day? (Evenings and weekends covered?)	
Do you have a compliance aid already? What type is it and who fills it?	
Who initiated use of the compliance aid?	
Check state of compliance aid (clean, labelled etc?)	
What about any medicines that are unstable in a compliance aid? (see list)	

Comments

Actions required	Y/N	Intervention Score	Actions required	Y/N	Intervention Score
Link medication to daily routine?			Supply medication reminder chart?		
Supply medication administration records?			Supply medicine in multi-compartment compliance aid?		
Other (specify)?					

Review recommendations for GP approval

	Recommendation and rationale	Agreed by GP? (initial and date)	Intervention Score
1			
2			
3			
4			
5			

GP and reviewing pharmacist verification

GP Signature	Date
Pharmacist Signature	Date
Next Review Due (6 months if >75 and on 4+medications, 12 months if <75)	

Additional Information

Referral received	
Patient Contacted	
Medication Review Completed	
Recommendations agreed and actioned and review recorded on GP clinical system	
Follow up completed (if applicable) Delivered Dossette and explained use.	

Costs/savings associated with recommendations

Total costs/savings associated with recommendations agreed

Value of medicines removed for disposal

Date: _____

Name of Pharmacist: _____

Name of Coordinator: _____

Name of GP: _____

Appendix 3

Template of medicines record and reminder chart for integrated care patient

Appendix 3: Template of medicines record and reminder chart for integrated care patient

INTEGRATED CARE PATIENT MEDICINES RECORD CHART

Patient Name _____**Date completed** _____**Review Date** _____

Name, strength and form of medicine	What it's for	How much to take & when				Comments
		Breakfast	Dinner	Tea	Bed time	

If your medication is interfering with your daily life, ask if it is possible to change the type or dose to suit you.
If you have any questions about your medicines ask your doctor or pharmacist.

Appendix 4

Staff participant information leaflet

DE MONTFORT UNIVERSITY LEICESTER

STAFF PARTICIPANT INFORMATION SHEET
Version 4
08th January 2016

Version Number	Date	Comments (descriptions of changes and amendments
Version 2	14/12/2015	Version 1 annotated as per request in REC conditional approval letter 27/11/2015
Version 3	21/12/2015	Version 2 -annotated with comments in response to REC email 17/12/ 2015
Version 4	08/01/16	Comments for REC on version 3 removed and information re use of quotes as per REC request added

Title of Project:
An Action Research evaluation of the contribution to patient care, made by a pharmacist within an Integrated Care Model.

Name of Investigator: Phyllis Navti

Job Titles: Head of Prescribing, East Leicestershire and Rutland CCG & part time Senior Lecturer, De Montfort University

Who is organising and funding the research?
The research is not funded by any organisation. It is being undertaken as part of a doctorate degree in pharmacy practice which is paid for by De Montfort University of Leicester , where the main researcher works as a Senior Lecturer in Pharmacy Practice and Clinical Pharmacy

Invitation paragraph
You have been invited to take part in a research study. Before you decide whether to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Ask me if there is anything that is not clear or if you would like more information.
Please take time to decide whether you wish to take part or not.

Thank you for reading this.

What is the study about?
Patients with long term conditions make up 70% of the government overall spend on health and care. These patients receiving care in the community, often state that they do not feel as if they are treated as a whole person because treatment is usually focused on individual diseases and the NHS teams and social carers do not often communicate with each other or work together. It is proposed that the outcome for these patients will be better if their care is coordinated, integrated and holistic across general practitioner teams and social care, instead of the current fragmented care.

It is also proposed that this coordination should include medication because most patients will be on several medications. It is important that the patients and everyone providing care for them know and understand the basics of what medication the patient is taking. It is therefore proposed following a pre-pilot, that a pharmacist as part of the integrated care team can undertake medication reviews and support the patient and other members of the multidisciplinary team with information/advice regarding medication. However, the best way for the pharmacist to provide this support and how the support should be measured is not yet determined for East Leicestershire and Rutland Health and Social Care.

Therefore, you are being asked to take part in this study which will help understanding and development of the role of the integrated care pharmacist across East Leicestershire and Rutland Clinical Commissioning Group and social care. The study will also seek to understand the implications of rolling it out and develop a process for evaluation of the role.

What does the study involve?
The study will include one interview session lasting approximately 30-45 minutes and an invitation to attend a focus group a few months later.
During the interview you will be asked about your experience of the role of a pharmacist as part of the integrated care team. You will also be asked for any suggestions you might have about developing and evaluating the role. The information you provide at the interview will be used to develop a data collection tool to collect data that will be discussed during the focus group.
The interview will be at a location convenient for you e.g. a meeting room in your workplace or a base nearby.

All those who take part in an interview will be invited to attend a focus group at a future date at an NHS or social care venue, if they wish. The focus group will take place a few months after and will also be organised to take place in a meeting room at either an NHS or social care office. It is envisaged that the focus group would last for 60-90 minutes and drinks and snacks will be provided.

Why have I been invited?
You have been invited because you have worked alongside the pharmacist to provide integrated care to patients

Do I have to take part?
It is up to you to decide whether to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign the consent form attached. If you decide to take part you are still free to withdraw at any time before data analysis has started, without giving a reason. Please note that there are limits of confidentiality as specified below

Will my taking part in this study be kept confidential?
Care will be taken to ensure that all the data protection requirements are fulfilled in the following way
  • Only required data will be assessed and this will be anonymized as much as possible and data will be stored in encrypted sticks and locked in secure offices accessible only to chief investigator and her supervisor.

  • Direct identifiers will be kept to a minimum and will be separated from any traceable information. These identifiers will be destroyed in the long run and only fully anonymized data will held for the required duration.

  • Transcripts derived from audio recorded files from the interview and focus group will be edited to ensure that participants' names are removed or replaced by coded identifiers or pseudonyms of the participants. The audio record files will be locked up in the Chief Investigators (CI) NHS secured office in a drawer which will only be accessible by the CI.
  • The data will only be kept for the minimum period necessitated by the academic requirements

- Only Anonymous data will be shared if required for research purpose and only for the following reasons

  - ✓ to ensure that research is open to peer scrutiny

  - ✓ to optimise the use of good quality research data

  - ✓ to support policy and other decision-making

The write up will not reference any comments to the professional to ensure that views remain anonymous considering the small numbers.

Please be aware that confidentiality cannot be maintained if you provide information where disclosure is in the overriding public interest or where there is a legal duty to disclose, for example by court order and where there is a statutory basis which permits disclosure. Please be reassured that you will be notified in the case of any disclosure if there is any risk to yourself or others.

I am interested in taking part, what do I do next?
Participants will be accepted on a first come first served basis although the chief investigator will use her judgment in order to obtain a balanced representation of participants, for example by gender, length of work experience and professional background.

If you are interested in taking part and would first like to discuss your involvement with the researcher, please contact Mrs Navti by telephone or email (see details at end of this information sheet). On the other hand, if you feel that you are already fully informed about the study, please sign and return the enclosed consent form.

Via post:

Please complete the attached consent form, put it in the attached envelop and either hand it to the coordinator (for GP and nurse participants) or post it using the stamped and addressed envelope to

Phyllis Navti
East Leicestershire and Rutland CCG
Bridge Park Road
Thurmaston LE4 8BL

OR

Via Email
Please email a request for an electronic version to
Phyllis.navti@eastleicestershireandrutlandccg.nhs.uk Please complete the electronic consent form and email to *Phyllis.navti@eastleicestershireandrutlandccg.nhs.uk*

What if I agree to take part and then change my mind?
You can withdraw from the study at any time before data analysis starts, without giving a reason.

What are the possible disadvantages and risks of taking part?
There are no disadvantages or risks apart from the time you provide when you take part in the interview and focus group.

What are the possible benefits of taking part?
You may help to improve the way integrated care is delivered across East Leicestershire and Rutland so that it is done in a truly multidisciplinary and integrated way.

What if something goes wrong? / Who can I complain to?
If you have a complaint regarding anything to do with this study, you can initially approach the lead investigator. If this achieves no satisfactory outcome, you should then contact the Administrator for the Faculty Research Ethics Committee, Research & Commercial Office, Faculty of Health & Life Sciences, 1.25 Edith Murphy House, De Montfort University, The Gateway, Leicester, LE1 9BH or hlsfro@dmu.ac.uk

What will happen to the results of the study?
The results could be submitted for publication or used in a report. Some of the data will inform a focus group of health and social care workers and patients. A summary of the final results will also be sent to you for your information. Non-identifiable quotes may be published in articles or used in conference presentations.

Who has reviewed the study?
This study has been reviewed and approved by De Montfort University, Faculty of Health and Life Sciences Research Ethics Committee and the NHS Research Ethics committee
Contact for Further Information
Phyllis Navti
Email: Phyllis.navti@eastleicestershireandrutlandccg.nhs.uk
Phone: 01162955168

Thank you for reading this information and for considering taking part in the study.

Please complete the attached consent form if you would like to take part.

Appendix 5

Staff participant consent form

Appendix 5: Staff participant consent form

DE MONTFORT UNIVERSITY LEICESTER

STAFF CONSENT FORM
Version 3
08th January 2016

Version Number	Date	Comments (descriptions of changes and amendments
Version 2	21/12/2015	Version 1 with changes as per request in REC conditional approval letter 27/11/2015 and REC email 17/12/ 2015 and option to send completed form via email
Version 3	**08/01/2016**	Tracked changes for REC accepted and imbedded

Title of project:
An Action Research evaluation of the contribution to patient care made by a pharmacist within an Integrated Care Model

Name of researcher: Phyllis Navti

Please initial all boxes if you agree

1. I confirm that I have read and understood the information sheet [version 3 January 2016] for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

2. I understand that my participation is voluntary and that I am free to withdraw ☐

   at any time without giving any reason.

3. I agree that non-identifiable quotes may be published in articles or used in conference presentations. ☐

4. I agree to the interview being digitally audio recorded ☐
   (The transcripts derived from audio recorded files from the interview and focus group will be edited to ensure that participants' names are removed or replaced by coded identifiers or pseudonyms of the participants)

5. I understand that data collected during the study may be looked at by a Supervisor from De Montfort University. ☐

6. I agree to take part in this study ☐

_____   _____   _____
Print name of participant   Date   Signature

_____
Telephone Number of participant

_____   _____   _____
Print name of person taking consent   Date   Signature

Thank you for completing the consent form.
Please either

1) Send via Post

Place completed form in the attached envelop and hand to the coordinator (for GP and nurse participants) or post using the stamped and addressed envelope to

Phyllis Navti
East Leicestershire and Rutland CCG
Bridge Park Road
Thurmaston LE4 8BL

OR

2) Send via email

By requesting an electronic version by emailing
Phyllis.navti@eastleicestershireandrutlandccg.nhs.uk and then completing the electronic consent form and emailing to Phyllis.navti@eastleicestershireandrutlandccg.nhs.uk

Appendix 6

Patient participant information leaflet

![De Montfort University Leicester logo]

PATIENT PARTICIPANT INFORMATION SHEET
Version 4
08th January 2016

Version Number	Date	Comments (descriptions of changes and amendments
Version 2	14/12/2015	Version 1 annotated as per request in REC conditional approval letter 27/11/2015
Version 3	21/12/2015	Version 2 -annotated with comments in response to REC email 17/12/ 2015
Version 4	08/01/16	Comments for REC on version 3 removed and information re use of quotes as per REC request added

Title of Project:
An Action Research evaluation of the contribution to patient care made by a pharmacist within an Integrated Care Model.

Name of Investigator: Phyllis Navti

Job Titles: Head of Prescribing, East Leicestershire and Rutland Clinical Commissioning Group & part time Senior Lecturer, De Montfort University

Who is organising and funding the research?
The research is not funded by any organisation. It is being undertaken as part of a doctorate degree in pharmacy practice which is paid for by De Montfort University of Leicester , where the main researcher works as a Senior Lecturer in Pharmacy Practice and Clinical Pharmacy

Invitation paragraph
You have been invited to take part in a research study. Before you decide whether to take part, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. Ask me if there is anything that is not clear or if you would like more information.

Take time to decide whether you wish to take part or not.

Thank you for reading this.

What is the study about?
The study is about getting the views and opinions of patients and staff, to help understand and develop the role of the pharmacists who work as part of the integrated care team, across East Leicestershire and Rutland Clinical commissioning group and social care.

What is the integrated care team?
The Integrated Care Team is a group of GPs, nursing staff, a pharmacist, health & social care coordinators and administrators who look after patients to help them stay well for longer and avoid the need for hospital care. The team develops a personal plan to meet specific needs of patients. The team also:

o   Tries to help to resolve any issues that are preventing patients from staying well

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- o Provide patients with information about self-help groups, so that they can meet others in similar situations

- o Refer patients to local services that can help them care better for themselves, including:
  - ✓ Education about long term conditions
  - ✓ Information about lifestyle choices
  - ✓ How to get the right equipment to keep independent
  - ✓ How to manage medicine

By looking after patients in this way we can make sure that patient needs are taken care of quicker, while reducing the amounts of visits by different people.

Why is the study important?
Patients with long term conditions receiving care in the community are stating that they do not feel as if they are treated as a whole person. This is because treatment is usually focused on individual diseases and social needs and the National Health Service (NHS) and social carers do not often communicate with each other or work together. Patients could end up receiving several phone calls or visits about a single condition instead of one single contact to look after all their needs. It is proposed that the benefits for patients will be improved by integrated care which is described above.

It is also proposed that this coordination should include medication because most patients will be on several medications. It is important that the patients and everyone caring for them know and understand the basics of what medication the patient is taking. It is proposed that a pharmacist as part of the team could link patient care by reviewing all medication the patient is taking and support the patient and other carers with advice regarding the medication. However, the best way for the pharmacist to provide this support and how to check if it is useful, is not yet known.

Therefore you are being asked to take part in this research study which will help to understand and develop this role of the pharmacist working as part of the integrated care team. The study will also seek to understand what it means to expand the pharmacist role and test if it is providing any benefits to patients.

What does the study involve?
The study will include one interview session lasting approximately 30-45 minutes and an invitation to attend a focus group a few months later.

During the interview, you will be asked about your experience of the role of a pharmacist as part of the integrated care team. You will also be asked for any suggestions you might have about improving the role and how to and check if having the pharmacist is useful. The information you provide at the first interview will be used to develop a data collection tool to collect data that will be discussed during the focus group.
The interview will be at a location convenient for you eg a meeting room at your Gp surgery or a social care office close to your home or in your home if you are unable to attend otherwise and are comfortable with this.

All those who take part in an interview will be invited to attend a focus group at a future date at an NHS or social care venue, if they wish. The focus group will take place a few months after and will also be organised to take place in a meeting room at either an NHS or social care office. It is envisaged that the focus group would last for 60-90 minutes and drinks and snacks will be provided

Why have I been invited?
You have been invited because a pharmacist has been part of the Multidisciplinary team that has provided care for you

Do I have to take part?
It is up to you to decide whether to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign the consent form attached. If you decide to take part you are still free to withdraw at any time before data analysis has started, without giving a reason. Please note that there are limits of confidentiality as specified below

Will my taking part in this study be kept confidential?
Care will be taken to ensure that all the data protection requirements are fulfilled in the following way
- Only required data will be assessed and this will be anonymized as much as possible and data will be stored in encrypted sticks and locked in secure offices accessible only to chief investigator and her supervisor.

- Direct identifiers will be kept to a minimum and will be separated from any traceable information. These identifiers will be destroyed in the long run and only fully anonymized data will held for the required duration.

- Transcripts derived from audio recorded files from the interview and focus group will be edited to ensure that participants' names are removed or replaced by coded identifiers or pseudonyms of the participants. The audio record files will be locked up in the Chief Investigators (CI) NHS secured office in a drawer which will only be accessible by the CI.

- The data will only be kept for the minimum period necessitated by the academic requirements

- Only Anonymous data will be shared if required for research purpose and only for the following reasons

  ✓ to ensure that research is open to peer scrutiny

  ✓ to optimise the use of good quality research data

  ✓ to support policy and other decision-making

Please be aware that confidentiality cannot be maintained if you provide information where disclosure is in the overriding public interest or where there is a legal duty to disclose, for example by court order and where there is a statutory basis which permits disclosure. Please be reassured that you will be notified in the case of any disclosure if there is any risk to yourself or others.

I am interested in taking part, what do I do next?
Participants will be accepted on a first come first served basis although the chief investigator will use her judgment to obtain a balanced representation of participants, for example by gender, length of work experience and professional background.

If you are interested in taking part and would first like to discuss your involvement with the researcher, please contact Mrs. Navti by telephone or email (see details at end of this information sheet). On the other hand, if you feel that you are already fully informed about the study, please sign and return the enclosed consent form.

Via post:

Please complete the attached consent form, put it in the attached envelop and post it using the stamped and addressed envelope to
Phyllis Navti
East Leicestershire and Rutland CCG
Bridge Park Road
Thurmaston LE4 8BL

OR

Via Email
Please email a request for an electronic version to
Phyllis.navti@eastleicestershireandrutlandccg.nhs.uk . Please complete the electronic consent form and then email to *Phyllis.navti@eastleicestershireandrutlandccg.nhs.uk*

What if I agree to take part and then change my mind?
You can withdraw from the study at any time, without giving a reason.

What are the possible disadvantages and risks of taking part?
There are no disadvantages or risks apart from the time you provide when you take part in the interview and focus group.

What are the possible benefits of taking part?
You may help to improve the way integrated care is delivered in East Leicestershire and Rutland so that it is done in a truly multidisciplinary and integrated way.

What if something goes wrong? / Who can I complain to?
If you have a complaint regarding anything to do with this study, you can initially approach the lead investigator-Phyllis Navti (details below).

If this achieves no satisfactory outcome, you should then contact the Administrator for the Faculty Research Ethics Committee, Research & Commercial Office, Faculty of Health & Life Sciences, 1.25 Edith Murphy House, De Montfort University, The Gateway, Leicester, LE1 9BH or hlsfro@dmu.ac.uk

What will happen to the results of the research study?
The results may be submitted for publication in a peer reviewed journal or used in a report. Some of the data will inform a focus group of health and social care workers and patients. A summary of the final results will also be sent to you for your information. Non-identifiable quotes may be published in articles or used in conference presentations.

Who is organising and funding the study?
The study is not funded by any organisation. It is being undertaken as part of a doctorate degree in pharmacy practice which is paid for by De Montfort University of Leicester where the main researcher works as a Senior Lecturer in Pharmacy Practice and Clinical Pharmacy

Who has reviewed the study?
This study has been reviewed and approved by De Montfort University, Faculty of Health and Life Sciences Research Ethics Committee and the Leicestershire, Rutland and Northampton NHS Research Ethics Committee.

Contact for Further Information
Phyllis Navti
Email: Phyllis.navti@eastleicestershireandrutlandccg.nhs.uk
Phone: 01162955168

Thank you for reading this information and for considering to take part in the study.

Please complete the attached consent form if you would like to take part.

Appendix 7

Patient participant consent form

DE MONTFORT UNIVERSITY LEICESTER

PATIENT CONSENT FORM
Version 3
08th January 2016

Version Number	Date	Comments (descriptions of changes and amendments
Version 2	21/12/2015	Version 1 with changes as per request in REC conditional approval letter 27/11/2015 and REC email 17/12/ 2015 and option to send completed form via email
Version 3	**08/01/2016**	Tracked changes for REC accepted and imbedded

Title of project:
An Action Research evaluation of the contribution to patient care made by a pharmacist within an Integrated Care Model

Name of researcher: Phyllis Navti

Please initial all boxes if you agree

3.   I confirm that I have read and understood the information sheet [version 3; 8th January 2016] for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.   ☐

4.   I understand that my participation is voluntary and that I am free to withdraw   ☐

at any time without giving any reason.

3.   I agree that non-identifiable quotes may be published in articles or used in conference presentations.   ☐

4.   I agree to the interview being digitally audio recorded   ☐
(The transcripts derived from audio recorded files from the interview and focus group will be edited to ensure that participants' names are removed or replaced by coded identifiers or pseudonyms of the participants)

5.   I understand that data collected during the study may be looked at by a Supervisor from De Montfort University.   ☐

6   I give consent to the researcher to access my medical record for the purpose of this research   ☐

7.   I agree to take part in this study   ☐

_____   _____   _____
Print name of participant   Date   Signature
                              _____
                              Telephone Number of participant
_____   _____   _____

Print name of person taking consent Date   Signature

Thank you for completing the consent form

Please either

1) Post the completed form using the stamped and addressed envelope to

Phyllis Navti
East Leicestershire and Rutland CCG
Bridge Park Road
Thurmaston LE4 8BL

OR

2) Send via email

By requesting an electronic version by emailing
Phyllis.navti@eastleicestershireandrutlandccg.nhs.uk and then completing the electronic
consent form and emailing to Phyllis.navti@eastleicestershireandrutlandccg.nhs.uk

Appendix 8

Topic guides for interviews and focus group

Appendix 8: Topic guides for interviews and focus group

<div align="center">

Topic Guide for Semi Structured Interview for Stage 1

Interviewee Identifier code:_____

</div>

<u>**Verbal Introduction:**</u>

I am Phyllis Navti the main researcher.

Thank you for accepting to take part in this study and for taking the time to attend this interview today.

The interview will last 30-45 minutes

Thanks for accepting that I record the interview.

Are you ok if I also take a few notes?

Resources	Patient Guide Questions	Pharmacist's Guide Questions	Other Stakeholder guide questions
	Have you heard about IC care?	*Health care is about providing care for patients*- where do you think IC fit into this?	*Health care is about providing care for patients*- where do you think IC fit into this?
(**only if required** ie do not know what IC care) Copy of appendix one – IC leaflet	*Health care is about providing care for patients- where do you think IC fit into this?* What do you think IC is? What does IC mean to you?	What does IC mean to you?	What does IC mean to you?
	Who do you think is part of the IC team? Prompt re other health care professionals working together What do you think they do?	Who do you think is part of the IC team? What do you think they do?	Who do you think is part of the IC team? What do you think they do?
	Who do you think should be part of the IC team? - Patients? - Community pharmacist?	Who do you think should be part of the IC team? - Patients? - Community pharmacist?	Who do you think should part of the IC team? - Patients? - Community pharmacist?

	What do you think having an IC pharmacist means to a patient? What do you think having an IC pharmacist means to a patient like yourself? • What should they do/how should they work? • Likes • dislikes	What do you think having an IC pharmacist means to a patient? • What should they do/how should they work? • Advantages • disadvantages	What do you think having an IC pharmacist means to a patient? • What should they do/how should they work? • Advantages • disadvantages
		What do you think having an IC pharmacist means to other members of the team?	What do you think having an IC pharmacist means to other members of the team?
	Can you think of anything that would help the work of the integrated care pharmacist?	Can you think of any barriers/facilitators to the work of the integrated care pharmacist	Can you think of any barriers/facilitators to the work of the integrated care pharmacist?
	How do you think the role should be assessed to see if it improves patient care?	How do you think the role should be evaluated? • how evaluate	How do you think the role should be evaluated? how evaluate

	Do you think the role should be kept going in the future?	How do you think the role could be developed? How do you think the role could be developed?	How do you think the role could be developed? How do you think the role could be developed?
	Any other comments?	Any other comments?	Any other comments?

Topic Guide for Focus group

<u>Verbal Introduction:</u>

Thank you for accepting to take part in this study and for taking the time to attend the initial interview and this focus group today.

The focus group will last 60 – 90 minutes.

Thank you for accepting that I record the interview.

Are you ok if I also take a few notes?

Just to introduce who is here I have made large cards with everyone's name and whether they are staff or patient.

The plan will be

1) Presentation of findings derived from interviews

2) Presentation of quantitative data summary

3) Discussions arising from the presentations

Reserve prompts

Any updates or changed views or additions to following questions from interview?

Where do you think IC fit into this?

What does IC mean to you?

Who do you think is part of the IC team?

What do you think they do?

Who do you think should be part of the IC team?

Patients?

Community pharmacist?

What do you think having an IC pharmacist means to a patient?

What should they do/how should they work?

Advantages

disadvantages

What do you think having an IC pharmacist means to other members of the team?

Can you think of any barriers/facilitators

Do you think the role should be evaluated/developed ?

how evaluate

how develop?

How sustained?

Any other comments?

Appendix 9

Research ethics approval letters from DeMonfort University and NHS Ethics Committees

Appendix 9: Research ethics approval letters from DeMonfort and NHS Ethics Committee

DE MONTFORT UNIVERSITY LEICESTER

HLS FREC Ref: 1437

2nd February 2015

Phyllis Navti
DHSci Candidate
School of Pharmacy

Dear Phyllis,

Re: Ethics application – What contribution to patient care is made by a pharmacist within an East Midlands based Clinical Commissioning Group Integrated Care model?". A study designed to understand and inform the role and develop a method of evaluation. (Ref: 1437)

I am writing regarding your application for ethical approval for a research project titled to the above project. This project has been reviewed in accordance with the Operational Procedures for De Montfort University Faculty of Health and Life Sciences Research Ethics Committee. These procedures are available from the Faculty Research and Commercial Office upon your request.

I am pleased to inform you that ethical approval has been granted by Chair's Action for your application. This will be reported at the next Faculty Research Committee, which is being held on 2nd April 2015.

Should there be any amendments to the research methods or persons involved with this project you must notify the Chair of the Faculty Research Ethics Committee immediately in writing. Serious or adverse events related to the conduct of the study need to be reported immediately to your Supervisor and the Chair of this Committee.

The Faculty Research Ethics Committee should be notified by e-mail to hlsfro@dmu.ac.uk when your research project has been completed.

Yours sincerely,

Professor Martin Grootveld
Chair
Faculty Research Ethics Committee
Faculty of Health & Life Sciences
De Montfort University

Email: hlsfro@dmu.ac.uk
Web: http://www.dmu.ac.uk/research/ethics-and-governance/faculty-specific-procedures/health-and-life-sciences-ethics-procedures.aspx

Faculty of Health and Life Sciences, Edith Murphy House, The Gateway, Leicester LE1 9BH.
T: (0116) 255 1551 **F:** (0116) 257 7135

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22 December 2015

Mrs. Phyllis Navti   Head of Prescribing and

Senior Lecturer   East Leicestershire & Rutland Clinical Commissioning Group,

Bridge Park Business   Park, Bridge Road,

Leicester   LE4 8BL

Dear Mrs. Navti,

Study title: An Action Research evaluation of the contribution to patient care made by a pharmacist within an Integrated Care Model   15/LO/2132
REC reference: Protocol number: IRAS project ID: HLS1437 174726

Thank you for your letter of 21 December 2015, responding to the Proportionate Review Sub-Committee's request for changes to the documentation for the above study.
The revised documentation has been reviewed and approved by the sub-committee.
We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this favourable opinion letter. The expectation is that this information will be published for all studies that receive an ethical opinion but should you wish to provide a substitute contact point, wish to make a request to defer, or require further information, please contact the REC Manager Georgina Castledine, nrescommittee.london-harrow@nhs.net. Under very limited circumstances (e.g. for student research which has received an unfavourable opinion), it may be possible to grant an exemption to the publication of the study.

Confirmation of ethical opinion
On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting

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documentation as revised.

Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study:

1. The point regarding the intended use of quotes was misunderstood. The consent form provides for use of non-identifiable quotes, therefore please add this to the PIS.

You should notify the REC in writing once all conditions have been met (except for site approvals from host organisations) and provide copies of any revised documentation with updated version numbers. The REC will acknowledge receipt and provide a final list of the approved documentation for the study, which you can make available to host organisations to facilitate their permission for the study. Failure to provide the final versions to the REC may cause delay in obtaining permissions.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).

Guidance on applying for HRA Approval (England)/ NHS permission for research is available in the Integrated Research Application System, www.hra.nhs.uk or at http://www.rdforum.nhs.uk.

Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.

For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.

Sponsors are not required to notify the Committee of management permissions from host organisations.

Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database. This should be before the first participant is recruited but no later than 6 weeks after recruitment of the first participant.

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered

but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to request a deferral for study registration within the required timeframe, they should contact hra.studyregistration@nhs.net. The expectation is that all clinical trials will be registered, however, in exceptional circumstances non-registration may be permissible with prior agreement from the HRA. Guidance on where to register is provided on the HRA website.

It is the responsibility of the sponsor to ensure that all the conditions are complied with before the

Ethical review of research sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" above).

Approved documents

The documents reviewed and approved by the Committee are:

Document	Version	Date
Evidence of Sponsor insurance or indemnity (non-NHS Sponsors only) [Copy of DMU insurance Sponsor]		
Interview schedules or topic guides for participants [Topic guide for interview and focus group for integrated care pharmacist]	1	22 November 2015
IRAS Checklist XML [Checklist_21122015]		21 December 2015
Other [Patient PIS IC pharmacist research]	1	02 November 2015
Other [Staff consent form Integrated care pharmacist research]	1	22 November 2015
Other [IC research Patient PIS]	3	21 December 2015
Other [IC pharmacist research staff consent form]	2	21 December 2015
Other [PN to REC letter summarizing completed actions as requested in REC letter of 27/11/15 and Email 17/12/15]	1	21 December 2015
Participant consent form [Patient consent form for IC Pharmacist research]	V1	21 November 2015
Participant consent form [IC pharmacist patient consent form]	2	21 December 2015

Participant information sheet (PIS) [staff PIS IC pharmacist research]	1	02 November 2015
Participant information sheet (PIS) [IC research Staff PIS]	3	21 December 2015
REC Application Form [REC_Form_23112015]		23 November 2015
Research protocol or project proposal [Evaluation of role of IC pharmacist]	1	02 November 2015
Summary CV for Chief Investigator (CI) [CV Phyllis Navti]	1	02 November 2015
Summary CV for supervisor (student research) [Peter Rivers CV]	1	16 June 2015

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Reporting requirements

The attached document "After ethical review – guidance for researchers" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

 Notifying substantial amendments

 Adding new sites and investigators

☐☐☐Notification of serious breaches of the protocol

☐☐☐Progress and safety reports

☐☐Notifying the end of the study   The HRA website also provides guidance on these topics, which is updated in the light of

changes in reporting requirements or procedures.

Feedback

You are invited to give your view of the service that you have received from the Nakyour views known please use the feedback form available on the HRA website: http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance

We are pleased to welcome researchers and R & D staff at our NRES committee members' training days – see details at http://www.hra.nhs.uk/hra-training/

With the Committee's best wishes for the success of this project.

Yours sincerely   pp.   Miss Shelly Glaister-Young Vice Chair

Email: nrescommittee.london-harrow@nhs.net

Copy to:

Dr Peter Rivers

Mrs Rose Streeton, Northamptonshire R&D Service

15/LO/2132 Please quote this number on all correspondence

Appendix 10

Transcripts of interviews and focus group

(Attached as separate file–use line numbering for cross-referencing)

Appendix 11

End of scheme report for Integrated Care Pharmacist Pilot (*Abridged & adapted for confidentiality and relevance*)

EAST LEICESTERSHIRE AND RUTLAND CLINICAL COMMISSIONING GROUP STRATEGY, PLANNING AND COMMISSIONING COMMITTEE MEETING

Front Sheet

REPORT TITLE:	**End of scheme report for Integrated Care Pharmacy Pilot**
MEETING DATE:	**(Removed for confidentiality)**
REPORT BY:	**KC/RS /PN (abbreviated for confidentiality)**
SPONSORED BY:	**TS (abbreviated for confidentiality)**
PRESENTER:	**PN (abbreviated for confidentiality)**

PURPOSE OF THE REPORT:

This report is aimed at providing a summary of the of key performance indicators(KPIs) delivered by the Integrated Care Pharmacists (1.6WTE)

Background

Medicines Optimisation is defined as "*a patient-focused approach to getting the best from investment in and use of medicines ….and requires a holistic approach, an enhanced level of patient centred professionalism, and partnership between clinical professionals and a patient*" (Royal Pharmaceutical Society of Great Britain 2013). The RPS also states that MO involves professionals across the health and social care system working together collaboratively and much more closely with patients.

Shared principles and outcomes of both Integrated care and medicines optimisation, include patient centred care, increased adherence, holistic approach, partnership working, reduction in medicines waste and medication related admissions.

A pharmacist from the Integrated Care Pharmacy Service Team was allocated to each of the localities.

Key performance indicators achievement:
All KPIs were achieved as detailed table one below

Table 1: Summary of key performance indicators

Key performance indicator	Outcomes	
(238 IC patient reviews resulting in 708 suggestions)	**Achieved Yes/No**	**Figure (Percentage)**
1 **Achievement of return of investment of minimum 2 Calculations** Net Savings £196,840 (Total savings by IC pharmacist for 8.5 months*) – £47,874(Total IC Pharmacist cost for 8.5months) **=** 148,966 Return of investment £148,966 ÷£47,874 x 100% = 3.1 %	Yes	3.1 (311%) £625.9 per patient
2 Reduction of polypharmacy	Yes	54 (22%)
3 Completion of clinical Medication Review for all referred patients	Yes	100%
4 Completion of Medicines Reconciliation for all integrated care patients as required	Yes	23 (9.6%)
5 Provision of domiciliary Clinical Medication review as required	Yes	20 (8.4%)
6 Provision of Repeat prescriptions review for all IC patients	Yes	89(37%)
7 Provision of medication training sessions to integrated care coordinators every two months	Yes	4

Key activities

November 14 – July 15 (abridged – full report available)

- Integrated care pharmacists developed workflow process for undertaking project following previous pilot work. Establish referral process from Care Co-coordinators but also directly from GPs and other practice clinical staff
- Clinical medication reviews & Domiciliary visits of opt in and referred patients
- Pharmaceutical care plans developed
- Visits to practices made to arrange patient record access (including remotely), feedback method (meetings, MDT, paperwork), record keeping & "closing the loop".

- Attendance at Integrated Care Co-coordinators team meetings to liaise and improve cross team working, including educational input around compliance aids and drug use overview
- Follow up of medication reviews through various means (GP feedback on written reviews, "task" through SystmOne, attendance at MDTs and one to one with IC responsible GP)
- Liaise with community pharmacies
- Presentation of Integrated Care & Polypharmacy work streams to Locality meeting and ELR CCG Medicines Quality Strategic Group (MQSG) and Strategy Planning and Commissioning Group(SPCG)
- Action and follow up of medication reviews including coding, telephone calls to patients, liaison with community pharmacy and other appropriate agencies.
- Attendance at bimonthly hub meeting for sharing cross department practice information
- Costing of waste drugs from patients' home & disposal
- Development of laminated record cards for patients
- Development of medicines summary aides for coordinators and district nurses

Barriers

- Access to clinical systems and key stakeholders and establishing work flow has been a rate limiting step.
- Large geographical area, a phased approach may have been better
- Issues with liaising with GP's, low GP feedback

Table 2: Key Performance Indicators (KPIs) monitored to demonstrate progress

Description	TOTAL
Total number of reviews	238
Number of reviews conducted in patient's home	20
Number of telephone calls made	56
Number of reviews with suggestions made	209
Total number of suggestions made	708
Number of suggestions agreed	541
Number of suggestions disagreed	34
Number of suggestions outstanding	133*
The number of patients reviewed who have been recently discharged from hospital whose medicines have been reconciled	23

Number of Antipsychotics and Benzodiazepines stopped (not indicated for psychosis)	0
Number of drugs changed (dose/strength/form)	66
Prescription directions changed (including amendments to dossette)	6
Quantity changed/synchronised	27
Repeat lists tidied/repeats stopped	89
Monitoring suggested	
i) Follow up/review due	45
ii) Blood pressure	8
iii) Blood test	29
Unnecessary medicines stopped	
i)Total stopped	54
ii) Avg per patient stopped	
iii) Range (of medicines stopped per patient)	1-4
Falls Prevention	
i) Anxiolytics (reduced/stopped)	11
ii) Anti-muscarinics (reduced/stopped)	7
iii) Analgesics (optimised)	23
iv) Antihistamines (reduced/stopped)	7
v) Antidepressants (reduced/stopped)	3
vi) Antihypertensives (optimised)	4
vii) Diuretics (reduced/stopped)	2
viii) Calcium and Vitamin D (started)	8
High risk drugs	
Warfarin	
NOACS	
Methotrexate	2
NSAIDS	2
Important information communicated	
i) Allergies	
ii) ADR	42

FINANCIAL AND FUNDING INFORMATION

Savings

Total annualized savings

Estimated annualized savings from medicines stopped or amended** =£55,300

Estimated annualized savings from unused medication from patient home =+ £29,030

Estimated annualized savings from medicines related admission avoidance ***= + £193,536

=£277,893

Savings per month = £277,893 ÷ 12 = 23,157

Savings for 8.5 months of scheme = 23.157 x 8.5 =£196,840

Expenditure

The total cost of the pilot =

£20,565 (pro- *rata cost of 9 months of 0.6WTE of Band 8a – WTE cost of £45,707*) + £27,309 (8 *months of 1WTE Band 8a –WTE cost of £40.964 per annum*)

= £47,874 (Total *cost of 1.6 WTE Band 8a for 8.5 months (8 and 9 months averaged to 8.5)*

Net savings

Net SAVINGS= £196,840- £47,874 = £148,966

Notes
*Outstanding suggestions are generally due to one of the following
1. Due to being agreed for action at next routine appointment (possible role for pharmacist once more fully integrated into practice team)
2. Waiting for next MDT
3. Work still required at practice level to improve feedback loop
4. All the above factors would be improved with a permanent pharmacist in practice

**Savings calculated for KC for February 2015 and extrapolated to include total interventions
***Admission avoidance:**
By definition, all integrated care patients are at risk of admissions as the risk stratification tool links to a history of hospital admission. Approximately 12% of hospital admissions could be assumed as "medication related harm" eg ADR, adherence or errors (Pirmohamed et al., 2004) . Cost of an emergency admission is £1792 on average. Assumes 10% of *accepted interventions* have prevented an emergency admission.
~Calculated from waste collected from domiciliary visits, and assuming similar waste for all patients reviewed

Quality Outcomes

1. Improved adherence with medication through confidence building and education
2. Improved links with local pharmacies
3. Sign posting to services, such as clinical waste collection
4. Supporting carers/relatives to improve adherence
5. Pharmacist monitoring support
6. Integrated care team working in its fullest sense to optimise patient care

7. This service is different to MURs and NMS provided by community pharmacists (access to medical records, integration with wider multidisciplinary team eg GP, nurse, OT, domiciliary visits)

Exit Strategy

1. The integrated care role and work streams will be a key part of the next phase – the newly created Hub pharmacist posts, which will address geographical issues and integration within the MDT and practice team. All the learning from this pilot will be applied
2. Including a pharmacy technician as part of the next phase will allow for some of the quality outcomes to be more appropriately managed and impact positively on salary costs.
3. Roles for community pharmacy have also been identified.
4. Explore reviewing contracts with domiciliary care agencies to ensure medicines quality delivered as per required standards
5. Complete action plans for different members of the MDT and present to the groups eg GP practices, community pharmacy forum, district nurses and domiciliary carers

RECOMMENDATIONS:
The East Leicestershire and Rutland CCG Strategy, Planning and Commissioning Committee is requested to: **RECEIVE FOR INFORMATION**

REPORT SUPPORTS THE FOLLOWING STRATEGIC AIM(S) 2014 – 2015: (tick all that apply)			
Transform services and enhance quality of life for people with long-term conditions	x	Improve integration of local services between health and social care; and between acute and primary/community care.	x
Improve the quality of care – clinical effectiveness, safety and patient experience	x	Listening to our patients and public – acting on what patients and the public tell us.	x
Reduce inequalities in access to healthcare		Living within our means using public money effectively	x
Implementing key enablers to support the strategic aims (e.g. constitutional and governance arrangements, communications and patient engagement).			x

EQUALITY ANALYSIS **(Respond by inserting /completing one of the three statements below, delete the one that does not apply)**
1. An Equality Analysis and due regard to the positive general duties of the Equality Act 2010 has been undertaken in the development of this report and its influence on the recommendation(s) is evidenced in section(s) XXX / paragraph(s) XXX / Appendix XX / the Equality Analysis is attached.   **Or**

2. An Equality Analysis and due regard to the positive general duties of the Equality Act 2010 has not been undertaken in the development of this report as it is judged that it is not proportionate on the basis that XXXXX.

   This completes the due regard required.

Or

3. Further equality analysis is required and it is recommended that the ELRCCG Board receives this in [date]"

RISK ANALYSIS AND LINK TO BOARD ASSURANCE FRAMEWORK:
Questions to consider (text in red should be deleted as these are only prompts):   • Does the report align to corporate risks identified in the Board Assurance Framework?   • Does the report support in mitigating the risk(s) identified?   • Does the report highlight a new risk(s)? if so please quantify the risk using the 5 x 5 risk matrix or discuss with the Corporate Affairs Team.

Appendix 12

Monitoring form for GP Hub Medicine Quality Team pilot

TEMPLATE MONITORING DOCUMENT FOR GP HUB MEDICINE QUALITY TEAM

HUB /PRACTICE NAME:	
AUTHOR (S):	

Project Name: GP Hub Pharmacist Scheme   **Date**: _____

_____

 Overall Project Status (RAG): Red or Amber or Green (Please delete as appropriate)

Progress Chart for Key Deliverables (**Key: Black** – Time estimate, **Green** – On target, **Amber** – Slightly off target, **Red** – Seriously off target)

ID	TASKS	Month 1				Month 2				Month 3				Month 4				Month 5				Month 6				Month 7				Month 8				Month 9				Month 10				Month 11				Month 12			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	Meet all GP prescribing leads and agree process	🟩	🟩	🟩																																													
2a	Integrated Care Medicines Review – Meet all care coordinators / Band 7 Nurse and agree process for referrals																																																
b	Conduct medication reviews for highlighted patients																																																

ID	TASKS	Month 1				Month 2				Month 3				Month 4				Month 5				Month 6				Month 7				Month 8				Month 9				Month 10				Month 11				Month 12			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
c	MDT feedback of reviews, liaise with co-ordinator & implement actions																																																
3a	Formulary Adherence Reports and highlight areas of switching to formulary & most cost effective therapy																																																
b	Engage & develop Pre-agreements to pre-authorise levels of MQT intervention																																																
4a	Review current Medicines Reconciliation policy and develop one if necessary																																																
b	Discuss and agree the process of coding and updating discharge letters with staff and GP prescribing lead																																																
c	Review discharge letters and update medications on GP record system																																																
5a	Polypharmacy Rationalisation - Discuss with GP & Integrated care team high risk patients for Medication review.																																																

ID	TASKS	Month 1				Month 2				Month 3				Month 4				Month 5				Month 6				Month 7				Month 8				Month 9				Month 10				Month 11				Month 12			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
b	Polypharmacy Rationalisation prescribing reviews in Care Homes																																																
c	Highlight adherence to NICE care homes Quality standard																																																
d	Discuss findings with key stakeholders & implement findings																																																
6a	Shared Care Governance – Audit adherence to GP responsibilities on shared care																																																
b	Highlight number of patients on LMSG Amber drugs who require monitoring																																																
c	Set up a robust recall process to ensure GP responsibilities on shared care delivered																																																
7a	Traffic Light Drugs – Formulary Adherence - Identify patients currently prescribed LMSG Red and Black drugs																																																
b	Reduce prescribing of LMSG Red and Black drugs by stopping and re-																																																

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ID	TASKS	Month 1				Month 2				Month 3				Month 4				Month 5				Month 6				Month 7				Month 8				Month 9				Month 10				Month 11				Month 12			
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	directing prescribing to secondary care																																																
c	Discuss initial results with GP prescribing leads and educate GPs (discuss at practice meetings)																																																
9a	Completion of Baseline of 2 Quality Audits (due Sept 2015) develop action plan																																																
b	Completion of Re-Audit of 2 Quality Audits (due March 2016) & assess outcomes																																																
c	Submit the required evidence for both Quality audits (due March 2016)																																																
10a	Pharmacist Led Consultations: Evaluate demand and process to incorporate clinic slots																																																
b	Patients referred to Pharmacist for clinic or tele-consultations																																																
11	Assist GP and patients in UHL Specials Trial Pilot (for Oakham only)																																																

Other Activities – Month 1

Other Activities – Month 2

Other Activities – Month 3

Other Activities – Month 4

Risks and Issues

Risk/Issue Description	Risk Score			Mitigation	Risk Lead
	Impact	**Likelihood**	**Score**		

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PROJECT SPEND 2014/15																
CONFIRMED ALLOCATION	TOTAL SPEND TO DATE			TOTAL ANTICIPATED SPEND			TOTAL ANTIICPATED SAVINGS			POTENTIAL SLIPPAGE				CONFIRMED SLIPPAGE		
ELRCCG: Collaborative: Local Authority: **Total:**																
	Month 1	Month 2	Month31	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Total			
Forecast Spend																
Actual Spend																
Variance on Plan																
Cumulative Total																
COMMENTARY TO SUPPORT CURRENT FINANCIAL POSITION																

Key Performance Indicators (KPIs) monitored to demonstrate progress

The Key Performance Indicators have been divided into two main groups:

A. Productivity and Prevention Key performance Indicators

B. Productivity and Prevention Key performance Indicators

A) **Productivity and Prevention Key performance Indicators**

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	M Month 11	Month 12	TOTAL
1. Medicines Reconciliation													
i. Number of discharge letters reviewed & updated													
ii. Number of discrepancies identified and resolved													
iii.GP time saved													
iv. Audit of Meds Rec showing improvement from baseline													
2. Pharmaceutical care Includes Integrated care role functions, drop-ins,care homes and domiciliary medication reviews													
i). Total number of patient interventions for all reviews													
Integrated Care role functions													
ii)Number of integrated care interventions													
iii) Number of MDT meetings attended													

iv) Number of medication training sessions to MDT													
Care homes role functions													
v. Number of care home patient interventions													
vi) Number of medication training sessions to care home staff													
Others													
v. Number of Pharmacist led polypharmacy clinic consultations													
vi. Total monthly cost savings from medication reviews													
3. Shared Care Governance													
i) GP time saved													
iii. Bi annual Shared care audit of rheumatology and antipsychotic Shared care agreements with action plans & flagging sec comm care issues	n/a	n/a	n/a	n/a	n/a	Baseline audit and action plans	n/a	n/a	n/a	n/a	Re-audit summary and action plans		
4. Formulary Adherence and QIPP actions													
i. prescribing spend (add when data available 6 weeks after)													
ii. Number of patients identified for therapy change													
iii. Number of patients actioned													

iv. **Total monthly savings from schemes**													
5. Additional medicine quality area related to QOF/LTC/QIPP selected by Practice/hub 1													
i													
ii.													
6. Additional medicine quality area related to QOF/LTC/QIPP selected by Practice/hub 2													
i.													
ii													
7. Additional medicine quality area related to QOF/LTC/QIPP selected by Practice/hub 3													
i.													
ii.													

2) Quality Prevention Key performance Indicators

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	M Month 11	Month 12	TOTAL
8. Quality audits													
Quality 1 - Antibiotic Audit													

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GP time saved (Time to complete audit requirements)												
ii. Number of self-limiting leaflets coded												
iii. Improvement from baseline for Antibiotic volume QIPP indicator												
Audit evidence submitted	n/a	n/a	n/a	n/a	n/a	Baseline audit and action plans	n/a	n/a	n/a	n/a	Re-audit summary and action plans	

Quality 2 – *example* Hypnotic audit

i) GP time saved for Baseline												
ii) Number of reviews												
iii) Monthly savings												
ii) GP time saved for re-audit												
iii) Audit evidence submitted	n/a	n/a	n/a	n/a	n/a	Baseline audit and action plans	n/a	n/a	n/a	n/a	Re-audit summary and action plans	

Exceptional incidents & additional information
(<mark>Add boxes as required</mark>)

Incident 1
Date: Incident Description and outcome:

Incident 2
Date: Incident Description and outcome:

Incident 3
Date: Incident Description and outcome:

Appendix 13

Evaluation summary of GP Hub Medicine Quality Team pilot

May 2016

Research Impact Study of Pilot of Medicines Quality Teams in GP Hubs in East Leicestershire and Rutland CCG

1. Executive Summary

This report presents the findings from an independent review of East Leicestershire and Rutland CCG's (ELR CCG) pilot of Medicines Quality Team (MQT) staff operating within GP practices (Pharmacy Hub Teams). Adopting a mixed methodological design, the research was designed to establish the perceptions and experiences of key stakeholders associated with the pilot scheme and to inform potential expansion of MQT work to the remaining GP hubs in ELR CCG. The research was undertaken during April-May 2016 by De Montfort University and Qualicis Research on behalf of ELR CCG.

Qualitative data collection was in the form of one-to-one, semi-structured interviews, conducted with a representative sample of 16 staff that had been associated with the pilot scheme. Spread across three GP hubs within ELR CCG, participants included Prescribing Leads, Practice Managers, pharmacists, pharmacy technicians and other additional stakeholders (agreed with the CCG). The quantitative element to the research utilised a structured questionnaire that was sent to GP practice staff by the ELR CCG in order to gauge opinion of the extent of success of the MQT project.

Key Findings

Value and impact of Pharmacy Hub Teams
All participants - GPs, Practice Managers, Pharmacy Hub Teams and other stakeholders – understood the rationale and motivation behind the pilot scheme well. There was a very positive outlook with respect to an expectation of clinical contributions from the pharmacy team alongside cost and time-saving aspects of the role.

Prior to implementation of the pilot scheme, participants were generally positive about the initiative. GPs in particular expressed keenness to achieve an impact on their workload and time. Most participants talked positively about the integration of Pharmacy Hub Teams within their practices and alluded to issues related to individual personalities and relationships as a major contributor to successful collaborative working. Factors that were considered to have a potentially inhibitory impact upon the integration of the Pharmacy Hub team centred upon opinion that the scheme would benefit from pharmacy staff being employed for a greater number of hours per week in GP surgeries in order to more fully realise the potential of an integrated Pharmacy Hub Team.

The overall accessibility of pharmacy staff was highlighted as a key benefit both in terms of planned and impromptu interactions between the pharmacy team and practice staff. The notion of pharmacy staff 'being a team' was often expressed by GPs and Practice Managers and there were numerous references to the unique area of expertise of individual pharmacy team members. Members of the Pharmacy Hub Teams, themselves, reflected upon feeling empowered through being more involved in the care of patients such as by having access to patient notes and clinical history as well the role being rewarding through medical staff having faith and confidence in their ability.

Opinion within one of the GPs Hubs suggests that the full potential of the pharmacy team could not be realised because the MQT was not contracted for sufficient number of hours. There was some variation, within Hubs, of the initial experience when pharmacy team members were introduced to the practices that may partly have been the result of some unavoidable sickness within the pharmacy team in one Hub.

It was readily apparent that participants could point to specific perceived clinical 'benefits' of the Pharmacy Quality Hub by citing examples of good practice. With regard to assessing the impact of the pharmacy team on Key Performance Indicators (KPIs) opinions were generally positive although some participants expressed scepticism regarding whether the statistics (e.g. estimates of GP time saved) were a true reflection of practice. Some participants were not convinced that time-saving figures were a true reflection of workload. By contrast, others played down the importance of such figures by arguing that there was a range of unquantifiable activities in addition to the time-saving aspects that added value to pharmacy involvement.

Sustainability of Pharmacy Hub Teams

Overall, there was a highly positive reflection of the MQT among practice stakeholders that bodes well for achieving longer-term sustainable working relations between Pharmacy Hub Teams and GP practices. This was evidenced by a strong sense of confidence of practice staff in the clinical abilities of individual MQT members. Also, mutual respect had developed in some Hubs that resulted in a feeling of empowerment of the pharmacy team and an acceptance of them by the practice team of which both qualities are desirable in order to achieve sustainable long-term working relations. In instances where individual members of the pharmacy team 'gelled' well with practice staff and were considered to be 'good team players' – the potential for sustainability was greater. Moreover, where pharmacy staff took a proactive approach to problem-solving, there was considerable appreciation of their worth within the practice.

Factors that acted as barriers, and therefore learning points to address in terms of the future sustainability of the scheme, arose from opinion, expressed strongly by a minority of participants, of contrasting agendas or priorities between practices and the ELR CCG. Such issues tended to relate to differences in opinion with regard to whether the role of the MQT was primarily to pursue a perceived CCG agenda of cost-saving activities (e.g. in relation to the drug budget) or, by contrast, for pharmacy teams to absorb some drug-related clinical or prescribing activity that has traditionally been the responsibility of doctors. There were some practical issues associated with the provision of resources such as computer and telephone access and training for the pharmacy team which was a source of frustration in one Hub during the early stages of the pilot scheme but such issues are not likely to impact on the longer term sustainability of the scheme.