Influences on Non-Medical Prescribing: Nurse and Pharmacist Prescribers in Primary and Community Care

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Abstract

Since 1994 there have been considerable additions to the range of health care professionals (HCPs) that can prescribe in the United Kingdom (UK). These HCPs include nurses, pharmacists, radiographers, physiotherapists, podiatrists, chiropodists and optometrists. After a period of specific prescribing training these HCPs are often referred to as non-medical prescribers (NMPs). There has been a limited amount of research that has investigated the influences on the prescribing behaviour of NMPs. Additional research with NMPs would be beneficial to contribute to the currently limited understanding of the prescribing behaviour of NMPs. Knowledge about the influences on NMPs' decisions will also provide further insight into the training and support requirements of these HCPs.

A programme of research was conducted to explore the influences on the prescribing behaviour of nurse and pharmacist independent and/or supplementary prescribers working in primary and community care. The research utilised a range of qualitative data collection techniques including interviews, semi-structured interviews, focus groups and the critical incident technique. The Q-method was also used. This allowed perspectives amongst NMPs about prescribing influences to be identified. In total, 104 NMPs took part in this research. This included 31 pharmacist prescribers and 73 nurse prescribers. NMPs were mainly recruited via their primary care trust prescribing lead but pharmacist prescribers were also contacted using the details they provided to their professional body. NMPs in this research occupied a wide range of roles and had diverse demographic characteristics. Relevant ethical approval was obtained before conducting this research.

NMPs were motivated by their desire to feel safe, keep it simple and fit in with prescribing culture when prescribing. They also had a code of practice which underlined their rejection of some influences, such as patient pressure and logistical influences, and their acceptance of others, such as guidelines and formularies. The research found that the influences on NMPs' prescribing decisions can be best understood through identifying how and in what circumstances NMPs take responsibility for issuing prescriptions and making prescribing decisions. As well as providing insights into the training and support requirements of NMPs the findings of this research are important to others that may want to research the prescribing influences on NMPs in the future.

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Abbreviations

AHCP	Allied Health Care Professional
BMA	British Medical Association
BNF	British National Formulary
CD	Controlled Drug
CKS	Clinical Knowledge Summaries
CIT	Critical Incident Technique
CMP	Clinical Management Plan
CNP	Community Nurse Prescriber
COPD	Chronic Obstructive Pulmonary Disease
CPD	Continued Professional Development
DMP	Designated Medical Practitioner
DN	District Nurse
DoH	Department of Health
EBM	Evidence Based Medicine
ENPF	Extended Nurse Prescribers' Formulary
EOI	Expression of Interest
FDA	Food and Drug Administration
GP	General Practitioner
GPhC	General Pharmaceutical Council
GSL	General Sales List
HCP	Health Care Professional
HV	Health Visitor
IP	Independent Prescribing
MA	Marketing Authorisation
MHRA	Medicine Healthcare Regulatory Agency
NHS	National Health Service
NICE	National Institute Clinical and Health Excellence
NIF	Nurse Independent Formulary
NMC	Nursing and Midwifery Council
NMP	Non-Medical Prescriber
NMPL	Non-Medical Prescribing Lead
NPC	National Prescribing Centre
NPF	Nurse Prescribers' Formulary

P	Pharmacy medicine
PCA	Principal Component Analysis
PCT	Primary Care Trust
PGD	Patient Group Directive
PIS	Participant Information Sheet
PLP	Period of Learning in Practice
POM	Prescription Only Medicine
QoL	Quality of Life
OOH	Out-of-Hours
OTC	Over The Counter
R&D	Research and Development
RPS	Royal Pharmaceutical Society
RPSGB	Royal Pharmaceutical Society of Great Britain
SP	Supplementary Prescribing
UK	United Kingdom
US	United States
WHO	World Health Organisation
WIC	Walk-in Centre

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Preface

The author completed her undergraduate Psychology degree at the University of York between 2001 and 2004. After graduating, the author worked for a health care market research agency, Adelphi International Research, for three years. In this role she was responsible for each aspect of market research studies conducted on behalf of clients in the pharmaceutical and health care industry. The research population consisted of a range of health care professionals including general practitioners, nurses, specialist doctors, surgeons, pharmacists and a wide range of patient groups. In this role the author developed her knowledge of both qualitative and quantitative study designs, which she has continued to do throughout the course of her PhD. Many of the studies conducted as part of this role involved examining the factors influencing doctors' prescribing decisions. This was typically in one specific therapy area. It was through this role the author developed an interest in prescribing behaviour. Through this PhD she was able to explore this area further and examine the influences on the prescribing of other health care professionals able to prescribe.

Chapter One - Introduction

The purpose of this chapter is to introduce the topic of this programme of research and provide an outline of the organisation of this thesis.

1.1 Introduction

'Medicines offer so much help, can deliver so much harm, and are the most expensive element in health care after staff costs' (Barber et al. 2003, pg. 51). In 2009 alone, over £12.3 billion worth of National Health Service (NHS) expenditure in England was spent on the prescription of medicine, appliances and dressings[1] (The NHS Information Centre 2010a). This accounted for approximately 10% of total NHS expenditure in England that year (House of Commons Health Committee 2010). Given the associated costs, it is unsurprising that prescribing behaviour has attracted so much attention from researchers and policy makers over the last few decades. A large volume of research has set about identifying and understanding the influences on prescribing behaviour. This research has identified a wide range of factors that influence prescribing behaviour.

Much of the United Kingdom (UK) based research investigating prescribing behaviour has focused on the prescribing decisions of doctors and dentists. This is because, prior to 1994, only doctors and dentists could prescribe in the UK. Furthermore, with dentists' prescribing limited (The NHS Information Centre 2010b), the majority of this research has examined doctors' prescribing only. Since 1994 there have been considerable additions to the range of health care professionals (HCPs) that can prescribe in the UK. Additional prescribing authority was first extended to community nurses in 1994. This move gave community nurse prescribers (CNPs) the legal authority to prescribe a limited range of products to patients. Since then, prescribing authority has been periodically extended to a wide range of other HCPs, including all nurses, pharmacists, radiographers, physiotherapists, podiatrists, chiropodists and optometrists. The term 'non-medical prescribing' is often used to refer to prescribing by this group of HCPs.

Though non-medical prescribing is still in its infancy, to the year September 2010, almost 14 million prescription items were prescribed by non-medical prescribers (NMPs) in general practice in England[2]. This accounted for 1.6% of all prescriptions written in the same period in primary

[1] Figure includes prescriptions issued the by the hospital pharmacy, prescriptions issued in primary care and hospital prescribing dispensed in the community.

[2] Figures include prescriptions written in England but dispensed elsewhere. It does not include prescriptions written by prescribers in hospitals.

care, representing a 12% increase on the year to September 2009 (NHS Prescription Services 2009; NHS Prescription Services 2011). Only a small amount of research has sought to understand the factors influencing the prescribing behaviour of NMPs. Most of the research that does exist has focused on CNPs only. In contrast, a great deal of research has explored the prescribing behaviour of doctors. Given non-medical prescribing is increasing there is a need for further understanding of the influences on NMPs' prescribing behaviour. Such research will contribute to the currently limited understanding of the prescribing decision-making process of NMPs. Further knowledge about the influences on NMPs' decisions will also provide further insight into the training and support requirements of these HCPs.

1.2 Organisation of Thesis

Chapter Two provides background information about prescribing and non-medical prescribing, an overview of the current literature relating to prescribing influences and outlines the current gap in knowledge that this programme of research seeks to address.

Chapter Three provides an overview of the entire programme of research. Methodological issues are discussed along with the ethical considerations of this research.

Chapter Four provides a rationale for Study One, outlines the aim and objectives of the study and describes the method employed. It then describes the key findings, discusses these key findings in light of relevant literature and summarises the implications of the findings for the remainder of this programme of research.

Chapter Five outlines the aim and objectives of Study Two and Study Three, the methods employed and the data analysis procedures. Study Two and Study Three were designed based on the findings of Study One. Study Two examined the factors that influence whether NMPs take responsibility for prescribing. Study Three furthered the understanding, developed in Study One, of the factors that influence NMPs' prescribing decisions. In Study Three perspectives about prescribing influences amongst NMPs were generated by asking prescribers to order statements about prescribing influences according to their agreement with the statement.

Chapter Six describes the factors that influence whether NMPs take responsibility for prescribing. The chapter combines relevant findings from both Study One and Study Two. The chapter begins by describing NMPs' cautious approach to prescribing responsibility. The factors that influence whether NMPs take responsibility for prescribing are discussed under four main headings: competency, role, practical and legal considerations, and risk. The pressures that NMPs face in

relation to taking prescribing responsibility are also outlined. The chapter then discusses the findings in relation to the available literature.

Chapter Seven explores the factors influencing the prescribing decisions of NMPs. This chapter draws on relevant findings from Study One. An overview of these findings are introduced in Chapter Three in order to provide a rationale for the entire programme of research, but are presented in more depth in this chapter. The findings are described under seven main headings: regulatory factors, patient factors, colleague factors, prescribing culture and professional experience, training and information sources, logistical factors the pharmaceutical industry. The results are then discussed in terms of the prescribing influences literature.

Chapter Eight describes the findings of Study Three which identified the range of perspectives amongst NMPs about the sources of influence on their prescribing decisions. A reflection of the key aspects of these perspectives in terms of the current literature, with a particular emphasis on the principles of evidence-based medicine and patient-centred medicine, is then provided.

Chapter Nine draws the programme of research to a conclusion, discusses the limitations of the research, outlines the recommendations from the research and suggests areas for further research. It ends with some final thoughts about this thesis.

Chapter Two – Background

The purpose of this chapter is to provide the necessary background information about prescribing and non-medical prescribing, provide a description and critique of the current literature in the area of prescribing influences and state the current gap in knowledge that this programme of research seeks to address.

2.1 Preparing the Prescribing and Non-Medical Prescribing Background Sections

The initial part of this chapter provides an overview of prescribing and non-medical prescribing in the UK. This background information was produced partly by searching grey literature sources such as the Department of Health (DoH) website (see Appendix 1.0 for the list of grey literature sources). A literature search also helped to inform the background sections of this chapter. A number of key search terms associated with non-medical prescribing (see Box 2-1) were applied in various combinations and iterations to relevant databases (see Appendix 2.0 for list of databases). Recent information generated from the search was favoured because it provided a more accurate reflection of the current situation in relation to non-medical prescribing. However, older information sources were sometimes used to help uncover the history of non-medical prescribing in the UK.

Box 2-1: Key Search Terms used to Prepare Prescribing and Non-Medical Prescribing Background Sections

Community Nurse Prescriber, Nurse, Pharmacist, Supplementary, Independent, Nurse Practitioner, Optometrist, Physiotherapist, Chiropodist, Podiatrist, Radiographer, District Nurse, Health Visitor, Prescribing, Prescriber, Non-Medical Prescribing, Implementation, Use, Background, Development, History

2.2 Background to Prescribing

Before discussing non-medical prescribing in further detail, it is appropriate to define some key prescribing terms, overview the laws that govern prescribing in the UK and provide some information about the total cost and volume of prescribing.

2.2.1 Definition and Legal Basis of Prescribing

The Oxford Dictionary offers a definition of 'prescribe' which is as follows:

'(Of a medical practitioner). Advise and authorise the use of a medicine of treatment for someone else, especially in writing' (Oxford dictionary of English 2005)

Whilst the definition is somewhat outdated, given the range of HCPs that can now prescribe, 'prescription' is defined by the British Medical Association (BMA) as:

'An instruction written by a doctor, dentist or a specifically trained nurse that directs a pharmacist to dispense a particular drug at a specific dose. A prescription details how often the drug must be taken, how much is to be dispensed and other relevant facts' (British Medical Association 2007)

A prescriber is anyone who can issue a valid prescription. In the UK, doctors, dentists and appropriately trained nurses, pharmacists, radiographers, physiotherapists, podiatrists, chiropodists and optometrists can be prescribers. Doctors and dentists gain the authority to prescribe once registered with their professional body. Nurses, pharmacists, radiographers, physiotherapists, podiatrists, chiropodists and optometrists can gain prescribing authority through completion of a period of specific training. Prescribers are governed by strict laws and regulation. In the UK there are three major acts that govern the prescription and supply of medicines and poisons: (1) Poisons Act (1972), (2) Medicines Act (1968) and (3) Misuse of Drugs Act 1971 (Together with the Misuse of Drugs Regulations 1973) (Knight 1992).

2.2.2 Total Volume and Cost of Prescribing

In 2009, the total cost of prescribing in England accounted for £12.3 billion. In total, 69% of this cost (£8.3 billion) was as a result of primary care prescribing and 31% (£4.0 billion) was as a result of hospital or secondary care prescribing. The cost of prescribing to the NHS is increasing each year. There was a 5.6% increase in the cost of prescribing in 2009 compared with the previous year (The NHS Information Centre 2010a). Dentists' prescribing accounts for a small proportion of the entire prescribing budget in England. In 2009, prescription items written by dentists and dispensed in the community accounted for £4.9 million worth of expenditure. The vast majority of the prescriptions written by dentists came under the British National Formulary (BNF) Section 5.1 antibacterial drugs (The NHS Information Centre 2010b).

2.3 Background to Non-Medical Prescribing

The purpose of this section of the chapter is to describe non-medical prescribing in further detail by providing a historical account of non-medical prescribing in the UK. For the purposes of this thesis the term allied healthcare professionals (AHCPs) is used to refer to radiographers, physiotherapists, podiatrists, chiropodists and optometrists.

2.3.1 Implementation of Non-Medical Prescribing

2.3.1.1 Prescribing for Community Nurses

In the 1980s reports by Julia Cumberledge and Dr June Crown highlighted the potential benefits of extending prescribing authority from doctors and dentists to community nurses (Department of Health 1989; DHSS. 1986). The reports suggested that allowing community nurses to prescribe a limited number of items would improve the efficiency of healthcare provision for patients. Community nurses included nurses with a district nurse (DN) qualification, a health visitor (HV) qualification, or a practice nurse with either a DN or HV qualification. It was felt that allowing community nurse prescribing would serve to legitimise current practice as nurses were already informally prescribing by asking doctors to sign pre-written prescriptions on their behalf. In 1994 a pilot of 58 community nurses specifically trained to prescribe were permitted to prescribe from the Nurse Prescribers' Formulary (NPF) for HVs and DNs. The formulary included a limited range of medicines, dressings and appliances. The initial pilot was extended in 1996 to include an additional site which allowed evaluation of a further 150 nurses. Evaluation of this additional pilot phase was deemed a success and in April 1998 it was announced that community nurse prescribing would be fully implemented throughout the UK.

In April 2011, 33,899 community nurses were qualified to prescribe from the 'NPF for Community Practitioners' (Nursing and Midwifery Council 2011) (renamed from NPF for HVs and DNs in 2005). The formulary consists of a range of dressings, appliances, 13 prescription only medicines (POMs), some general sales list (GSL) medicines and pharmacy (P) medicines[3]. The formulary allows access to a range of wound management products, catheter care products, emollients, laxatives and head lice products. Prescribing training for CNPs is now integrated into community nurse specialist practitioner degree programmes. This means all newly qualified community nurses can prescribe (Department of Health 2006b).

2.3.1.2 Prescribing for other HCPs (Crown Report II)

Whilst prescribing rights for community nurses were being introduced the government set up another review under the direction of Dr June Crown. The purpose of this review, which was published in two reports (Department of Health 1998; Department of Health 1999), was to appraise the current situation in relation to group protocols, and to determine in what circumstances HCPs could undertake new roles with regards to the prescribing, supply, and administration of medicines.

[3] A prescription only medication is a licensed medicine that is regulated by legislation to require a prescription before it can be obtained. Only pharmacies may sell pharmacy medicine and a pharmacist must make or supervise the sale. General sales list medicines can be sold by a wide range of shops, such as newsagents, supermarkets and petrol stations. They do not require a prescription or a pharmacist to sell them.

Patient Group Directions (Crown Report II – Part 1: 1998)

The first part of the Crown report, published in 1998, issued guidance on the supply and administration of medicines under group protocols. At the time there was concern about the legality of group protocols as it was thought that they were not meeting the requirements in some sections of the Medicines Act 1968 for the supply and administration of medicines to be in accordance with the directions of a doctor. It was thought that in order to meet these requirements protocols should leave the minimum of discretion for the HCPs involved (Baird 2003; Department of Health 1998). The report recommended that the current practice be continued, but with more stringent criteria in the form of Patient Group Directions (PGDs) (Department of Health 1998). First implemented in 2000, a PGD enables the supply or administration of medicine in situations such as vaccinations and routine treatments. PGDs do not authorise the prescribing of medicine. There is no specific training for PGDs but organisations must ensure HCPs using PGDs are competent to do so (Department of Health 2006b).

Independent Prescribing (IP) and Supplementary Prescribing (SP) (Crown Report II Part 2: 1999)

The second part of Crown's report, published in 1999, recommended that prescribing authority should be extended to other HCPs through two models of prescribing: independent prescribing and dependent prescribing. In the report an independent prescriber was described as a professional who is responsible for the initial assessment of the patient and for devising the broad treatment plan, with the authority to prescribe as part of that plan. A dependent prescriber (subsequently renamed as a supplementary prescriber) was defined as a professional who is authorised to prescribe certain medicines for patients whose condition has been diagnosed or assessed by a doctor or dentist within an agreed assessment and treatment plan.

The implementation of Crown's recommendations began with the introduction of IP for nurses in 2002. Figure 2-1 presents a summary timeline of the implementation of non-medical prescribing in the UK. At the time, this type of prescribing was termed 'Extended Nurse Prescribing'. It enabled all registered nurses and midwives with three years post registration clinical nursing experience to train to prescribe a limited range of medicines from the Extended Nurse Prescribers' Formulary (ENPF). Initially the products listed in the ENPF were limited. However, in the years following 2002 the ENPF expanded considerably and by May 2005 the ENPF included a list of around 240 POMs, all GSL medicines and all P medicines (Department of Health 2006a). Training for nurses comprised 25 days taught theory over a three month period as well as 12 days of a period of learning in practice (PLP) with a designated medical practitioner (DMP). The purpose of the PLP was to provide the student with supervision, support and opportunities to develop competence in prescribing.

Figure 2-1: Summary Timeline of the Implementation of Non-Medical Prescribing in the UK

Date	Nurses and Midwives	Pharmacists	Allied Health Care Professionals
1986	**Neighbourhood Nursing Review (Cumberledge Report)**		
1989	**Crown Report I - Community Nurse Prescribing**		
1994	Community nurses with appropriate qualification able to prescribe from the Nurse Prescribers' Formulary (NPF) for District Nurses and Health Visitors (now NPF for Community Practitioners) in eight demonstration sites		
1996	Pilots for community nurse prescribing extended to further sites		
1998	**Crown Report II, Part 1 - Patient Group Directives**		
December 1998	CNP is extended to all parts of the UK		
1999	**Crown Report II, Part 2 - Independent and Supplementary Prescribing**		
2002	Extended nurse prescribing introduced		
April 2003	SP introduced	SP introduced	
April 2005			SP introduced for Physiotherapists, Chiropodists, Podiatrists, Radiographers
July 2005			SP introduced for Optometrists
May 2006	IP introduced	IP introduced	
June 2008			IP introduced for Optometrists

In April 2003, SP was introduced to nurses and pharmacists. Later that year, officials at the DoH undertook informal consultation on proposals to extend SP to AHCPs. The appropriate legislation to allow SP by AHCPs was eventually changed in 2005 (Department of Health 2005). As proposed by Crown, SP allows suitably trained HCPs to prescribe in partnership with an independent prescriber (i.e. doctor or dentist). The independent prescriber is responsible for the initial diagnosis and for setting up the parameters of the clinical management plan (CMP). The supplementary prescriber then has discretion in the choice of dosage, frequency, product and other variables in relation to medicines within the limits specified by the CMP. Within SP there are no legal restrictions on the conditions that can be treated (Department of Health 2005) and a supplementary prescriber can prescribe any medicine (including controlled drugs[4] [CDs]) within the parameters of the CMP (Department of Health 2010d).

To prepare nurses for SP, additional modules, comprising of one days teaching, were incorporated into their existing prescribing training course. A SP conversion course was made available for nurses that had previously qualified to prescribe as an extended nurse prescriber. SP training for pharmacists and AHCPs consisted of 25 and 26 taught study days respectively and 12 days of a PLP with a DMP. The curriculum for pharmacists and AHCPs was based on that for extended nurse prescribing but with components specific to SP (Department of Health 2005). The training for optometrists included components more specific to the eye (Department of Health 2006a).

The introduction of SP for nurses meant they could prescribe using extended nurse prescribing and SP. However, though the products in the ENPF expanded considerably from 2002 to 2005, research at the time highlighted how the limited formulary was restricting benefit to patients and was limiting the efficiency of practice as nurses still had to rely on doctors for some prescriptions (Latter et al. 2005). The most common medicine additions desired by nurses at the time were a greater number of antibiotics, asthma medicine and respiratory medicine (Latter et al. 2005). As a result, in October 2005 the Committee on Safety and Medicines recommended to health ministers that nurses qualified as an extended nurse prescriber should be able to prescribe any licensed medicine[5] for any medical condition within their competence. The proposal was accepted, and from May 2006 nurses were able to prescribe any licensed medication as well as specified CDs from the Nurse Independent Formulary (NIF) (renamed from the ENPF) (Department of Health 2006a).

[4] CDs are medicines controlled under the Misuse of Drugs Act. Examples of CDs include benzodiazepines, morphine, pethidine and methadone. Stricter legal controls apply to controlled medicines to prevent them being misused, being obtained illegally and causing harm. (NHS Choices 2009).

[5] Licensed medicines are medicines which have marketing authorisation (MA). MAs are issued by the Medicines and Healthcare Products Regulatory Agency in the UK. Unlicensed medicines are medicines without MA.

Nurses were also able to prescribe licensed medicines off-label[6] but were required to take full professional responsibility for their actions (Department of Health 2006a).

In 2006, IP rights were also extended to pharmacists. Like nurses, pharmacists could prescribe any licensed medicine for any medical condition within their competence as well as licensed medicines off-label (Department of Health 2006a). Changes to legislation in December 2009 also meant both nurse and pharmacist prescribers could prescribe unlicensed medicine independently (Department of Health 2010a; Department of Health 2010c). Changes to legislation allowing the prescription of CDs by pharmacist prescribers have not been made. However, changes are likely to be implemented in the near future (Department of Health 2010c). From June 2008, optometrists were able to independently prescribe any licensed medicine (excluding CDs) for ocular conditions (Department of Health 2010b).

To train pharmacists for IP an additional day was added to the SP course to bring pharmacists' training in line with nurses and AHCPs at 26 taught study days and 12 days of a PLP. Components were added to reflect the increase in professional autonomy, clinical assessment and responsibility, and the associated legal and ethical implications. Conversion courses were made available for pharmacists and optometrists trained as supplementary prescribers wanting to become independent prescribers. Currently, minimum entry requirements for non-medical prescribing courses are standardised across higher education institutions in accordance with DoH guidelines. Table 2-1 provides a summary of these requirements.

Table 2-1: Minimum Entry Requirements for Non-medical Prescribing Courses

	Nurses	Pharmacists	AHCPs
Registration with professional body	Yes	Yes	Yes
Post-registration clinical experience	3 years	2 years	3 years
Number of years experience in prescribing field	1 year	1 year	1 year
Education level capable of studying for	Degree	Higher Education Level 3	Degree
Other criteria	Support from the sponsoring organisation confirming a service need, access to a prescribing budget and a specified DMP		

[6] The prescription of licensed medicine in a different manner (e.g. different dose, for a different patient age group, different administration) from that approved by the Food and Drug Administration (FDA) body.

2.3.2 Non-Medical Prescribing in Practice: Benefits, Concerns and Barriers

The DoH states that non-medical prescribing should 'improve patient care without compromising patient safety, make it easier and quicker for patients to get the medicines they need, increase patient choice in accessing medicines, make better use of the skills of health care professionals and contribute to the introduction of more flexible team working across the NHS' (Department of Health n.d.).

The literature suggests that the DoH's expectation of benefit to patients, doctors and NMPs is fulfilled. Supplementary pharmacist prescribers feel, as a result of their prescribing role, patients benefit from better management and increased satisfaction (George et al. 2007). Similarly, nurse and pharmacist independent prescribers perceive that patients receive higher quality care, have more choice, have opportunities for longer consultations, receive more continuous care, benefit from a more convenient and timely service and are given more information about medicines (Courtenay and Berry 2007; Latter et al. 2010). Doctors too perceive similar patient benefits of non-medical prescribing (Courtenay and Berry 2007; Stewart et al. 2009b).

Research with patients has also evaluated non-medical prescribing. Patients report similar benefits to those perceived by nurse prescribers, pharmacist prescribers and doctors. In earlier work patients consulting CNPs said they benefited from the greater expertise of the CNPs compared with general practitioners (GPs), a more responsive, timely and convenient service, greater continuity in their care, an improved relationship with their HCP and more information during consultations (Brooks et al. 2001; Luker et al. 1998). In more recent research patients consulting nurse independent prescribers in a dermatology service cited similar benefits of nurse prescribing. Patients said they benefited from more appointments, more flexible care, increased access to prescribers, high quality information relating to their medicines, greater continuity of care and said they experienced increased concordance and adherence to treatment regimens (Courtenay et al. 2011). Diabetic patients consulting nurse independent prescribers in primary care have highlighted nurses' 'non-hurried' and caring consultation style as well as improved access to medicines and better continuity of care (Stenner et al. 2011). In early evaluation work with patients of pharmacist supplementary prescribers patients said they were generally satisfied with the consultations, would recommend seeing a pharmacist prescriber to others and agreed they were provided with all the necessary information about their treatment. Patients also said it was easier to arrange an appointment with the pharmacist than their doctor and felt they had more time to discuss health-related issues (Stewart et al. 2008). In another study, patients consulting nurse and pharmacist independent prescribers said their appointments were longer than with their doctor. Of the patients surveyed, 45% agreed that their condition was controlled better and that they were happier with their

medicines since seeing the NMP. Patients also said they had better access to medicine from the NMP than their doctor (Latter et al. 2010)

Despite the obvious benefits of non-medical prescribing there is inconsistency in the attitudes of patients. In Stewart et al.'s study, 67% of patients said they would prefer to consult a doctor than a pharmacist. An even higher percentage of patients said they would prefer to consult a doctor if their condition worsened (Stewart et al. 2008). In Latter et al.'s study, between one in five and one in three patients believed they received safer care from their doctor than the nurse or pharmacist prescriber respectively. Some patients also felt doctors provided them with more information about non-drug treatments, how any medicine would help them and the possible side effects of the medicine (Latter et al. 2010). This research suggests patients have concerns about some aspects of non-medical prescribing.

NMPs perceive, as a result of their prescriptive authority, that doctors' relationships with them is improved and doctors' time is used more effectively (Courtenay and Berry 2007; Hacking and Taylor 2010; Latter et al. 2010). Research has found doctors' experiences of supplementary prescribing pharmacists matches NMPs own perceptions. Doctors have reported pharmacist prescribing improved team work and freed up their own time to spend on more acute patient cases (Stewart et al. 2009b). Similarly doctors interviewed regarding their experiences of nurse prescribing reported a reduction in their own workload. This view was confirmed by GP surgery managers in the same study who felt doctors' workload had reduced significantly as health promotion issues had been taken up by nurse prescribers (Watterson et al. 2009). Weiss et al. also reported that doctors working with pharmacist supplementary prescribers felt a portion of their workload had been transferred to pharmacists. However, doctors felt transferred work was simply replaced by other demands (Weiss et al. 2006). Interestingly, 82% of the doctors surveyed in another study agreed non-medical prescribing saves them time but 43%, of the same sample, agreed that working with NMPs adds significant time to their workload because of the support NMPs need from them (Hacking and Taylor 2010). Similarly some pharmacists working with nurse prescribers have reported an increase in their workload due to time needed to support nurse prescribers (Watterson et al. 2009).

Extending prescriptive authority has reportedly had benefits to the HCPs themselves. Pharmacist prescribers have said prescribing authority increases their job satisfaction, increases their self-confidence, makes them more independent and provides more recognition from other HCPs (George et al. 2007). Nurse prescribers have also said their job satisfaction is improved and said prescribing brings greater opportunities for professional development (Courtenay and Berry 2007; Watterson et al. 2009). Nurse and pharmacist independent prescribers in other research have cited

similar benefits and added that prescribing authority enables better use of their skills and means their time is used more effectively (Latter et al. 2010). However, whilst NMPs clearly benefit from prescribing authority, some nurse prescribers have highlighted the increased pressure and workload prescribing duties bring (Watterson et al. 2009).

Doctors and patients have expressed concerns about both nurse and pharmacist non-medical prescribing. Doctors have expressed concerns about the adequacy of the prescribing training, feel nurses and pharmacists are unprepared to conduct medical diagnoses and believe some NMPs may struggle to manage uncertainty arising from clinical practice (Blenkinsopp et al. 2008; Courtenay and Berry 2007; Crown and Miller 2005; Fisher 2010; Lloyd et al. 2010; Stewart et al. 2009b; Tann et al. 2010; Watterson et al. 2009; Weiss et al. 2006). Patients, on the whole, feel comfortable with nurse and pharmacists having a prescribing role (Stewart et al. 2009a). In one research study patients consulting pharmacists did not express too much concern regarding the concept of pharmacist prescribing (Stewart et al. 2009b). However, in other research, patients have expressed doubts about whether pharmacists are as knowledgeable as a doctor in prescribing medicines and many feel that a doctor should be involved whenever a pharmacist prescribes (Stewart et al. 2009a). Hobson et al. also found that patients have concerns about the training and monitoring systems that are in place for pharmacist prescribers (Hobson et al. 2010). Patients also wish there to be safeguards for nurse prescribers and suggest GPs could check prescriptions. Patients have also expressed concerns about nurses' diagnostic ability and emphasise how they should receive sufficient training and supervision (Watterson et al. 2009). However, presumably patients would expect all HCPs to have sufficient training and supervision. The issues surrounding the concerns raised by patients and doctors are not necessarily borne out in practice as nurse and pharmacist independent prescribers have found to be prescribing in clinically appropriate ways (Latter et al. 2010). However evaluation of the clinical appropriateness of non-medical prescribing is clearly an area that will need continuous research.

Post-qualifying not all qualified NMPs go on and use their prescriptive authority. Hacking and Taylor reported that 14% of 537 NMPs had not prescribed at all since qualifying (Hacking and Taylor 2010). Often there are also delays in the issuing of the first prescription by NMPs. Latter et al. reported that only 23% of nurses and 37% of pharmacists prescribed within one month of completing prescribing training. Furthermore 15% of nurses and pharmacists took longer than six months to issue their first prescription (Latter et al. 2010). Delays receiving prescription pads, managerial responsibilities, difficulties accessing patients' notes, the availability of more appropriate services, insufficient support from doctors and other HCPs and time constraints were found, in earlier research, to be barriers to the use of prescriptive authority amongst CNPs (Hall et al. 2006). Similarly, research with pharmacist supplementary prescribers found that organisational

barriers (e.g. local Trust procedures, university systems), lack of funding, delay in prescription pads, and role changes delayed their use of SP (George et al. 2007; Tully et al. 2007). Recent research with nurse and pharmacist independent prescribers has found similar barriers are still delaying or preventing prescribing in some cases (Hacking and Taylor 2010; Latter et al. 2010).

2.3.3 Profile of NMPs

2.3.3.1 Number of Prescribers

In April 2011 there were 23,280 nurses holding a SP or IP qualification on the Nursing and Midwifery Council (NMC) register. This represented an 18% increase from April 2010. In addition there were 33,899 CNPs on the register. Independent and/or supplementary nurse prescribers accounted for 3.5% and CNPs 5.1% of all practising nurses on the NMC register (Nursing and Midwifery Council 2011). It is likely that some CNPs were also independent and/or supplementary prescribers. There were 1,208 pharmacist independent prescribers and 1,471 pharmacist supplementary prescribers on the Royal Pharmaceutical Society of Great Britain (RPSGB)[7] register in 2009 (Seston and Hassell 2010). Due to the staggered introduction of prescribing training for pharmacists[8] the figures suggest that in 2009 there were 1,208 pharmacists trained as both an independent and supplementary prescriber and 363 pharmacists qualified as a supplementary prescriber only. In 2009 pharmacist prescribers accounted for 3% of all practising pharmacists on the RPSGB register (Seston and Hassell 2010). According to NHS Prescription Services there were 103 AHCPs actively prescribing in 2010. The majority of the AHCPs prescribing were physiotherapists, chiropodists and podiatrists (NHS Prescription Services 2011). Numbers of AHCPs with a prescribing qualification but not actually prescribing are not currently available.

2.3.3.2 Work Settings and Prescribing Environments

Research shows that nurse and pharmacist prescribers work in a wide range of health care settings. Independent and supplementary pharmacist prescribers reportedly work in secondary care, primary care and the community pharmacy setting (Seston and Hassell 2010). Recent research has reported that primary care is the predominant setting for pharmacist prescribing (Latter et al. 2010). The NMC does not produce a breakdown of the care settings that nurse prescribers work. However, Hacking and Taylor surveyed 546 NMPs including 515 nurses, 16 pharmacists and 15 AHCPs. Of those surveyed, 46% worked for a primary care trust (PCT) and 21% worked for a GP surgery. The remainder worked for either an acute trust, mental health trust or in another setting (Hacking and Taylor 2010). Latter et al. concluded that, as with pharmacists, nurse prescribing operates

[7] The RPSGB is now separated into two bodies: the General Pharmaceutical Council (GPhC), which is the regulator for pharmacists, pharmacy technicians and pharmacy premises, and the Royal Pharmaceutical Society (RPS) which is the dedicated professional body for pharmacists in England, Scotland and Wales.

[8] As the current prescribing course for pharmacist prescribers combines training for IP and SP and because the IP qualification for pharmacists has never been offered alone almost certainly all pharmacist independent prescribers will be supplementary prescribers.

predominantly within the primary care setting (Latter et al. 2010). This supports Hacking and Taylor's findings. Latter et al. also reported that pharmacists were prescribing within the NHS acute trust setting, during home visits to patients, in care homes, nursing homes, at sexual health clinics and for NHS mental health trusts. Specific environments where nurse prescribers prescribed included in the NHS acute trust setting, during home visits to patients, NHS walk-in centres (WICs), family planning clinics, care homes, nursing homes, sexual health clinics, NHS mental health trusts, community midwifery, prisons, private hospitals, hospices and private clinics (Latter et al. 2010).

2.3.4 Volume and Nature of Prescribing

In the year to September 2010 non-medical prescribing accounted for 1.6% of the total volume of all prescriptions written in general practice in England. In total, 13.6 million prescriptions were written by nurse prescribers and a further 308,000 items were written by pharmacist prescribers. Furthermore, nurse and pharmacist prescribing, in the year to September 2010, increased by 11% and 78% respectively from the year beginning September 2008. AHCP prescribing is still in its infancy with only 1,790 prescription items written in the year September 2009 to September 2010 (NHS Prescription Services 2011). Nurse prescribers have been found to prescribe within a wide range of treatment areas, the five most predominant of which are infections, asthma, diabetes, chronic obstructive pulmonary disease (COPD) and family planning. In the same study, hypertension, cardiology, asthma, coronary heart disease prevention and care of older people were found to be the main areas that pharmacists prescribe (Latter et al. 2010). Only 4% of pharmacists' prescribing was in the infection treatment area compared with 15% of nurse prescribing (Latter et al. 2010). This suggests that nurses are involved more in the treatment of acute conditions than pharmacist prescribers.

2.3.5 Prescribing Competency

The NMC states that nurse prescribers should only prescribe within their level of experience and competence and within the requirements of their role (Nursing and Midwifery Council 2006). Likewise, the RPSGB state that pharmacist prescribers should only prescribe within their professional and clinical competence and expertise (Royal Pharmaceutical Society of Great Britain 2007). A Competency Framework is provided to NMPs (National Prescribing Centre 2006) to be used to ensure prescribers possess the relevant competency to undertake a prescribing role, to help prescribers and their employers identify training and development needs and to support prescribers' continued professional development (CPD). The Competency Framework is split into three main sections, 'the consultation', 'prescribing effectively' and 'prescribing in context'. The key aspects of the Competency Framework are summarised in Table 2-2. The rather limited research in this area suggests that NMPs are prescribing within their perceived competency. For instance, Bradley

et al. reported that nurse prescribers' perception of their competency influenced the areas that they selected to prescribe (Bradley et al. 2007). Other research has found despite receiving requests to prescribe outside their competency both nurse and pharmacist prescribers report they rarely do in practice (Bissell et al. 2008). Research suggests that NMPs are adhering to guidance from their professional body regarding competency. However, very little else is known about how prescribers select to use their prescriptive authority.

Table 2-2: Outline of the Competency Framework for NMPs

Competency Area	Competency	Overarching Statements
1. The Consultation	1. Clinical and Pharmaceutical Knowledge	Has up-to-date clinical and pharmaceutical knowledge relevant to own area of practice.
	2. Establishing Options	Reviews diagnosis and generates treatment options for the patient within the clinical management plan. Always follows up treatment.
	3. Communicating with Patients	Establishes a relationship based on trust and mutual respect. Sees patients as partners in the consultation. Applies the principles of concordance.
2. Prescribing Effectively	4. Prescribing Safely	Is aware of own limitations. Does not compromise patient safety, justifies prescribing decisions.
	5. Prescribing Professionally	Works within professional and organisational standards.
	6. Improving Prescribing Practice	Actively participates in the review and development of prescribing practice to improve patient care.
3. Prescribing in Context	7. Information in Context	Knows how to access relevant information. Can critically appraise and apply information in practice.
	8. The NHS in Context	Understands, and works with, local and national policies and services that impact on prescribing practice. Sees how own practice impacts on the wider NHS.
	9. The Team and Individual Context	Works in partnership with colleagues for the benefit of patients. Is self-aware and confident in own ability as a prescriber.

Source: (National Prescribing Centre 2006)

2.3.6 Independent Prescribing versus Supplementary Prescribing

The DoH has stated that IP is more appropriate where the NMP is competent to assess, diagnose and make treatment decisions for the patient, for conditions that the prescriber is competent to treat independently, and where the NMP works remotely from a doctor (Department of Health 2006a). The use of SP is considered more appropriate in the management of long-term medical conditions, where prescribing is undertaken as part of a team, where CDs are prescribed, where the NMP is newly qualified as a prescriber and in mental health settings (Department of Health 2006b).

Evidence that the recommendations regarding the use of IP and SP are followed by NMPs in practice is inconclusive. Earlier research with mental health nurses found that three quarters of the sample were using SP rather than IP (Snowden 2008). However, more recently Latter et al. found that much of the prescribing by nurse and pharmacists independent prescribers was for conditions considered long-term (e.g. asthma, diabetes, COPD, hypertension) (Latter et al. 2010). Hacking and Taylor reported only 9% of the NMPs in their study were using SP only, 92% of the NMPs were using IP and SP and 67% of the NMPs were using IP only. The 15 AHCPs included in the sample are likely to account for some of those using SP only (Hacking and Taylor 2010). The research suggests prescribers that can are using IP rather than SP. Some prescribers view CMPs as restrictive, cumbersome and time consuming (Bissell et al. 2008). It may be these views that underlie prescribers' preferences for IP rather than SP. If legislation allowing the prescription of CDs by pharmacists is changed the use of SP could be reduced further. In the forthcoming years it may be important to evaluate the usefulness of the SP model.

2.4 Prescribing Influences

This section of the chapter provides a description of the current literature relating to prescribing influences.

2.4.1 Literature Search Strategy

A literature search was conducted using the search terms provided in Box 2-2. The search terms were kept broad to avoid rejecting papers relevant to the topic. This search strategy was applied to those databases outlined in Appendix 2.0. Grey literature sources were also searched (see Appendix 1.0). The dates selected for the search were 1994 to present for NMPs and 1975 to present for doctors. For the NMPs search it was felt that searching earlier than 1994 would be unlikely to yield any relevant papers as the first form of non-medical prescribing was not introduced until 1994 in the UK. Prescribing by dentists was not included in the literature search because prescribing by dentists accounts for a small percentage of the overall NHS prescribing cost (see Section 2.2.2). Dentists only prescribe a limited range of medicine for specific complaints and work and prescribe within a unique setting specific to dentistry. The broad aim of the literature search was to identify a wide range of papers relating to the factors influencing NMPs and doctors' prescribing decisions. The aim of the non-medical prescribing literature review was to identify gaps in understanding concerning the influences on NMPs' prescribing.

The search yielded 14 relevant papers relating to the influences on non-medical prescribing. The vast majority of the papers identified through the search focused on CNPs or NMPs outside the UK. Two papers addressed some of the influences on nurse independent and/or supplementary

prescribers but did not specifically focus on this topic. No papers were identified that examined the influences on the prescribing of pharmacists or AHCPs.

There were no strict inclusion and exclusion criteria for the papers about doctors' prescribing. The author used research papers she felt were most relevant to the topic. No preference was given to papers in either primary or hospital and secondary care but it became evident that much of the research focusing on prescribing influences has been conducted with GPs. Generally, UK papers were used over non-UK papers and more recent papers were selected over less recent papers. However, where non-UK papers and older papers were considered to contribute to understanding prescribing influences, more than other papers, they have been included in the review. New references, identified through reading papers generated by the search, were also read and included in the review if they were relevant to the topic.

Box 2-2: Key Search Terms used for Literature Searches

Factors influencing Non-Medical Prescribing Decisions: Search Terms

Sources, Information, Influences, Impact, Pressure, Factors, Community Nurse, Nurse, Pharmacist, Supplementary, Independent, Nurse Practitioner, Optometrist, Physiotherapist, Chiropodist, Podiatrist, Radiographer, District Nurse, Health Visitor, Non-Medical, Prescribing, Prescribing Behaviour.

Factors influencing Doctors' Prescribing Decisions: Search Terms

Sources, Information, Decision-making, Influences, Impact, Pressure, Factors, Medical, Doctor, Prescribing, Prescribing Behaviour

2.4.2 Influences on Prescribing

The main categories of prescribing influences, identified through the literature search, were as follows: regulatory factors (i.e. guidelines, formularies, healthcare managers), cost, patient factors, colleagues, professional and personal experience, others' prescribing behaviour and prescribing culture, research findings, logistical factors, diagnostic uncertainty and the pharmaceutical industry. The literature, for both doctors and NMPs, within each of these areas is discussed in this section of the thesis.

2.4.2.1 Guidelines, Formularies and Healthcare Managers

Both GPs and hospital doctors report that guidelines influence their prescribing decisions. Examples of guidelines in the literature include National Institute for Health and Clinical Excellence (NICE) guidelines, surgery guidelines, PCT guidelines, protocols and treatment pathways. Wood et al. interviewed GPs in order to explore the reasons for their choice of prescribed antibiotic. Many GPs reported that what was stated in the guidelines in relation to antibiotics influenced their prescribing decisions (Wood et al. 2007). Hospital doctors of all experience levels also select medicine based on protocols and guidance (Higgins and Tully 2005).

Swedish hospital doctors have said they are particularly influenced by guidelines if they are prescribing outside their area of clinical expertise (Ljungberg et al. 2007). Doctors do not, however, feel obligated to conform to guidelines and deviation is also common. GPs in Wood et al's study, initially described above, stated that prescribing contrary to the recommendations of guidelines was justified when it coincided with the patient's best interests (Wood et al. 2007). Wathen and Dean assessed the impact of five NICE technology appraisals on the prescribing patterns of GPs. They found that overall NICE guidance in isolation had minimal impact on GPs' prescribing patterns. If NICE guidance was considered out-dated or if the GP had conflicting advice from other sources then NICE guidance had no perceived impact on prescribing (Wathen and Dean 2004).

Although much is known about the influence of guidelines on doctors' prescribing decisions there is a limited understanding about how guidelines influence NMPs. The only research that does exist is with CNPs. This research found CNPs are influenced by guidelines in most circumstances. CNPs stated that they only deviate from guidelines in 'exceptional circumstances' on the grounds of lack of efficacy, reduced treatment duration, patient compliance, and more appropriate product choice. However, CNPs deviating from guidelines were all experienced practitioners who prescribed more frequently (Hall et al. 2004). Further research is required, especially with NMPs with full prescriptive authority, to expand the understanding of how guidelines influence NMPs' prescribing.

A formulary is a list of medicine that doctors or other prescribers may prescribe from. Prescribers are normally requested or required by management to use only formulary medicine unless there are valid medical reasons to use non-formulary medicine. Formularies can be implemented at various levels, including national level (e.g. BNF), PCT level, hospital level or surgery level. Formularies can include recommendations in regards to prescribing as guidelines do. Formularies have been found to influence the prescribing behaviour of doctors. Schumock et al. asked 150 United States (US) doctors, clinical pharmacists and formulary committee members to rate the importance of a list of factors thought to influence drug prescribing. All respondents rated drug formulary status as highly influential (Schumock et al. 2004). Clearly the US respondents' interpretation of the term 'formulary' may be different from UK doctors. However, UK research has noted similar findings. For instance GPs based in the UK have described how their choice of antibiotics is influenced, amongst other reasons, by their practice formulary (Wood et al. 2007). However, whilst doctors do take formulary recommendations into consideration they also feel comfortable to prescribe medicine not on their formulary. Jacoby et al. found that in response to clinical circumstances GPs reported they chose medicine not available on the formulary (Jacoby et al. 2003).

The BNF has been cited as a source of influence by CNPs (Hall et al. 2003) but the impact of formularies on NMPs has not been explored in-depth. In earlier research Hall et al. described the

inconsistency in the provision of local formularies for CNPs (Hall et al. 2004). However, with the expansion of non-medical prescribing, it might be that formularies for NMPs are now more prevalent. More research in this area is needed to understand whether the recommendations of formularies influence NMPs and if NMPs, like doctors, feel comfortable deviating from these recommendations.

GPs describe how NHS managers make them more accountable for their prescribing behaviour which ultimately influences their decisions (Prosser and Walley 2007). Whilst some GPs have welcomed discussions with NHS managers and found them a useful source of support others have said they resent the advice they have been given. Some GPs refer to 'advice' from NHS managers as 'political', 'managerial meddling', 'cost-cutting' and 'inspecting' (Carthy et al. 2000; Prosser and Walley 2007). Some GPs have challenged managers authority to control their prescribing behaviour and regard managers as not possessing sufficient information to engage in clinical decision making processes (Prosser and Walley 2007). It is not clear how NMPs respond to advice from healthcare managers. The currently limited research suggests NMPs have positive attitudes towards NHS managers. Nurse independent and supplementary prescribers prescribing in acute and chronic pain have welcomed formal agreements with PCT managers, such as the 'intent to prescribe' agreement, because they considered them useful in helping them to resist patient pressure (Stenner and Courtenay 2008). Further research on this topic, particularly with pharmacist prescribers and AHCP prescribers, would be clearly beneficial.

2.4.2.2 Cost

Doctors report that medicine cost can influence their prescribing decisions. Greenfield et al. investigated the factors influencing GPs', cardiologists' and practice nurses' decisions to prescribe preventative treatment for coronary heart disease. Approximately one quarter of the participants who took part in the study regarded medicine cost as an important influence on their prescribing decisions and others mentioned other cost factors (e.g. cost of long-term monitoring of patients) (Greenfield et al. 2005). GPs have also described prescribing generic and cheaper products in order to reduce drug costs (Jacoby et al. 2003). However, other factors sometimes take precedence over cost. In Ljungberg et al.'s study Swedish hospital doctors said they prioritised their knowledge and experience over cost considerations (Ljungberg et al. 2007). Similarly Prosser and Walley found hospital doctors were willing to adhere to initiatives to prescribe therapeutically equivalent substitutions to save cost but still wished to prescribe more expensive drugs if they felt they improved the quality of prescribing for their individual patients (Prosser and Walley 2006). Whilst cost can clearly influence doctors' they reject an entirely cost orientated agenda.

CNPs also take cost, as well as other factors associated with cost, into consideration when prescribing. Hall et al. reported that when DNs assessed the cost of prescribing wound management products they considered a range of issues including product cost, time required to heal the wound, the number of dressing changes and the likely adherence of the patient (Hall et al. 2003). Although cost is considered by CNPs, PCT prescribing leads have said controlling the cost of community nurse prescribing is not a high priority for them (Hall et al. 2004). However it would be unsurprising if, because of the changes in the volume and range of NMPs since this research was conducted, PCTs now place more emphasis on the cost associated with non-medical prescribing. It may be that NMPs now face more pressure in relation to cost. Whether this is the case and how this influences their prescribing needs to be explored with further research.

2.4.2.3 Patients

Clinical patient factors, such as patients' age, clinical need for the medicine, the extent and nature of co-morbidities, patients' family history, patients' lifestyle habits and current medication have been reported to influence doctors' prescribing decisions (Bendtsen et al. 1999a; Greenfield et al. 2005; Tobin et al. 2008). Other, less clinical, patient factors, such as patients' financial status, likely adherence, location, living conditions and character, have also been found to influence doctors' prescribing (Bendtsen et al. 1999a; Buusman et al. 2007; Carthy et al. 2000; Greenfield et al. 2005; Kumar et al. 2003; Ljungberg et al. 2007; Tobin et al. 2008). CNPs have also said they are influenced by patients' financial status and social situation (Hall et al. 2003; Luker et al. 1998). For instance CNPs have said they are more likely to prescribe, rather than recommend an over the counter (OTC) product, for those exempt from prescription charges and will recommend an OTC product, rather than prescribe, if it would work out cheaper for the patient (Luker et al. 1998). DNs, in Hall et al.'s study, described how they prescribed products that they believed would prevent non-adherence and minimum disruption to the patient's daily activities (Hall et al. 2003).

Doctors have cited patient pressure as an influence on their prescribing decisions (Bradley 1992a; Petursson 2005; Stevenson et al. 1999). For instance, in Stevenson et al.'s study, GPs interviewed said they had experienced pressure for a prescription from patients and said that this pressure led them to prescribe when they would not otherwise have done so (Stevenson et al. 1999). Furthermore, patient expectation is often blamed for non-pharmacological or non evidence-based prescriptions (Petursson 2005). Petursson asked Icelandic GPs for the reasons behind their non-pharmacological prescribing of antibiotics. All GPs cited pressure from patient or family as the main reason for their decision (Petursson 2005). Lewis and Tully used the critical incident technique to investigate the influences on hospital doctors' prescribing decisions by exploring what they found uncomfortable when prescribing. In nearly half of incidents where the doctor reported patient pressure the patient was prescribed the medicine requested. In many of these incidents the

prescribing was considered inappropriate by the prescriber (Lewis and Tully 2011). Doctors report that other factors, such as insufficient time and uncertainty, make it particularly difficult to resist patient pressure (Carthy et al. 2000; Coenen et al. 2006; Miller et al. 1999). These issues are discussed further in Section 2.4.2.8 and Section 2.4.2.9 respectively.

Research employing quantitative techniques has provided further insight into patient pressure. Evidence suggests when a patient expects a prescription they are more likely to be given a prescription by the doctor (Macfarlane et al. 1997; Webb and Lloyd 1994). Cockburn and Pit found that when a patient expected medication they were three times more likely to be prescribed a medication than when the patient did not expect any medication. However, when the GP thought that the patient expected medication they were 10 times more likely to be prescribed a medication than when the GP thought the patient did not expect any medication (Cockburn and Pit 1997). This suggests that doctors' assessments of patients' preferences have more influence than patients' preferences themselves. Clearly this makes it all the more important that doctors' perceptions are accurate. However, studies have found that in many cases doctors overestimate patients' expectations for prescriptions (Little et al. 2004; Macfarlane et al. 1997).

CNPs also experience patient pressure in relation to prescribing (Hall et al. 2003; Luker et al. 1998). HVs in Hall et al.'s study reported they felt particular pressure to prescribe free supplies of OTC medicines to patients who were exempt from prescription charges (Hall et al. 2003). In one study CNPs reported that patient pressure led them to prescribe some items that they would not otherwise have prescribed (Luker et al. 1998). More recently Weiss et al. compared WIC nurses' and GPs' perceptions of the influence of patients on their supply of an antibiotic to patients with an acute respiratory tract infection. The study found that GPs were more likely than nurses to report that the patient expected an antibiotic and were more likely to report being influenced by patient expectations (Weiss et al. 2004). Whilst Weiss et al.'s findings are important it is unknown how applicable the findings are to NMPs because the nurses in the study were using PGDs and not actually prescribing. The study however lays foundations for further research about patient pressure with NMPs. Given that research has already been conducted with CNPs it is important that future research focuses on other NMPs.

Doctors' desire to stay on good terms with their patients also influences their prescribing. In some cases this leads to in inappropriate prescribing. For instance, Coenen et al. found that concern for the doctor-patient relationship and GPs' wish to be 'nice' to their patients played a role in over 40% of deviations from good general practice (Coenen et al. 2006). Butler et al. found that both patients and doctors saw the doctor-patient relationship as important and were keen to avoid conflict. In many situations where antibiotics were prescribed doctors knew that they offered

marginal effectiveness yet often prescribed to maintain good relationships with patients (Butler et al. 1998). In some cases doctors' fear that they may 'lose' their patients to another GP or practice motivates them to prescribe unnecessary medicines (Dybwad et al. 1997). The fear of loosing patients to other GPs has found to be particularly influential on doctors in countries where GPs are paid to maintain a certain number of patients in their surgery (Hassell et al. 2003). It would be unsurprising if, like doctors, NMPs also want to maintain good relationships with their patients. However, further research is needed to explore if the desire for good patient relationships influences their prescribing.

2.4.2.4 Colleagues

Influence of GPs

CNPs have said GPs have a limited influence on their prescribing decisions (Hall et al. 2003; Luker et al. 1998). In one study, CNPs said they use GPs as an information source for specific conditions, such as bowel management, but regarded their knowledge superior to GPs for many conditions that they treated (Hall et al. 2003). There is little research that has examined how GPs influence independent and supplementary NMPs. It may be that because NMPs now manage a wider range of conditions, for which they are not necessarily the expert like CNPs, they may consult GPs more than CNPs do when making prescribing decisions. Additional research is needed to explore this area in detail.

Hospital and Secondary Care Practitioners

Hospital doctors have been found to influence GPs' prescribing behaviour (Buusman et al. 2007; Eccles et al. 1996). For instance, in a UK study, Eccles et al. found that hospital doctors were particularly influential on GPs' prescribing in the areas of schizophrenia, diabetes, ischemic heart disease as well as other conditions (Eccles et al. 1996). Similarly, Buusman et al. investigated how Danish GPs choose between drugs in the same therapeutic drug group. In the study many of the 15 GPs stated that recommendations from the local hospital had a significant impact on their prescribing habits (Buusman et al. 2007). CNPs have previously cited clinical specialists as a source of information (Hall et al. 2009). However, the relationship between NMPs in primary and community care and hospital and secondary care practitioners has not been explored at all. Further research is needed to understand more about this relationship and how, if at all, it influences NMPs' prescribing.

Influence of Pharmacists

Doctors believe pharmacists exert little influence on their prescribing behaviour (Carthy et al. 2000; Schumock et al. 2004). GPs acknowledge community pharmacists fail-safe role in identifying prescription errors but admit they rarely exploit pharmacists in terms of prescribing

decision-making support (Carthy et al. 2000). In the US context there is also evidence of nurse prescribers preferring other sources of drug information, such as research and pharmaceutical representatives, than pharmacists (Clauson et al. 2009). However, Hall et al. found CNPs receive support from community pharmacists in the form of information on products, drug interactions and OTC products (Hall et al. 2003). Independent and supplementary nurse prescribers have also said they value pharmacists as a source of information and advice on CDs and drug interactions (Stenner and Courtenay 2008). Whilst there is clearly evidence of a cooperative relationship between CNPs and community pharmacists it is unclear the extent to which NMPs use community pharmacists for help with medicine choice and selection. Future research needs to address this question specifically. It may also be interesting to explore the interaction between pharmacist prescribers and other pharmacists.

Peers

Doctors' attitudes towards the influence of other doctors on their prescribing practice vary considerably. Hospital doctors seek the advice of colleagues they regard as more knowledgeable about a particular aspect of prescribing (Ljungberg et al. 2007) and those more experienced (Lewis and Tully 2009b). GPs interact with colleagues about medicine issues at surgery meetings (Prosser et al. 2003; Wood et al. 2007) and favour the advice of those they regard as more up-to-date due to more recent hospital experience (Armstrong et al. 1996). However, other GPs have described how they rarely meet with colleagues to compare prescribing. In Carthy et al.'s study GPs explained their reluctance to compare prescribing with their GP colleagues was due to confidence in prescribing ability and fear of criticism (Carthy et al. 2000). Similarly, in Prosser et al.'s study, GPs reported that colleagues had little influence on their prescribing of new drugs (Prosser et al. 2003).

The literature points to a cooperative relationship between nurse prescribing colleagues. CNPs have stated that other nurse prescribers influence their prescribing behaviour through informal discussion and exchange of ideas (Luker et al. 1998). Nurse independent and supplementary prescribers have described how peer support from other nurse prescribers is an important source for gaining information and trouble shooting, provides encouragement, boosts confidence and helps with teamwork (Stenner and Courtenay 2008). Peer support appears to be more important to NMPs than it does for some GPs. However, it is unknown whether NMPs, other than CNPs, feel their prescribing decisions are influenced by their colleagues.

Influence of Nurses

Research suggests that nurses' influence on doctors' prescribing decisions is varied. On the one hand junior doctors rely on experienced nurses when making prescribing decisions in hospital (Pearson et al. 2002). Nurses too say they are actively involved in the prescribing process, by

writing out prescriptions for doctors to sign, recommending treatment and discussing treatment options with doctors (Jutel and Menkes 2010). Indeed nurses doing everything but signing prescriptions was one of the reasons that non-medical prescribing was introduced. However, nurses' involvement in prescribing is sometimes interpreted as pressure by doctors. In Wood-Mitchell et al.'s study, psychiatrists described the pressure from nurses, as well as other care home staff, to prescribe medicine for patients with dementia (Wood-Mitchell et al. 2008). Hospital doctors report pressure from nurses for medicine as a cause of discomfort in their practice (Lewis and Tully 2009b). As yet no research has examined how the relationship between NMPs and nurses influences their prescribing. Research is needed to understand if NMPs experience similar pressures from nurses, as doctors do, and, if they do, how they respond to this pressure.

2.4.2.5 Professional and Personal Experience

Doctors report that their personal and professional experience influences their prescribing decisions. In Wood-Mitchell et al.'s study psychiatrists reported their prescribing decisions were based on familiarity and past experience of a drug. Psychiatrists reported using a small group of medications that they had experience of as well some common 'preferred' medications (Wood-Mitchell et al. 2008). Where doctors' professional experience contradicts scientific evidence doctors favour their experience. For instance, in Schwartz et al.'s study, doctors defended their use of vasodilators, despite contradictory research evidence suggesting that other products are more effective, on the grounds that their clinical experience, generated from years of practising 'real-world medicine', was more applicable to clinical practice than academic studies (Schwartz et al. 1989). Research also suggests that those with less experience are influenced by professional experience less when prescribing than more experienced colleagues. Dutch junior doctors have indicated that clinical experience influences them, but less so compared with more experienced colleagues such as consultants and GPs (Tichelaar et al. 2010). It may be that less experienced doctors use clinical experience less than more experienced doctors simply because they have less experience to draw upon.

The study by Tichelaar et al., although of limited comparison with UK prescribers because of the Dutch sample, raises questions about how NMPs, as relatively inexperienced prescribers, are influenced by their own experience. Research with CNPs found that they draw on past professional experience when making prescribing decisions (Hall et al. 2008). Personal experience also influences US nurse prescribers' prescribing decisions within the field of chronic pain (Fontana et al. 2000). Despite this research, there is clearly a rather limited understanding of this area. In further research it may be interesting to explore the question, relating to inexperienced prescribers, raised by Tichelaar et al.'s study.

2.4.2.6 Behaviour of Others and Prescribing Culture

There is evidence that doctors' prescribing behaviour is influenced by the prescribing behaviour of others as well as by prescribing culture. There are a number of examples of this in the literature. For instance, sometimes GPs can feel obliged to continue prescriptions of medicines initiated by a hospital consultant (Armstrong and Ogden 2006; Buusman et al. 2007; Cantrill et al. 2000). Hospital doctors have reported that they prescribe in accordance with 'therapeutic traditions' which are not necessarily evidence-based (Ljungberg et al. 2007). Bishop et al. and Cavazos et al. reported that aspects of decision making, including prescribing, were influenced by informal 'rules' which dictate practice (Bishop et al. 2011; Cavazos et al. 2008). GPs report that the use of a new medicine by a hospital consultant gives it acceptability and encourages them to use it themselves (Jones et al. 2001; Prosser et al. 2003).

CNPs, like doctors, are reluctant to change prescriptions initiated by hospital consultants (Hall et al. 2009). CNPs also look to the prescribing patterns of their immediate colleagues to guide their own practice (Hall et al. 2008). US nurse prescribers have reported their prescribing decisions are influenced by the customary prescribing practices of others, even practices not clinically appropriate (Fontana et al. 2000). There is evidence of both doctors and CNPs following the prescribing behaviour of others and conforming to prescribing culture. However, as this topic has not been explored with NMPs in the UK with full prescribing authority there is a need for further research in this area.

2.4.2.7 Research Findings

Doctors claim that the prescribing decisions they make are influenced by evidence from journals and research findings (Wood et al. 2007; Wood-Mitchell et al. 2008). Evidence suggests specialists are influenced by such sources more than GPs. In Allery et al.'s study GPs and consultants were asked to give the reasons for the change in their clinical practice. In the study hospital consultants cited literature as a source of influence more than GPs did (Allery et al. 1997). Although Allery's findings were for changes in all types of clinical practice, and not just prescribing, a Dutch study similarly found clinical specialists rated scientific literature as more important in their drug choice than GPs and medical students (Tichelaar et al. 2010). The use of research to inform prescribing decisions is aligned with the principles of evidence-based medicine (EBM). EBM has been defined as the 'conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients' (Sackett et al. 1996, pg. 71). Despite being encouraged to adhere to the principles of EBM not all prescribing decisions made by doctors are evidence-based (Miller et al. 1999; Petursson 2005). Some doctors reject research findings because the research sample does not reflect the patients they manage (Wood et al. 2007; Wood-Mitchell et al. 2008). Furthermore, when discrepancies between their own experiences and the research emerge some doctors favour

their own experience (Wood-Mitchell et al. 2008). Other factors such as patient pressure (see Section 2.4.2.3) and time pressures (see Section 2.4.2.8) can also lead doctors to prescribe against available evidence.

Evidence suggests NMPs' exposure to and use of research in their practice is varied. In one study independent nurse prescribers' responses to the question of how frequently they used evidence in their prescribing practice ranged from 'not very often' to 'fairly regularly' (Banning 2005). Nearly half of US nurse prescribers in another study rated published studies in journals as their preferred drug information source (Clauson et al. 2009). Clearly more research is needed with NMPs to understand their use of research findings in their prescribing practice. More research is needed with pharmacists and AHCPs as there is currently no research with this group of HCPs.

2.4.2.8 Logistical Factors

Doctors admit that time and workload pressures influences their prescribing behaviour. In many studies GPs have described how insufficient time in consultations leads to unnecessary prescriptions of drugs and reduced prescribing quality (Buusman et al. 2007; Carthy et al. 2000). In one study Kumar et al. looked at why GPs prescribe antibiotics to patients. GPs in the study stated they often prescribed antibiotics to patients as a result of the daily pressure, to make the consultation quick and therefore catch-up on time or relieve stress of clinical practice, and because they did not have time during the consultation to explain to the patient why antibiotics were not necessary (Kumar et al. 2003). Petursson also suggests that GPs use prescriptions as a means to ending a consultation with a patient and managing their workload (Petursson 2005). Carthy et al. also found that GPs regard patient pressure to be a key influence on their prescribing behaviour and whether they resisted this pressure depended on the amount of time available (Carthy et al. 2000). Britten suggested that GPs simply do not have enough time to negotiate an alternative to a prescription with the patient (Britten 1995). The anticipated workload arising from certain prescribing decisions also influences GPs' decisions. GPs have described how it is easier to prescribe benzodiazepines to patients than deal with the extra workload associated with dealing with the patient's addiction to the drugs (Bendtsen et al. 1999b). Similarly, GPs have described how prescribing a broader spectrum antibiotic lessens the need for the patient to re-present due to treatment failure which reduces demand on the surgery as a whole (Wood et al. 2007).

NMPs, like doctors, report experiencing time pressures in their practice. Nurse independent prescribers have highlighted the increased pressure and workload that prescribing authority brings (Watterson et al. 2009). HVs in Hall et al.'s study described the time and workload pressure they experienced during clinics meant that it was not feasible to prescribe. Some HVs managed this pressure by concealing the fact they could prescribe so they could avoid writing prescriptions (Hall

et al. 2009). Paradoxically, some CNPs also feel they have more time to spend with patients. Hall et al. reported that CNPs considered this extra time led to a reduction in unnecessary prescriptions because they were able to use this time to explain to patients why the prescription was not needed (Hall et al. 2003). More research is needed to understand whether NMPs with full prescriptive authority feel time pressure and how any pressure influences their prescribing.

2.4.2.9 Uncertainty

Research indicates that diagnostic uncertainty can cause over prescribing. Studies have suggested that when doctors are unsure about a diagnosis their prescribing threshold is lowered making them more susceptible to factors such as patient, time and workload pressure (Miller et al. 1999; Petursson 2005). In one US study, Miller et al. investigated the influence of perceived patient demand on doctors' prescribing of anti-infective drugs. Doctors reported that patient demand had little influence on their prescribing behaviour but when uncertain about clinical need for an anti-effective over one third of patients were prescribed one and doctors reported that they were influenced by patients in over half of these cases (Miller et al. 1999). Petursson found that lack of continuity in medical care and uncertainties regarding diagnosis are factors that tend to be conducive to a doctor feeling insecure or anxious. Petursson suggested that this insecurity, uncertainty or anxiety then contributes to non-pharmacological prescriptions (Petursson 2005).

Doctors have been found to manage uncertainty in a number of ways. Di Caccavo and Reid termed the management strategy, whereby doctors use a prescription to reduce clinical uncertainty, as 'hypervigilance'. Di Caccavo and Reid also highlighted how doctors use 'defensive avoidance', where they pass the decision on to another person, to mange their uncertainty (Di Caccavo and Reid 1995). Similarly Bendsten et al. found that Swedish doctors managed dilemmas relating to prescribing opiods by either seeking agreement with the patient or consulting external resources (e.g. discussion with a colleague, referral to a clinic) (Bendtsen et al. 1999a). There is little discussion in the literature about how NMPs manage uncertainty in their prescribing practice which highlights the need for further research in this area.

2.4.2.10 Pharmaceutical Industry

Pharmaceutical companies, and more specifically pharmaceutical representatives, seek to encourage HCPs with prescriptive authority to use and prescribe their company's products to generate maximum profit for their company. The activities of pharmaceutical companies may include the following: promotional visits, presentations by representatives, sponsored training or conferences, personal gifts, gifts for the hospital or practice and free samples. On the one hand research illustrates that doctors value the activities of the pharmaceutical companies. Both GPs and hospital doctors find representatives convenient and an up-to-date information source (Ljungberg et

al. 2007; Prosser and Walley 2003; Tobin et al. 2008). However, although doctors recognise the value of the activities of the pharmaceutical industry they believe that some of the information provided by the industry is 'biased', 'selective' and 'exaggerated' (Prosser and Walley 2003). Evidence suggests that the activities of the pharmaceutical industry influence doctors' prescribing behaviour (Muijrers et al. 2003; Watkins et al. 2003). However, when asked, doctors play down the impact of the pharmaceutical industry on their prescribing. GPs express confidence in their ability to withstand commercial sales pressure (Carthy et al. 2000) and feel they can resist pressure from sales representatives by selecting only relevant information (Prosser and Walley 2003).

The available research relating to the influence of the pharmaceutical industry on NMPs provides a similar picture to that of doctors. Early research with CNPs reported that the majority had only limited contact with representatives (Luker et al. 1998). Those that did have contact considered the pharmaceutical industry a helpful source of information (Hall et al. 2003). Like doctors, CNPs and nurse independent/supplementary prescribers have expressed their resolve to withstand any pressure from pharmaceutical representatives and maintain evidence-based prescribing (Lewis-Evans and Jester 2004). In contrast, nurse prescribers in the US admit that the activities of the pharmaceutical industry influence their prescribing in some manner (Kessenich and Westbrook 1999; Ladd 2005). However, this difference in attitude may be a reflection of the US healthcare system which may have different regulations regarding marketing of medicine to HCPs. Clearly, further research with UK NMPs is warranted. Research with a sample larger and more diverse than that in Lewis-Evans and Jester's study, of only seven nurses, would improve the understanding of this area.

2.5 Summary

Due to the differences in training that NMPs and doctors receive, both in terms of prescribing training and professional training, it is unknown how applicable the literature relating to doctors' prescribing is to NMPs' prescribing. However, since this earlier work was conducted there has been an extension of full prescribing rights to an even broader range of HCPs. It is difficult to generalise the findings of research with CNPs to other NMPs because CNPs only have limited prescribing authority, they receive different training and because they are managing patients in a very specific environment (i.e. in the patients' homes). In contrast, newer NMPs train for longer, can prescribe virtually any medicine from the BNF within their competency and manage a wide range of patients in a wide range of settings (See Section 2.3.3.2). Therefore, to understand the influences on NMPs' behaviour it is important to conduct research with these HCPs. The purpose of this programme of research was to address this current gap in research. In this thesis the term non-medical prescriber (NMP) refers to any prescriber, other than doctors and dentists, who can prescribe (i.e. nurses [including community nurses], pharmacists, radiographers, physiotherapists,

podiatrists, chiropodists and optometrists). When discussing the findings of the research, the term non-medical prescriber (NMP) is also used to refer to the participants who took part in the research. As will be discussed, the sample did not include community nurse prescribers, radiographers, physiotherapists, podiatrists, chiropodists or optometrists.

Before specifying the overall aim of the research it is important to outline the two key decisions that were made by the author about the programme of research. Firstly, as a result of low prescribing volume by AHCPs, it was decided that this programme of research would concentrate on the decisions of nurse prescribers and pharmacist prescribers only. Secondly, it was decided that it would not be within the practical limitations of a PhD to study all the sectors that NMPs operate within. Instead it was decided that the research should focus on either primary and community care or hospital and secondary care. It was hoped this would make the research practically more manageable and more in-depth as all efforts could be devoted to one main sector of prescribing. As the majority of prescribing in the NHS is in primary care (The NHS Information Centre 2010a) and because nurse and pharmacists independent prescribers operate within primary care (Latter et al. 2010) it was decided that the research would be conducted with prescribers working in primary and community care only. These two decisions led to the overall aim of this programme of research to be set as follows:

To explore the influences on the prescribing behaviour of nurse and pharmacist independent and/or supplementary prescribers working in primary and community care.

A programme of research consisting of three studies was conducted in order to address this overall research aim. The structure of this programme of research is discussed in Chapter Three.

Chapter Three – Overview of Programme of Research

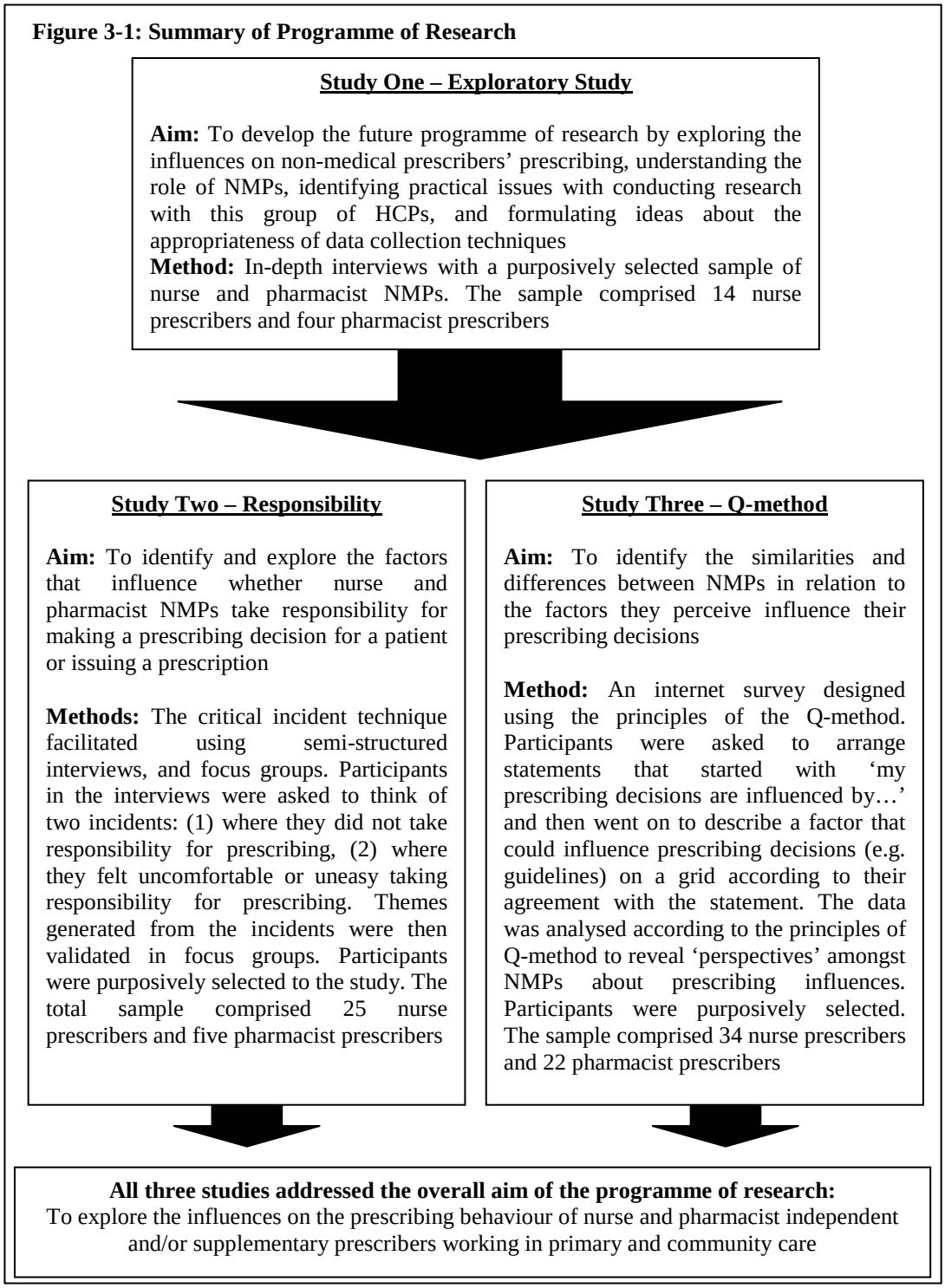
The purpose of this chapter is to provide an overview of the entire programme of research. Methodological issues, such as validity and reliability, will be discussed along with the ethical considerations of this research.

3.1 Structure of Programme of Research

A programme of research was conducted to address the overall aim of this PhD (see Section 2.5). The programme of research commenced in December 2008 and ended in December 2010. The research began with an exploratory study (Study One) in which 18 NMPs took part in an in-depth interview about prescribing influences. The aim of Study One was to develop the future programme of research by exploring the influences on NMPs' prescribing, understanding the role of NMPs, identifying practical issues with conducting research with this group of HCPs, and formulating ideas about appropriate data collection techniques. An overview of the findings from Study One are presented in Chapter Four to explain the rationale for other aspects of the programme of research. The findings are then discussed in more detail in Chapter Six and Chapter Seven. Based on the findings of Study One it was decided that two further studies would be conducted.

The aim of Study Two was to identify and explore the factors that influence whether NMPs take responsibility making a prescribing decision for a patient or issuing a prescription. The specific objectives of Study Two are outlined in Chapter Five (see Section 5.1.1). Study Two employed the critical incident technique which was facilitated in 20 semi-structured interviews with NMPs. Three focus groups were also conducted with 10 nurse prescribers. The findings of Study Two, with the relevant findings from Study One, are presented and discussed in Chapter Six. Study Three built on the findings of Study One by identifying similarities and differences between NMPs in relation to the factors they perceive influence their prescribing decisions. The Q-method was facilitated by an internet survey which was completed by 56 NMPs. The findings of Study Three are presented and discussed in Chapter Eight. A summary of this programme of research is provided in Figure 3-1.

Figure 3-1: Summary of Programme of Research



3.2 Key Issues in the Programme of Research

3.2.1 Methodological Issues

This section is dedicated to discussing the concepts of reliability and validity in relation to this programme of research.

3.2.1.1 Reliability

Study One and Study Two

Study One and Study Two used qualitative data collection methods (i.e. in-depth interviews, semi-structured interviews, the critical incident technique, focus groups). The aim of qualitative research is to study people in their natural settings and to collect data naturally. The focus 'is on the meanings that participants in the study attach to their social world' (Bowling 2002, pg.352). In quantitative research, a measure is often considered reliable if it provides the same 'reading' repeatedly overtime (de Vaus 1996). However, in qualitative research, the application of reliability is uncertain. Kirk and Miller argued statements repeated consistently may only reflect the stereotyped view of events and that the need for observations to be repeated overtime is problematic as it is based on the assumption that the topic under consideration will not undergo any changes (Kirk and Miller 1986). Flick recommends that the focus in qualitative research should be on 'checking the dependability of the data and procedures' (Flick 2009). Merriam states that 'what one strives for is consistency and dependability, a sort of internal reliability in which the findings of an investigation reflect, to the best of the researcher's ability the data collected' (Merriam 1995, pg. 57). In line with these recommendations, the researcher kept an audit trail which detailed how the data were collected, how the themes emerging from the data were formed and how other decisions were made during the research process. Secondly, the researcher checked the plausibility of the themes emerging from the analysis with her supervisors who have also conducted similar research.

Study Three

As described previously, Study Three used an internet survey administered using the principles of Q-method. Participants were asked to order statements about prescribing influences on a grid according to their extent of agreement with the statement. It was concluded, as for qualitative research, that traditional measures of reliability are difficult to apply to the Q-method. In conventional tests reliability can be assessed by administering the same test twice, say at intervals of two to four weeks. If the results from the first test correlate highly with the results of the second test then the measure can be considered 'sound' (de Vaus 1996). de Vaus highlights how this is a difficult measure of reliability to use because it can be difficult to administer the same test twice (de Vaus 1996). Indeed, in this research it would have been difficult to get participants to complete the survey on two separate occasions. Furthermore, participants may have simply remembered how

they responded on the first occasion and answered the same way on the second occasion. One way to overcome this would be to leave a longer time period between applying the tests. However, in this research, it is conceivable that prescribers' attitudes to the influences on their prescribing could change overtime. A change in participants' attitudes might suggest the test has lower reliability than it does. Furthermore, even if a view is repeated overtime it might only represent a stereotyped view. It was decided that the strategies for maximising reliability in Study Three would focus on checking the 'dependability of the data and procedures' as discussed previously.

3.2.1.2 Internal Validity

Study One and Study Two

Internal validity concerns 'the extent to which the instrument is really measuring what it purports to measure' (Bowling 2002, pg. 438). Whilst the internal validity of the 'measurement' is a prime concern in quantitative research the extent to which the concept of validity should be applied to qualitative research and the best way it should be established is the subject of much debate. There remains no standard definition, but numerous authors have recommended strategies for maximising internal validity. Some authors encourage the use of member checking where the initial data and interpretations are taken back to participants for reflection (Lewis and Ritchie 2003). In Study Two member checking was conducted with the use of focus groups. Examples of prescribing scenarios provided by participants in the semi-structured interviews were presented back to other participants in focus groups for discussion. This allowed the author's initial interpretation of the incidents to be explored and also the 'frequency' of the incidents to be tested (see Section 5.1.2.5 for further discussion).

Another strategy for maximising internal validity, also used in this programme of research, includes peer review. This is where colleagues are asked to comment on the themes generated from the data to assess their plausibility and interpretation (Merriam 1995). In this research the data was analysed and interpreted initially by the author of the thesis. This initial interpretation was presented to the author's PhD supervisors who reflected on the plausibility and breadth of the themes emerging. After reflecting on this initial interpretation with her supervisors the author revisited the data to explore any questions or comments raised. This process was repeated until all were satisfied with the interpretation of the data. The researcher also reflected throughout the research process on how her biases, experiences and assumptions may have impacted on how the data were interpreted.

Study Three

With the exception of member checking the strategies described above for maximising internal validity were also employed in Study Three. However, in addition to this, the content validity of

the Q-method survey was also assessed. Content validity refers to judgements, which are typically made by a panel of experts, about the extent to which the survey appears to measure what it claims to measure. In this study the content validity was assessed through cognitive interviews with NMPs. In the cognitive interviews prescribers completed the survey whilst 'thinking aloud'. The researcher then inspected the transcripts made of the interviews and compared the meaning that the participants attributed to the instructions, wording of the questions and the statements to the meaning that was intended by the researcher. If problems became evident changes were made to the survey and these were re-tested in other interviews.

3.2.1.3 External Validity

Study One and Study Two

External validity, sometimes referred to as generalisation, concerns the 'extent to which the research findings can be generalised to the wider population of interest and applied to different settings' (Bowling 2002, pg. 438). Merriam states that it is generally concluded that one cannot generalise from qualitative research because of the often small non-random sample used (Merriam 1995). Much has been written about the applicability of the concept of external validity to qualitative research. Lewis and Ritchie, as well as others, have highlighted how the purpose of qualitative research is to understand the range of opinion rather than the prevalence of these opinions in the population (Lewis and Ritchie 2003). They suggest that external validity in qualitative research can be strengthened by providing a 'thick description' of the data interpretation process to allow others to confirm that the conclusions reached hold 'validity' and to allow others to assess the transferability of the findings to other settings. They also suggest providing a detailed description of the design and conduct of the research to allow others to assess the methods used and to evaluate the limitations of the research. In line with these recommendations a 'thick description' of all aspects of the research has been provided in this thesis. This involves a detailed account of the methods, data analysis procedures and an in-depth presentation of the findings. Merriam also highlighted how including a wide range of cases in the research will allow the results to be applied to a range of other situations (Merriam 1995). Therefore, this programme of research set out to include a wide range of NMPs from different settings.

Study Three

The Q-method can be considered a small investigation of human subjectivity. Like qualitative research, Q-method studies use small non-random samples. As a result, the ability to generalise the results of a Q-method sample to a wider population has been called into question. Brown argued that only a limited number of distinct perspectives exist on any topic and was confident that any well designed Q-method study would reveal any perspectives concerning the topic (Brown 1980). Furthermore, and in line with qualitative research thinking, Thomas and Baas highlighted how the

purpose of Q-method is to explore the range of perspectives about a topic rather than to identify the proportion of the sample or the general population that adheres to any of them (Thomas and Baas 1992). Many of the strategies used to strength external validity in Study One and Study Two were used in Study Three. Thought was also given to whether NMPs had the necessary 'tools' to adequately express their perspective. If NMPs did not then the research might have failed to identify perspectives that exist in the wider population of NMPs. Therefore cognitive interviews were used to test whether any statements about prescribing influences were missing from the survey (see Section 5.2.2.5 for further discussion of the cognitive interviews).

3.2.2 Ethical Considerations

3.2.2.1 Ethics Issues

A number of ethical issues were considered during the design and conduct of this programme of research. These included informed consent, confidentiality and recruitment issues.

'Informed consent by human participants is a necessary condition for ethically acceptable research. This means that all the risks involved in the investigation must be explained, as well as the possible benefits' (Polgar and Thomas 2000, pg.34). To address this, in this programme of research participants were provided with a participant information sheet (PIS) when invited to take part in the study. The PIS outlined the purpose, nature, benefits and risks of the study. Participants were given other copies of the PIS when the interview or focus group time was confirmed (Study One and Study Two), immediately before the interview or focus group (Study One and Study Two) and before completing the survey (Study Three). To confirm the participant was satisfied with the information they had received and to confirm they were happy to take part in the research they were asked to sign a consent form. In Study Three, participants were asked to press the 'confirm' button if they were happy to continue. The researcher ensured from the first contact that participants were aware of their right to withdraw from the research at any time without giving a reason.

Ethical principles also state that 'participants have the right to expect that when they give you consent to observe or interview, you will protect their confidence and preserve their anonymity' (Glesne 1999, pg.122). In this study, participant confidentiality was assured by ensuring that all manual and electronic data was kept secure and where possible marked with a reference number rather than the participants' names, not disclosing the participants' participation or non-participation in the study to anyone other than those in the research team, disguising participants' identity when using quotations from transcripts and anonymising transcripts by removing any identifying features. Participants also have the right to be informed of any limitations on the confidentiality of what they may divulge to the researcher (Darlington and Scott 2002). Therefore

participants were informed on the PIS that, in the highly unlikely event they disclosed a serious patient safety issue, confidentiality will be broken to report the findings to the relevant authority. In Study Three this statement was not included as participants responded to a set of pre-determined questions and had no opportunity to disclose such information.

A consideration of the manner by which participants were recruited to this study was also given particular attention when designing the programme of research. Research might be deemed unethical if recruitment is based on a dependent relationship between an individual and the potential participant. As NMPs in all aspects of this research were recruited via their PCT non-medical prescribing lead (NMPL), who arguably they have a dependent relationship with, this issue was considered. After contemplation of this issue with the research team the involvement of NMPLs in the research process was deemed satisfactory as their role was to distribute information and not to recruit participants. Participants' participation or non-participation in the research was not disclosed to NMPLs.

3.2.2.2 Ethics Approval and R&D Approval

NHS research ethics approval is required if the research involves NHS staff recruited as research participants by virtue of their professional role, or the use of, or potential access to, NHS premises or facilities (Central Manchester University Hospitals NHS Foundation Trust 2010). As all studies within the programme of research fulfilled this criterion an application for NHS ethics approval was sought individually for each study. After due process, NHS ethics approval was granted for each study. The original NHS approval letters for each study are available in Appendix 3.0, Appendix 4.0 and Appendix 5.0. In addition to NHS ethics approval, NHS Research and Development (R&D) approval was also sought and subsequently granted for each study.

Chapter Four – Study One

The purpose of this chapter is to describe Study One including the method employed, the main substantive findings and discussion of these findings, and the implications of the study on other aspects of the programme of research.

4.1 Rationale for Exploratory Study

Blaikie summaries the overall purpose of exploratory research as the following: '…essentially exploratory research is used to get a better idea of what is going on and how it might be researched' (Blaikie 2007, pg.70). Blaikie argues that exploratory research is beneficial to understand more about the social situation and group of people you are researching, to develop and refine the research question(s) and to understand more about how the research question(s) might be addressed (Blaikie 2007). As research in the field of non-medical prescribing is limited, from the outset it was decided that exploratory research would be useful to aid the development of this programme of research.

It was anticipated that Study One would contribute to the development of the programme of research in four ways:

(1) Development of research aim and objectives - It was felt that understanding more about how the overall research aim could be addressed would be beneficial. This was felt to be particularly important as there was a limited amount of research in this area and, as a result, limited knowledge from which to produce meaningful research objectives. This was achieved by beginning to explore the influences on NMPs' prescribing. It was hoped this would identify avenues of enquiry not previously considered.

(2) Understanding the role of NMPs – Knowledge gathered by asking NMPs about their role and use of prescribing was to feed in to the sample design in other aspects of the programme of research and help the researcher, who is not a pharmacist, nurse or prescriber, familiarise herself with the language and environment of NMPs.

(3) Uncovering practical issues of conducting research with this group of HCPs - It was anticipated that practical issues would be identified by actually conducting research with this group of HCPs. Issues could be planned for so future research was easier and more efficient to conduct.

(4) Formulate ideas about methods - It was anticipated that ideas about appropriate methods to be employed in this research could develop from exploring how NMPs discuss influences on their prescribing and by reflecting on the method used in Study One. It should be noted however that the intention was not to 'test' different methods as only one method was used.

4.2 Aims and Objectives

The aim of Study One was to develop the future programme of research by addressing the following objectives:

1. To explore the influences on the prescribing behaviour of nurse and pharmacist prescribers in primary and community care thereby identifying worthwhile avenues of enquiry to pursue in the future programme of research
2. To understand the role of NMPs and their use of prescribing in primary and community care
3. To identify any practical issues regarding conducting research with this group of HCPs
4. To formulate ideas about the appropriateness of particular data collection techniques in this field

4.3 Method

The purpose of this section of the chapter is to outline the method used in Study One. The section begins by explaining the overall approach taken to the study.

4.3.1 Overall Approach

The exploratory nature of Study One led to the use of an inductive reasoning approach. Inductive reasoning begins with observation and measurement of phenomena and then develops ideas and general theories about the universe of interest (Bowling 2002). Qualitative research techniques were considered most appropriate to address the objectives of the study. It was felt a qualitative approach would enable a more in-depth exploration of participants' views and were preferred over quantitative methods because of their greater flexibility in data collection. For instance it would allow the researcher to follow-up themes emerging from the initial interviews in later interviews. The use of qualitative data collection techniques are consistent with Blaikie who argues for flexibility in the data collection techniques used in exploratory work (Blaikie 2007).

4.3.2 Location of Sample

It was decided that participants in Study One would be drawn from PCTs in the North West of England to reduce both the time spent travelling by the researcher and to limit travel costs. NMPLs in four PCTs in Greater Manchester were approached and informed about the research. The PCTs were selected based on their close proximity to the University of Manchester. All PCT NMPLs approached agreed that they would help facilitate the research in their PCT. The majority of

participants recruited to the study were based in one of these four PCTs. However, through snowball sampling, which is discussed in Section 4.3.3, another participant was recruited to this study who was based in a PCT outside Greater Manchester.

4.3.3 Sampling and Recruitment

Purposive sampling was used to select participants for inclusion in the study. Purposive sampling is a commonly used sampling method in qualitative research which Bowling describes as a 'deliberately non-random method of sampling which aims to sample a group of people or settings with a particular characteristic' (Bowling 2002, pg.187). This sampling technique allows participants to be selected on the basis of their relevance to the topic under investigation. In Study One participants were considered to be appropriate for inclusion if they were a registered nurse or pharmacist working in primary or community care, qualified as an independent and/or supplementary prescriber and were prescribing as part of their role

If participants wished to take part in the research they were asked to fill in the participant form (see Appendix 6.0). The form asked participants for the date of their prescribing qualification(s), type of prescribing qualification, use of prescribing and job title(s). Data collected on these forms were used to select participants for interviews. The aim was to have variety in the sample in terms of their prescribing demographic characteristics. Initially, it was hoped that the sample would include at least one participant employed as roles two to seven in Box 4-1 and two participants employed as role one. The information gained about NMPs' roles through conducting Study One was used to modify the initial proposed sample. This led to some roles being merged and new roles added. No criteria regarding the number of prescriptions by participants were set because of the limited knowledge in this field. Potential participants decided themselves whether it was appropriate for them to take part in the study. Information collected in Study One was used to inform other parts of the programme of research.

Box 4-1: Roles Occupied by NMPs intended to be Recruited to Study One

1. Pharmacist running a clinic(s) for a chronic/long term condition (n=2)
2. Pharmacist working in an out-of-hours centre (n=1)
3. Practice nurse/Nurse practitioner (n=1)
4. Nurse working in WIC (n=1)
5. Specialist nurse running a clinic(s) for a chronic/long term condition (n=1)
6. Specialist nurse running for 1 or more of the following sexual health clinic, family planning clinic, new born babies clinic, other clinic (n=1)
7. Palliative care specialist nurse (n=1)

Participants were initially approached by their PCT NMPL via email. The NMPL emailed the invitation letter (see Appendix 7.0), participant form, (see Appendix 6.0) and PIS (see Appendix 8.0) to all nurse and pharmacist independent and/or supplementary prescribers in their PCT. The number of NMPs who were sent invitation letters was not recorded in Study One or Study Two (see Section 5.1.2.3). As discussed, it was not intended that a random sample would be recruited to Study One. As a result, it was considered unnecessary to record the response rate of NMPs taking part in the research. If the NMP was interested in taking part in the research then they were asked to complete the participant form and return it to the researcher. Of those participants that filled in the form and returned it to the researcher all but two participants were interviewed. These participants were not included as it was felt their inclusion did not add to the diversity of the sample in Study One.

Snowball sampling was also used in Study One. 'Snowballing' is a 'technique used where no sampling frame exists and it cannot be created. Initial respondents are asked to suggest others whom they know are in the target group and who could be invited to take part, and so on' (Bowling 2002, pg.380). In this study a further three participants were recruited using snowballing sampling. One of the participants was based in a PCT not initially approached by the researcher. Attempts to recruit participants to the study ceased when it was felt that 'saturation' of the core themes emerging from the data analysis had been reached and the widest range of NMPs, which was practical to recruit at the time, had been included in the sample.

4.3.4 Sample of Study One

In total, 18 NMPs were recruited to Study One. This included four pharmacist prescribers and 14 nurse prescribers. The number of participants were split between the following PCTs, PCT 1 (n=8), PCT 2 (n=1), PCT 3 (n=4), PCT 4 (n=4) and PCT 5 (n=1). Participants taking part in Study One were employed in the roles listed in Table 4-1. Other demographic information about the participants taking part in Study One is presented in Appendix 9.0. Further information about the nature of participants' roles (e.g. type of conditions treated, consultation setting) is available in Appendix 10.0.

Table 4-1: Sample of Study One

Role		n=
Advanced Practitioner		4
Community Matron/Active Case Manager (including paediatric and adult)		1
Specialist Nurse (including paediatric and adult)	Palliative Care	2
	All Other	-
Nurse Practitioner for GP Surgery		2
WIC Nurse		3
Out-of-Hours*/WIC Nurse		1
Nurse (Practice Nurse, WIC Nurse and Specialist Nurse)		1
Practice Pharmacist/Prescribing Support Pharmacist		3
Pharmacist (practice pharmacist, intermediate care pharmacist and acute OoHs service)		1
TOTAL		**18**

*Out-of-Hours (OOHs)

4.3.5 Data Collection Method

Participants recruited to the study took part in an in-depth interview. It was felt that in-depth interviews were an appropriate data collection method for addressing the aim and objectives of Study One. In-depth interviews have been defined as 'guided conversations' (Lofland and Lofland 2006). In in-depth or unstructured interviews minimal questions and prompts are set before the interview begins and instead the discussion is formed and adapted based on participants' comments during the interview. This unstructured approach was felt to be particularly suited to the aims of the study as it would allow participants the opportunity to explain their own role, prescribing behaviour and attitudes in relation to prescribing influences in their own words. The researcher would also have the freedom to probe in-depth any comments made by participants and ask any follow up questions if needed. It was also hoped that in-depth interviews would enable any important themes not previously thought of by the researcher to emerge through the discussion.

The in-depth interviews conducted lasted between 40 minutes and one-hour and 10 minutes. The interviews took place between March 2009 and August 2009. All interviews were conducted in the participants' place of work and were recorded with the participants' permission. Four main themes were set out to be covered during the interviews. These four themes were: the participant's role, use of prescribing, how NMPs decided in what circumstances they should prescribe and factors influencing prescribing decisions. A number of prompts, based on the literature, were also set out to be used if the interview became stilted. Generally though the discussions were based around participants' comments in line with the nature of in-depth interviewing.

4.4 Data Analysis

The data analysis of Study One was performed with the aim to develop theory 'grounded' in the data rather than test preconceived hypotheses. Strict use of the grounded theory approach that is often used in qualitative data analysis was avoided and instead a modified version, referred to as the framework approach, was used. Ritchie and Spencer describe the framework approach as 'grounded', 'dynamic', 'systematic' and 'comprehensive'. The framework approach was considered suited to exploratory research as it enables flexibility and openness to new themes whilst at the same time providing a systematic approach to analysis. The framework approach described by Ritchie and Spencer consists of five steps: (1) Familiarisation, (2) Identifying a thematic framework, (3) Indexing, (4) Charting and (5) Mapping and interpretation (Ritchie and Spencer 1994).

In this study, familiarisation (Step 1) with the data was achieved easily as the author conducted all the interviews and transcribed all the recordings herself. As Ritchie and Spencer predict, at this early stage the author developed hunches about key issues and themes. It was these hunches that formed the basis of the initial thematic framework (Step 2). The thematic framework was set up in the qualitative data analysis software Nvivo (QSR International Pty Ltd) (Step 2). The author began to apply the data set to this initial thematic framework (Step 3) and, as Ritchie and Spencer predict, the initial thematic framework was continually refined in light of the emerging data. In the next step (Step 4) the initial thematic framework was rearranged in order to explore the range of opinion on a broader set of themes and issues. These broader themes and issues were generated both from the objectives of the study and the emergence of overall themes from the data itself. In the final step (Step 5) the author reviewed the themes generated from the data, compared viewpoints of participants in relation to particular themes and looked for explanations of any differences of viewpoints within the data. Nvivo was used throughout the data analysis process The use of a computerised qualitative data analysis package made the process of indexing, charting and retrieval simpler and more systematic.

4.5 Substantive Findings and Discussion

The purpose of this section of the chapter is to outline the key substantive findings from Study One and to discuss them in light of the current literature. The findings will only be discussed in sufficient depth to provide a rationale for the nature of the remainder of the programme of research. A detailed description of the substantive findings will instead be presented in Chapter Six, along with the findings of Study Two, and also Chapter Seven.

4.5.1 Findings

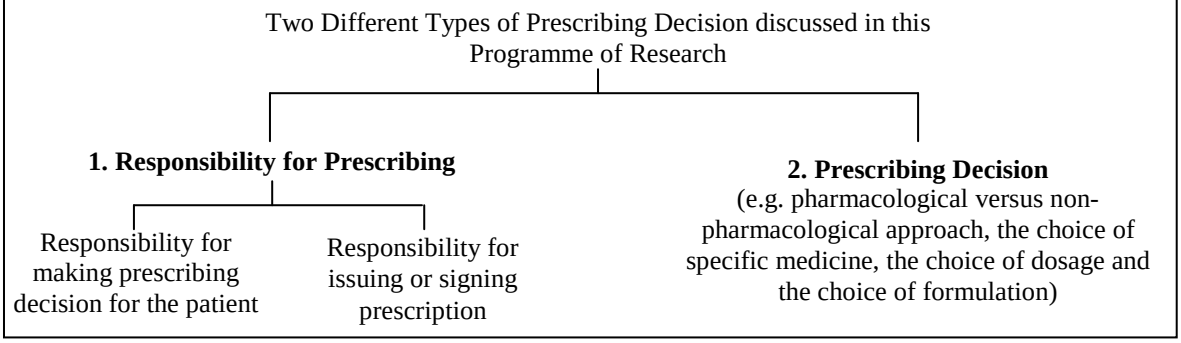
The findings of Study One highlighted two important aspects of prescribing NMPs consider in their practice. The first aspect of prescribing NMPs described was whether they should take 'responsibility' for prescribing in the first place. It is important to note NMPs did not necessarily use the term 'responsibility'. However, this term is used throughout this thesis to refer to this aspect of prescribing and differentiate it from other aspects of NMPs' prescribing. In this thesis the umbrella term prescribing 'responsibility' relates to two different aspects of prescribing 'responsibility' described by participants. Firstly, the term refers to 'responsibility' for making a prescribing decision for a patient. A NMP can be, for example, considered not to take 'responsibility' for a prescribing decision if they refer a patient to a colleague. NMPs can be considered not to take full 'responsibility' for making a prescribing decision for a patient if they seek colleagues' advice. Even though NMPs might not take 'responsibility' for the prescribing decision, or at least complete 'responsibility' for the prescribing decision, they may go on, or not go on, to issue the prescription. Secondly, the umbrella term prescribing 'responsibility' includes whether the prescriber takes 'responsibility' for issuing or signing the prescription. NMPs can be considered not to take 'responsibility' for issuing the prescription if they ask another prescriber to issue the prescription on their behalf. This first aspect of prescribing, prescribing 'responsibility', is represented on the left hand side of Figure 4-1.

NMPs in Study One discussed how they defined their area of clinical practice. For example, one WIC nurse described how she would refer a patient who was breathless and experiencing chest pains to accident and emergency rather than managing the patient herself. The line between prescribing responsibility and clinical practice is blurred as NMPs cannot generally prescribe unless they are managing the patient. The aim of Study One was to focus on prescribing and therefore more emphasis was placed on understanding the factors that influence whether NMPs take responsibility for prescribing. However, participants spontaneously talked about how they defined their areas of practice and discussion often skipped, sometimes unknowingly, between the two areas. The remainder of this programme of research focuses on how NMPs decide whether to take prescribing responsibility and not just how they define their practice.

The second aspect of prescribing described by NMPs in Study One was the actual prescribing decision. NMPs described this aspect of prescribing as the choice between a pharmacological versus non-pharmacological approach, and if a pharmacological approach is required, the choice of specific medicine (e.g. generic vs. non-generic or specific brand), the choice of dosage and the choice of formulation. This aspect of prescribing is represented on the right hand side of Figure 4-1. Issues of prescribing responsibility (Decision 1. on Figure 4-1) and the actual prescribing decision (Decision 2. on Figure 4-1) are discussed separately in parts of this thesis. However, it is

important to note that NMPs did not describe a two-step prescribing process where they first of all decided whether to take responsibility for prescribing and then made the prescribing decision. In many cases NMPs formulated ideas about the prescribing decision before deciding whether to take responsibility. For example, a WIC nurse decided not to take responsibility for prescribing for a patient with severe back pain, who was already taking co-codomol and diclofenac, because she felt the patent needed stronger strength pain relief. The patient was instead referred to a doctor. The NMP decided not to take responsibility for prescribing for this patient. However, without making a preliminary prescribing decision this nurse would have been unable to make this decision.

Figure 4-1: Diagrammatic Representation of the Two aspects of Prescribing discussed in this Thesis



The influences on whether NMPs take responsibility for prescribing and NMPs' prescribing decisions were discussed during the interviews in Study One. As the sole purpose of this chapter is to provide a rationale for other aspects of this programme of research only a brief description of the themes emerging from Study One will be provided. The themes emerging from Study One, relating to the influences on whether NMPs take responsibility for prescribing, fell into the following categories: competency, role, risk, practical and legal issues and pressures. The factors influencing NMPs' prescribing decisions were discussed under the following general themes: regulatory factors, patient factors, colleague factors, prescribing culture and professional experience, training and information sources, logistical factors the pharmaceutical industry. Clinical influences on prescribing decisions were also discussed in Study One. These findings are presented and discussed in Chapter Six and Chapter Seven along with the findings from Study Two where appropriate.

4.5.2 Discussion

The decision of whether to take responsibility for prescribing was clearly a major consideration for NMPs in their practice as it was discussed extensively during the interviews. NMPs' perceptions of their competency and role influenced whether they took responsibility for prescribing. This behaviour is consistent with guidance for NMPs (Nursing and Midwifery Council 2006; Royal Pharmaceutical Society of Great Britain 2007). However, current understanding about NMPs' decisions to take responsibility for prescribing is limited to only a few studies. Nurse independent

prescribers' perception of their competency has been found to influence the clinical areas they are prepared to prescribe in (Bradley et al. 2007). CNPs have expressed concern about prescribing for some patient groups including those at either end of the age spectrum, those with more complex poly pharmacy and those with multiple co-morbidities (Hall et al. 2003; Hall et al. 2006). Nurse and pharmacist supplementary prescribers have also indicated they do not feel confident prescribing for patients with co-morbidities (Bissell et al. 2008). CNPs have said they are more comfortable prescribing topical or OTC products than internal medicine (Hall et al. 2003; Luker et al. 1998). This attitude is also reflected in the behaviour of US nurse prescribers who prescribe more OTC medicine than doctors for patients with similar complaints (Running et al. 2006). The limited research in this area does not reflect the importance of the issue of prescribing responsibility to NMPs. Furthermore, the little research that does exist has been conducted with CNPs and US nurse prescribers. As a result, it was concluded that a more in-depth study of the influences on whether NMPs take responsibility for prescribing in any given scenario was required.

The General Medical Council states that doctors should recognise and work within the limits of their competence (General Medical Council 2006). Therefore, like NMPs, doctors need to decide whether it is appropriate for them to take responsibility for prescribing in any given scenario. Despite this there is little discussion in the literature about how doctors decide whether to take prescribing responsibility. A small volume of research has examined the factors that contribute to discomfort amongst doctors when prescribing (Bradley 1992b; Lewis and Tully 2009a; Lewis and Tully 2009b). Other research has gone some way to exploring the factors that influence whether doctors prescribe. For instance, GPs have been found to refer older diabetes patients when they require insulin because of discomfort initiating treatment (Agarwal et al. 2008). GPs' knowledge and expertise has also been found to influence whether they prescribe specialist medicine (Crowe et al. 2009). Clearly however this research does not constitute a detailed examination of how doctors choose to employ their prescriptive authority.

The limited amount of research about the factors that influence whether NMPs take responsibility for prescribing in any given scenario is understandable as non-medical prescribing has only recently been introduced. However, the lack of literature about this aspect of prescribing for doctors raises the question of how relevant the issue of responsibility is for doctors and for researchers to study. Weiss and Sutton argue that, until very recently, the competency of doctors as prescribers has rarely merited a topic of discussion and that GPs would be unlikely, at least openly, to set limits on their practice. It is only recently, they argue, with the emergence of NMPs that those in the medical field have begun to talk about prescribing competency and that a culture of safety has arisen with the emphasis on self-limitation and boundaries (Weiss and Sutton 2009). One reason for this might be that, unlike NMPs, doctors are not taught to consider their competency in

different prescribing fields. This issue is clearly relevant for NMPs as they talked about issues relating to taking prescribing responsibility at length in Study One. The frequency by which NMPs discussed this aspect of prescribing suggested that this was a key aspect of their prescribing that required further exploration.

4.6 Implications of Study One

The purpose of this section is to reflect on the findings of Study One and its implications for the future programme of research. The discussion in this section will be based around the four objectives of Study One.

4.6.1 Avenues of Enquiry

Through Study One it became apparent that in order to understand the influences on NMPs' prescribing behaviour, the factors that influence whether NMPs take responsibility for prescribing, and the factors that influence their prescribing decisions need to be understood. Study One provided initial insight into these two areas of prescribing but, because of a limited sample and time during the interviews, it was felt that further research was needed. As a result it was decided that the remainder of the programme of research would be split into two parts. The first part would focus on the factors that influence whether NMPs take responsibility for prescribing in any given scenario (Study Two). The second part would focus on the influences on prescribing decisions made by NMPs (Study Three). The research conducted in order to do this is outlined in Chapter Five of this thesis.

4.6.2 Role of NMPs and their Use of Prescribing

The information gained from participants who described their role and use of prescribing helped formulate ideas about the desired sample in Study Two and Study Three. The information participants provided about the roles of other prescribers they knew also helped to inform the sample in Study Two and Study Three. Based on the discussions in Study One it was decided that the future research would seek to include NMPs employed in a wide range of specialist roles (e.g. diabetes, asthma, epilepsy nurse). One specialist nurse took part in Study One but the participant highlighted that NMPs worked in a range of specialist fields. Involvement of NMPs managing paediatric patients only and pharmacist prescribers working in the community pharmacy setting was also sought. It was considered important to include these prescribers in case they had differing views on prescribing influences than those interviewed in Study One.

4.6.3 Practical Issues Regarding Conducting Research with this Group of HCPs

Another objective of Study One was to identify practical issues with conducting research with this group of HCPs. The study demonstrated that recruitment via the PCT NMPLs was an appropriate

method to recruit NMPs as a number of participants were successfully recruited this way. However, as fewer pharmacist prescribers were recruited via NMPLs, alternative means to recruit pharmacist prescribers were explored. One possible option that became apparent with regards to recruiting pharmacists was the use of details contained on the RPSGB register to post information about the research to pharmacist prescribers. This method was eventually used in Study Three and is therefore discussed more in Chapter Five.

The researcher also explored the surroundings and environment where NMPs worked. This information was used to reflect on the feasibility of other data collection methods. It was clear from visiting NMPs in their work place that all NMPs, even those practising in the community, had access to a computer. This observation opened up the possibility of internet-based research.

4.6.4 Ideas about the Appropriateness of Data Collection Techniques

Another objective of Study One was to develop ideas about the suitability of data collection techniques to study the influences on NMPs' prescribing. The interviews were appropriate to address the objectives of Study One but it was noted that participants spoke in general terms about the influences on all aspects of their prescribing. NMPs struggled, even when prompted, to provide examples of prescribing scenarios. It was felt that in order to understand the area of prescribing responsibility (Decision 1, Figure 4-1) further, a more in-depth discussion of the factors that influence this decision was required. Therefore an approach called the critical incident technique was used in Study Two. This technique asks participants to bring specific examples of prescribing 'incidents' with them to the interview so they can be discussed in-depth. The nature of this technique, as well as the other issues relating to the use of this method, is discussed in Chapter Five.

The general nature of the discussion about prescribing influences in Study One led to a different issue with regards to understanding the influences on NMPs' prescribing decisions (Decision 2, Figure 4-1). Study One allowed an understanding of the breadth and nature of the influences on NMPs' prescribing decisions but, from the discussion, it was apparent that almost any factor could influence NMPs. However, the general nature of the discussion made it difficult to ascertain the relative influence of certain factors on individual NMPs. Subsequently it was difficult to understand the differences between individual NMPs with regards to the factors they perceived influenced their prescribing decisions. To address these issues a method, called the Q-method, was employed in Study Three. The Q-method asks participants to order statements, in this case about prescribing influences, on a grid according to their extent of agreement with the statement. By ordering statements about prescribing influences participants indicate the relative influence of certain factors on their prescribing decisions. The analysis in Q-method studies group participants

together that rank the statements in a similar way. These groups of participants represent perspectives amongst your sample towards the topic. Exploration of these perspectives can identify similarities and differences, in a more systematic way than interviews, towards the topic. In Study Three these perspectives were explored to identify similarities and differences between participants about the factors they perceive influence their prescribing decisions. The Q-method is discussed in further detail in Chapter Five.

Chapter Five – Methods

The purpose of this chapter is to outline the aim and objectives, methods and data analysis procedures of Study Two and Study Three.

5.1 Study Two

Study Two was developed with the aim to further understand the factors that influence whether NMPs take responsibility for prescribing in any given scenario (Decision 1, Figure 4-1). The purpose of this section is to outline the aims and objectives, methods and data analysis procedures of Study Two.

5.1.1 Aims and Objectives

The aim of Study Two was to identify and explore the factors that influence whether nurse and pharmacist NMPs take responsibility for making a prescribing decision for a patient or issuing a prescription. This was to be achieved by addressing the following objectives:

1. To explore how perceived competency levels influence whether NMPs take responsibility for prescribing in any given scenario
2. To identify and explore how other factors than competency influence whether NMPs take responsibility for prescribing in any given scenario
3. To identify and explore factors that make NMPs uncertain or uneasy about taking prescribing responsibility in any given scenario

5.1.2 Method

5.1.2.1 Overview of Method

Nurse and pharmacist NMPs working in primary and community care were purposively sampled to this study from PCTs in Greater Manchester as well as other regions of England. Eligible participants were initially provided with the study details by their PCT NMPL. NMPs were asked to contact the researcher if they were interested in taking part in the study. Interested participants took part in a face-to-face or telephone semi-structured interview used in conjunction with the critical incident technique (CIT). Some nurse prescribers took part in a focus group. Assignment to either an interview or focus group was based on the individual's preference.

5.1.2.2 Location of Sample

As for Study One, participants were drawn from PCTs in Greater Manchester to limit travel time and costs. The NMPLs from six PCTs were approached and informed of the research. These PCTs were selected because they had not been approached in Study One. All NMPLs from the PCTs approached agreed they would help facilitate the research in their PCT. As a result, the majority of nurse prescribers recruited to the study were based in one of these six PCTs. As a result of poor recruitment via the PCT route, snowballing sampling was used to recruit pharmacist prescribers from other regions of England.

5.1.2.3 Sampling and Recruitment

Purposive sampling was used to select participants for inclusion in the study. The same recruitment criteria outlined in Section 4.3.3 was also used in this study. As for Study One, the aim was to ensure that the final sample included a diverse range of NMPs. It was initially planned that at least one participant from each of the roles identified in Study One, listed in Box 5-1, would take part in a semi-structured interview and a focus group. However, during the recruitment process it became evident that this would not be possible as most participants were happy to take part in an interview but not a focus group. The plan was revised to include NMPs from a wide range of roles in the study as a whole irrespective of whether they took part in an interview or focus group. The sample of the focus groups consisted mainly of colleagues and friends which meant they were all employed in the same or similar roles.

Box 5-1: NMPs intended to be Recruited to Study Two and Study Three

- Palliative Care Specialist Nurse
- Advanced Practitioner
- Specialist Nurse (any field)
- WIC Nurse and/or OOHs Nurse
- Nurse Practitioner for GP Surgery/Practice Nurse
- Active Case Manager/Community Matron
- Practice Pharmacist
- Community Pharmacist

Participants were also recruited to Study Two with the aim to achieve as much variety in the sample, in terms of other demographic characteristics, as practically possible. As with Study One, participants' demographic information relating to their role was collected on the participant form (see Appendix 11.0). This information was used to assign participants to one of the categories outlined in Box 5-2. This information was then monitored throughout the study to ensure a wide demographic in the final sample. The number of participants to fulfil each sub-category was not pre-set prior to the study commencing. However, it was anticipated that very few, if any, participants would be using SP, as a very low use of SP was observed during Study One.

Box 5-2: Demographic Categories for Study Two and Three (Based on data from Study One)

- **Frequency of Prescribing:** Low (<5 or less prescriptions per week), Moderate (≥5 to <20 prescriptions per week) and High (≥20 or more prescriptions per week)
- **Use of Prescribing:** Independent only, Independent and Supplementary, Supplementary only
- **Year of Prescribing Qualification:** Before 2003, 2003 to 2005, 2006 to Present
- **Length of Time Working in Field:** Low (<4 years), Moderate (≥ 4 years & <10 years) and High (≥ 10 years)

The sample size of this study was determined by the number of interviews and focus groups that were required to reach 'data saturation'. The data generated from this study was continuously analysed throughout the data collection period. Recruitment ceased when it was felt that data 'saturation' had been reached. Morse stated that saturation can be thought of as 'data adequacy' and can be operationalised by collecting data until no new themes or information are obtained from the data (Morse 1995). Morse highlighted how it is the research team, rather than published guidelines or tests, which determine whether data saturation has been reached. In this study the themes emerging from the data were reviewed by the research team for their breadth and depth. When it was felt that there was enough data to build a comprehensive and convincing theory, data saturation was considered to be reached, and sampling ceased.

The recruitment of NMPs to Study Two took the same form as that in Study One and will not be outlined again. The invitation email, participant form and PIS are available in Appendix 12.0, Appendix 11.0 and Appendix 13.0 respectively. NMPLs sent initial emails and reminders between February 2010 and June 2010. As with Study One, the number of NMPs to whom invitations were sent was not recorded (see Section 4.3.3 for further information). All participants recruited to the study were provided with the information about the critical incidents before taking part in the interview. The focus groups were arranged via one NMP who decided on the time, date and location of the focus group. Other NMPs in the PCT were then notified of the details of the group via the NMPL and were asked to notify the researcher if they wished to take part. As stated previously, recruitment of pharmacist prescribers via the PCT recruitment route was poor. However, four pharmacist prescribers and a further nurse prescriber were recruited to the study via snowball sampling.

5.1.2.4 Sample of Study Two

In total, 30 NMPs took part in either a semi-structured interview or a focus group. The sample consisted of 25 nurse prescribers and five pharmacist prescribers. Of the 30 participants, 10 took part in a focus group (over three focus groups) and 20 in a semi-structured interview. No pharmacist prescribers took part in a focus group. The NMPs were drawn from the following

locations: PCT 1 (n=3), PCT 2 (n=10), PCT 3 (n=6), PCT 4 (n=2), PCT 5 (n=1), PCT 6 (n=3) and Other Region (n=5). Participants taking part in Study Two were employed in the roles listed in Table 5-1. Other demographic information about the participants taking part in Study Two is presented in Appendix 14.0. Further information about the nature of the participants' roles (e.g. type of conditions treated, consultation setting) is available in Appendix 10.0.

Table 5-1: Sample of Study Two

Role		n=
Advanced Nurse Practitioner for Nursing Homes		3
Advanced Practitioner for Schools Health		1
Community Matron/ Active Case Manager (including paediatric and adult)		3
Specialist Nurse (including paediatric and adult)	Palliative Care	1
	All Other	5
Nurse Practitioner for GP Surgery		7
Practice Nurse		1
WIC Nurse		1
Community Matron & WIC Nurse		1
Specialist Nurse & WIC Nurse		1
Other: Extended Scope Practitioner		1
Practice Pharmacist/Prescribing Support Pharmacist		3
Community Pharmacist		2
TOTAL		**30**

5.1.2.5 Data Collection Method

Participants recruited to Study Two took part in a semi-structured interview using the CIT or a focus group. The use of these methods will now be discussed.

Critical Incident Technique (Facilitated using Semi-Structured Interviews)

As has been discussed previously, participants in Study One found it difficult to discuss specific prescribing events even when prompted. Instead, participants spoke in general terms about their prescribing behaviour. Flanagan, an early pioneer of the CIT, describes how the CIT 'does not collect opinions, hunches and estimates but obtains a record of specific behaviours' (Flanagan 1954). It was intended that the technique would allow focus on participants' actual prescribing behaviour rather than stereotyped views. In this study the CIT was facilitated by semi-structured interviews. Semi-structured interviews were selected, rather than in-depth interviews or structured interviews, as they allow both a framework for discussion to be set out prior to the interviews and flexibility to respond to participants' comments and thoughts as they emerge during the interviews. By using semi-structured interviews themes identified in Study One could be explored but participants still had an opportunity to add their own thoughts.

In studies using the CIT participants are asked to bring to the interview an example of a 'critical incident'. Flanagan describes a critical incident as 'any observable human activity that is sufficient in itself to permit inferences and predictions to be made about the person performing the act' (Flanagan 1954). In one example of a CIT study, hospital doctors were asked to think of prescribing decisions they had made that made them feel uncomfortable. The reason for this discomfort was then discussed during semi-structured interviews (Lewis and Tully 2009b).

In this study participants were asked to think of two critical incidents:

(1) A situation where they <u>did not feel it was appropriate</u> for them to take responsibility for making a prescribing decision for a patient or issuing a prescription.

(2) A situation where they felt <u>uncertain or uneasy</u> about taking responsibility for making a prescribing decision for a patient or issuing a prescription.

Incidents provided by participants were deemed to be suitable for inclusion in the data analysis if they enabled an understanding of the factors that influence whether NMPs take responsibility for prescribing in any given scenario. Two types of critical incidents were requested from participants to facilitate a greater understanding of the area. Participants were asked to think of these critical incidents before attending the interview. It was thought it might be difficult for participants to think of these situations as they were being asked to think of something that they did not actually do (i.e. not take responsibility for prescribing). Therefore, the additional time for reflection that the CIT allows, by asking the participants before the interview, was considered useful.

Flanagan stated the CIT should be adapted in accordance with the topic under investigation (Flanagan 1954). It should be noted that three modifications to the CIT were made in this study. Firstly, in contrast to Flanagan's preference, the critical incidents were not directly observed by the researcher. It was felt observation of these incidents would be inappropriate as many aspects of prescribing are non-verbalised and relevant incidents may only happen infrequently. Secondly, the nature of the study meant that it would be likely that only a small number of critical incidents would be collected. It was not intended that the incidents from this study would provide quantitative results. Instead it was intended that the CIT would be used as a tool to further the understanding of the topic under investigation by creating an environment where participants could describe their behaviour. Thirdly, a panel of experts were not used to classify the incidents. It was felt that the researcher, who conducted the interviews, transcribed the recordings and immersed herself in other aspects of the topic, would be suitably placed to do this. However, the

classifications were discussed with other members of the research team and the themes emerging from the critical incidents were discussed in focus groups.

There are disadvantages associated with the CIT. Some authors have highlighted that the technique relies heavily on participants' ability to remember the scenarios accurately (Flanagan 1954; Gremler 2004; Schluter et al. 2008). If participants fail to remember aspects of the scenario they may omit certain details or replace their memory will false events. To help address this issue participants were provided with an *aide-memoire* form, sent with the details of the interview, to be used to record key details of the incidents. A further disadvantage of the method might arise from participants misunderstanding the nature of the request in regards to thinking of the critical incident (Gremler 2004; Schluter et al. 2008). If participants misinterpret the request they might provide information about an aspect of prescribing not relevant to the topic under investigation. In this study this potential issue was addressed by clarifying the types of critical incident required on the *aide-memoire* form provided to participants and by encouraging participants to contact the researcher if they had any issues with understanding what they needed to do. Another potential disadvantage of the CIT is that participants self-select the incidents they wish to discuss. Participants might therefore select unusual incidents, incidents they regard as interesting or have a great personal motivation to discuss. To overcome this issue, and to add to data collection generally, it was decided that a small number of focus group discussions would take place. In the focus groups participants would be asked to feedback on some of the incidents that participants provided in the semi-structured interviews. The 'frequency' and the relevance of the incidents to other NMPs were therefore assessed.

Initially all the semi-structured interviews took place face-to-face. However, due to the low response rate of pharmacist prescribers, a number of pharmacists were also eventually recruited to the study from areas outside Greater Manchester. It was not deemed practical to interview these participants face-to-face due to the considerable travel and time costs. As a result, five of the 20 semi-structured interviews took place over the telephone. The interviews were conducted after an initial telephone interview was conducted to assess the appropriateness of using the CIT via telephone. The interview transcript was inspected for problems, but none, specifically relating to the use of the telephone, were found.

The semi-structured interviews lasted between thirty minutes and one-hour and 10 minutes. The interviews took place between February 2010 and June 2010. All interviews taking place face-to-face were conducted in the participants' place of work. All but one interview were recorded. One participant did not want her interview recording, so instead, the researcher took notes of the discussion.

Focus Groups

As discussed, a number of focus group discussions were also conducted in Study Two. Focus groups can be defined as 'unstructured interviews will small groups of people who interact with each other and the group leader' (Bowling 2002, pg.394). The main advantage of focus groups is that participants support each other in remembering events and feelings and this process can lead participants to beyond the answers of single interviews (Flick 2009). In this study, participants in the focus groups were presented with between four and five anonymised critical incidents generated from the semi-structured interviews. The incidents shown to participants were selected to represent the key themes emerging from the initial analysis of the critical incidents. Participants were asked whether they experienced a similar situation to that represented in the incident and were asked to describe this situation if they had, or if not, to reflect on the reasons why not. Participants' comments helped the researcher to reflect on the meanings she initially attributed to the critical incidents and revise them if necessary. As discussed in Chapter Three, this technique is called member validation and is a way of improving the internal validity of the findings.

One advantage of focus groups often cited by authors is that they provide a time and cost efficient means to generate rich data (Flick 2009). This is also true in this study as the focus groups enabled data to be generated from a larger number of participants more efficiently than interviews. In this way, the focus groups were thought to compliment the semi-structured interviews. Unfortunately the focus groups were only conducted with nurse prescribers as it was not possible to arrange any groups with pharmacist prescribers. However, as the incidents provided by pharmacists were similar to those provided by nurses their incidents were also presented to the nurses in the focus groups for further discussion.

The focus group discussions lasted between 50 minutes and one-hour and 20 minutes. The focus groups were conducted in July 2010. All focus groups were conducted at a participants' place of work and were recorded with permission.

Discussion Guides

The discussion guides for the semi-structured interviews and the focus groups (see Appendix 15.0 and Appendix 16.0 respectively) were developed based on the findings of Study One, relevant literature and previous interviews or focus groups (if relevant). Both discussion guides started with questions about the participant's role and use of prescribing which helped provide important contextual information for the rest of the discussion. The discussion guide for the semi-structured interviews then included questions about the critical incidents. Relevant questions were set out before the interviews but these were sometimes omitted, modified or added to, to reflect the incident being discussed. The discussion guide for the focus groups included questions about the

incidents shown to participants. Both discussion guides gave participants the opportunity to reflect spontaneously on other factors that influence whether they take responsibility for prescribing. These questions were asked at the beginning of the discussion in the focus groups, so that participants were not biased by the examples presented to them, but at the end of the semi-structured interviews to give these participants the opportunity to add any additional comments they had. In the semi-structured interviews these general questions were used if the participant had not thought of any critical incidents.

5.1.3 Data Analysis

The analysis of the data generated from Study Two was similar to the analysis in Study One. This has been described in detail in Section 4.4 and will not be outlined again. As mentioned, Study Two was designed to build on the findings of Study One. However, the data from Study Two was initially analysed separately from Study One. After it became apparent that similar broad themes, to those identified in Study One, were emerging it was decided to combine the relevant data from Study One with the data from Study Two. The broad themes generated from the data of Study One and Study Two were similar. However, Study Two helped to provide a greater understanding of these themes, generate sub-themes and contribute to the richness of the data. In later chapters the data from Study One and Study Two are presented in unison.

5.2 Study Three

As discussed previously, the general nature of the discussion in Study One made it difficult to ascertain the relative influence of factors on NMPs' prescribing decisions. Subsequently it was difficult to gauge, at least in a systematic way, whether they were any differences between individual NMPs with regards to the factors they perceived influenced their prescribing decisions. To address these issues a method, called the Q-method, was employed in Study Three. Through the Q-method it is possible to identify and explore perspectives amongst your sample towards the topic of interest. The aim of this section of the chapter is to outline the aim of Study Three, the method employed as well as the data analysis procedure.

5.2.1 Aim

The aim of Study Three was as follows:

- To identify similarities and differences between NMPs in relation to the factors they perceive influence their prescribing decisions

This was to be achieved by addressing the following objective:

- To identify and explore NMPs' perspectives on prescribing influences using Q-methodology

5.2.2 Method

5.2.2.1 Overview

Nurse and pharmacist NMPs working in primary and community care were purposively sampled to this study from the North of England. Participants were informed of the research by their PCT NMPL or via a direct postal invitation. Participants recruited to the study completed an internet survey, based on the principles of the Q-method, where they were asked to order statements about prescribing influences according to the extent to which they agreed or disagreed with the statement. Participants were also asked demographic questions about their role and use of prescribing at the end of the survey.

5.2.2.2 Location of Sample

Initially five PCTs in the North West of England were approached and were asked for help facilitating this study in their PCT. The five PCTs were chosen based on the Office for National Statistics 2001 health area classification (ONS 2008). PCTs were selected to represent patients with diverse health characteristics so there would be maximum variety in the patients that NMPs managed and ultimately prescribed for. Only PCTs in the North West were initially selected for involvement in the study because it was felt there was enough variety in the North West, in terms of population characteristics, to be able to conduct the study exclusively in the region.

The location of the sample of Study Three evolved from just five PCTs in the North West initially to other areas of Northern England. The response rate of pharmacist prescribers in the five PCTs approached was not sufficient to achieve the desired sample. As a result, pharmacists in additional areas were approached and invited to participate in the research. As discussed in Section 4.6.3, requests can be made to the RPSGB for access to the personal information of it members for the purposes of research. Using the information obtained from the RPSGB all pharmacists in the North of England registered as either an independent or supplementary prescriber and registered as working in primary or community care were sent a letter about the study (see Appendix 17.0). Nurse prescribers in these additional areas were not approached as a sufficient number of nurses had already been recruited to the study at this time.

5.2.2.3 Sampling and Recruitment

Brown states that for Q-method studies it is not required that the sample is randomly chosen but it should be a sample of participants who are theoretically relevant to the problem under consideration (Brown 1980). Similarly, purposive sampling allows participants to be selected on the basis of their relevance to the topic under investigation. People in this study were considered ‘relevant to the problem under consideration’ if they were a registered nurse or pharmacist, had qualified as an independent or supplementary prescriber, were working in primary and/or

community care and were currently prescribing in their role. Q-method studies do not require a large number of participants (Brown 1980). The initial aim of Study Three was to recruit 30 nurse prescribers and 30 pharmacist prescribers. This was based on Brown's recommendations that the overall aim should be to have four or five persons defining each anticipated perspective, which is often between two and four, but rarely more than six (Brown 1980). The desire for 30 nurse prescribers and 30 pharmacist prescribers was based on the worst case scenario of needing five participants for a maximum of six perspectives.

It was intended that at least one participant from each of the roles previously outlined in Box 5-1 would be recruited to Study Three to ensure that a diverse range of NMPs took part in the study. The exact proportion of participants in each of the roles was not however set-out prior to the study commencing. To ensure maximum variety in the sample, NMPs expressing interest in taking part in the study, but occupying roles other than those in Box 5-1, were recruited to the study. As with Study Two it was the intention to have as much variation in the sample, in terms of other demographic criteria (e.g. prescribing qualifications, use of prescribing, frequency of prescribing), as possible. As for Study Two the demographic profile of participants recruited to the study was monitored to ensure that there was sufficient variety in the final sample.

The majority of participants recruited to the study were initially approached by their PCT NMPL via email. This recruitment method has been discussed in Chapter Three and will not be discussed again in this section. The invitation email, the expression of interest (EOI) form and PIS are available in Appendix 18.0, Appendix 19.0 and Appendix 20.0 respectively. The numbers of prescribers within each PCT approached about this study are provided in Table 5-2. However, like Study One and Study Two (see Section 4.3.3 and Section 5.1.2.3) the response rate of NMPs taking part in Study Three was not calculated. Participants expressed interest by completing the EOI form and returning it to the researcher. Interested participants were sent the link to the internet survey as well as a unique username and password. This unique username and password allowed the researcher to identify participants that expressed interest in taking part in the study but did not actually complete the survey. In these cases a reminder email was sent to the participant notifying them they still had the opportunity to complete the survey. A maximum of three reminder emails were sent to individual participants who had not completed the survey. In addition to this, the NMPLs were asked to send reminder emails to all prescribers in their PCT at regular intervals a maximum of three times. Invitations were sent by PCT NMPLs between June and September 2011.

Table 5-2: Number of Participants approached about Study Three by PCT

PCT	Number of Participants Approached	
	Nurse Prescribers	Pharmacist Prescribers
PCT 1	94	2
PCT 2	190	10
PCT 3	86	7
PCT 4	72	8
PCT 5	57	11

As a result of the PCT recruitment method, six pharmacist prescribers and 52 nurse prescribers expressed their interest in taking part in the survey. However, not all those who expressed interest went on to complete the survey. The main reason offered by some of those not completing the survey was that they did not have sufficient time. Although the PCT recruitment method resulted in a sufficient recruitment of nurse prescribers very few pharmacists expressed interest in taking part and even fewer completed the survey.

To supplement the PCT recruitment method additional pharmacists were also individually notified of the study via post using personal details obtained from the RPSGB register. All pharmacist prescribers in the North of England registered as working in primary and/or community care were invited to take part in the research. This resulted in a further 219 pharmacist prescribers being invited to take part in the study. The invitations were sent to pharmacists between September and December 2010. Participants were sent a unique username and password with the initial invitation letter (see Appendix 17.0) so if they wished to participate they could access the survey immediately. As before, participants were sent reminder letters at regular intervals, a maximum of two times, should they not have completed the survey.

Attempts to recruit pharmacist prescribers using postal invites resulted in interest from a further 20 participants. Eight pharmacists emailed the researcher to ask if they were suitable to take part in the survey as they were not currently prescribing. These pharmacists were asked not to complete the survey but to notify the researcher if their prescribing status changed. Two pharmacists did complete the survey despite the fact they were not currently using their prescribing. These records were omitted from the data inline with the inclusion criteria of this study.

The additional recruitment of pharmacists did not result in the 30 pharmacist prescribers that it was initially hoped would be recruited to the study. However, it was apparent that pharmacist prescribers occupied a much narrower range of prescribing roles in primary and community care than nurse prescribers. It was therefore decided that a slightly smaller sample of pharmacists would be sufficient to represent the range of pharmacist prescribers in this setting. The pharmacist prescribers' data was combined with the nurse prescribers' data for analysis purposes.

5.2.2.4 Sample of Study Three

In total, 56 NMPs took part in the survey. This consisted of 22 pharmacist prescribers and 34 nurse prescribers. The 56 NMPs were drawn from the following locations PCT 1 (n=10), PCT 2 (n=10), PCT 3 (n=9), PCT 4 (n=3), PCT 5 (n=4), North of England (n=20). Participants taking part in Study Two were employed in the roles listed in Table 5-3. Other demographic information about the participants taking part in Study Three is presented in Appendix 21.0. Further information about the nature of the roles (e.g. type of conditions treated, consultation setting) is available in Appendix 10.0.

Table 5-3: Sample of Study Three

Role		n=
Advanced Practitioner		2
Advanced Nurse Practitioner for Nursing Homes		1
Community Matron/ Active Case Manager (including paediatric and adult)		7
Specialist Nurse (including paediatric and adult)	Palliative Care	4
	All Other	4
Nurse Practitioner for GP Surgery		10
Practice Nurse		3
WIC Nurse		1
Specialist Nurse and Practice Nurse		1
Other		1
OOHs Practitioner		1
Practice Pharmacist/Prescribing Support Pharmacist		13
Community Pharmacist		3
Practice Pharmacist/Prescribing Support Pharmacists & Other		1
Practice Pharmacist/Prescribing Support Pharmacists & OOHs Practitioner		3
Other		1
TOTAL		**56**

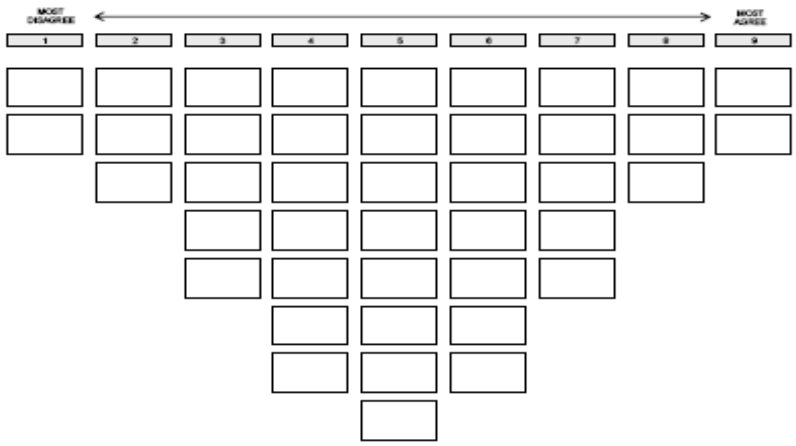
5.2.2.5 Data Collection Method

Background

Participants recruited to Study Three completed an internet-based survey. In the survey participants were asked to order statements about prescribing influences on a grid in the shape of a quasi-normal distribution (see Figure 5-1 for example) according to their extent of agreement with the statement. The survey was designed according to the principles of Q-method which was initially proposed by William Stephenson in 1935. Since then, Brown has described the Q-method as providing the foundation for a systematic study of subjectivity, a person's viewpoint, opinion, beliefs, attitudes and the like (Brown 1993). In a Q-method study participants are typically presented with a set of statements concerning the topic of interest, referred to as the ***q-set***. Participants, typically referred to as the ***p-set***, are asked to arrange the statements from their own

point of view according to some criterion, such as extent of agreement. Each arrangement is typically referred to as a ***q-sort*** and the process of sorting the statements is referred to as ***q-sorting***. The criterion by which participants sort the statements is often referred to as the ***condition of instruction***. McKeown and Thomas described how each completed q-sort represents an individual point of view concerning the study topic (McKeown and Thomas 1988). Likewise, Brown and Ungs stated that through the ranking of statements the participant provides a replica or model of their attitude (Brown and Ungs 1970).

Figure 5-1: Shape of Quasi-Normal Distribution



The aim of the analysis in Q-method studies is to identify and explore the perspectives towards any given topic. The analysis takes the form of a by-person factor analysis. The data analysis procedure for Q-method studies is outlined in detail in Section 5.2.3. The purpose of the analysis is to group participants together who arranged the statements in a similar, although not necessarily identical, manner. Participants who arrange the statements in a similar way could be said to hold a similar viewpoint towards the topic of interest. These groupings of participants are often referred to as 'factors' when analysing and presenting the data. Webler et al. describes how factors are taken to represent underlying discourses within the larger discourse about the topic (Webler et al. 2001).

It is difficult for prescribers to categorically state the exact nature and extent of the influences on their prescribing decisions because they might not know themselves. However, they can offer a description of how they perceive their prescribing decisions to be influenced. The Q-method was considered a suitable method for this topic as it seeks to study a person's subjectivity or viewpoint on any personal matter or matter of social importance (McKeown and Thomas 1988). In this study participants were asked to arrange statements on a grid according to the extent to which they agreed with the statement. Each statement began with 'my prescribing decisions are influenced by' and then went on to describe a source of influence on prescribing. More information about the condition of instruction, statements and the statement development is presented in Section 5.2.2.5.

The Q-method has a number of advantages over conventional survey methods. In most survey methods participants are typically asked to indicate their view towards isolated statements. For example, in Schumock et al.'s study, participants were asked to rate the importance of a number of factors on their prescribing decisions (Schumock et al. 2004). Participants rated the statements independently to other statements. This meant that participants could give all the statements the same rating if they wished. However, in the Q-method, statements are no longer treated as discrete information independent of one another. As a result of the ranking process in Q-method studies participants must make fine discriminations between statements they might otherwise not make in conventional survey methods (Brown and Ungs 1970). Participants in Study Three were asked to indicate which statements about prescribing influences they agreed with most and the statements they agreed with least. This led to an understanding of how NMPs 'trade-off' or prioritise some influences over others. It has been argued that this process of ranking the statements provides the researcher with a more holistic perspective of a person's subjectivity or viewpoint (Dennis 1986).

Dennis argues that during the process of ranking the statements there is a potential for participants to make mechanical rather than conceptual choices in order to complete the exercise (Dennis 1986). On the whole there was little evidence of this problem in the cognitive interviews conducted as part of this research. There was no evidence of this problem for the statements participants placed in the most agree and most disagree columns of the grid. However, there was some evidence of this problem when participants were making fine discriminations between the statements in the middle of the grid. Therefore, during the interpretation of the perspectives emerging from the data, more attention was given to statements that were placed in significantly different positions on one perspective compared with the statements positioning on another perspective.

The Q-method offers advantages in terms of sampling because, compared with other techniques employed in social research, large randomised samples are not necessary. Brown states that the sample of Q-method studies need to include enough participants to establish the existence of a perspective for the purposes of comparing one perspective with another. Brown also added that the p-set does not need to be random (Brown 1980). Instead, the participants are theoretically sampled, as in qualitative research, and are deliberately selected with the expectation that they will hold different and relevant points of view on the topic of interest (Dennis 1986). Whilst this has raised some questions about the external validity of the findings from Q-method studies, discussed initially in Chapter Three, the lack of need for a large randomised sample makes Q-method studies less time consuming and less costly. This was considered beneficial for a programme of research constrained, as much research is, by many logistical factors.

As well as acknowledging the advantages of the method, Dennis raises concerns about participants' ability to complete the Q-method exercise (Dennis 1986). Dennis emphasises how a thorough comprehension of the instructions for the exercise is required if the participants are to represent their perspectives accurately and adequately. Dennis argues that if a lack of understanding about the exercise leads to a misrepresentation of the participant's viewpoint, the validity of the study may be questioned (Dennis 1986). The clarity of the instructions in this study was tested in the cognitive interviews. Webler et al. believed that the quality of the data they collected was improved as a result of the participants in their study enjoying the Q-method exercise (Webler et al. 2001). In their study, Webler et al. reported participants enjoyed doing the exercise, mentioned it was fun, moderately difficult, and that it stimulated their thinking (Webler et al. 2001). It might be that the unique nature of the Q-method exercise is both an advantage and disadvantage of the method.

Application of Q-method in Study Three

The application of the Q-method in Study Three will now be discussed under three main headings: (1) The development of the q-set (2) Testing of the q-set and survey, (3) The administration of the survey.

(1) Initial Development of the Q-set (Statements)

This section describes the stages involved in the initial development of the q-set for the survey used in Study Three. As described previously, the q-set is the statements presented to participants in Q-method surveys. McKeown and Thomas make a distinction between four types of q-sets; (1) *Naturalistic q-sets*, (2) *Ready-made q-sets* (3) *Quasi-naturalistic q-sets* and (4) *Hybrid types.* According to McKeown and Thomas 'naturalistic q-sets' are statements taken from respondents' oral or written communication about the topic under study. 'Ready-made q-sets' are derived from sources other than respondents' own words. Quasi-naturalistic q-sets are similar to those drawn from interviews but are drawn from external sources to the study. As the name suggests, hybrid q-sets can be derived from naturalistic, quasi-naturalistic and ready-made sources combined (McKeown and Thomas 1988). In this study the q-set developed could be considered a hybrid q-set, as the development of the statements was drawn from both naturalistic (interviews in Study One) and quasi-naturalistic sources (literature for NMPs and doctors).

All sources, whether naturalistic, ready-made, quasi-naturalistic or hybrid, from which the q-set is developed are often termed the concourse. Brown defines concourse as the flow of communicability surrounding any topic in the ordinary conversation, commentary and discourse of everyday life (Brown 1993). Similarly, van Exel and de Graaf describe how concourse is a technical concept used in Q-method studies for the collection of all possible statements the

participants can make about the subject at hand (van Exel and de Graaf 2005). In this study, the concourse consisted of three sources:

(1) Transcripts of the 18 in-depth interviews in Study One
(2) Literature on prescribing influences for NMPs
(3) Literature on prescribing influences for doctors

The literature used to develop the statements in Study Three reflects that already discussed in Chapter Two of this thesis. As for the literature review only a small volume of literature was available for NMPs. In contrast, a large amount of research concerned doctors' prescribing. Therefore, as with the literature review, the researcher selected papers she felt were more relevant to address the aim of the study. Starting with the transcripts of the 18 in-depth interviews the researcher reviewed each source for statements where a factor was described as a source of influence on prescribing or where a factor was mentioned as something that did not influence prescribing. For example *"guidelines probably the central role, though… in my prescribing, I mean I tend to stick to guidelines fairly rigidly… well very rigidly"* and *"I must admit I don't always think about cost an awful lot"*. All statements were copied electronically into a blank Microsoft Excel document. The statements were grouped under broad themes generated from Study One. This led to 978 statements grouped under eight broad categories. These categories were: (1) clinical, (2) regulatory factors, (3) patient factors, (4) colleague factors, (5) prescribing culture and professional experience, (6) training and information sources, (7) logistical factors, (8) pharmaceutical industry. The researcher than reviewed the 978 statements again and removed irrelevant or ambiguous statements. This reduced the number of statements to 850.

In the next stage of q-set development the researcher reviewed each of the statements within the eight categories described above and grouped statements that dealt with a very similar or the same theme together. This produced 97 statement sub-groupings within the broader eight categories. One overall statement was then created for each of the sub-groups of statements by reviewing the statements that were contained within the grouping. Where possible the researcher copied the language of the participants taking part in Study One to ensure that the statements mirrored the language of NMPs. However, in a desire to replicate the language of NMPs the word 'concordance' was used in one statement in a way that is not consistent with the official definition (see Chapter Eight for further discussion). The overall statements were reviewed by the wider research team and some minor changes to the statements were made. The aim of the next stage was to, if necessary, refine and reduce the 97 statements even further. In order to help evaluate the 97 statements a checklist was produced by the researcher based on the literature for the Q-method.

This checklist is provided in Box 5-3. This review of the statements, in terms of the checklist, reduced the 97 statements to 52 statements.

Box 5.3: Checklist for Statement Development for Study Three

1. Is the statement potentially relevant to each type of prescriber?
2. Does the statement include a source of influence that could influence prescribing decisions?
3. Does the statement include one idea only?
4. Can the statement be compared with the other statements for the purposes of ranking/sorting?
5. Can the statement be ranked on the scale provided?
6. Does the statement include an idea that could evoke mixed reactions from the participants?
7. Is the statement unique to other statements?
8. Is the statement clear?
9. Is the statement worded using terms that are familiar?

The majority of the 45 statements deleted from the original 97 were deleted because they did not fulfil one or more of the evaluation criteria outlined in Box 5-3. Nine statements were removed because they focused on clinical influences (e.g. the anticipated efficacy of the treatment). It was felt that if clinical influences were included in the task there would be less opportunity to explore how other sources of influences impacted NMPs' decisions, as participants may well have placed all the statements concerning clinical factors in the most agree columns of the grid. For this reason the statements relating to clinical influences were removed. For much the same, albeit opposite reason described above, an additional four statements, all relating to the pharmaceutical industry, were also removed at this stage. It was clear from Study One that NMPs felt the pharmaceutical industry had little impact on their prescribing. It was anticipated that the majority of NMPs would place all the pharmaceutical industry factors in the disagree columns. For this reason the majority of statements relating to the pharmaceutical industry were removed. However, one statement was kept to 'test' this assumption in the cognitive interviews.

McKeown and Thomas make the distinction between unstructured and structured q-sets. In unstructured q-sets, items considered relevant to the subject are selected so to provide a reasonably accurate 'survey' of positions taken or likely to be taken on a given issue. In structured q-sets items are composed more systematically. McKeown and Thomas state the process of developing q-sets can be inductive, so that categories emerge from observations or statements collected, or deductive, so that categories are formed based on prior hypothetical considerations (McKeown and Thomas 1988). In this study, the q-set was 'structured' and 'inductive' because statements represented the broader categories of influences identified in Study One. However, the final number of statements under each theme varied to reflect the depth to which the theme received coverage in the original concourse. There were more statements under the colleague theme than the cost theme because there were many different ways NMPs talked about the influences of colleagues (e.g. GPs, pharmacists, NMPs) but there was less variety in terms of how cost was discussed. The difference

in the number of the statements within each category could therefore be considered a direct reflection of how prescribers talk about prescribing influences. It was felt this method would provide the best means for participants to adequately replicate their viewpoint through the Q-method exercise. Baker using a similar approach to this, describes this as a 'loose' structured approach to developing the q-set (Baker 2006). It is important to note that the statement categories did not represent a theory as to how NMPs would be differentiated after data analysis. Instead, it was intended that any perspectives amongst NMPs would emerge from the data. This distinction was also made by Baker et al. in their Q-method study (Baker 2006) and should be considered when interpreting the findings of this survey.

(2) Testing of the Q-set and Survey Material

The performance of the 52 statements, produced in the initial development stage, as well as other survey material was tested through six cognitive interviews with NMPs. Cognitive interviews are used to identify problems in questionnaires under development by asking a small number of pre-test participants to respond to the draft survey (Conrad and Blair 2009). In cognitive interviews participants are asked to provide verbal reports about their thinking while responding to draft survey questions. During the interview the researcher may probe further for more information than the participant spontaneously provides. Once the interview is complete the researcher inspects the transcripts for any evidence of problems in the questionnaire (Conrad and Blair 2009). Those NMPs taking part in the cognitive interviews were initially approached using contacts of the research team and colleagues in the Pharmacy department at the University of Manchester. All were told that the information gained from their interviews would only be used to help develop the survey material and would not be used in any other capacity.

Three nurse prescribers and three pharmacist prescribers took part in a cognitive interview. The researcher recorded the cognitive interviews with the prescribers' permission. Initially, the cognitive interviews took place face-to-face, either at the prescribers place of work, home-address or in offices at the University of Manchester and used paper versions of the material. This was to maximise understanding of how NMPs responded to the q-set and survey material as the researcher could evaluate both verbal and non-verbal clues (e.g. facial expressions). The performance of the internet survey was later tested in telephone interviews after the prescriber had completed the internet-based survey. The aim of the cognitive interviews was to test the performance of the q-set and other survey materials. NMPs were provided with the paper survey and were asked to complete the exercise normally but to explain their decisions as they made them. Participants were also asked the questions outlined in Box 5-4 at relevant points during the interview.

Box 5-4: Questions Participants asked in Cognitive Interviews in Study Three

- What do you think the instructions are telling you to do?
- How would you rephrase the instructions in your own words?
- Is there anything confusing in the instructions?
- Overall how did you find the exercise?
- Was there anything you found difficult about the exercise?
- Was there any statements that you expected to see that were not there?
- How easy/difficult was it to think about your prescribing decisions generally? What would make it easier?
- Can you foresee any problems when others complete the exercise?

Discussions with NMPs were transcribed and inspected for problems. Initially, the condition of instruction, that is the instruction that sets out the context for consideration of the q-set, asked participants to order the q-set according to the extent to which they *used* the factors, listed on each card, to help make *treatment* decisions. Each statement in the q-set contained one source of influence such as 'information from the medicines management team'. The scale on the grid ranged from 'most frequently' on the right to 'most infrequently' on the left with 'neutral' in the middle.

NMPs' behaviour and comments during the initial interviews pointed to a number of problems with this initial survey material. NMPs' behaviour suggested that they had difficulty ordering the statements according to the condition of instruction. NMPs appeared confused, read the condition of instruction mid-exercise and re-worded the instruction inaccurately. At the end of the interviews NMPs were asked directly about any difficulty with the condition of instruction. Most described some issues with the wording and felt other words such as 'influence' would be more appropriate. NMPs also felt 'prescribing decision' would be more appropriate than 'treatment decision' as the word 'treatment' is wide ranging and involves many different aspects of patient care other than prescribing.

Following the initial interviews a number of changes were made to the survey material. Each of the statements in the q-set was changed to start with the phrase 'my prescribing decisions are influenced by'. This was done to re-emphasise the condition of instruction and to encourage participants to reflect on the factors that influence the prescribing decisions they personally make. In the condition of instruction 'treatment decision' was replaced by 'prescribing decision' and participants were asked to think about the extent to which they 'agreed' or 'disagreed' with the statements. This was changed so the condition of instruction was consistent with the language of the statements. The scale was changed to 'most agree' on the right hand side and 'most disagree' on the left hand side. In addition to these changes, small wording and formatting changes were made to other aspects of the survey instructions in line with NMPs' comments during the interviews. The changes made as a result of the findings from the initial cognitive interviews were tested and refined in the later cognitive interviews.

Following the cognitive interviews a number of changes were made to the 52 statements in the q-set. These changes involved reducing the number of statements from 52 to 42, and some small editing changes to the remaining statements. Duplicate statements were removed along with those considered not relevant to the majority of NMPs. Vague or ambiguous statements were also removed. For example, the statement 'whether I am certain with the diagnosis I have made' elicited a wide range of responses from NMPs which could not be resolved with wording changes. One statement 'the anticipated effect of the prescribing decision on the wider community' was divided in to two statements to reflect the two meanings that prescribers attributed to the statement. The statement relating to the pharmaceutical industry was deleted because, as predicted, all NMPs placed this statement in the most disagree column. The changes made to the q-set as a result of the findings from the initial cognitive interviews were tested and refined further in the later cognitive interviews. These changes led to 42 statements remaining in the q-set. The final 42 statements are available in Appendix 22.0.

As outlined, in the later cognitive interviews participants completed the internet version of the survey and discussed any problems they faced with the researcher via telephone. These interviews served to 'test' the performance of the on-going changes to the survey and evaluate whether the survey worked effectively via the internet. After the initial cognitive interviews the survey material was transferred to the internet. To aid this process the researcher used a freely available internet version of the Q-method survey (Hackert and Braehler 2007). A number of structural modifications were made to the survey so it could be used for this study. The NMPs in the later interviews reported that they had no problems accessing the survey using the link provided, completing the main q-sorting task, navigating through the survey and completing other aspects of the survey. Therefore, no changes were made to the survey material as a result of the feedback NMPs provided in the later cognitive interviews.

(3) Administration of Q-method Survey

A number of ways to administer the survey were considered for this study. These included focus-groups, one-to-one interviews, mail administration and the internet. Q-method surveys administered in face-to-face situations can aid completion of the survey as participants can clarify any difficulties with the instructions. Face-to-face administration may also enable a deeper understanding of participants' rationale for the choices they made. However, it was felt that face-to-face administration of the Q-method survey would not be possible in this study due to the limited number of pharmacist prescribers in the immediate area that had not taken part in Study One or Study Two. Therefore, in this study, the Q-method survey was administered using the internet to enable participants to be drawn from a wider geographical distribution than if the exercise was conducted face-to-face. An internet administration was preferred over mail

administration because it was anticipated that data collection would be more consistent, quicker and more efficient.

Participants were sent a unique username and password and the link to the internet survey. To enter the survey the participant needed to enter their username and password details on *screen one*. Participants were provided with introductory information about the study on *screen two* and *screen three*. If participants continued with the survey at this stage they were assumed to be consenting to take part in the survey, an additional consent form was not signed. However, participants could still exit the survey if they decided not to take part at any point.

On *screen four* of the survey participants were provided with the condition of instruction for the survey (see Box 5-5) along with instructions for Step One. Step One of the survey involved participants sorting the 42 statements into three piles: (1) Statements they generally agreed with, (2) Statements they felt neutral about and (3) Statements they generally diagreed with. On *screen five* participants were provided with Step One. A summary of each screen of the survey is provided in Table 5-4. A summary of each step of the survey is provided in Table 5-5. A full version of the survey is available in Appendix 23.0

Box 5-5. Condition of Instruction for Survey in Study Three
'In the first step of this exercise you will be presented with 42 statements. Each statement begins with "My prescribing decisions are influenced by…" and then describes a factor that could influence prescribing. Please think about the extent to which you agree or disagree with each of the statements in relation to the prescribing decisions you personally make'.

On *screen six* participants were given instructions for Step Two. In Step Two participants were asked to sort the statements, still in 'piles' as per Step One, in the form of a quasi-normal distribution (see Figure 5-1). Although other distributions can be selected a conventional quasi-normal distribution was selected for this study. Participants were asked to arrange the 42 statements in a distribution ranging from -4 (most disagree) on the left hand side to +4 (most agree) on the right hand side. Neutral was in the middle of the scale and was represented by the value 0. A -4 to +4 scale was selected as Dennis recommends that piles on the continuum are labelled in deviation form (e.g. -4 to +4) and that the orientations reflect a most to most situation (e.g. most like me to most unlike me) as people's negative feelings can be just as strong as their positive ones (Dennis 1986). On *screen seven* participants were provided with Step Two.

On *screen eight* participants were given instructions for Step Three. In Step Three participants were asked to review their distribution from Step Two and make any corrections they wished to. On *screen nine* participants were provided with Step Three. On *screen ten* participants were presented

with the instructions for Step Four. In Step Four participants were asked to explain the reasons for placing the two statements they did in the -4 column (most disagree) and the two statements they did in the +4 column (most agree). The information captured in this stage was used to help with the interpretation of the perspectives at a later stage. On *screen eleven* participants were provided with Step Four.

Table 5-4: Summary of Each Screen in Survey used in Study Three

Screen One, Two and Three	Username and Password Login Introductory Information
Screen Four	Condition of Instruction Instructions for Step One
Screen Five	Step One Exercise
Screen Six	Instructions for Step Two
Screen Seven	Step Two Exercise
Screen Eight	Instructions for Step Three
Screen Nine	Step Three Exercise
Screen Ten	Instructions for Step Four
Screen Eleven	Step Four Exercise
Screen Twelve	Instructions for Step Five
Screen Thirteen	Step Five Exercise
Screen Fourteen	Thank you and Data Submit
Screen Fifteen and Sixteen	Feedback and Comments

On *screen twelve* participants were given instructions to complete Step Five. In Step Five participants were asked to complete questions relating to their role, number of years working in the field they are prescribing in, type of prescribing qualification achieved, use of different types of prescribing, year of first prescribing qualification and number of prescriptions issued per week. On *screen thirteen* participants were provided with Step Five.

On *screen fourteen* participants were thanked for their participation and were asked to submit their data. On *screen fourteen* and *screen fifteen* participants were invited to leave any negative, positive or general comments they had about completing the survey.

The data from the survey was automatically saved to a secure server. The saved data did not contain participants' names or any other personal contact details but could be linked back to the name of the participant using the unique username that was saved with the data. The period of data collection was June 2010 to November 2010. Three participants had issues completing the survey via the internet and another participant wished to complete the survey using a manual, rather than an electronic version of the survey. To accommodate these participants a paper version of the survey, almost identical to the electronic version, was created and sent to these participants. Two of the four participants completed the survey and returned it to the researcher. The data of another participant, who returned a partially completed survey, was not used.

Table 5-5: Summary of Step One to Step Five in Survey used in Study Three

Step One	Participants asked to sort 42 statements about prescribing influences into three piles: Statements they generally agree with, (2) Statement they feel neutral about and (3) Statements they generally disagree with
Step Two	Participants were asked to sort the statements, still in 'piles' as per Step One, in the form of a quasi-normal distribution (see Figure 5-1). Participants were asked to arrange the 42 statements in a distribution ranging from -4 (Most Disagree) on the left hand side to +4 (Most Agree) on the right hand side
Step Three	Participants were asked to review their distribution from Step Two and make any corrections they wished to
Step Four	Participants were asked to explain the reasons for placing the two statements they did in the -4 column (Most Disagree) and the two statements they did in the +4 column (Most Agree)
Step Five	Participants were asked to complete questions relating to their role, number of years working in the field they are prescribing in, type of prescribing qualification achieved, use of different types of prescribing, year of first prescribing qualification and number of prescriptions issued per week

5.2.3 Data Analysis

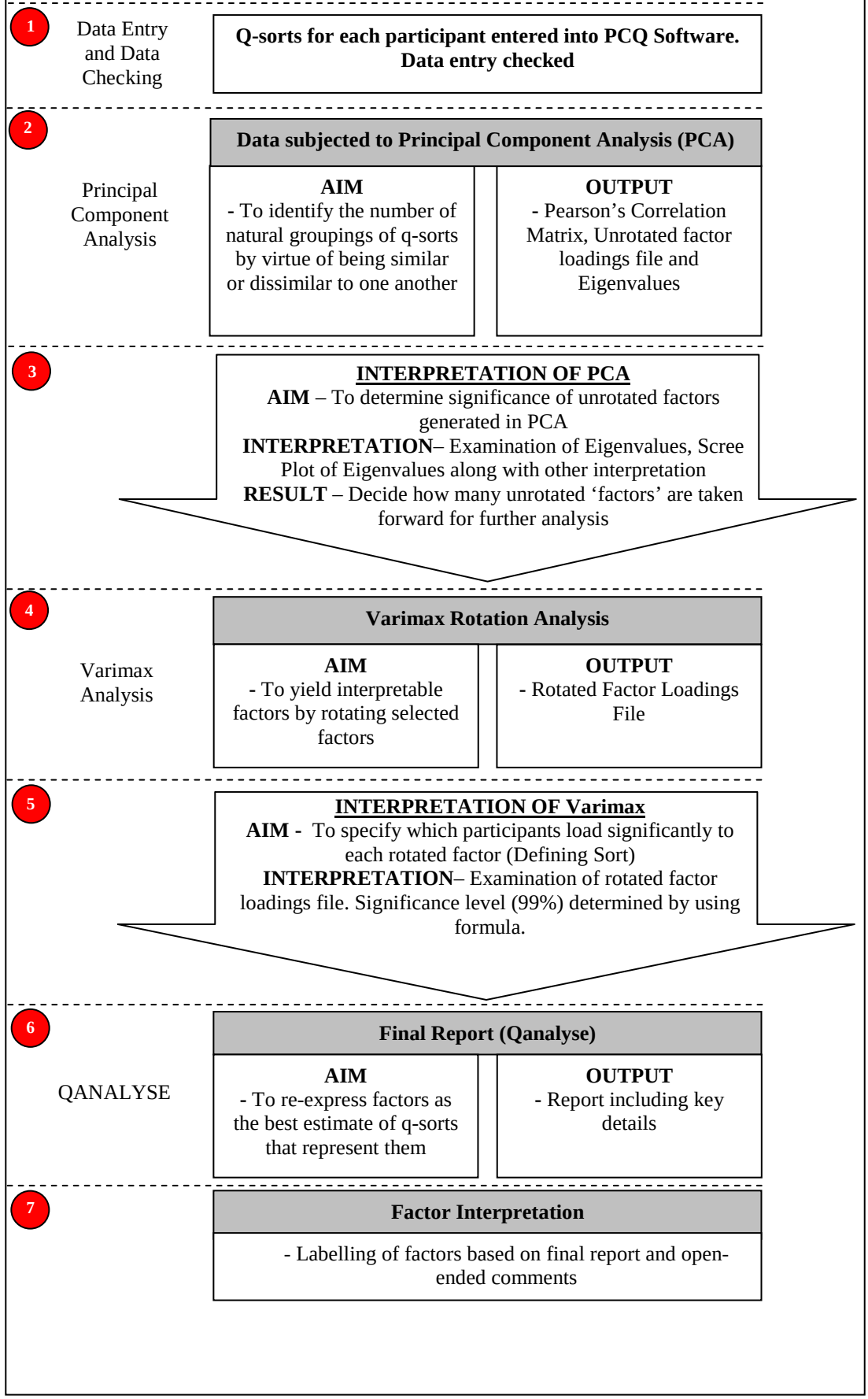
The analysis of the data in Study Three was facilitated by the use of a program called PCQ software (Stricklin and Almeida 2004). This is a freely available downloadable software program specifically for the analysis of Q-method studies. A summary of the data analysis process for Study Three is provided in Figure 5-2. In the first stage of the analysis, the data for each q-sort was entered into the PCQ software program. The PCQ software checks that the number of a statement has not been entered twice or not at all. If an error has been made the program alerts you to the problem and asks you to double check the data and re-enter it if necessary. However, because this accuracy check would not cover instances where two statements were entered in the wrong place an additional accuracy check was completed by another person.

Once entered, the data was subjected to factor analysis. As discussed previously, in Q-method it is people that are being 'factored' and correlated as opposed to tests, traits and the like (van Exel and de Graaf 2005). Therefore, in Q-method a factor represents a group of people who hold a similar perspective on the topic of interest (indicated by similar arranged q-sorts). In the second stage of the analysis the data was subjected to principal components analysis (PCA). The aim of this stage was to identify the number of natural groupings of q-sorts by virtue of being similar or dissimilar to one another, that is, to examine how many basically different q-sorts are in evidence. The PCA produced a series of eigenvalues, a Pearson's correlation matrix (where each q-sort was correlated with every other q-sort) and an unrotated factor loadings file (which presented the loadings for each q-sort onto the factors extracted from the correlation matrix). Factor loadings are in effect correlation coefficients. They indicate the extent to which each q-sort is similar or dissimilar to eigenvalues (and corresponding percentage figures) on screen.

The aim of the third stage of the analysis was to determine the significance of the unrotated factors generated from PCA. This was achieved partly by examining the eigenvalues and producing a scree plot of the eigenvalues. However, other criteria for assessing the significance of the unrotated factors was also used. This is discussed further in Chapter Eight. Once it was decided how many unrotated factors were significant, varimax rotation analysis was performed (fourth stage). The aim of this fourth stage was to yield interpretable factors by rotating the selected factors. To do this it is first necessary to derive a best estimate of that factor in terms of a weighted average of the q-sorts in terms of their loadings on that factor. To achieve this it is required that the loadings of each q-sort should be large on one factor and trivial on the other. In factor analysis this is called 'simple structure' (van Exel and de Graaf 2005). Each resulting final factor represents a group of individual points of view that are highly correlated with each other and uncorrelated with others (van Exel and de Graaf 2005). This process is achieved automatically based on mathematical criterion in the PCQ software be selecting the varimax rotation option but this can also be achieved with qrotation, which is a visual procedure or hand rotation. Hand rotation was used more before the introduction of computers but is rarely used today. Instead, varimax is now the rotation of choice (van Exel and de Graaf 2005) and was therefore used in this study.

The output of the varimax rotation analysis is a rotated factor loadings file. This file indicates the extent to which each participant's q-sort is similar or dissimilar to the composite factor array for that type. In the fifth stage of analysis the q-sorts that load significantly on to each rotated factor were marked. These are termed 'defining' sorts. In the PCQ software there is an automatic function to mark defining sorts. However, in this study, this automatic function was overridden so an alternative formula could be applied. This is discussed further in Chapter Eight of the thesis. In the sixth stage of the analysis a final report is produced by selecting the qanalyse function in the PCQ software. This re-expresses the factors as a best estimate of the q-sorts or defining sorts that represent them. The final report includes the factor matrix with an 'X' indicating a defining sort, a list of statements that differentiates each factor from each of the other factors (along with significance levels) and the z-score for each statement and factor. In the seventh stage of the analysis factors generated from the study were interpreted using the final report, generated from the PCQ software, and the open-ended comments provided by participants in Step Four of the survey. The open-ended comments provided by participants were entered in to NVivo and organised according to the statement to which the comment related.

Figure 5-2: Summary of Data Analysis and Interpretation process for Study Three



Chapter Six – Responsibility

The purpose of this chapter is to describe the factors that influence whether NMPs take responsibility for prescribing. This includes a discussion of the factors that influence whether NMPs take responsibility for issuing a prescription and the factors that influence whether they take responsibility for making a prescribing decision for a patient. The chapter draws on findings from both Study One and Study Two. Study One began to explore the influences on whether NMPs take responsibility for prescribing using in-depth interviews. The topic was then explored further in Study Two using the CIT, facilitated through semi-structured interviews, and focus groups. The chapter begins with an overview of the critical incidents provided by NMPs in Study Two.

6.1 Overview of Critical Incidents

The NMPs taking part in Study Two were asked to think about two incidents before attending the interview:

(1) A situation where they did not feel it was appropriate for them to issue a prescription or take responsibility for making a prescribing decision for a patient (for a non-clinical reason)

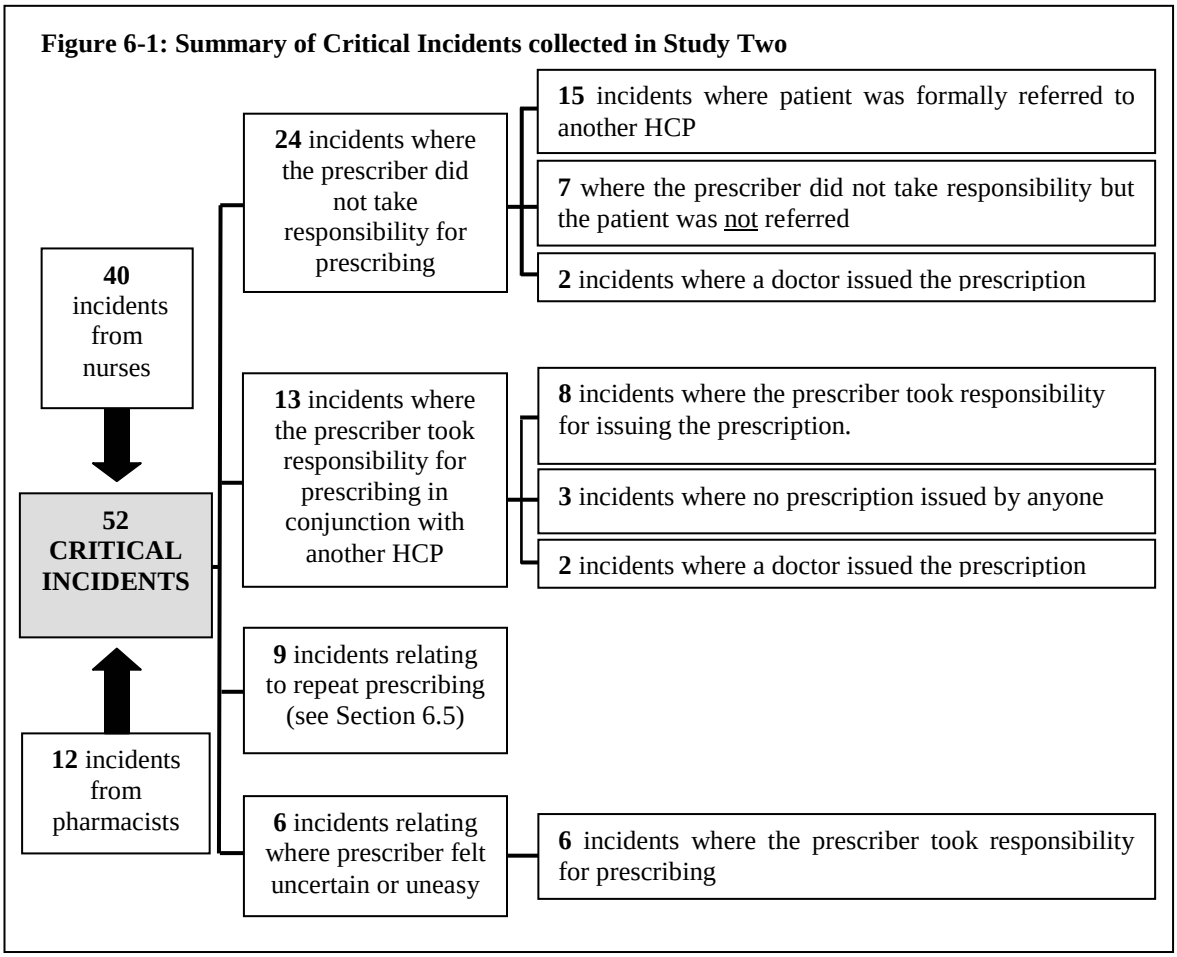
(2) A situation where they felt uncertain or uneasy about issuing a prescription or taking responsibility for making a prescribing decision for a patient (for a non-clinical reason)

The 20 NMPs taking part in a semi-structured interview in Study Two described 52 incidents. Nurse prescribers provided 40 incidents and pharmacist prescribers provided 12 incidents. Nine out of the 52 incidents concerned repeat prescribing. Analysis of these incidents was conducted. This analysis is presented in Section 6.5 of this chapter. In 24 of the remaining 43 incidents, the NMP decided not to take responsibility for prescribing. In 15 of these incidents the patient was formally referred to another HCP. In seven of these incidents the NMP did not take responsibility for prescribing and the patient was not referred. In two of these 24 incidents a doctor was asked to issue the prescription on behalf of the NMP. In 13 of the 43 incidents, the NMP took responsibility for prescribing in conjunction with another HCP. The NMPs eventually took responsibility for the prescribing decision in eight of these 13 cases. A doctor issued the prescription in two incidents. No prescription was issued by anyone in a further three incidents. Six of the 43 critical incidents collected concerned a scenario where the NMP felt uneasy or uncertain about taking responsibility

for prescribing. There were only six incidents in this category as NMPs brought incidents that covered both types of incidents outlined above. Figure 6-1 provides a summary of this data.

Seven NMPs came to the interviews having not thought of any incidents at all. These NMPs were reminded of the request at the beginning of the interview and asked to think of these incidents during the discussion. Following this request all prescribers managed to recall incidents appropriate to the discussion.

Figure 6-1: Summary of Critical Incidents collected in Study Two



NMPs often described many factors that impacted their eventual decision. It was therefore difficult to categorise the incidents based purely on the factors influencing the incident. This chapter will instead provide an overview of all the influences that NMPs discussed. The findings will be presented in conjunction with the appropriate findings from Study One and the focus groups in Study Two. The key factors influencing whether NMPs took responsibility for prescribing in any given scenario fell under four categories: competency, role, practical and legal issues, and degree of risk. NMPs also reported a number of factors that exerted pressure on them to take prescribing

responsibility. These factors are discussed later in Section 6.4. NMPs' overall approach to taking responsibility for prescribing is discussed in the next section of this chapter.

6.2 Overall Approach to taking Responsibility

It was evident from the discussion in both Study One and Study Two that most nurse and pharmacist prescribers adopted a cautious approach to taking prescribing responsibility. NMPs in this research stated they were cautious about taking responsibility. A quote from one palliative care specialist nurse *(Nurse 010, Study One)* illustrated the attitude of many interviewed that *"I think it's a case of if in doubt, do nowt"*. This view was also replicated by one community matron *(Nurse 017, Study Two)* in Study Two who said *"If I've got a doubt then I have to find out"*. This sentiment was also repeated amongst pharmacist prescribers. For example, one practice pharmacist *(Pharmacist 001, Study One)* said *"If I am in any doubt whatsoever then I just buzz through to the GP"*. Additionally, another practice pharmacist *(Pharmacist 004, Study One)* said *"If I felt that my knowledge wasn't up to, up to scratch, or there was any doubt in my mind, then I would refer"*. These sentiments reflect the general cautious attitude of those taking part in this programme of research.

NMPs also described behaviour that reflected a cautious approach to prescribing. For instance, NMPs described how they would only take responsibility for prescribing when the decision falls within their perceived competency levels. In this research, where competency was in question, but not altogether lacking, NMPs were quick to seek advice of colleagues. Competency is discussed further in Section 6.3.1. NMPs were also less keen to take responsibility for prescribing in situations they deemed high 'risk'. High 'risk' was associated with deviation from guidelines or formularies, prescribing medicines off-label and prescribing high 'risk' medicines or for high 'risk' patients. Further evidence of NMPs' cautiousness was reflected in their attitude to repeat prescribing. This is discussed in Section 6.5. NMPs drew a comparison between their careful approach to issuing repeat prescriptions and that of their GP counterparts who they believed would *"sign anything"*.

It is important to note that not all NMPs at all times demonstrated cautiousness in relation to prescribing responsibility. For example, one WIC nurse described how they issued a repeat prescription of a medicine they had limited knowledge about because a friend had run out of their repeat prescription. However, whilst there are exceptions, this characterisation of NMPs' approach to taking prescribing responsibility represents the attitude and behaviour of virtually all NMPs in this programme of research. The next section will describe the possible origins of this cautious approach.

6.2.1 Factors Influencing Overall Approach to Taking Responsibility

Some nurse prescribers held certain attitudes in relation to prescribing practice that appeared to engender their cautiousness. These attitudes included lack of support from professional bodies and healthcare managers, NMPs' vulnerability and the role of NMPs. These attitudes were not expressed by all NMPs in this research. However, even NMPs that did not express these attitudes were cautious about prescribing responsibility. The possible origins of their cautiousness are reflected upon in the discussion section of this chapter (see Section 6.6).

Some of the nurse prescribers interviewed felt if they made a prescribing error they would not be supported by their professional body and healthcare managers to the same extent doctors are in similar circumstances. Some felt they would be much more likely than doctors to be *"struck-off"* from the nursing register. Other nurses felt if a nurse made a prescribing error it would be highlighted whereas prescribing errors made by doctors would be *"concealed"*. The quote below illustrates some of the nurses' attitudes:

"I still truly believe that nurses are still more vulnerable than doctors and always will be, so I think really, you've got to be quite safe in your practice and follow your NMC, because at the end of the day, you don't follow your codes of practice, then, you know it's, you're only answerable to the coroner" (Nurse Practitioner for GP Surgery 007, Semi-structured Interview, Study 2)

One nurse practitioner for a GP surgery *(Nurse 006, Study 2)*, who did not want her interview recorded for confidentiality reasons, described how she was cautious putting her name to a prescription. She described how the *"buck stopped"* with her and how if a serious error was made with prescribing, people would think, *"it was just the nurse prescribing and not the doctor"*. She went on to say there is a *"cloak of responsibility"* around doctors but not nurses. By this she meant that doctors would be protected in cases of prescribing errors or other clinical errors. A dermatology specialist nurse, who was asked how her views regarding lack of professional support influenced her prescribing, described the impact of her views as the following:

"It would make me stop and reflect sometimes before I did something, so things like, a patient not being able to fully understand what I'm saying to them is enough to make me think actually do I want to give them a prescription, or, in the situation of, of, not having a legal guardian or parent there, you know if I prescribe it, and something goes wrong, it's me that has written the prescription" (Dermatology Specialist Nurse 012, Semi-structured Interview, Study 2)

Other nurse prescribers described how their attitude, in relation to professional support, influenced all aspects of their practice and not just prescribing. Pharmacist prescribers did not spontaneously raise the issue of professional support. In fact pharmacist prescribers felt they had the necessary support from their professional body. Some nurse prescribers also expressed this view.

"I think you've got to, as long as you feel confident that you can justify your actions and that you behaved in a competent manner then, you know, you're as protected as anybody else" (Nurse Practitioner for GP Surgery 027, Focus Group 2, Study 2)

It was not clear from the discussions why some NMPs felt supported from their professional body and healthcare managers and others did not. However, it could be that past incidents or rumours of professional support that influenced their beliefs on this issue.

A small number of nurse prescribers believed an error made by a NMP would attract strong criticism from the media and medical profession. In this quote below, two nurse prescribers in a focus group discuss how they think errors from nurses would be exaggerated by the media. Similar sentiments were also repeated by two other nurse prescribers throughout the course of the discussions in Study Two.

NMP 1:"I have that paranoia anyway, if you do something wrong, you will be absolutely, you know, it's about, it's supposed to be about learning and no blame culture but, there is, and, the worrying thing is about prescribing is that they do say, you know, the first thing that goes wrong potentially serious will be blown up" (Extended Scope Practitioner 001, Focus Group 1, Study 2)

NMP 2: "Well it will definitely for nurses, they'll love it, the papers will have a field day" (Advanced Practitioner for Nursing Homes 004, Focus Group 1, Study 2)

One epilepsy specialist nurse *(Nurse 010, Study 2)* felt there was a lot of criticism in the medical profession about non-medical prescribing. The nurse described how she had personally experienced negativity from doctors. As a result of this criticism she felt that non-medical prescribing had to be *"cherished"* and *"protected"*. Similar sentiments were also repeated by other nurse prescribers, but again, as with professional support, these views were not repeated by pharmacist prescribers.

Nurse prescribers' attitudes to the vulnerability of non-medical prescribing appeared to engender cautiousness when they were deciding whether to take responsibility for prescribing. In the quote below a community matron describes how the fear of making a serious prescribing error encourages her to highlight cases where she feels she has insufficient knowledge. The community nurse qualified to prescribe in 2002 and was one of the more experienced prescribers interviewed. Therefore, the term "new prescriber" in the quote can be taken to mean that non-medical prescribing is new generally, rather than she personally is a new prescriber.

"As a new prescriber at this stage you're very much aware of I don't want to make a decision, I don't want to be the first nurse that's across the Daily Mail for killing a patient, type of thing, and I think, we're very very good at looking at what we don't know and saying I don't know enough about that" (Community Matron 004, Semi-structured Interview, Study 2)

Some nurse prescribers felt that it was doctors' role, rather than NMPs, to take risks in relation to prescribing. An advanced nurse practitioner for nursing homes explained how she felt doctors should be at the *"forefront"* and the *"leaders" (Nurse 001, Study 2)* of prescribing. Similar sentiments were also expressed by this dermatology nurse specialist:

"I think GPs are more risk takers, because that is part of their role to be a risk taker, when you go into a GP with, err, and describe symptoms to them, they've got to make a decision for you" (Dermatology Nurse Specialist 012, Semi-structured Interview, Study 2)

The attitude about risk appeared to encourage a cautious approach to taking responsibility for prescribing when the decision involved deviation from guidelines.

"Guidelines are there to support my practice, err, always in the back of my mind, or probably in the forefront of my mind is the fact that I am not a GP, erm I am a nurse prescriber, and I if I, if I sort of vary, if I stray from the guidelines, I really need to, my practice has to be, I have to be able to substantiate why I have done that and there has to be a good reason for me to err to go from the guidelines" (Advanced Practitioner 005, In-depth Interview, Study 1)

In one case a community matron described how she was more cautious about prescribing following the training course than before. She described how the course had outlined the legal and ethical aspects of prescribing issues which she had considered less before the course. The nurse described how it was much easier to ask a GP to sign the prescription on her behalf. This might suggest that the prescribing training course encourages cautiousness amongst NMPs with regards to taking prescribing responsibility. Exactly how long this cautiousness lasts is unknown.

"When you've done the course you lose a lot of confidence because you learn a lot more about, you know the dilemmas and the ethics of prescribing and that you've got to know a lot more about that drug before you prescribe it, so then it's actually harder to prescribe it independently" (Community Matron 017, Semi-structured Interview, Study 2)

In addition to the views outlined there was a general sense of cautiousness amongst the majority of NMPs interviewed, including pharmacist prescribers. This suggests that other factors give rise to this cautiousness that were not identified in this research. The two quotes below illustrate this point:

"I think as pharmacists we've always been a pretty cautious bunch anyway, erm I think the kind of, that's been instilled in to us from the society for a very long time, so I think by breed we're fairly cautious, erm we don't tend to, kind of act too spontaneously really" (Practice Pharmacist 20, Semi-structured Interview, Study 2)

"I do feel that within nurse prescribing people are a little bit more cautious about what they are prescribing anyway" (Advanced Practitioner 006, In-depth Interview, Study 1)

The overwhelming evidence was that NMPs adopt a cautious approach to taking responsibility for prescribing. For some nurse prescribers this approach was linked with their attitudes regarding support from the NMC and healthcare managers, NMPs' vulnerability and the role of NMPs. However, not all prescribers in this research expressed these attitudes which suggest other factors give rise to their cautiousness.

6.3 Main Influences on whether NMPs take Responsibility

As discussed previously, there were four main categories of influences on whether NMPs took responsibility for prescribing. These included competency, role, practical and legal considerations, and 'risk'.

6.3.1 Competency

Insufficient competency was frequently cited by NMPs as a reason for not taking responsibility for making a prescribing decision for a patient or issuing a prescription. Where NMPs did not feel competent they referred the patient to a doctor (12 incidents) or sought informal advice and support (nine incidents). NMPs mainly received support from GPs, but support from hospital and secondary care doctors and other HCPs was sometimes mentioned. The influence of competency on NMPs' decisions was also apparent from NMPs' comments in all components of Study One and Study Two.

Nurse and pharmacist prescribers clearly felt if they were not competent they should not take responsibility for prescribing. This is reflected in the quote below:

"Well if you're not competent you don't do it basically, you get the GP to do it instead" (Nurse Practitioner for GP Surgery 027, Focus Group 2, Study 2)

This nurse practitioner used the term 'competency' rather that describing components of competency. This was also noticeable in the comments of other NMPs in Study One and Study Two. The importance that NMPs, both nurses and pharmacists, placed on competency in this programme of research reflects the guidelines provided for NMPs (Nursing and Midwifery Council 2006; Royal Pharmaceutical Society of Great Britain 2007). Furthermore, as discussed in Section 4.5.2, NMPs comfort with the word 'competency' is in contrast to the limited discussion of this issue in the doctors' prescribing literature. NMPs felt they are responsible, rather than others, for dictating the areas they are competent enough to prescribe in. They felt that colleagues would not know enough about their competency to make the decision for them.

In some cases NMPs used other words than competency to indicate the degree to which they felt content to take responsibility for prescribing. For instance, NMPs talked about how when *"uncertain", "in doubt"* or *"uncomfortable"* about an aspect of prescribing then they refer the patient or seek the support of colleagues. In many ways, these words were all used to indicate how competent they felt to deal with the situation.

In Study One NMPs did not spontaneously expand on the meaning of competency. Therefore, one of the objectives of Study Two was to expand the understanding of what particular aspects of competency were important to NMPs when deciding whether they should take responsibility for prescribing. The key aspects of competency described by NMPs are discussed in relation to the Competency Framework initially introduced in Section 2.3.5.

6.3.1.1 Competency Framework

The aspects of competency frequently mentioned by NMPs included: background knowledge, ability to diagnose the patient's complaint, the skills to interpret the results of any tests needed for diagnosis, the ability to select the most appropriate medicine, the skills to monitor the patient's response to the medicine and the knowledge and experience to prescribe any required medicine safely. Many elements of competency mentioned by NMPs in this research matched those in the Competency Framework (National Prescribing Centre 2006). This is despite most NMPs in this research suggesting, when asked, that they rarely refer to the Competency Framework in their practice. NMPs outlined many of the competencies in the competency area 'The Consultation'. Competencies from this area relating to 'Clinical and Pharmaceutical Knowledge', 'Establishing Options' and 'Communicating with Patients' were mentioned by NMPs. NMPs also mentioned those competencies outlined in the 'Prescribing Safely' section of the Competency Framework. However, other competencies in the 'Prescribing Effectively' and the 'Prescribing in Context' sections were not mentioned.

It is likely that sections of the Competency Framework were not mentioned because the Framework was developed to maintain competency, rather than to assess whether a NMP is competent enough to take responsibility for prescribing in a specific scenario. For example, one statement in the Competency Framework states that prescribers must know how to maintain patient confidentiality when prescribing. It is plausible to assume that NMPs consider this before starting to prescribe but do not reconsider it each time they decide whether to take responsibility for prescribing.

The Competency Framework provides a useful structure to describe the findings of this programme of research. Therefore, the description of how competency influences whether NMPs take

responsibility for prescribing in any given scenario is discussed under the first four headings of the Framework.

6.3.1.2 Key Aspects of Competency

Clinical and Pharmaceutical Knowledge

The first aspect of competency that influenced whether NMPs took responsibility for prescribing was whether they possessed sufficient background clinical and pharmaceutical knowledge about the area of practice. This is understandable, as thorough and up-to-date background knowledge of the condition and viable pharmacological and non-pharmacological treatment options is needed before a prescriber can even contemplate making a judgement regarding prescribing.

Patients would often be referred to another HCP or service if the NMP did not possess satisfactory background clinical and pharmaceutical knowledge.

"It comes back to the competencies, you really need to know what the starting point is to know what's wrong with the patient before you can actually safely go for any sort of treatment, and if you don't know that then I think you're duty bound to refer back to somebody who does" (Community Pharmacist 020, Semi-structured Interview, Study 2)

Arguably this aspect of competency is about how NMPs define their area of clinical practice rather than just the situations they should and should not prescribe in.

Establishing Options

A further aspect of competency that influenced whether NMPs took responsibility for prescribing was whether they felt they had the competency to, if needed, make a working diagnosis from differential diagnosis. This was apparent from comments made when discussing critical incidents and from comments made by NMPs in Study One and the focus groups in Study Two. However, it was more apparent in the comments of nurse prescribers than pharmacist prescribers. This is most likely to be because more pharmacists than nurses are managing patients with conditions already diagnosed by a doctor. In contrast, nurse prescribers are more likely to be managing conditions with no previous diagnosis (See Appendix 10.0 for further details of NMPs' roles).

"Before you actually make a decision to prescribe or not, you've got to be safe on your assessment of that patient, so unless you can actually assess that patient safely, and you can actually come to a working diagnosis that you're happy with, then you can't really move on and issue a prescription" (WIC Nurse 009, In-depth Interview, Study 1)

As this quote illustrates, making a diagnosis also included possessing the skills to interpret the results of any tests or investigations conducted:

"It's not just a prescribing decision about the drug choice, and so on, it's everything that comes before that, so, am I confident enough that I know what the problem is, is the diagnosis right and if I've made that diagnosis am I confident with it, have the investigations been done where appropriate and am I comfortable with the results and interpreting those results" (Practice Pharmacist 003, In-depth Interview, Study 1)

The analysis of the critical incidents suggested if a NMP was unable to make a diagnosis then they would be more likely to refer the patient than prescribe in conjunction with another HCP. Out of the 14 critical incidents, where the NMP stated they did not have the competency to form a diagnosis, the NMP referred the patient to a doctor in 10 cases. In four of these 14 incidents the prescriber sought informal advice and support from a GP. In two of these four incidents the prescriber sought informal advice to avoid the patient having to make another appointment. In the other two other incidents, the NMP sought informal advice and guidance because they considered the situation high 'risk'. The concept of a situation being high 'risk' is discussed further in Section 6.3.4.

NMPs also stated they would not take responsibility for prescribing in situations where they felt they were not competent to select the most appropriate medicine, dose and formulation for the patient.

"I'd confidently know that a patient with a chest infection that's coughing up green sputum would need an antibiotic, but I wouldn't feel competent to know which antibiotic, and at what strength, and if I've got to look in the BNF to work that out in front of a patient then I don't feel I want to go down that road" (Epilepsy Specialist Nurse 010, Semi-structured Interview, Study 2)

In the majority of the seven critical incidents where the NMP did not feel they could select the most appropriate medicine the patient was referred to a doctor.

"I am not sure what the best course of treatment would be, then erm I will refer back to the GP for their support" (Practice Pharmacist 020, Semi-structured Interview, Study 2)

In a smaller number of incidents, the NMPs described how they sought informal advice and guidance from GPs. For instance, one nurse practitioner described how she asked a GP's advice because she had tried most standard treatment options and was unsure what to prescribe next for the patient. "ACE" in the quote is referring to ACE inhibitors which are commonly used to manage high blood pressure.

"You might get a patient that's on two or three agents for their blood pressure and it's obvious that the blood pressure's still not controlled, and there comes a point where I need to really say to, you know, to run by someone else and say look you know, they're on an ACE, they're on this, they're on that, what shall we add in now" (Nurse Practitioner for GP Surgery 002, Semi-structured Interview, Study 2)

NMPs also explained how they would be reluctant to take responsibility for prescribing unless they were competent to monitor the patient's response to treatment and modify the treatment plan if necessary.

Communicating with Patients

As this quote below demonstrates, some NMPs' definition of competency also meant the capacity to explain to the patient what treatment they were taking, why they needed to take it and any likely side effects they might encounter:

"Well being competent to prescribe is that you can explain how it works to the patient, so the patient knows what they're taking and why they're taking it, what potential problems they might encounter with it" (Practice Nurse 015, Semi-structured Interview, Study 2)

Prescribing Safely

NMPs were reluctant to take responsibility for prescribing in situations where they did not feel they could prescribe safely. NMPs' perceptions of how safe they were to prescribe the medicine were influenced by their medicine knowledge and experience. NMPs' definition of medicine knowledge varied but often included knowledge of the medicine's interactions, any side effects, any contraindications, the appropriate dose of the medicine for the patient, how to adjust the dose, how to write the prescription, the potential harm of the medicine and the most appropriate time to give the medicine.

In the minority of the eight critical incidents, where the NMP did not feel they possessed sufficient medicine knowledge to take responsibility for prescribing, the patient was referred. However, in the majority of the incidents the NMP sought informal support and guidance from other HCPs, most notably GPs and pharmacists. Guidance was often sought because the patient had co-morbidities, complex polypharmacy or was receiving a non-standard treatment. In half the incidents, after seeking guidance, the NMP went on to issue the prescription themselves.

"I have quite good relationship with the pharmacist because he's only downstairs, so I can just ring him up and say hi it's [name of participant], can you just give me some advice, which I did this morning actually on a dexmethasone for a child, you know and he will help me, he will just say do that on the script or whatever" (Nurse Practitioner for GP Surgery 007, Semi-structured Interview, Study 2)

In some incidents the NMP still did not feel comfortable taking responsibility for prescribing and asked a doctor to issue the prescription. For example, a community matron described how she was uncertain about how two medicines, which she normally prescribed alone, interacted. The community matron sought guidance from a GP who advised her that prescribing the two medicines together was safe. However, even after receiving this guidance, the community matron did not feel comfortable issuing the prescriptions and asked a GP to do it instead. She explained the reason for this was that she wanted written evidence that it was safe to prescribe both medicines together rather than just rely on the GP's advice. It was not entirely clear what the NMP felt might happen to her had she prescribed. This situation is a further example of NMPs' cautiousness in relation to prescribing responsibility.

"Just hearing it verbally, even from a GP, is fine, but it's not good enough, you've got to also get the, you've got to see the written evidence I think really, you can't just take verbal erm acceptance from a GP" (Community Matron 017, Semi-structured Interview, Study 2)

As has been previously mentioned, NMPs' perceptions of how safe they are to prescribe the medicine were based on their knowledge and experience. These quotes below illustrate how some NMPs were reluctant to prescribe medicine where they had no prior experience of doing so:

"We don't prescribe oral steroids because I don't feel comfortable, I've had no experience of prescribing oral so I wouldn't do it" (Dermatology Specialist Nurse 012, Semi-structured Interview, Study 2)

"I only prescribe drugs that I know, and have used and I am comfortable with" (Practice Pharmacist 014, Semi-structured Interview, Study 2)

Use of P-Formulary

A p-formulary or personal-formulary is a list of medicine that the NMP feels competent to prescribe. The National Prescribing Centre (NPC) recommends that prescribers should aim to cover around 90% of routine daily prescribing requirements for the conditions they most regularly encounter in practice in their p-formulary. The prescriber should aim to develop good knowledge about the way each medicine works, likely side effects, contraindications and ideally experience their use in the 'real world' (National Prescribing Centre n.d.). For some nurse prescribers the medicine they felt competent to prescribe was reflected in their p-formulary. Many nurses stated it was a current requirement of the prescribing course to write a p-formulary. In some cases this p-formulary was submitted on a formal basis to their PCT. The p-formulary was generally a list of medicine that the prescriber felt safe to prescribe. However, one nurse described how her p-formulary was a list of medicine she feels she is <u>not</u> safe to prescribe. A number of nurse prescribers described how they would not prescribe medicines outside of their p-formulary because

the formulary reflects what they can safely prescribe. This quote below illustrates this sentiment. P-list is used to refer to p-formulary in the quote.

"Basically our p-list has to match up with what we're doing, erm and then that's when you say, actually no I'm not prescribing Tramadol" (Paediatric Diabetes Nurse Specialist and WIC Nurse 030, Focus Group 3, Study 2)

A small number of nurse prescribers felt they would not receive legal support if they prescribed something outside of their p-formulary. One nurse prescriber believed she would be open to litigation not backed up by the PCT.

"It's not legal to do that, you've got to have a p-list, and your p-list has to say what you intend to prescribe, and if you feel the need to prescribe something else you have to extend your p-list, can't just add them and say, oh well I will give you that because that's not what we're here for" (Advanced Practitioner for School Health 029, Focus Group 3, Study 2)

However, for other nurse prescribers, it was acceptable to them, and they thought their PCT would find it acceptable, to prescribe outside their written p-formulary where a clinical need arose. However, it was still important to them to possess sufficient knowledge.

"The trust would accept the fact that we're going in to things like that, I'd never prescribed before, but I know they need it, they're in pain so I'm going to have to prescribe it, but it's my duty then to know about the drug" (Advanced Nurse Practitioner for Nursing Homes 001, Semi-structured Interview, Study 2)

For other nurse prescribers if the need arose to prescribe outside their p-formulary they would seek support or refer the patient to a doctor rather than taking responsibility for prescribing in that circumstance. However, if a need for the medicine consistently arose, nurse prescribers said they would consider carrying out further study of the medicine so they could add it to their p-formulary.

"I still wouldn't prescribe off my p-list, say if I went to see a child at the weekend, erm I'd phone somebody and get a written prescription rather than make a decision as what to give them because I feel that my p-list is sort of, not my protection, but what I know, and even if I looked in the BNF and read I wouldn't know enough in that instance but I'd phone and get somebody to give a verbal message to change their medication and then if it was to come up a few times I might think it might be handy that to add to my p-list [others in the same focus group nod their heads in agreement]" (Advanced Practitioner for School Health 029, Focus Group 3, Study 2)

In some cases NMPs had written a p-formulary as part of their prescribing course and felt it was now out-dated, and had not sought to update it because of time constraints. Furthermore, some NMPs had never written a p-formulary as part of their course and had not been asked or done one since. This was a more common occurrence amongst pharmacist prescribers. NMPs without an

official p-formulary often described a head-held formulary of medicine they perceived they could prescribe. The head-held formulary worked in much the same way as an official p-formulary with NMPs not willing to take responsibility for prescribing decisions that fell outside the scope of the medicine within their formulary.

"If anyone asks me to say what I don't prescribe, I know that I wouldn't prescribe CDs, I know that I wouldn't prescribe benzodiazepines, I know, you know where the buck stops, but no, I don't have a list that says that" (Nurse Practitioner for GP Surgery 002, Semi-structured Interview, Study 2)

6.3.1.3 Factors Influencing Competency

NMPs described a number of factors that influenced the development of their competency levels. These factors included the availability of clinical support, opportunities to gain experience and training opportunities.

As outlined, where NMPs did not feel competent to take responsibility for prescribing alone they would seek support from colleagues. NMPs described how this guidance over time would increase both their competency and confidence in prescribing, eventually leading them to take sole responsibility in similar situations in the future. In Study Two, three nurse prescribers, including a community matron, a paediatric continence specialist nurse and a palliative care specialist nurse, described how a lack of clinical support meant they found it difficult to increase their competency. Insufficient clinical support meant there were no mechanisms in place to prescribe in a 'safe' environment with the support of colleagues. In contrast, NMPs with adequate clinical support who were unsure about an aspect of a prescribing decision could seek guidance from colleagues. This guidance increased their competency and confidence. For example, this practice nurse explained how support from a GP helped her develop her competency. The abbreviation PPI in the quote below refers to protein pump inhibitors which are commonly used to reduce acid in the stomach.

"I mean very much like becoming competent in prescribing the erm lansoprazole or the PPI, erm learning about it, doing it, discussing scenarios with the GP, that then gives you the competence to actually know when it's safe to prescribe that, it's like any learning isn't it you learn by watching, listening, doing" (Practice Nurse 015, Semi-structured Interview, Study 2)

Clinical support was not available for the three nurse prescribers mentioned. As a result they were finding it difficult to increase their competency. For instance, the continence specialist nurse *(Nurse 008, Study Two)* described how there were no doctors or NMPs within her team. The lack of support meant the nurse prescriber was underutilising her prescribing skills and not developing her competency in other areas of prescribing that would benefit the service. This type of problem was also expressed by the two other nurse prescribers, as this quote demonstrates:

"But I still feel I need a lot of clinical supervision which I am arranging, which I have arranged, to build my confidence to hopefully build on my prescribing erm medications as well, because I need that, because that's the whole point is that I should be building on it" (Community Matron 017, Semi-structured Interview, Study 2)

The continence specialist nurse felt her confidence to prescribe in her current area of prescribing was diminishing because of the lack of support. She described how she had experienced negative outcomes as a result of past prescribing decisions. As she had no one to discuss these situations with, her confidence lowered and she failed to take responsibility prescribing in some situations that followed. This was apparent in one of the critical incidents the nurse discussed in her interview. The nurse described how she did not prescribe an anticholinergic for a patient directly because of past negative outcomes (i.e. side effects) with other patients. Instead she asked the GP to issue the prescription even though she thought the GP would follow her request without examining the patient. When asked why it was better for the GP to issue the prescription she said *"just because of the responsibility"*. This example provides an in-depth examination of how insufficient clinical support can have a direct influence on whether a NMP takes responsibility for prescribing in a given scenario. This quote illustrates the difficulties faced by this NMP:

"I think also someone challenging you is helpful in terms of your practice in general but I think in terms of making progress, I think I need someone to challenge me to say well what stop, like you're doing sort of, what's stopped you, not what, yeah what stopped you from prescribing that and actually do you think you'd have been better off prescribing that instead of the other" (Paediatric Continence Specialist Nurse 008, Semi-structured Interview, Study 2)

A lack of opportunity to gain prescribing experience was mentioned by some nurse prescribers as a barrier to increasing competency. Two nurse prescribers mentioned it was difficult for them to gain experience because of their lack of contact with patients. In one case this was due to the nurse's management duties and in the other case this was because the nurse's service was being reorganised.

"I've expressed that concern to my line manager that erm, but I am being pulled in a direction of managerial service development and my clinical is falling behind, so it's up to me to keep that clinical as much as I can up-to-date" (Palliative Care Specialist Nurse, Semi-structured Interview, Study 2)

Two pharmacist prescribers also felt opportunities to expand their prescribing practice were restricted by the lack of training courses and material targeted at the appropriate level for pharmacist prescribers. This quote below illustrates this attitude:

"Expanding your prescribing may be difficult, not because of your knowledge of the drugs, but because there's no training at a good enough level for the other stuff, you know, how do you

become competent to erm treat osteoporosis, there are no courses" (Practice Pharmacist 003, In-depth Interview, Study 1)

However, as this quote from a nurse prescriber demonstrates, lack of training could be overcome with sufficient opportunities to gain experience in a safe environment:

"Because my background is adult and we don't have, I don't have any children's qualifications so at first it was a bit, a bit scary with little people but the more, the more you do it the less scary it becomes really and you feel quite competent about doing it yeah" (Dermatology Specialist Nurse 012, Semi-structured Interview, Study 2)

Clearly NMPs' perceptions of their competency levels in certain areas influences whether they take responsibility for prescribing in any given scenario. This behaviour is in line with guidance issued to NMPs.

6.3.2 Role

NMPs stated they would not take responsibility for prescribing if it was not within their *"role"* to do so. NMPs also used other words such as *"remit"* and *"scope of practice"* but these largely meant the same as role. An understanding of how NMPs define their role, and the influence it has on prescribing, was gathered more through the general discussion that occurred in the interviews and focus groups than the critical incidents. NMPs' definition of their role appeared to be self-generated. However, there were a number of common factors that contributed to NMPs' definition which included main medical speciality, agreements with colleagues, appropriateness of alternative services and nature of prescribing.

Some of those working as specialist nurses defined the boundaries of their role primarily by their main medical speciality (e.g. diabetes). These nurse prescribers described how they would be unwilling to take responsibility for prescribing decisions that fell outside their speciality. This role definition also meant there was no perceived requirement for NMPs to expand their competency outside their main medical speciality.

"I don't see how I would develop a competency in heart disease because it's not my speciality so I wouldn't, I wouldn't be attempting to, there's not an expectation either" (Palliative Care Specialist Nurse 018, Semi-structured Interview, Study 2)

NMPs working in more general roles did not have a main medical speciality and as a result based the definition of their role on other factors. Two practice pharmacists in Study One, and one community pharmacist in Study Two, described how they had agreements with their GP colleagues and surgery managers about the clinical areas they could operate within.

"I'm answerable essentially to the doctors and the practice manager and I discuss with them the types of area that I'm involved with" (Practice Pharmacist 003, In-depth Interview, Study 1)

In this quote below, the practice pharmacist described how his role is defined by *"rules of engagement"*. It is noteworthy that the pharmacist believes he is relatively competent in muscoskeletal problems but is expected to refer such patients. This clearly suggests that doctors have a major role in defining some NMPs' roles.

"When I start working in a practice erm I tend to sort of try and agree ground rules or rules of engagement, call it what you will, about what it is they want me to do, and if they're fairly broad, then that's okay, in some cases they're fairly narrow and say outside these we prefer you to pass them over to us, which is also okay, erm so if I get people with muscoskeletal problems, erm which I'm not too bad on, but generally I pass them over in that they expect me to just sort of stay within my boundaries" (Practice Pharmacist 005, In-depth Interview, Study 1)

Pharmacist prescribers would still only take responsibility for prescribing in an area if they felt competent to do so.

"They did say that simple dermatology they'd be happy for me to do now I'm not really that good on dermatology so I've asked myself anything dermatology I refer on to the GP" (Community Pharmacist 020, Semi-structured Interview, Study 2).

There is less evidence that nurses, working in GP surgeries and other general roles, have informal agreements outlining therapy areas where they can prescribe. This may be because nurses have historically had a greater role in primary and community care.

The appropriateness of alternative services also shaped NMPs' definition of their role. For instance, patients with more severe issues would be referred to the hospital or secondary care. In this quote, a dermatology specialist nurse described how she does not feel it is her responsibility to prescribe oral steroids for skin conditions because a need for oral steroids is an indication the patient's condition is severe which requires input from other services:

"We try to get our patients in the position where they don't need them to be truthful, erm and often you can manage them on topical steroids, they don't need the oral steroids and if they're that bad they need to be seen by somebody else and not us" (Dermatology Specialist Nurse 012, Semi-structured Interview, Study 2)

In another example, provided in Study One, an advanced practitioner describes how she would not prescribe pain relief for patients with cancer as it was more appropriate for palliative care specialist nurses and GPs to provide that service:

"The palliative care will just be things like oral hygiene if we need anything for that, or say if the pressure areas are beginning to look suspect and we need anything for that, as far as the pain relief is concerned then the Macmillan and the GP really do that" (Advanced Nurse Practitioner 003, In-depth Interview, Study 1)

Similarly, a practice pharmacist described how he felt it was more appropriate for the practice nurses to give holiday immunisations as they do not require his level of expertise:

"I don't tend to get involved very much in vaccine holiday immunisations and so on, broadly because they tend not to be difficult choices, they tend to be very protocol driven and doesn't need my level of expertise, that's what our general nursing team are for" (Practice Pharmacist 003, In-depth Interview, Study 1)

Some NMPs explained how their role was more suited to some types of prescribing. For example, a WIC nurse was content to prescribe for one-off or acute conditions with previously undifferentiated diagnosis but did not feel she should initiate patients on long-term medications for conditions such as hypertension. She explained how this type of prescribing would be more suitable for a GP as WICs are not set up for long-term patient management.

"At the moment I don't feel happy to prescribe for even things like hypertension because that's not my role, erm and patients obviously need not just a prescription or advice but they need further management" (WIC Nurse 009, In-depth Interview, Study 1)

In contrast this community matron described how she would not be willing to prescribe for undiagnosed complaints. She perceived her role to be mainly restricted to altering medication for existing conditions.

"It's harder I think, initiating it for the very first time is where I wouldn't, I might not be as comfortable erm because if you're initiating a drug you need a diagnosis and if it's a new thing why am I the one who is saying this is what you need for the first time" (Community Matron 017, Semi-structured Interview, Study 2)

In general pharmacist prescribers were less involved in diagnosing patients' conditions than nurse prescribers. They were however involved in altering existing treatments. The majority of NMPs also felt issuing repeat prescription items for patients did not fall within their role. This is discussed further in Section 6.5.

Many factors influenced NMPs' definition of their role and NMPs' perceptions of their role influenced whether they took responsibility for prescribing in any given scenario.

6.3.3 Practical and Legal Considerations

The practical issues NMPs considered when deciding whether to take responsibility for prescribing included whether they had access to sufficient information to enable safe prescribing, whether the patient would be able to obtain the medicines and whether it was more convenient for another service to take responsibility for prescribing. NMPs also considered the legal issues when deciding whether or not to take prescribing responsibility.

6.3.3.1 Practical Considerations

In five critical incidents NMPs did not take responsibility for the prescribing because of insufficient information. In all of these incidents the NMP postponed the prescribing decision rather than referring the patient to another HCP. This suggests that it would have been inappropriate for any prescriber to take responsibility for prescribing. Insufficient information was more often mentioned more by NMPs working in the community pharmacy setting, WICs, clinics and the community, but mentioned less by those in GP surgeries. This is presumably because NMPs in GP surgeries have access to patient records.

Some NMPs highlighted how it could be difficult to obtain the required information from patients during consultations because of language barriers. One dermatology specialist nurse explained she was reluctant to prescribe in these cases because of difficulties obtaining a history and concerns that the patient would not understand the information given to them.

"I can't take a comprehensive assessment if, if erm I'm asking them questions and they're just nodding and saying yes and, and I'm uneasy that they actually understand what I am asking them, especially around allergies and previous medications etc and previous treatments that they've tried, it just puts you in a very difficult position" (Dermatology Specialist Nurse 011, Semi-structured Interview, Study 2)

Advanced nurse practitioners working for nursing homes also highlighted difficulty in obtaining information from elderly patients. This was because the elderly patient did not know the information themselves and the nursing home did not keep the information. If it was not possible to obtain the information then the NMP would make the patient as safe as possible. This may or may not have involved issuing a prescription.

NMPs visiting patients in their own home were reluctant to provide prescriptions for patients if the patient would be unable to take the prescription to the pharmacy. Instead, the NMP would ask the patient's GP surgery to provide the prescription to the pharmacy so the medicine could be delivered by the pharmacy to the patient's home.

"Even if it's an antibiotic and they're house bound there's no point me doing a script and handing it to them and they can't get it, the surgery might as well do it and send it through to the pharmacy and have it delivered"(Community Matron 017, Semi-structured Interview, Study 2)

NMPs felt it was more convenient for GPs to take responsibility for prescribing in cases where patients were given medicine in dosettes[9] as any change in the prescription needed to be processed through the patient's GP surgery before it could be issued anyway.

"You struggle sometimes with some of the heart failure patients because they might be on medi-dose and nomads and all of that so it doesn't necessarily work us giving them a prescription because it's got to come through the GP to change the nomads and the medi-dose and it takes weeks" (Practice Nurse and Specialist Nurse 012, In-depth Interview, Study 1)

Similarly, some NMPs found it easier for the patient's GP surgery to issue the prescriptions if the patient required a large number of medicines. Similarly, in one critical incident a palliative care specialist nurse described how it was easier for GPs to issue prescriptions for medicine that involved a large amount of paper work. This was because the nurse was employed by a private hospice rather than the PCT who issued the paperwork.

6.3.3.2 Legal Considerations

Given the frequency and volume of changes to non-medical prescribing legislation over the last few years it is understandable that NMPs considered legal issues, specifically around CDs and unlicensed drugs, when deciding whether or not to take responsibility for prescribing.

Pharmacist prescribers conformed to the current regulations that state pharmacist prescribers cannot prescribe CDs independently.

"I've got the unfortunate situation, I can't prescribe co-codomol at the moment because there are the legalities of pharmacists prescribing CDs" (Practice Pharmacist 019, Semi-structured Interview, Study 2)

In some cases, pharmacist prescribers wishing to prescribe CDs set up a CMP in line with the rules of SP. However, other pharmacists simply asked the GP to issue the prescription instead because they regarded CMPs as time consuming and the requirement of CMPs to ask patients for their consent, as inappropriate.

Those nurse prescribers working in roles that required the use of CDs issued prescriptions of CDs independently. However, despite the fact all nurse prescribers are permitted to prescribe CDs there was very little use of them in practice. This was either because the NMP needed an agreement with

[9] Dosettes are are individualised box containing medicines organised into compartments by day and time.

the PCT, which they did not have, they did not perceive themselves to be competent to prescribe CDs or the use of CDs was not required within their role.

When Study One took place all NMPs were unable to prescribe unlicensed medicines independently. Since Study One was conducted restrictions on nurse and pharmacist prescribers prescribing unlicensed medicines independently have been lifted. However, in Study One, NMPs mentioned they were not permitted to mix two licensed medicines together in a syringe driver as it created a product that was unlicensed. The quote below highlights the issue initially faced by nurse prescribers:

"We can't prescribe multiple drugs now in a syringe driver but we used to be able to, well no we didn't, we thought we could at first as everybody did and then it was flagged up, hello, this is an unlicensed drug" (Palliative Care Specialist Nurse 010, In-depth interview, Study 1)

Even though the restriction on the use of unlicensed medicines had been lifted there was no evidence in Study Two of NMPs prescribing medicine in this manner. This may have been because the NMPs taking part in Study Two did not feel they were competent to prescribe these medicines or because it was not part of their role to do so.

A number of practical and legal issues influenced whether NMPs took responsibility for prescribing. NMPs only took responsibility for prescribing where they possessed sufficient information to do so, it was the most convenient option for the patient and where it was legal.

6.3.4 Degree of Risk

Whether NMPs took responsibility for prescribing was in some cases influenced by their perception of the situations 'risk'. 'Risk' was mainly risk to themselves as a result of any personal and legal ramifications. 'Risk' seemed to increase when prescribing involved deviation from guidelines or formularies, prescribing medicine off-label and prescribing high 'risk' medicines or for high 'risk' patients. Nurse prescribers, more than pharmacist prescribers, seemed to associate high 'risk' with certain types of medicine and patients. However, like nurses, pharmacist prescribers did mention their reluctance to deviate from guidelines and formularies and to prescribe medicine off-label. There was some evidence that NMPs felt less competent to deal with high 'risk' situations. However, sometimes NMPs appeared reluctant to take responsibility for prescribing in high 'risk' situations regardless of their perceived competency levels. High 'risk' situations also led to feelings of unease and discomfort amongst NMPs. This also might explain why they were reluctant to prescribe. An understanding of how 'risk' influenced NMPs arose from discussion of the critical incidents and the general discussion in Study One and Study Two.

In five critical incidents the NMP's decision of whether or not they should take responsibility for prescribing was influenced by the possible requirement of deviating from guidelines or formularies. In two of these five incidents the NMP did not take responsibility for prescribing and referred the patient to a doctor. In three of the incidents the NMP prescribed in conjunction with a doctor. Incidents such as these were provided both by nurse and pharmacist prescribers. In this quote below, a community pharmacist describes how the possibility of prescribing against guidelines led him to feel uncomfortable about taking responsibility for prescribing. This pharmacist went on to describe how he referred the patient to a hospital consultant.

"I didn't think it was my place to kind of initiate a very high dose script of benzodiazepines, although it does mention it on the clinical management plan, I really didn't want to go against all local protocols and guidelines by reissuing a script for a client at high doses" (Community Pharmacist 020, Semi-structured Interview, Study 2)

In another example, provided by a nurse practitioner in a GP surgery (Nurse 005, Study Two), a patient had recently been put back on a smoking cessation medicine by a GP despite the use being contrary to NICE guidelines. The patient then consulted the nurse prescriber for a review and asked to be given another prescription of the medicine. As the nurse did not want to issue a prescription contrary to guidance she consulted a GP in her surgery. The GP advised her to prescribe the medicine anyway, which she did, but she felt uneasy and uncomfortable doing so. In another incident, another nurse practitioner in a GP surgery (Nurse 018, Study Two) felt *"uneasy"*, *"vulnerable"* and *"uncertain"* about her use of antibiotics as she was unsure which guidance was preferred by the PCT. It is interesting that this nurse practitioner wished to ensure she was not only following guidance but the ideal guidance in the area. This incident, as well as the others provided by NMPs, suggests that deviating from guidelines and formularies is a source of discomfort for both nurse and pharmacist NMPs.

Despite the fact nurse and pharmacist prescribers can legally prescribe medicines off-label independently they exhibited a wide range of negative emotions about prescribing them in practice. In one critical incident, a palliative care specialist nurse prescriber described how issuing a medicine off-label led to feelings of *"discomfort"* and *"anxiety"*. This was despite the fact she was comfortable with the clinical decision she was making and had observed use of the medicine, in this manner, by GPs. The nurse's negative feelings were strongly linked to her perception that the pharmacist may question her decision. Although uncomfortable, the nurse prescriber did issue the prescription but it was clear that if a doctor had been available she would have rather the doctor issued the prescription.

"When I issued the prescription for it I must admit I personally had some anxiety thinking that the pharmacist was going to contact me" (Palliative Care Specialist Nurse 018, Semi-structured Interview, Study 2)

NMPs were much more likely to seek informal guidance when they were prescribing medicine off-label. This was apparent from two critical incidents discussed and was also supported by comments from nurse prescribers in the focus groups. For instance, this nurse prescriber says she would always get a second opinion if using melatonin off-label for children:

"You know it's just one of those things that erm and I do always speak to our consultant before I prescribe it, so I do get a second opinion on everything" (Paediatric Active Case Manager and WIC Nurse 031, Focus Group 3, Study 2)

Some NMPs referred patients needing a medicine off-label to doctors. In one critical incident a pharmacist prescriber, prescribing malaria prophylaxis, described how if a patient needed medicine off-label then she would refer the patient to their GP rather than prescribe herself. There was no evidence of any restrictions on the pharmacist preventing the prescription of medicine off-label. The pharmacist's decision did not seem to relate to issues of competency as she prescribed the medicine frequently in other circumstances. Instead the decision appeared to be based purely on the fact it was a medicine being used off-label. In a further example provided by an advanced practitioner for school health the nurse described how she would not prescribe a medicine off-label, even though she commonly prescribes the medicine in other circumstances and even though she knows she can legally prescribe it. The advanced practitioner uses the word license in this quote but it was evident from others aspects of the conversation she meant off-label.

"The only thing is you can prescribe outside your license for erm Levonelle, because it's licensed for 72 hours but you can give it longer, but I've never prescribed it longer because I'd rather say I will work to the thing and then I'd refer them them to either somebody else who'll prescribe out of license maybe a family planning doctor or, the coil but there are times when you can legally but I wouldn't" (Advanced Practitioner in School Health 029, Focus Group 3, Study 2).

Some NMPs would rather refer the patient to a GP than prescribe off-label. This nurse prescriber also uses the word license but it was evident from others aspects of the conversation she meant off-label.

"There is only one combination inhaler that we can actually prescribe that's within license but a lot of patients tend to have the inhaler that's not actually licensed so to prescribe that, I'd go back to the GP" (Advanced Practitioner 005,In-depth Interview, Study 1)

The main medicine characteristics associated with high risk were those with potentially severe side effects, potent medicine, medicine prescribed at high doses, medicines that have systemic effects

on the body and medicine that could have serious interactions with others. Prescribing situations involving these medicine characteristics decreased the likelihood of the NMP taking full responsibility for prescribing and increased the likelihood the patient would be referred. Pharmacist prescribers did not express these sentiments. However, this is not to say pharmacists did not consider whether they had the competency to prescribe in situations such as these.

In this quote below a dermatology specialist nurse described how she was more likely to seek input from GPs when required to prescribe a medicine linked with toxic side effects:

"They're quite toxic these drugs and there's a high risk, high risk of reactions such as Steven Johnson's syndrome, so in a young child with scalp infections I would always ask the GP with specialist interests" (Dermatology Specialist Nurse 011, Semi-structured Interview, Study 2)

As this quote below demonstrates, there was also a sense of reluctance amongst some NMPs to take responsibility for prescribing medicine that have more complex effects on the body. The word "consequences" refers to adverse medicine reactions.

"But anticholinergics are quite, I worry more about them because they're a more complex drug and they affect more body systems than laxatives. Erm and it's probably not just one scenario where I feel that I haven't prescribed it because I worry about the consequences" (Continence Specialist Nurse 008, Semi-structured Interview, Study 2)

Some NMPs also mentioned they were reluctant to take responsibility for prescribing when it was a potent medicine or the medicine needed to be prescribed at a high dose. In this quote below, the nurse practitioner describes her feelings about prescribing steroids:

"I think it's a very big decision to give someone oral steroids because it's not like giving someone a course of antibiotics it's a big whacking dose of steroids I have to be absolutely sure in my own mind that the patient needs it" (Nurse practitioner for GP Surgery 002, Semi-structured Interview, Study 2)

Prescribing medicine that could have interactions with other medicine caused feelings of discomfort amongst NMPs. As this quote illustrates, in some cases, this led the NMP to defer responsibility for issuing the prescription to a doctor:

"I'll look for the black spots and if I see the black spot I actually say to the patient this has got a black spot which means I err I really need to run this past the GP, so I'm going to, I'm not going to write the prescription for you now I'm going to get the GP to do it" (Nurse Practitioner for GP Surgery 015, In-depth Interview, Study 1)

The patient characteristics associated with risk were complex polypharmacy, multiple co-morbidities and under the age of four years old.

NMPs were less likely to take responsibility for prescribing when the patient was taking multiple medicines or had multiple conditions. In the quote below, a nurse prescriber indicates that she would refer patients to a GP if the patient had co-morbidities or was taking other medicine, rather than prescribing herself:

"If they're on a lot of other drugs or they've got lots of other health problems I just refer it to the GP but if they've got no co-morbidities and they're on minimal drugs I would go ahead and prescribe it" (Palliative Care Specialist Nurse 010, In-depth Interview, Study 1)

Similarly, a nurse practitioner for a GP surgery *(Nurse 006, Study Two)*, who did not want her interview recorded, also explained how she would not take responsibility for prescribing for patients with co-morbidities. The nurse described how she referred a patient with cancer to a GP because she was *"worried about the consequences"* of prescribing anything for the patient.

Patients with co-morbidities or complex polypharmacy were not always referred. However, NMPs often sought informal guidance and support from others.

"I think as people get older and they're on much more you know, you can get somebody on 20 different medications can't you, erm I look to our pharmacist to assist with those" (Nurse Practitioner for GP Surgery 015, Semi-structured Interview, Study 2)

On the whole pharmacist prescribers were more comfortable prescribing for patients with complex polypharmacy or co-morbidities. As the quote below demonstrates, some pharmacists expressed unease prescribing for patients with complex needs. However, this did not often result in patient referral.

"Yesterday I was dealing with somebody who had a renal transplant and that just makes me feel a bit, you know, I just feel there's more possibility that things can go wrong in terms of the drug treatment" (Practice Pharmacist 019, Semi-structured Interview, Study 2)

There was a general sense of unease amongst all NMPs, including both nurses and pharmacists, about prescribing for babies. This quote, from a WIC/OOHs nurse in Study One, demonstrates the unease felt by NMPs:

"I have only prescribed once for a baby and that was when I ran it by the doctor, I have only ever prescribed four times for a child and I have been a prescriber now for three years" (WIC Nurse and OOHs Nurse 002, In-depth Interview, Study 1)

NMPs were reluctant to take responsibility for prescribing in high risk scenarios. Risk was associated with deviance from guidelines or formularies, use of off-label medicine and certain medicine and patient characteristics.

6.4 Pressures

A small number of WIC nurse prescribers described feeling pressure from other non-prescribing nurses to take responsibility for prescribing. Some prescribers also indicated that a lack of time could also influence whether or not they took responsibility for prescribing. These issues will now be discussed.

6.4.1 Non-Prescribing Nurses

Some WIC nurses described instances where non-prescribing nurses had asked them to provide a prescription for their patient. They described feeling pressure to issue prescriptions for medicine that fell outside their competency or role and also for patients they had not personally examined. Despite this pressure the nurse prescribers said they would not issue a prescription for a medicine they did not feel competent to prescribe.

"When I am in the walk-in centre obviously they're asking all the time, can you do this, no, because it's not within your remit is it, we might have the BNF that we can prescribe from but we're not competent in all that BNF are we, so basically our p-formulary has to match up with what we're doing erm and then that's when you say actually no" (Paediatric Diabetes Nurse Specialist and WIC Nurse 030, Focus Group 3, Study 2)

Where the medicine was within their competency and role nurse prescribers were content to take responsibility for issuing the prescription. However, NMPs wanted to examine the patient and would only issue a prescription if they agreed with the non-prescribing nurse's decision. This suggests nurse prescribers are not prepared to take responsibility for issuing a prescription unless they have involvement in the prescribing decision. This behaviour would be in line with the NMC standards which states prescribers should not issue prescriptions for patients they have not personally examined (Nursing and Midwifery Council 2006). Some nurse prescribers complained this has a negative impact on their workload as they have to examine other nurses' patients as well as their own. However, they still insisted on examining the patient before issuing the prescription. Nurse prescribers described feeling uncomfortable, if on examination of the patient, they felt the patient did not actually require a prescription. Some described how examining the patient caused negative feelings between them and other non-prescribing nurses who felt their diagnostic skills were being questioned.

"They'll say I've just seen a kid next door and he's got definite bacterial tonsillitis can you just do me a prescription, no sorry I can't I'll have to see them, well I've seen them and I know they have, but you can't, they think that's just awkward, you don't trust my diagnosis, but it's not that you don't trust their diagnosis it's that you're responsible for your actions" (Advanced Nurse Practitioner for School Health 029, Focus Group 3, Study 2)

Some nurse prescribers felt that a minority of nurses do not believe they have genuine reasons for refusing to issue prescriptions. Instead they feel that others perceive them as difficult or awkward, as the quote below illustrates:

"I think they think that you may be being difficult perhaps if you don't prescribe something, oh it's only you know, they have that kind of attitude, it's only this come on" (Paediatric Active Case Manager and WIC Nurse 031, Focus Group 3, Study 2)

Those who experienced pressure from other nurses felt they needed to justify their decision rather than just refusing to issue the prescription. Other nurse prescribers described how they needed to appease other nurses in order to maintain good relations.

"You have to have a rationale as to why, every time somebody else asks me to do a prescription for somebody, I always have to rationalise why I'm not doing it, instead of just saying nope can't do it, you have to say well really I can't do it because I don't know the child, I haven't seen the child, and there might be something else going on" (Paediatric Diabetes Nurse Specialist and WIC Nurse 030, Focus Group 3, Study 2)

One WIC nurse described how she has put mechanisms in place to address this pressure. She explained how other nurses are asked not to request a prescription for a patient from her, but rather an opinion.

"I mean it is a difficult scenario and we've actually got around this now and it doesn't happen anymore, a colleague will never come in and ask for a prescription they will ask for an opinion" (WIC Nurse 009, In-depth Interview, Study 1)

It may be that NMPs represent either the most convenient or possibly the only option for non-prescribing nurses requiring a prescription. With an increase in nurse-only clinics and nurse-led clinics, as described by some NMPs, it might be that non-prescribing nurses, who would normally turn to doctors, have turned to NMPs who they find are more stringent with their prescribing practice.

6.4.2 Time

Time constraints were mentioned by nurse prescribers but not pharmacist prescribers. Time constraints influenced whether nurse prescribers took responsibility for prescribing in two different ways. Firstly, time restrictions encouraged nurse prescribers to take responsibility for prescribing when they did not feel competent doing so. For example, a nurse practitioner for a GP surgery described how patients, actually presenting for other complaints, sometimes complained of low mood. She said in these cases she would assess the patient to determine whether they required an

antidepressant. The nurse explained how she did not feel comfortable prescribing antidepressants but felt she had to because of time constraints in the consultation and because of surgery policy.

"What tends to happen, is the practice policy anyway, is generally that we would start someone on a drug called fluoxetine, so what tends to happen, purely because I would say of time constraints because of course the patient is given a ten minute appointment by this time we're probably half an hour in to a consultation, and then I'm going to say to the patient well actually you know I can't prescribe this drug for you or whatever" (Nurse Practitioner for GP Surgery 002, Semi-structured Interview, Study 2)

The nurse in the quote below said after double-checking a diagnosis with a GP she feels under pressure to sign a prescription for the required medicine:

"If I've got somebody in the room with me and I am not sure if I've got the right diagnosis and I may not have prescribed something for that before, then I go and get a GP to double check with erm and I still don't feel erm you know, I am a little bit under pressure here to sign this prescription" (Practice Nurse 015, Semi-structured Interview, Study 2)

In contrast some nurse prescribers felt time could influence them in the opposite way to the sentiments described above. For instance, one nurse prescriber described how she would not issue a prescription if she felt under time pressure. Instead, she said, she would ask a GP to issue the prescription.

"If I was feeling sort of like that and I felt that I was under pressure and rushed then I probably wouldn't prescribe. I'd come away and ring the surgery and get the, them to issue the prescription" (Advanced Practitioner 005, In-depth Interview, Study 1)

This behaviour suggests that whilst some NMPs are not prepared to sign prescriptions for others they still expect doctors to sign their prescriptions.

Nurse prescribers experienced two main sources of pressure in relation to prescribing responsibility: pressure from non-prescribing nurses and time pressure.

6.5 Repeat Prescribing

The NMC defines repeat prescribing as a 'partnership between patient/client and prescriber that allows the prescriber to authorise a prescription so it can be repeatedly issued at agreed intervals, without the patient/client having to consult the prescriber at each issue' (Nursing and Midwifery Council 2006). The NMC and RPSGB standards state that NMPs can issue repeat prescription items but are responsible as the signatory of the prescription and are accountable for their practice (Nursing and Midwifery Council 2006; Royal Pharmaceutical Society of Great Britain 2007). Repeat prescribing proved to be important for NMPs in this research. Virtually all NMPs in Study

One and Study Two described instances where they had been asked, either by a patient or another HCP, to issue a repeat prescription item. The importance of repeat prescribing was also reflected in the nine critical incidents, highlighted by both nurse and pharmacist prescribers, which related to repeat prescribing. The type of repeat prescription requests that NMPs received ranged from requests for medicines they had originally initiated for the patient, medicines that others had initiated but fell within their competency or role, and medicines not within their competency or role and therefore not initiated by them.

Through discussion of the critical incidents, as well as the general discussion in Study One and Study Two, it was possible to identify the factors that influence whether NMPs take responsibility for issuing repeat prescription items. These factors are discussed in the next part of this section.

6.5.1 Factors Influencing Repeat Prescribing

The factors that influenced whether NMPs took responsibility for issuing a repeat prescription mirrored those described in the initial part of this chapter. NMPs were influenced by perceptions of their competency, role, practical considerations and degree of risk. NMPs also described sources of pressure they experienced in regards to taking responsibility for issuing repeat prescriptions.

The majority of nurse and pharmacist prescribers were prepared to issue repeat prescriptions for medicine they felt competent to prescribe. This meant if they had initiated the medicine they would be prepared to issue the repeat prescription. In cases where the patient was requesting medicine within the NMP's competency, but was not initiated by them, generally the NMP would be prepared to take responsibility for issuing the repeat prescription. On the whole, NMPs were not prepared to take responsibility for issuing repeat prescriptions of medicines outside their perceived competency. However, there were some examples of some NMPs doing this. Six of the nine incidents relating to repeat prescribing involved a patient request for medicine the NMP did not feel competent to prescribe. In four of these incidents the NMP referred the patient to other services. This behaviour is reflected in the quote below:

"I won't sign things that you know I am not competent to sign. And I quite often will say to them, well I can do your you know your inhalers but I can't do your blood pressure medications" (Practice Nurse 015, Semi-structured Interview, Study 2)

In the other two incidents the NMP did issue the repeat prescription as a result of pressure they experienced (see Section 6.5.2).

Many nurse prescribers and one pharmacist prescriber felt that, regardless of whether the medicine fell within their competency, it was still not their role to provide repeat prescriptions for patients.

Many felt issuing repeat prescriptions should fall within the GPs' domain and NMPs should supplement existing services and not take over. As a result they were unwilling to issue repeat prescriptions for their patients. This view was expressed less by pharmacist and nurse prescribers working in GP surgeries.

"I think you've got to have your standard, you've got to say to yourself whether it's A, B or C the repeat comes from a GP. Even if it is something that you use regularly you're not there to take over their treatment you're there to supplement it" (Advanced Practitioner for School Health 029, Focus Group 3, Study 2)

NMPs wanted to withstand pressures to issue repeat prescriptions so their role boundaries would be protected. One advanced practitioner for nursing homes felt that if she made an exception and prescribed outside the acute remit of her role once, in the future staff would rely on her to prescribe in these situations again rather than contacting a GP.

"You see the more we do it to me the more reliant the nursing home become and don't bother to contact the GP" (Advanced Practitioner for Nursing Homes 001, Semi-structured Interview, Study 2)

Prescribers working in GP surgeries considered issuing repeat prescriptions part of their role. So long as the criteria surrounding competency was met they were content issuing repeat prescription items for patients. However, they did not believe their role extended to signing patients routine monthly repeat requests and limited issuing repeat prescriptions to instances when the patient was actually in the consultation with them.

"I don't go to the repeat box in the morning and take out a pile and sign them like doctors do" (Practice Nurse and Specialist Nurse 012, In-depth Interview, Study 1)

The main practical issue that influenced whether NMPs issued the repeat prescription was whether there was sufficient information about the patient's medical history to ensure the prescription would be safe for the patient. Insufficient information issues were mentioned less by those working in GP surgeries and more by those working in community and clinic settings.

Certain factors led NMPs to feel more comfortable about issuing repeat prescription items. For instance, as this quote illustrates, NMPs were more confident issuing repeat prescriptions where the patient had been receiving the same medicine over a long period for an established condition:

"I do sign some repeat drugs that I wouldn't commence, but where that's been something that's on a long term repeat for an existing purpose where it's clearly identified" (Practice Pharmacist 003, In-depth Interview, Study 1)

A nurse practitioner highlighted her unease issuing repeat prescriptions for children. This was also a sentiment repeated by other NMPs that came in to contact with children.

6.5.2 Pressures to issue Repeat Prescriptions

NMPs described a number of pressures in relation to repeat prescriptions. These pressures fell into the following categories: patient need, failure of other services, time, and lack of support to uphold regulations.

One difficulty NMPs faced, with regards to repeat prescribing, was if the patient required the medication they found it difficult to avoid issuing the repeat prescription regardless of their own concerns. This quote below demonstrates the general attitude of NMPs. This view was expressed less by those working in GP surgeries, presumably because if they were not comfortable issuing the repeat prescription, but the patient needed it, they could always approach a GP.

"We tend not to use, to do repeat prescriptions, however, in an emergency situation we would, we would never leave patients without a prescription" (Palliative Care Specialist Nurse, In-depth Interview, Study 1)

Even those who felt it was GPs' role to issue all repeat prescriptions made exceptions in some cases. For instance, this palliative care specialist nurse prescriber described how she issued a prescription of morphine for a patient in exceptional circumstances:

"But I shouldn't be doing repeat prescriptions for palliative care medications anyway, they should be getting those through the GP, and it's really their responsibility to ensure that they don't run out, but if that scenario did happen, like the scenario happened that I mentioned before, where I walked in the house and they literally, they'd just broken the bottle of morphine in front of me, I wouldn't see somebody without medication but I'd be explaining that in my letter, in my documentation to the GP" (Palliative Care Specialist Nurse 018, Semi-structured Interview, Study 2)

NMPs also felt it was important to issue repeat prescriptions if there was a risk the patient's condition could become worse.

"So you're in the position what, what do you do, you prescribe for them, because if they don't use their treatments their skin will become worse so, and, and that's really prescribing, there's nothing clinical, nothing wrong with the clinical decision" (Dermatology Specialist Nurse 012, Semi-structured Interview, Study 2)

NMPs also felt pressure to issue repeat prescriptions for patients in cases where the GP had not provided or was unwilling to provide the medicine. In the example below, a nurse prescriber described how a patient's GP surgery would not issue the patient a prescription for the

antidepressants she had lost. As a result of this, the NMP issued the repeat prescription for the patient.

"Yesterday I encountered a lady who's on antidepressants, a new course of antidepressants, she'd been in to the hospital for four days, taking them in in a tissue and lost them and when she's rung the surgery for a repeat they said they're not sure you can't have them, which would have interrupted her course of treatment and I was there then I continued with another prescription for that" (Palliative Care Specialist Nurse 008, Semi-structured Interview, Study 1)

The nurse prescriber in this quote below described how a letter she sent to the GP went missing. As a result, she felt she needed to issue the patient with another prescription. She describes feeling between a *"rock and hard place"* which suggests that she felt she had to issue repeat prescription though reluctant to.

"I do occasionally get, family will phone up and say erm you know that dressing you prescribed, erm can you do us another one because I've run out, and I say well actually no I sent your GP a letter to ask them to put it on a repeat prescription, can you phone your GP and get a repeat and sometimes they'll phone back and say the GP's not got the prescription so then you're stuck between a rock and a hard place and erm and usually I'll just go and prescribe them, do another prescription, but make sure I drop the letter in at the GPs instead of faxing it over to them" (Paediatric Active Case Manager and WIC Nurse 031, Focus Group 3, Study 2)

As this quote demonstrates, some NMPs described how time and workload pressure influenced their decision to issue a repeat prescription:

"But this was Friday night erm where they're desperate and they're not going to get anybody to do anything erm and their patients going to be without drugs basically" (Advanced Practitioner for Nursing Homes 001, Semi-structured Interview, Study 2)

Another source of discomfort for this advanced practitioner for nursing homes was that she was not sufficiently supported by managers at the PCT to follow through with the regulations regarding repeat prescribing. This lack of support made it difficult to resist some of the pressures discussed above.

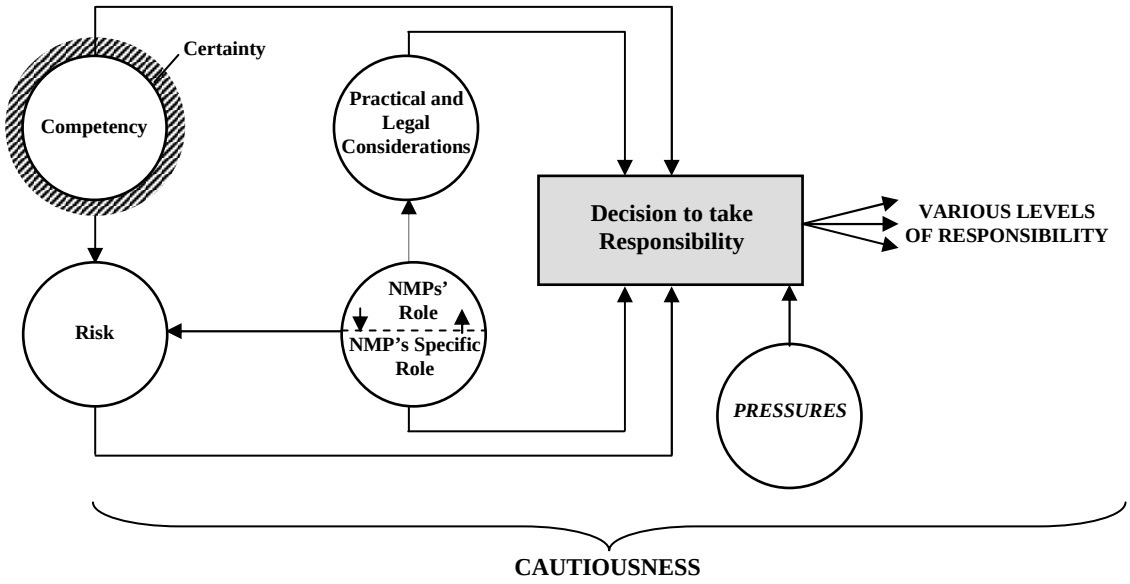
"It is a very difficult position to be in, erm because we're just so regulated, and rightly so, I don't think that's wrong, erm but it's difficult when we're regulated, we have these rules, and we're not being backed up to, err from management to say well just hang on, don't do this, but, we shouldn't be doing it" (Advanced Practitioner for Nursing Homes 001, Semi-structured Interview, Study 2)

The factors that influenced whether NMPs took responsibility for issuing repeat prescriptions largely reflected those influencing other prescribing. NMPs described a wide range of factors that exerted pressure on them in relation to repeat prescribing. However, unlike the pressures discussed previously, they appeared to have a greater influence on the decisions NMPs took.

6.6 Discussion

As Figure 6-2 depicts, the four main influences on whether NMPs took responsibility for making a prescribing decision for a patient or issuing a prescription were competency (see Section 6.3.1), role (see Section 6.3.2), practical and legal considerations (see Section 6.3.3) and risk (see Section 6.3.4). These factors also influenced whether NMPs took responsibility for issuing a repeat prescription (see Section 6.5). NMPs also described a number of pressures on their decisions to take responsibility for prescribing (see Section 6.4 and Section 6.5.2). All NMPs displayed cautiousness when it came to taking prescribing responsibility (see Section 6.2). This cautiousness underpins all the influences on prescribing responsibility represented on Figure 6-2.

Figure 6-2: Diagrammatic Representation of the Factors Influencing Non-medical Prescribers' Decision to take Responsibility for Prescribing (Including Repeat Prescribing)



As outlined on Figure 6-2 NMPs' perception of their competency influenced whether they took responsibility for making a prescribing decision for a patient or issuing a prescription. As with nurse prescribers in other research (Bradley et al. 2007) NMPs believed that competency should be self-assessed as others that they work alongside do not have the knowledge to make this assessment for them. It is perhaps unsurprising that competency was mentioned frequently by NMPs because guidelines for NMPs clearly state that they should only prescribe within their competency (Nursing and Midwifery Council 2006; Royal Pharmaceutical Society of Great Britain 2007) and because there is a strong emphasis on competency within the prescribing training course and through the Competency Framework (National Prescribing Centre 2006). There has not been extensive discussion in the literature about whether NMPs need to consider their competency levels in their practice or whether, by virtue of the referral pathway, they manage patients within their competency. This research, along with other recent research (Bissell et al. 2008), has demonstrated

that NMPs do regularly need to assess their competency and this assessment of their competency influences whether they take responsibility for prescribing.

There has not been, until now, an in-depth examination of how NMPs' perception of their competency influences whether they take responsibility for prescribing. This research has expanded this limited knowledge by identifying aspects of competency that NMPs consider on a routine basis in their practice before taking prescribing responsibility (see Section 6.3.1). The competency to form a diagnosis was mentioned more by nurse prescribers than pharmacist prescribers. This finding reflects the differences between the roles of nurse prescribers and pharmacist prescribers. In this research, pharmacist prescribers were mainly involved in medicine optimisation for patients with previously diagnosed conditions. Nurse prescribers were, in contrast, more involved in managing acute or previously undiagnosed conditions (see Appendix 10.0 for further information about NMPs' roles). This finding is consistent with other research which found 74% of nurse independent prescribers, compared with only 22% of pharmacist independent prescribers, were making diagnoses on most occasions within their prescribing practice (Latter et al. 2010).

It is important that NMPs consider their competency before prescribing because many prescribing errors are as a result of the prescribers' failure to fulfil competencies discussed by NMPs in this research. For instance, Garbutt et al. reported that 34% of the prescribing errors they examined were as a result of incomplete knowledge of the medication (Garbutt et al. 2005). Lesar et al. found 30% of the prescribing errors they studied were due to insufficient drug knowledge (Lesar et al. 1997). NMPs used a p-formulary or a head-held formulary to help them assess their safety to prescribe certain medicine. This formulary was simply a list of medicine that the NMPs felt competent to prescribe. In their good prescribing guide, the World Health Organisation (WHO) emphasises the need for a personal formulary to promote rational prescribing (World Health Organisation 2000). In the UK context the NPC has reemphasised the WHO's advice in their good quality prescribing guidance (National Prescribing Centre n.d.). De Vries et al. found that the prescribing skills of 583 medical students, from eight universities throughout the world (though not UK), improved using the concept of the personal formulary, compared with those using either no formulary or existing university formularies. However, the increase in prescribing skills was for students from universities with a classic rather than problem-based learning curriculum (De Vries et al. 2008). De Vries et al.'s research suggests that the p-formulary concept may have inconsistent benefits for medical students. Clearly though the p-formulary has an important role in NMPs' practice as a tool to assess their competency to prescribe specific medicines.

Ensuring the prescriber is competent has implications for patient safety and the NMP. However, it is also important that NMPs acknowledge their limitations in order to maintain the confidence of

their colleagues. This is because their colleagues expect them to acknowledge their limitations (Stenner et al. 2010). Furthermore, because patients have expressed concerns regarding some aspects of non-medical prescribing (Hobson et al. 2010; Stewart et al. 2009a; Watterson et al. 2009), it is important that NMPs work, and are seen to be working, within their competency. In this research NMPs easily communicated their competencies. It is important that this openness is transmitted to both patients and colleagues alike in order to sustain good working relationships and quell any of their concerns.

It was difficult to separate out issues of competency and certainty in this research. NMPs described how they would refer the patient or seek advice if they lacked competency but similarly said they would refer the patient or seek advice from colleagues if they were "uncertain" or "in doubt". As these factors are difficult to separate they are presented together in Figure 6-2. This research found that NMPs' certainty in any scenario also influenced whether they took responsibility. NMPs' uncertainty led them to employ similar strategies, such as patient referral or seeking advice, to those used by doctors when they are uncertain or experience a dilemma (Bendtsen et al. 1999a; Di Caccavo and Reid 1995). The question of where the line should be drawn between competency and certainty is difficult to answer. One argument is that uncertainty is at the periphery of competency. When NMPs feel fully competent they are unlikely to be uncertain. The less competent they feel the more the feelings of doubt, concern and uncertainty emerge.

This research has reemphasised a how lack of clinical support and insufficient opportunities to prescribe are barriers to NMPs employing their prescriptive authority. This finding echoes previous research with CNPs (Hall et al. 2006) and other NMPs (Hacking and Taylor 2010; Latter et al. 2010). Through the use of the CIT, to explore actual prescribing scenarios, it was possible to understand, in more detail than current research, how a lack of support and opportunities to prescribe impact on whether NMPs take responsibility for prescribing in specific situations. This research replicates the findings of other research that active NMPs work in cohesive and supportive teams (Otway 2001). The importance of clinical support for NMPs is acknowledged by NMPLs who are putting strategies in place to manage this issue (Hacking and Taylor 2010) (see Section 9.3). This research underlines how NMPs must also be given opportunities to prescribe regularly in their practice, because, as Hall et al. states, they may not overcome confidence issues and will remain low prescribers forever (Hall et al. 2003).

There are parallels between the support requirements of NMPs and junior doctors. Post-qualifying junior doctors do not rate their prescribing skills very highly (Wall et al. 2006). Junior doctors learn safe prescribing by copying out orders written by others doctors (Garbutt et al. 2005) and seek guidance from more senior doctors when faced with difficult prescribing decisions (Lewis and

Tully 2009b). Junior doctors do not wish to feel 'abandoned', require opportunities to reflect on their practice and welcome opportunities to act independently but with assistance from more senior doctors when required (Iedema et al. 2010). Like junior doctors, NMPs also require support from doctors. However, doctors may not have time to offer support to NMPs and complete other duties which will include supporting less experienced doctors. Research has found that one in five doctors have regular contact with six or more NMPs at any one time (Hacking and Taylor 2010). Moreover, doctors feel working with NMPs increases their own workload (Hacking and Taylor 2010). Community pharmacists have been found to be in a position to provide support to NMPs (Fisher 2009). Support for NMPs in primary and community care could therefore come from other avenues than doctors (see Section 9.3).

How NMPs respond to inadequate support and lack of opportunities to prescribe reflects their perception, as well as others perception, of their role in the healthcare system. Some NMPs felt they were a supplement to existing practices. Furthermore, it is anticipated, and expected, by doctors and patients alike that NMPs should refer uncertain prescribing decisions and work within their competency (Stenner et al. 2010; Watterson et al. 2009). It is potentially easier for NMPs to 'dissolve' prescribing responsibility to others. Doctors may not have similar opportunities and may take responsibility for prescribing when uncomfortable and not competent to do so. Ultimately, this may lead to more prescribing errors amongst doctors, particularly junior doctors, than NMPs. It will be important in the future to compare the number of prescribing errors made by junior doctors and NMPs. It will also be important to explore the reasons behind errors made (see Section 9.4.3).

NMPs also considered practical and legal factors when deciding whether or not to take responsibility for prescribing. This influence is represented on Figure 6-2. Practical factors, considered most by community based prescribers, included whether they represented the most convenient source of a prescription for the patient. The finding echoes Hall et al.'s finding that CNPs would not prescribe where it was easier for GPs to prescribe for the patients as a result of medicine delivery arrangements or other factors, such as arrangements for repeat prescriptions (Hall et al. 2006). A proposed benefit of non-medical prescribing was that patients would have speedier access to medicine (Department of Health 1999). In some cases patients do report a more timely and convenient service from NMPs (Courtenay et al. 2011; Latter et al. 2010; Stewart et al. 2008). Clearly though, NMPs do not always represent the most efficient means to provide medicine to patients. It is therefore expected that NMPs' decisions of whether to take responsibility for prescribing are based on practical patient factors. This research clearly demonstrates that this is the case in practice.

Other practical factors considered by NMPs were whether they had sufficient information to enable prescribing. In some cases insufficient information, as a result of language barriers or the patient's age, meant NMPs were sometimes unable to take responsibility for prescribing. There was no evidence that insufficient information, as a result of these issues, was unique to NMPs though. NMPs expressed their discomfort prescribing where there was insufficient information to do so. This finding replicates other research. GPs too express their discomfort prescribing with limited information (Bradley 1992b). Similarly, CNPs state they are more confident prescribing the more information they have (Luker et al. 1998).

In earlier research, a lack of access to patients' notes was found to be a barrier to community nurse prescribing (Hall et al. 2003). Nurse prescribers based in the community in this research also reported difficulties with accessing patients' notes as they had to physically attend the patient's GP surgery. However, in contrast to previous research, there was no evidence it was a barrier to prescribing. Nurse prescribers hoped that the computerisation of patients' medical notes, a current NHS policy (NHS Choices 2010), would eliminate difficulties in this area. With insufficient information resulting in so many prescribing errors (Garbutt et al. 2005; Lesar et al. 1997) it is important that prescribers are in full possession of all information available before prescribing. This evidence suggests that, without the necessary available information, NMPs are reluctant to take responsibility for prescribing. Delaying prescribing because of insufficient information may help to reduce prescribing errors but it is obviously important that patients are not adversely by such a strategy in the short-term.

The legal authority to act is clearly an issue that influences most people in the actions they take in their lives. It is therefore unsurprising that NMPs did not want to take responsibility for prescribing where it was illegal to do so. During Study One, prescribers did not issue prescriptions for unlicensed medicine for patients. At the time this behaviour was in line with legislation. However, policy on this issue has since changed (see Section 2.3.1.2). Pharmacist prescribers did not take responsibility for independently prescribing CDs. Some pharmacist prescribers did set-up a CMP, under SP, so they were able to prescribe CDs. However, some pharmacist prescribers, who were negative about CMPs, simply asked a doctor to issue the prescription on their behalf. The DoH states SP is most appropriate in circumstances where CDs are being used (Department of Health 2006b). However, the findings of this research, as well as other research (Bissell et al. 2008), suggests that some pharmacists view CMPs as unworkable because of the time required to set CMPs up and the inconvenience to patients. If pharmacist prescribers feel competent to prescribe CDs independently then they should be permitted to do so. It is important that legislation enabling prescribing of CDs by pharmacists is changed sooner rather than later (see Section 9.3 for further discussion).

As Figure 6-2 depicts, NMPs' decisions to take responsibility for prescribing was influenced by their perceptions of their role. This behaviour reflects guidance from their professional bodies (Nursing and Midwifery Council 2006; Royal Pharmaceutical Society of Great Britain 2007). NMPs' role definition was influenced by a wide range of factors including main medical speciality, agreements with colleagues, appropriateness of alternative services and nature of prescribing. There was less evidence in this research, compared with other research (Latter et al. 2010), that NMPs had agreements with their PCT about their scope of practice or role. However, some NMPs, particularly nurses, had written p-formularies which they submitted to their PCT NMPL. The p-formulary might be one type of 'scope of practice' agreement that NMPs cited in Latter et al.'s study. Fewer pharmacists had a p-formulary submitted to their PCT. Instead pharmacists' role definitions were influenced by agreements with GP colleagues and surgery managers. Interestingly, in some cases, pharmacist prescribers were permitted to prescribe but selected not to because of insufficient competency. In other cases, pharmacists felt competent to prescribe in certain areas but did not because the area was not within their agreement. Clearly role and competency factors interlink when NMPs decide whether to take responsibility for prescribing. NMPs' definitions of their roles also influenced the clinical areas they were prepared to become competent in. It is for these reasons the competency and role boxes are linked in Figure 6-2.

As well as defining their individual role NMPs also defined the role of NMPs more generally. These two aspects of role are represented on Figure 6-2. For instance, many NMPs, although rarely those working in GP surgeries, did not feel it was their role to issue repeat prescriptions for patients, regardless of whether it was for medicine within their perceived competency. Some NMPs felt their role was to add to existing services not to replace them. Some also felt that GPs, traditionally the providers of long-term patient care, should remain the providers of repeat prescriptions. Some nurse prescribers also said doctors, rather than NMPs, should be the ones to take 'risk' in relation to prescribing. Other NMPs, including pharmacist prescribers, did not explicitly state these views. However, their behaviour of referring high risk situations to doctors suggest many NMPs hold these views anyway. In order to feel 'safe' when prescribing nurse prescribers set limits on their practice (Bradley et al. 2007). It may be that NMPs' definition of their role, both individual and general, is also a way of setting limits on their practice. NMPs' role may be a way of controlling their prescribing so they feel 'measured'. Defining their role might also help them to resist pressures (e.g. non-prescribing nurses) that they might otherwise succumb to. These pressures are discussed further in this section.

As Figure 6-2 highlights, NMPs' perception of the risk of the prescribing situation influenced whether they took responsibility for prescribing. In high risk situations NMPs were more likely to refer the patient, seek advice and input from colleagues, most notably GPs, or ask a doctor to issue

the prescription on their behalf. Risk was associated with deviation from guidelines or formularies, prescribing medicine off-label and prescribing high risk medicine or prescribing for high risk patients. Similar factors also increased NMPs' perceptions of risk when issuing repeat prescriptions. In some cases avoidance of risk was linked the prescribers' perception of their competency. For example, some NMPs felt less competent to prescribe for patients with complex poly-pharmacy because of their lack of medicine knowledge. However, as mentioned, many NMPs appeared to believe it was not their role to be 'risk-takers' and would rather leave high risk situations to doctors. To reflect these links the boxes role, risk, and competency are linked on Figure 6-2.

Invariably high risk scenarios led to feelings of discomfort in NMPs. In some cases this discomfort led NMPs not to take responsibility for prescribing. Research demonstrates that similar factors lead to discomfort in doctors and NMPs. All prescribers feel uncomfortable prescribing for patients at either end of the age spectrum (Bradley 1992b; Hall et al. 2003; Hall et al. 2006). NMPs feel uncomfortable prescribing for patients with complex poly pharmacy and those with co-morbidities (Bissell et al. 2008; Hall et al. 2003; Hall et al. 2006; Latter et al. 2010). Doctors, nurse independent prescribers and pharmacist independent prescribers feel uncomfortable departing from protocols, guidelines, formularies and agreed management plans (Bradley 1992b; Latter et al. 2010). In this research, more nurses than pharmacists expressed concern prescribing for patients with co-morbidities and complex poly-pharmacy. However, pharmacists did also express discomfort in these situations. This finding replicates other research where pharmacist prescribers have said they are uncomfortable managing patients with co-morbidities (Bissell et al. 2008; Latter et al. 2010). In one study, one third of pharmacists surveyed said they felt uncomfortable managing these patients (Latter et al. 2010). This suggests that feelings of discomfort about managing co-morbid patients are not just specific to nurses. This research, whilst replicating some of the previous findings relating to prescribing discomfort, adds that NMPs discomfort with risk sometimes results in them not taking responsibility for prescribing in some scenarios.

Whilst some NMPs managed high risk prescribing scenarios, and subsequently any discomfort, by referring the patient some sought advice from doctors or asked a doctor to issue the prescription on their behalf. This behaviour is consistent with the findings of a recently published study that found when deviating from protocols, guidelines or formularies nurse and pharmacist independent prescribers seek colleagues' advice (Latter et al. 2010). Furthermore, as discussed previously, similar strategies are used by NMPs to manage uncertainty. Junior doctors also seek advice from their colleagues when faced with a difficult prescribing decision as a means to reduce the discomfort they feel and essentially 'pass the buck' (Lewis and Tully 2009b). Such strategies appear to reduce negative feelings within the prescribers who arguably feel some responsibility for

the prescribing is transferred to others. It is noteworthy that, in this research, some NMPs said they document advice received in patients' notes. This may also be part of absolving themselves of full responsibility for the prescribing. It may also be a practical way of 'covering' themselves in case of legal issues. However, in some cases, GPs advice was not sufficient to stifle negative feelings caused by difficult prescribing decisions, and instead, NMPs referred the patient or asked a doctor to issue a prescription on their behalf.

The findings of this research add to the current body of research because, as yet in the literature, the pressures that NMPs face in relation to taking responsibility for prescribing have not been identified or discussed in-detail. The pressures NMPs experienced included pressure from non-prescribing nurses, time pressures, failure of other services, patient need and lack of support to uphold prescribing regulations. These pressures had more influence on NMPs when issuing repeat prescriptions. The existence of the pressures on NMPs is represented on Figure 6-2.

WIC nurse prescribers described pressure from non-prescribing nurses to issue prescriptions. This occurred when the non-prescribing nurse assessed a patient, decided they needed a prescription, but could not issue the prescription. The non-prescribing nurse would request a prescription from a nurse prescriber. Doctors have identified non-prescribing colleagues as a source of pressure on their prescribing (Lewis and Tully 2009b; Wood-Mitchell et al. 2008). It is clear from this research that some nurse prescribers also experience similar pressures. In this research, nurse prescribers said they would not issue a prescription in these circumstances unless they had assessed the patient. In some cases they admitted this has a negative impact on their workload. This clear refusal to issue prescriptions without assessing the patient is consistent with the behaviour of CNPs who have reported rejecting pressure from other CNPs and GPs (Fisher 2009).

The nurse prescribers' views in this research that other non-prescribing nurses viewed them as awkward or difficult when they refused to issue prescriptions without assessing the patient are consistent with non-prescribing nurses' views. Non-prescribing nurses have described how they feel their professionalism and autonomy is being questioned by nurse prescribers who want to assess the patient themselves before issuing a prescription. Some nurses have described their annoyance that nurse prescribers are obliged to perform an assessment and then prescribe (Fisher 2009). If there are uncertainties amongst non-prescribing HCPs about the legalities of prescribing, as some research has suggested (Fisher 2009; Stenner et al. 2009), then it is important that these are addressed so non-prescribing HCPs can understand NMPs' position. However, does the pressure from non-prescribing HCPs stem from a lack of understanding regarding prescribing legalities or an expectation that all independent prescribers will ignore prescribing regulations? Nurses state they regularly recommend treatment to doctors and write prescriptions out for doctors to sign (Jutel

and Menkes 2010). Perhaps they have similar expectations of NMPs. With the introduction of nurse-only clinics it may not be possible to eliminate the need for non-prescribers to ask NMPs for prescriptions. However, it is important that non-prescribing HCPs understand that not all prescribers are prepared to overlook the legalities regarding prescribing.

Some NMPs described how time pressure led them to take responsibility for prescribing when they otherwise would not have done so (e.g. because of insufficient competency). Much of the research with doctors has focused on how time and workload pressures encourage doctors to issue clinically inappropriate medicine to manage patient pressure (Lewis and Tully 2011; Petursson 2005; Stevenson et al. 1999). However, until now, research with NMPs had not discussed how time pressure could influence whether NMPs take responsibility for prescribing in any given scenario. A small number of NMPs described how when facing time pressures, albeit in situations which were inside their competency, they did not prescribe at all and asked someone else to issue the prescription on their behalf. This reflects other research which found in busy clinics HVs do not utilise their prescriptive authority (Hall et al. 2006). This research has demonstrated that deferring prescribing responsibility to others is not a strategy all NMPs can employ in all circumstances, and therefore, more must be done to reduce time pressures on prescribers. There may be serious safety implications of NMPs taking responsibility for prescribing just because of time pressure. This may be especially true where there is an absence of competency.

In other research NMPs have described how they receive pressure from patients to prescribe outside their competency (Latter et al. 2010). This research found that much of patient pressure, in regards to prescribing responsibility, related to repeat prescription requests. NMPs described how patient need, failure of other services and time meant they felt in some circumstances they had to issue the prescription even though they would rather not. Furthermore, a very small number of nurse prescribers felt there was limited support to uphold regulations about repeat prescribing from managers. As far as possible GPs must continue to issue repeat prescriptions for patients so pressure on NMPs is limited. This is particularly important so NMPs prescribing outside their competency is avoided. Patient pressure in relation to repeat prescriptions may arise from patients' attitudes that NMPs will be able to fulfil all their prescribing needs. It is therefore important that patients' understanding of NMPs' role is improved (see Section 9.3).

One quarter of nurse prescribers and one in ten pharmacist prescribers, in recent research, said they were anxious about their prescribing responsibilities (Latter et al. 2010). It may therefore be unsurprising that, in this research, NMPs were cautious when it came to taking responsibility for prescribing and this cautiousness underpins all the factors presented in Figure 6-2. NMPs stated they were cautious about prescribing and provided examples of cautious behaviour with regards to

prescribing responsibility. This finding is consistent with research with nurse prescribers (Bradley et al. 2007). Doctors too confirm nurses' approach to prescribing is 'careful' and state nurses refer uncertain cases to them (Stenner et al. 2009). This research suggests that pharmacist prescribers, like nurses, adopt a similar approach when prescribing. Nurse prescribers describe how their cautiousness is encouraged by the fact that prescribing is new to them (Bradley et al. 2007). In this research NMPs of all experience levels described a similar attitude towards prescribing. This suggests that even after the novelty of prescribing wears off most NMPs continue to behave in this manner.

Why are some NMPs anxious and cautious about prescribing responsibility? This research has begun to uncover some of the possible reasons for this, which will be discussed in this section, but more focused research in this area is warranted (see Section 9.4.2). A small number of nurse prescribers felt that doctors would receive more support from their professional body and healthcare managers in the case of prescribing errors than they would. Some also felt that non-medical prescribing needs to maintain a 'safe' image and be protected from criticism from both the media and medical profession. A small number of nurse prescribers also felt some doctors hold negative attitudes towards NMPs and provided specific examples of doctors' negativity. This finding echoes research with CNPs who reported an unfavourable reaction amongst GPs to their prescriptive authority (Fisher 2009; Hall et al. 2006). Other nurse prescribers have also reported negative views amongst doctors (Lewis-Evans and Jester 2004; Stenner et al. 2009). As discussed previously, doctors express some concern about non-medical prescribing in relation to training and diagnosis (Blenkinsopp et al. 2008; Courtenay and Berry 2007; Crown and Miller 2005; Fisher 2010; Lloyd et al. 2010; Stewart et al. 2009b; Tann et al. 2010; Watterson et al. 2009; Weiss et al. 2006). Is it possible that some of these concerns are transmitted to NMPs? It may be that doctors' criticism impacts NMPs in two ways. If doctors do not want NMPs to prescribe for their patients then NMPs are unlikely to take responsibility for prescribing in those cases. Indirectly, doctors' criticism may create an underlying fear amongst NMPs who do not want to confirm any of the criticisms that the medical profession and in some cases, individual doctors, have levelled at them.

Other factors must give rise to NMPs' approach to prescribing though, besides from possible reasons discussed, as most nurse and pharmacist prescribers in this research described cautious behaviour or said they were cautious about prescribing. One community matron, who described how she was more cautious about prescribing following the training course than before, raises questions about the impact of the course on NMPs' attitudes to prescribing. The prescribing training course leaves NMPs more aware of prescribing responsibility and accountability (Offredy et al. 2008) as well as more conscious of inadequacies in their own prescribing knowledge (Bradley et al. 2007). The PLP, required as part of the course, has also been found to enhance NMPs'

understanding of doctors' roles, the complexity of diagnosis and provide a greater understanding of holistic patient care. Barber et al. argued that it is the lack of teaching medical students and junior doctors receive about prescribing that gives rise to an attitude that prescribing issues are not really important (Barber et al. 2003). Once in practice junior doctors are likely to face expectations from other HCPs to overlook some prescribing rules and legalities (Lewis and Tully 2009b). These expectations can lead doctors to break prescribing rules, particularly when it helps their colleagues (Lewis and Tully 2009b). In contrast, NMPs receive a dedicated and specific training course focusing on, amongst other things, prescribing ethics and legalities. This specific training may contribute to cautiousness in NMPs and motivate them to reject prescribing pressure.

NMPs' cautiousness may also be as a result of them assuming legal responsibility for a task they could not do previously. Previously NMPs might have felt less responsibility for prescribing because they did not actually sign the prescription. The accountability that nurses feel post-qualifying as a prescriber is reportedly worse than they anticipated (Lewis-Evans and Jester 2004). Presumably this is because they are signing the prescription and taking legal responsibility for the issuing of that prescription. This increased legal responsibility, combined with other issues discussed, may generate cautiousness in NMPs. It is noteworthy that NMPs still continue to ask doctors to sign their prescription requests when they feel uncomfortable prescribing. Clearly these HCPs new found understanding of prescribing responsibility has not influenced their expectations of doctors.

NMPs' cautiousness led them to seek doctors' advice when uncertain or uncomfortable about prescribing. In regards to pharmacist prescribers Weiss and Sutton argue that, despite prescriptive authority, pharmacists still view themselves as subordinates to doctors who they require to provide final authorisation for prescribing decisions (Weiss and Sutton 2009). Weiss and Sutton's suggestion is consistent with research that found that pharmacists avoid prescribing in fields they regard as the doctors' domain (Weiss 1994). Equivalent research is not available for nurses but arguably NMPs' overall approach to taking responsibility for prescribing may reflect deeply rooted professional boundaries in the UK healthcare system.

6.6.1 Reflections on Method

The use of the CIT in Study Two allowed an examination of the factors that influence whether NMPs take responsibility for making a prescribing decision or issuing a prescription. As discussed in Chapter Four, NMPs talked about prescribing responsibility and the factors that influence this decision in general terms. The CIT encouraged NMPs to think of prescribing scenarios before they came to the interviews and the forum to discuss these incidents in detail. This technique allowed an in-depth examination of actual prescribing events rather than relying on generalisations. The focus

groups, conducted with a larger number of NMPs, used in conjunction with the CIT were particularly useful in exploring some of the themes emerging from the CIT. In line with the limitations of the CIT, discussed in Section 5.1.2.5, a small number of NMPs did not bring any incidents to the discussion. However, they were reminded of the instructions regarding the incidents at the beginning of the interview and all managed to think of incidents during the discussion.

The CIT provided NMPs the opportunity to reflect on aspects of their practice. A number of NMPs welcomed the opportunity to discuss prescribing with someone. Some stated at the end of the interview they had enjoyed the discussion. NMPs with limited clinical support and those struggling to use their prescriptive authority also appreciated the opportunity to discuss prescribing in general and the difficulties they faced as a prescriber. These NMPs' motivation to take part in the research seemed to be linked with the difficulties they were facing. Their inclusion in this research was important given the issues they highlighted.

The use of the CIT to study prescribing is not unique. Other research has used the CIT to study the sources of discomfort amongst prescribers (Bradley 1992a; Bradley 1992b; Lewis and Tully 2009a; Lewis and Tully 2009b). The research demonstrated that the CIT is an effective method to study the sources of influence on prescribing decisions. The technique, with or without the modifications in Section 5.1.2.5, could be used to understand the influences on other aspects of prescribing, such as prescribing decisions discussed in Chapter Seven. Focus groups could also be used to expand on some of the themes emerging from the CIT. The CIT could also be used during focus groups to provide an instant reading of the relevance of the themes emerging from the incidents. However, thought must be given to how the presence of other participants might impact the incidents participants provide.

6.7 Chapter Summary

This chapter has examined the factors that influence whether NMPs take responsibility for making a prescribing decision or issuing a prescription for a patent. The issue of prescribing responsibility was found, in Study One, to be particularly important to NMPs. The factors influencing whether NMPs took responsibility for prescribing included competency, role, practical and legal considerations and risk. Pressures NMPs faced to take responsibility for prescribing included time pressures, failures of other services, patient need and lack of support to uphold prescribing regulations. The next chapter discusses the influences on NMPs' prescribing decisions.

Chapter Seven – Prescribing Influences

The purpose of this chapter is to explore the factors influencing the prescribing decisions of NMPs. As described in Chapter Four, prescribing decisions involve the choice between a pharmacological versus non-pharmacological approach, the choice of medicine, formulation and dose. This chapter presents findings from Study One, introduced in Chapter Four, and is intended to provide a basis for the findings of Study Three (see Chapter Eight). The factors influencing prescribing decisions are discussed under seven main headings, regulatory factors, patient factors, colleagues, prescribing culture and professional experience, training and information sources, logistical factors and the pharmaceutical industry. The findings are then discussed in terms of the prescribing influences literature.

7.1 Introduction

One of the main categories of influences NMPs discussed on their prescribing decisions was clinical influences. Clinical influences included, but were not limited to, factors such as medical need, efficacy, side effects, test results, patient's medical history, patient's medicine history, allergies, co-morbidities, drug-drug interactions and patient's symptoms. Clinical influences were excluded from Study Three to focus on other influences. However, it is important to highlight that these factors were spontaneously mentioned by all NMPs in Study One and undoubtedly play a very important role in their prescribing decisions. However, like Study Three, this chapter will focus on other influences.

7.2 Regulatory Factors

The regulatory influences discussed by NMPs as sources of influence on their prescribing decisions included guidelines, formularies, PGDs and cost to the NHS.

7.2.1 Guidelines

When NMPs were asked for their definition of guidelines they generally described them as step-by-step instructions to guide treatment of a particular condition or symptom. The guidelines NMPs used were generally considered to be up-to-date and based on relevant research. Very few NMPs spontaneously mentioned cost in relation to guidelines. The guidelines mentioned by NMPs fell in to two main categories: national guidelines and PCT or local guidelines. As this quote illustrates, the recommendations of guidelines were a major consideration for NMPs when making prescribing decisions:

"Choice of drug now that would depend on various guidelines, err so you would work to say NICE guidelines, or you would work to local PCT guidelines" (Practice Pharmacist 004, In-depth Interview, Study 1)

Often NMPs described how different guidelines, both national, PCT and local, informed different areas of their prescribing decisions.

"Like if it was around contraception I'd usually use the Faculty of Family Planning, if it was around asthma I'd use the Thoracic Society, if it was around antibiotics I'd go by the local guidelines around antibiotics or you know, for skin infections, for chest"(WIC and OOHs Nurse 002, In-depth Interview, Study 1)

NMPs of all experience levels claimed to be content to deviate from guidelines in favour of their own judgement. However, when prompted for examples where they had deviated from guidelines, many NMPs said they could not think of any situations.

"I'm trying to think of an example really where I haven't erm I can't to be honest I can't really think of an example when I haven't prescribed within guidelines erm" (Advanced Practitioner 005, In-depth Interview, Study 1)

A small number of NMPs did provide examples of deviating from guidelines. The main reasons NMPs gave for deviating were that they personally had contradictory clinical experience, they considered the guidelines to be out-of-date or the recommended medicine was unsuitable for the patient (e.g. because of past treatment failure).

"Let's give an example of a urinary tract infection, first line treatment is trimethoprim but if I have a patient that comes to me and they've had several urinary tract infections and trimethoprim doesn't work for them then I'm not going to give trimethoprim as a first line" (WIC Nurse 009, In-depth Interview, Study 1)

Other NMPs, when asked if they deviated from guidelines, described how their patient cases were not exceptional and largely fit within guidelines and formularies anyway. One advanced practitioner described how he was *"not pushing the boundaries of any formulary or guidelines" (Nurse 006, Study One)* when prescribing. Other NMPs described how the guidelines they used were sufficiently flexible to enable them to manage the majority of clinical cases.

National guidelines included NICE guidelines and other guidelines from national bodies (e.g. British Thoracic Society, Faculty of Family Planning). The guidelines that NMPs said they followed depended on their speciality. Examples of local or PCT protocols or guidelines included WIC guidelines, local palliative care guidelines and PCT heart failure guidelines. Generally, NMPs

followed PCT guidance when prescribing antibiotics. Some NMPs believed their local guidelines were largely based on the recommendations of national guidelines.

7.2.2 Formularies

A formulary was described by NMPs as a list of medicines that are commonly used to treat a particular symptom or condition. Within a formulary could be recommendations as to the first, second and third line treatment for a particular condition or symptom. Types of formularies described by NMPs could be divided in to national formularies and PCT and local formularies. The BNF was the only national formulary mentioned by NMPs. Examples of PCT and local formularies included the WIC formulary, wound care formulary and palliative care formulary. A small number of nurse practitioners for GP surgeries and practice pharmacists also mentioned they had a GP surgery formulary.

The recommendations of formularies, both national and local, were major considerations when NMPs made prescribing decisions. As with guidelines most NMPs felt formularies were based on research. A small number of NMPs, particularly those with a GP surgery formulary, felt cost was factored into the recommendations of formularies. There was a mixed response from NMPs to the question of whether they would prescribe a medicine not on the formulary. Some said they would deviate if they did not consider the recommendations of the formulary to be up-to-date. For instance, one nurse described how she would be prepared to follow her own clinical judgement about a new medicine, and prescribe it, even if it was not on the formulary:

"If a new dressing has come out and we have piloted it and we have decided yes it's good but it's not yet on the formulary but it's probably going to be then yeah I would prescribe the dressing of my choice" (Night Nurse Lead/WIC Nurse 003, In-depth Interview, Study 1)

Some NMPs were not prepared to prescribe medicine outside the formulary. This is illustrated by the following quote from an OOHs and WIC nurse. The nurse is dramatic in her description of what she believes the consequences might be of deviating from the formulary.

"I would not override [the WIC Formulary], I wouldn't do that, I like to sleep at night and I like my pin number [NMC registration] and pay my mortgage. Doctors do, they do override it. But that's up to them isn't it" (OOHs and WIC Nurse 002, In-depth Interview, Study 1)

7.2.3 Patient Group Directions (PGDs)

Although NMPs can prescribe medicine outside of PGDs some described how they still consider the recommendations of relevant PGDs when making prescribing decisions. This was generally mentioned by NMPs working in OOHs centres and WICs where PGDs are commonly used by non-prescribing HCPs. This quote from a nurse illustrates her use:

"The other nurses that don't prescribe have PGDs but I can prescribe so I prescribe what the PGD says but I'm using prescriptions" (Practice Nurse, Specialist Nurse and WIC Nurse 013, In-depth-Interview, Study 1)

One nurse said that she had used PGDs before becoming a prescriber, and as a result, continued to refer to them even after qualifying. Those NMPs referring to the recommendations of PGDs felt they were useful, detailed, a good source of information and evidence and research based.

7.2.4 Cost to the NHS

The cost of the medicine influenced the prescribing decisions of both nurse and pharmacist prescribers. Generally, if after taking other factors into consideration (e.g. efficacy, anticipated adherence), NMPs deemed two or more medicines to be equally appropriate for the patient then generally they would prescribe the least expensive option. Many NMPs said that, where possible, they would select generic medicine over branded alternatives. Although relatively cost-conscious all NMPs said they would not base a prescribing decision solely on the cost of the medicine. From this quote below it was clear that other factors, such as patient adherence and medicine efficacy, took precedence over cost factors:

"I think top of my priority list has got to be the other things that I've mentioned, is it going to work, are they going to take the medication, it's no good giving the patient something that's cheap, but that they're not going to use" (WIC Nurse 009, In-depth Interview, Study 1)

The initial expense of more costly medicine could be justified if NMPs felt there would be an overall cost saving as a result of other factors (e.g. reduced hospital admissions or increased adherence).

"Sometimes in GP practice because it's all very money driven they would prefer that you use certain inhalers because they're cheaper but to me there's no point in that because if they're not going to use it, they'll become unstable and they'll end up costing a whole lot more" (Practice Nurse/Specialist Nurse 012, In-depth Interview, Study 1)

The main sources of pressure on NMPs to reduce medicine cost came from GPs and their PCT. Two NMPs, one nurse and one pharmacist, described how the PCT had asked them to switch all their patients from one medicine to another solely for cost cutting purposes. There was no suggestion that their PCT was concerned with other prescribing issues such as efficacy. Many of those NMPs who described pressure from GPs and their PCT in relation to cost felt that if they could justify the prescription on other grounds they could prescribe against GPs' or their PCT's wishes. In this quote a practice pharmacist explains they favour advice from their tutors over advice from the PCT. This pharmacist appears to associate advice from the PCT to be purely motivated by cost factors but advice from his tutor to be motivated by quality and efficacy issues.

"But 12 months ago they [PCT] were asking us to make sure we were using a drug called ipratropium first line before we used a more expensive one called tiotropium treating our COPD patients, I completely ignored that because the literature I had read and my tutors and the professor I learned with say that tiotropium is far better than ipratropium even though it costs more so I just ignored the PCT" (Practice Pharmacist 001, In-depth Interview, Study 1)

From Study One it did not appear that pharmacist prescribers were any more influenced by cost issues than nurses. Some pharmacist prescribers did describe how they were aware of cost issues as a result of their advisory roles to GP surgeries. However, the impact of cost on prescribing decisions was mentioned equally by nurse prescribers.

7.3 Patient Factors

As is perhaps to be anticipated a number of patient factors influenced the prescribing decisions of NMPs. These factors included the anticipated adherence of the patient, the patient's social responsibilities, the patient's quality of life, the patient's relatives or carers, the patient's financial situation, patient satisfaction, patients' requests and expectations and other patient issues such as patient re-attendance and wider community issues.

7.3.1 Adherence and Patients' Social Responsibilities

The anticipated adherence of the patient to the treatment was a key consideration for NMPs when making decisions. NMPs attempted to select medicine they felt the patient would take. In the quote below the prescriber uses the word concordance but it is clear from her description she means adherence:

"Another factor is going to be concordance, it's basically are they going to comply with what you prescribe them or are they going to go away use it for a day and not bother because it's not suitable, don't like it" (WIC Nurse 009, In-depth Interview, Study 1)

NMPs felt that one way of increasing adherence was to incorporate patients' views and preferences into their prescribing decisions. NMPs felt that if patients' views were ignored then adherence to the treatment would be lower. Addressing patients' social responsibilities (e.g. job, daily routine) when prescribing was thought of by NMPs as another way of improving patient adherence. However, NMPs described how some patients used their social responsibilities to exert pressure on them to prescribe inappropriately. This is discussed further in Section 7.3.6.

NMPs wanted to prescribe medicine that patients would take so the patient's condition or symptoms would improve. However, NMPs also highlighted how patient adherence to treatment reduces wasted medicine. This suggests that cost issues, other than direct medicine cost to the NHS, are considered by NMPs.

"If they are not going to take something that you prescribe then there is very little point in doing it really because it's a waste of money really and they probably wouldn't cash it anyway", (OOHs and WIC Nurse 002, In-depth Interview, Study 1)

7.3.2 Patient's Quality of Life (QoL)

As much as possible NMPs made prescribing decisions with the aim to maximise the patient's QoL. This aim influenced many aspects of prescribing including whether a prescription was given at all, the type of medicine, the formulation and the dosing schedule. The influence of patients' QoL was cited more by NMPs managing patients with chronic or long-term conditions, such as community matrons, palliative care nurse specialists, practice pharmacists and advanced practitioners, than other NMPs. The quote below illustrates how important QoL was for one palliative care specialist nurse:

"My number one influence for prescribing, my number absolute ultimate erm aim would be that quality of life issue, so if by writing that prescription there and then for that patient would improve the quality of their life" (Palliative Care Specialist Nurse 010, In-depth Interview, Study 1)

7.3.3 Patients' Relatives or Carers

Some NMPs provided examples of how patients' relatives or carers influenced their prescribing decisions. Patients' relatives or carers were considered a good source of information about the patient in question. NMPs managing patients with long-term or chronic conditions, particularly those working in the community, described how relatives or carers would inform them of the patient's condition where it was difficult for the patient to do this themselves. This information was used to help inform prescribing decisions. As this quote illustrates medicine was also prescribed with practical issues relating to the patient's relatives and carers in mind:

"Fentanyl patches which need to be replaced every seventy two hours, so she [patient's daughter] was having to get two buses to her mums to replace the patch, her mum couldn't do it herself so I had a bit of a chat and basically we've changed it to a patch that is slightly weaker but only needs to go on once a week" (Advanced Practitioner 004, In-depth Interview, Study 1)

NMPs managing patients with acute illness and minor ailments, such as WIC nurses, nurse practitioners for GP surgeries and OOHs practitioners, felt patients' relatives or carers had little impact on their decisions. The majority of the NMPs interviewed did not report any pressure from relatives or carers.

7.3.4 Patients' Financial Situation

The financial situation of the patient was often considered by NMPs when making prescribing decisions. NMPs said they would prescribe for patients who were exempt from prescription charges if they thought they may otherwise struggle to buy the item over-the-counter. For example, in some

cases NMPs wrote prescriptions for products such as ibuprofen, paracetamol and Calpol if they felt the parent could not afford to buy it over-the-counter for their child. As this quote illustrates, nurses in WICs described giving prescriptions for OTC products to homeless people because they were exempt from prescription charges:

"The odd time you get people in who are, live on the streets, you know, I'd prescribe for them, and you can get those things over-the-counter because they haven't got the money and they get free prescriptions" (OOHs and WIC Nurse 002, In-depth Interview, Study 1)

7.3.5 Patient Satisfaction

NMPs wanted patients to be satisfied with the prescribing decisions they made. However, this did not necessarily mean that NMPs prescribed what the patient wanted regardless of the clinical appropriateness of the decision. It did mean that patients' views on the medicine, dose, and method of administration and other issues were taken into consideration when forming the eventual decision. As this quote illustrates, NMPs' motivation for satisfying patients was also linked to their desire to increase patient adherence:

"I suppose if someone's got some really strong views about, as an example an antibiotic, if they say I had that it doesn't work for me then I honestly would probably think twice about prescribing it because, and again, not because I believe it doesn't work but because I believe they believe it doesn't work and they're not going to take it" (Advanced Practitioner 001, In-depth Interview, Study 1)

It was not possible for NMPs to satisfy the patient if they felt what the patient wanted was clinically inappropriate. This issue is discussed in the next section of this chapter.

7.3.6 Patients' Requests and Expectations (i.e. what patient wants and/or asks for in the consultation)

All of the NMPs interviewed in Study One believed they had been pressurised by patients to prescribe medicine they believed was clinically inappropriate. This pressure originated both from patients' direct requests (i.e. what the patient asks for) and perceptions of patients' expectations for medicines (i.e. what they believe the patient wants). NMPs felt pressurised to prescribe antibiotics, pain relief (mainly paracetamol), food supplements and antidepressants. NMPs formed views about patients' expectations from non-direct verbal clues (e.g. *"I can't have time off work at the moment they are making people redundant")* and non-verbal body language.

It is important to note the pressure NMPs faced from patients is different to that discussed in Section 6.5.1. Chapter Six stated that NMPs faced pressure to take responsibility for issuing repeat prescriptions when the medicine fell outside their competency. However, the pressure discussed in

this chapter relates to how, when making prescribing decisions for patients, some NMPs feel pressure to prescribe a medicine for the patient. In some cases, this medicine is against the recommendations of guidelines or formularies.

Despite their experiences of patient pressure the majority of NMPs did not feel their prescribing decisions were in anyway influenced by patient pressure. Most stated that unless there was a medical reason for a prescription they would not issue one regardless of the pressure they experienced. In some cases this meant the patient left the consultation dissatisfied with the outcome. It is noteworthy that although NMPs were keen to ensure the patient was satisfied with the outcome of the consultation in some circumstances (as described in Section 7.3.5) the desire for patient satisfaction did not extend to situations where the prescribing decision was considered clinically inappropriate. This quote below from one nurse illustrates NMPs' attitude towards patient pressure:

"A number of people want antibiotics for a chest infection that they've not got but they have a sats monitor, I examine the chest, if I don't hear anything and the sats monitor says there's no obstruction with the lungs and the pulse is fine and they are not pyrexial I am not going to give it" (Night Nurse Lead/WIC Nurse 003, In-depth Interview, Study 1)

NMPs placed negotiation and discussion at the core of managing patient pressure. Some NMPs felt this discussion was made possible by the longer time they had available for consultations (discussed further in Section 7.7.1). In some cases NMPs provided written information to patients (e.g. patient information leaflets) to help rationalise their decision not to prescribe. Part of NMPs' negotiation process was also reminding patients they should return for further assessment if their condition worsened.

"We always give them worsening advice so say well look now you're not happy, but try this, and in 72 hours or 24 hours depends what it is, if it's not better or it's worse then come back" (WIC Nurse 009, In-depth Interview, Study 1)

Where negotiation was unsuccessful some NMPs enlisted the advice of their colleagues to help 'convince' the patient that a prescription was not required. If this strategy failed patients would often leave the consultation dissatisfied. However, NMPs felt this only happened in a minority of cases. NMPs felt that dissatisfied patients leaving a consultation would simply go to their GP the next day.

NMPs were quite stringent in their policy not to prescribe solely because the patient wanted a prescription. However, there were certain situations where they admitted that refusing a patient's request was made more difficult. These situations included when the patient was elderly, when the

patient had experienced repeated exacerbations of the same condition in the past and when the consultation occurred before a bank holiday weekend.

One reason why NMPs did not want to prescribe in reaction to patient pressure was because they did not want to encourage patients to re-attend with the same complaint and expectations in the future. Many NMPs felt that it was their role to educate patients about their condition and appropriate use of medicine. Additionally, some NMPs felt they had a responsibility to limit use of antibiotics to only clinically appropriate cases because of wider community issues such as antibiotic resistance.

A minority of NMPs did feel their prescribing decisions could be influenced by patient pressure but only where the patient was very insistent they needed the requested medication. These NMPs described how they would issue medicine, even if they regarded it as inappropriate, but explain to the patient they were not happy with their decision. One nurse practitioner for a GP surgery (Nurse 013, Study One) who said she succumbed to pressure said she felt *"she had not done her job properly"* and *"deflated"*. It is noteworthy that NMPs react very negatively to situations where they feel they have to prescribe inappropriately. Others used words such as *"weak"* (Nurse 009, Study One) to describe succumbing to patient pressure. It might be that NMPs generally do not give in to patient pressure to avoid negative feelings. NMPs in this research rarely discussed relations with patients. It might be that NMPs are less worried about upsetting patients than doctors, perhaps as a result of their more transient role, but are influenced by how prescribing inappropriately leaves them feeling on a personal level. This is discussed more in Section 7.9 of this chapter.

Perceptions of GPs' Behaviour

NMPs spontaneously offered comparisons between their own and GPs' behaviour in relation to patient pressure. Many NMPs felt that in comparison to themselves GPs rarely negotiate with patients and simply end up prescribing *"what the patient wants"*. When NMPs suggested patients would simply return to their GP, if unable to get what they wanted from them, they believed the GP would end up prescribing something for the patient even if inappropriate. Some NMPs felt that GPs' behaviour in relation to patient pressure was as a result of time constraints on GPs because they did not have the time to explain to patients why the medicine requested was not appropriate. However, others felt that GPs prescribed simply to make life easier for themselves. Some NMPs also felt that GPs past behaviour in relation to patients has led to patients' requests and expectations for medicines:

'But antibiotics now are seen as the panacea, I've got a sore throat I need antibiotics. And that's only really because it's been GP led, you can go to a GP and get antibiotics it's that simple' (OOHs and WIC Nurse 002, In-depth Interview, Study 1)

7.4 Colleague Factors

The colleague factors discussed by NMPs included GPs, community pharmacists, hospital and secondary care practitioners, other NMPs, non-prescribing HCPs and prescribing course mentor or DMP.

7.4.1 GPs

GPs involvement in NMPs' prescribing decisions varied widely. As discussed, when uncertain about an aspect of prescribing, NMPs actively sought input from GPs. In other cases, NMPs felt that GPs put unwelcome pressure on them to prescribe in a certain manner because of cost issues. Pressure in relation to cost arose because NMPs were managing GPs' patients and GPs' prescribing budget met the cost of any prescribing by the NMP. Some NMPs described how some GPs had asked them not to prescribe certain medicine because of cost. However, the palliative care specialist nurse in this quote below maintained, as others did, that they would still make an independent decision:

"Some GPs who are really really budget conscious will, because obviously we use their practice codes so it's going to affect budgets, will say don't use that but I just ignore them" (Palliative Care Specialist Nurse 008, In-depth Interview, Study 1)

None of the WIC nurse prescribers who were interviewed reported any pressure from GPs despite the fact their costs were also met by patients' GPs' budgets. This might be because they do not work within a close distance to GPs and have very little contact with them. However, other nurse prescribers and all pharmacist prescribers did not feel that GPs exerted any pressure on them to prescribe in a certain way.

NMPs sought input from GPs in situations where they had insufficient competency or in situations they considered high risk. Input from GPs would take the form of informal advice. In some cases the patient was formally referred. Sometimes NMPs asked the GP to issue the prescription for the patient on their behalf. Chapter Six concentrated on GPs involvement in whether NMPs took responsibility for prescribing. However, this chapter focuses on how GPs actively influence NMPs' prescribing decisions. The findings of Study One indicated that the nature and extent to which GPs were considered to influence NMPs' eventual prescribing decision varied widely. In some cases, the GP's role was simply to reassure the NMP that their decision was appropriate. In other cases, NMPs described how GPs advice and recommendations influenced their choice of medicine, as the below quote illustrates:

"He'd [GP] say well what would you prescribe first of all and tell me why and then we'd have that conversation about well no perhaps this is a better drug to use and this is the reason why" (WIC Nurse 007, In-depth Interview, Study 1)

GPs were NMPs main source of support when faced with a difficult prescribing decision, However, for patient cases NMPs felt comfortable managing, GPs seemed to have little influence. This point is discussed further in Chapter Eight.

7.4.2 Community Pharmacists

Community pharmacists were considered a useful resource by both nurse and pharmacist prescribers. However, community pharmacists were mainly contacted for help with practical aspects of prescribing and medicine supply. Both nurses and pharmacists gave examples of where they contacted community pharmacists for information about medicine stocks of unusual medicine. Palliative care specialist nurses often built relationships with particular pharmacies on the understanding that certain, harder to get, medicine would be available for their patients. Some nurses said they contacted community pharmacists for information about OTC products their patients were taking. The influence this might have on NMPs eventual prescribing decision was uncertain. A small number of NMPs provided examples where they had contacted community pharmacists for help with medicine selection. However, examples such as these were few and far between.

"I had a patient that had erm a mouth infection but she didn't want liquid she wanted lozenges, and the lozenges that I knew that we used to use they don't exist anymore so I was stuck then as what to prescribe and I just rang the pharmacy" (Advanced Practitioner 001 ,In-depth Interview, Study 1)

There was some interaction between NMPs and community pharmacists. However, interaction on the whole was minimal with most NMPs saying they only contacted community pharmacists a few times at the most.

"The pharmacists are a mine of information so we'd probably ring one of them you know, it's not often we would do that, I have done that on one or two occasions but not a lot" (WIC Nurse 007, In-depth Interview, Study 1)

7.4.3 Hospital and Secondary Care Practitioners

Hospital and secondary care practitioners, normally doctors, were respected for their expert knowledge and experience. However, contact between these practitioners and NMPs was minimal. The majority of interaction took the form of formal referral letters detailing the prescriptions the patient should be given following discharge from hospital or secondary care. This was more frequently mentioned by specialist nurses and those managing long-term or chronic conditions.

"There is not a great deal of direct contact a lot of it's through letters" (Practice Nurse and Specialist Nurse 012, In-depth Interview, Study 1)

NMPs, normally specialists nurses and those managing long-term or chronic conditions, did sometimes seek guidance from hospital and secondary care doctors on specific prescribing issues. Usually contact occurred when the NMP was managing an unusual or complex patient who required specialist input. For example, as this quote illustrates, one advanced practitioner described how she would seek a respiratory consultant's advice, over other colleagues, for a patient with a rare lung disease:

"[I had] a patient with a very rare lung disease and I was wondering whether to manage her symptoms, to start her on a small dose of morphine, but I wouldn't come back and discuss that here, I'd discuss that with her respiratory consultant" (Advanced Practitioner 005, In-depth Interview, Study 1)

The majority of NMPs working in GP surgeries and community roles, including pharmacist prescribers, stated that they asked GPs to refer patients on their behalf.

7.4.4 Other NMPs

The main interaction between participants and other NMPs occurred within their working environment in an informal capacity. Exchanges between NMPs seemed to be informal, relaxed and comfortable. Some NMPs shared an office with other NMPs whilst others worked in the same clinic or practice. A small number of NMPs said they felt isolated from other prescribers. One WIC nurse described how the work rota was planned so there was only one nurse prescriber working with other non-prescribing nurses. As a result she had limited opportunity to interact with other NMPs. Other NMPs mentioned they felt isolated from others to begin with, but in recent years, because of the increase in the number of NMPs, the situation had improved.

Other NMPs were a convenient source of advice and information when a NMP was uncertain about a prescribing decision. Pharmacist prescribers and nurse prescribers both said that they sought advice of other NMPs. However, no pharmacist prescriber mentioned that they had regular contact with another pharmacist prescriber. Given the relatively low number of pharmacist prescribers compared with nurses (see Section 2.3.3.1) it is unsurprising there are few pharmacist prescribers working together. The nature of the information exchanged between NMPs depended on the prescribers' expertise. For example, one advanced practitioner *(Nurse 001, Study One)* described how she would seek the advice of another advanced practitioner, who was previously employed as a palliative care specialist nurse, on issues relating to palliative care and symptom control. Similarly, as the quote below illustrates, a practice pharmacist, mainly prescribing for cardiovascular disease, described how he would seek the advice of a nurse practitioner if the issue

related to respiratory conditions. He also described how the nurse practitioner would seek his advice on cardiovascular issues.

"You know I take cues on respiratory problems from our nurse practitioners who's, you know her former role as a respiratory nurse specialist, she knows more about breathing problems than I do, lots more, and I'm, and I will often ask her advice, what's going on with this patient I don't know, what would you recommend? Equally she'll come to get my advice on cardiovascular issues, so yeah we influence each other" (Practice Pharmacist 003, In-depth Interview, Study 1)

Nurses working in the community setting mentioned they sometimes contacted nurse practitioners working in GP surgeries, rather than seek advice from their immediate colleagues, about prescribing issues they regarded these nurses as having more experience of. A small number of NMPs mentioned that they attended non-medical prescribing group meetings offered by their PCT or professional body. However, they said the meetings generally offered only general support on issues relating to non-medical prescribing. It is clear though that other NMPs can have a role in prescribing decisions made by NMPs.

7.4.5 Other Non-Prescribing HCPs (Except Community Pharmacists)

WIC nurses described situations where non-prescribing HCPs exerted pressure on them to take responsibility for prescribing (see Section 6.4.1). In some cases non-prescribing HCPs requested prescriptions for medicine outside the prescribers' competency. In these cases nurse prescribers were not prepared to issue the prescription at all. In some cases non-prescribing HCPs requested prescriptions for medicine within the prescribers' competency. In these instances the NMP said they would examine the patient themselves before issuing any prescription. Chapter Six did not address the extent to which non-prescribing nurses' requests for prescriptions influenced the actual prescribing decisions nurse prescribers made. On the one hand nurse prescribers said they would examine the patient and make their own independent decision. In light of these claims it might be assumed that non-prescribing nurses have little influence on NMPs' prescribing decisions. However, the influence that a non-prescribing colleague might have, if they request a specific medicine, remains unclear from the discussion in Study One. Non-prescribing HCPs could potentially have more of an influence on NMPs than they are aware of themselves or are prepared to admit to. Other NMPs rarely mentioned non-prescribing HCPs, which suggests that the influence of other non-prescribing HCPs on NMPs' prescribing decisions is limited. This issue is followed up in Chapter Eight.

7.4.6 Prescribing Course Mentor or Designated Medical Practitioner

As part of the non-medical prescribing course NMPs are required to have support from a DMP who provides 12 days of a PLP. Half of the NMPs interviewed in Study One still maintained contact

with their DMP following completion of the prescribing course. The other half of the prescribers did not have any contact at all. This lack of contact was mainly because either the NMP or DMP had moved location or because their working hours did not coincide.

"I don't have any contact now because I've changed jobs, so unfortunately, I did up until I changed my job even though I'd finished the course" (Advanced Practitioner 006, In-depth Interview, Study 1)

NMPs with a relationship with their DMP actively sought advice and recommendations about prescribing issues. There was no evidence of a relationship between the length of time since qualifying and contact with a DMP.

7.5 Prescribing Culture and Professional Experience

The influence of prescribing culture and professional experience is discussed under the following headings: colleagues' prescribing behaviour, accepted and established prescribing practice amongst others and prescribing experience.

7.5.1 Colleagues' Prescribing Behaviour

There was some evidence that NMPs' prescribing decisions were influenced by the prescribing practice of GPs and hospital and secondary care doctors.

Some NMPs were able to observe what hospital and secondary care doctors were prescribing through patient discharge letters. In Study One, the influence these HCPs' behaviour was mentioned more by NMPs managing chronic or long-term conditions than other NMPs. This is presumably because hospital practitioners have more involvement in these areas. In a direct way NMPs' prescribing was influenced by hospital and secondary care doctors' prescribing because they were reluctant, although not completely averse, to change the medicine started by consultants. This quote from one nurse prescriber illustrates how she felt about changing medicine initiated by hospital consultants:

"Sometimes, don't like doing it much, because it's kind of like you, you know, you think if the consultant's started it you can't stop it" (Practice Nurse and Specialist Nurse 012, In-depth Interview, Study 1)

There was also evidence that NMPs generally were keen to follow consultants' prescribing behaviour. This quote from a nurse practitioner talking about her choice of medicine for a range of long-term and chronic conditions illustrates this:

"It also depends what's in vogue and what's the consultants are doing" (Nurse Practitioner for GP Surgery, In-depth Interview, Study 1)

There was evidence that NMPs looked to GPs' behaviour to guide their own. However, they only did this where they needed guidance about patient management.

"What I tend to do is if I've had, if I've not been able to deal with a particular erm problem, or I've had to refer on to a GP, what I then do on the next day err or whenever that patient's seen the GP, I go into the notes and see how they resolved it" (Practice Pharmacist 004, In-depth Interview, Study 1)

There was little evidence from Study One that NMPs replicate GPs' prescribing behaviour in all prescribing situations. In fact, many NMPs were critical of GPs' own prescribing behaviour. For instance, some NMPs were keen to differentiate their prescribing behaviour from GPs in relation to patient pressure (see Section 7.3.6). Furthermore, NMPs felt GPs prescribed contrary to guidelines. It was evident that there was no desire to emulate GPs behaviour in this regard.

"I'm possibly more aware of guidelines than they are because I review notes that often and see how the GPs prescribe" (Practice Pharmacist 004, In-depth Interview, Study 1)

"I remember a GP (laughing), I remember a GP telling me when I was on this prescribing course that guidelines were for fools (laughing) and it has never really left me that you know" (Advanced Practitioner 006, In-depth Interview, Study 1)

Whilst NMPs were also a good source of support there was less evidence that other NMPs' behaviour influenced participants' prescribing behaviour.

7.5.2 Accepted and Established Prescribing Practice amongst Others

There was evidence in Study One that at least some NMPs' prescribing decisions were influenced by whether the prescribing behaviour was 'established' practice and 'accepted' amongst others. NMPs judged whether the prescribing practice was 'established' by the length and extent of its use amongst other prescribers and by the extent of available research evidence. Whether the practice was 'accepted' was based on NMPs' perception of others' behaviour and opinions towards the prescribing practice. NMPs most commonly looked to the practice of GPs to inform their practice but hospital and secondary care doctors' practice was also considered. This adds to the evidence from this research that the relationship between NMPs and GPs is complex. This quote illustrates the influence of GPs behaviour on NMPs:

"I think it would have to be approved by GPs first and then I think that does come, it doesn't take very long, because if they are dynamic enough and enthusiastic enough they make sure that they get their information over"(Night Nurse Lead and WIC Nurse 003, In-depth Interview, Study 1)

The influence of these factors was particularly apparent when NMPs discussed relatively new medicine. This quote from one advanced practitioner, when asked how she would feel prescribing a medicine new to the market, illustrates the importance of both of these issues for some NMPs:

"I think I'd probably wait 'til it was established and people were using it and see you know what people thought to be honest" (Advanced Practitioner 001, In-depth Interview, Study 1)

This NMP, as well as other NMPs, gave the impression that the vast majority of the medicine they prescribe is well 'established' and 'accepted'. NMPs seemed to feel uncomfortable prescribing new medicine because it is less well 'established' and 'accepted'.

"The drugs that we prescribe have been around for donkey's years but you do get the odd new, I mean we've got some heart failure drugs that are very very new on the market, erm but I would be out of my comfort zone really to prescribe those" (Advanced Practitioner 004, In-depth Interview, Study 1)

Further evidence that NMPs are reluctant to prescribe medicine that is not 'established' comes from this quote from an OOHs and WIC nurse. It is noteworthy that whilst, as will be discussed in Section 7.6.2, NMPs do not regularly use literature from academic and professional journals to inform their prescribing decisions they still place great importance on the research behind practice.

"So I would not be part of that new prescribing thing unless it was sort of tried and tested and part of the whole package really. But it would have to be supported by robust evidence for me to sleep at night" (WIC and OOHs Nurse 002, In-depth Interview, Study 1)

7.5.3 Prescribing Experience

A small number of nurse and pharmacist prescribers described how the outcome of past prescribing decisions influenced future prescribing decisions they made. This was not, however, something spontaneously cited by NMPs as an influence on their prescribing decisions. In this quote the advanced practitioner described, in general terms, the influence of past experiences on prescribing:

"Like I say lots of things that, my past experience, yeah past experiences have yeah, particularly around palliative care and managing symptoms, I think certainly influences my prescribing" (Advanced Practitioner 005, In-depth Interview, Study 1)

7.6 Training and Information Sources

7.6.1 Training

On the whole, knowledge gained through the prescribing training course was not mentioned by NMPs as an on-going source of influence on individual prescribing decisions. However, some NMPs did recall general advice they received. For example, one NMP described how the

prescribing course emphasised the importance of medicine cost when prescribing. Other NMPs felt the course emphasised the importance of patient adherence when forming prescribing decisions.

"The prescribing kicked off with one of the GPs there saying the best medicines are the ones that patients take, and I thought, I've not really thought about that really you know"(Advanced Practitioner 004, In-depth Interview, Study 1)

Other training courses, such as those organised by GP surgeries, the PCT, or by pharmaceutical companies were also mentioned by a small number of NMPs as potential influences. Conferences were also mentioned by a small number of NMPs. However, the influence of these sources had a sporadic rather than consistent influence on their prescribing decisions.

7.6.2 Information Sources

Some NMPs mentioned that relevant information from NHS Clinical Knowledge Summaries (CKS) (formerly known as PRODIGY) (Clinical Knowledge Summaries NHS Evidence 2011), the NPC and the Medicines and Health Products Regulatory Agency (MHRA) were potential sources of influence on their prescribing decisions. This information was accessed through relevant websites or through email updates which were set-up by prescribers. NMPs felt these sources were evidence-based and up-to-date. These information sources were not however mentioned by all NMPs interviewed in the Study One.

"We follow evidence-based guidelines and we usually use CKS on the computer erm that's our err bible really" (WIC Nurse 007, In-depth Interview, Study 1)

NMPs felt these sources assisted in keeping their prescribing practice up-to-date and evidence-based. Information sources such as these were also used when NMPs were uncertain about how to prescribe medicine appropriately or how to manage particular conditions. This quote below illustrates this point:

"I will find out about stuff that I need to know if I'm faced with it, like how to taper steroids in polyrheumatica, who to give antivirals to for shingles, using those kind of sources the NPC materials, NICE and CKS" (Practice Pharmacist 003, In-depth Interview, Study 1)

A small number of NMPs, particularly specialist nurses and those managing long-term chronic conditions, stated that literature from academic and professional journals was a potential source of influence on their prescribing decisions. However, on the whole NMPs favoured summarised prescribing information (e.g. NHS CKS, NICE, PCT guidance). Two advanced practitioners and one specialist nurse mentioned that they refer to literature in unusual clinical cases or when they want to explore claims made by pharmaceutical representatives. A small number of NMPs also said

that they referred to literature when they were working in a new field and when training to become a prescriber. Some pharmacist prescribers said they refer to literature as a consequence of other roles beyond prescribing. However, there was no specific indication that this influenced their prescribing and some said they would still favour summarised information sources. Time constraints were cited by a small number of NMPs as a reason for not using literature to inform their prescribing. Furthermore, one nurse said that she likes to *"keep things simple" (Nurse 007, Study One)* another said she *"is not at the cutting edge of research" (Nurse 001, Study One).* These quotes suggest NMPs actively select not to use research findings for reasons beyond simply not having enough time. A number of points raised in this section are expressed in this quote below:

"It can be a bit difficult keeping on the ball with all of them, this job, the heart failure job is the newest job to me, I've only been doing this since August so for my learning I've gone out and found more of the articles about the trials and erm that kind of thing because you know I want to learn, whereas the practice nursing and the out-of-hours I've done for longer so I suppose you do it while you do the minor illness course, while you do the prescribing course, but then you kind of, you just get on with it" (Practice Nurse, Specialist Nurse, WIC Nurse 013, In-depth Interview, Study 1)

7.7 Logistical Factors

7.7.1 Time

The influence of time in Chapter Six was discussed in terms of the impact it had on whether NMPs take responsibility for prescribing in any given scenario. Time pressures were found, in some cases, to increase the likelihood that NMPs took responsibility even when they would prefer not to (e.g. because of insufficient competency). In this chapter, the influence of time is discussed in terms of how it impacts the prescribing decisions that NMPs make.

The length of NMPs' consultation time depended on the type of role they were employed in. For example, some NMPs, treating patients with acute or minor ailments in GP surgeries, had 10-minute appointment slots. A 10-minute time slot is generally comparable to GPs typical practice. Other NMPs working in GP surgeries had 15 minute appointment slots for similar types of patients. Specialist nurses and those in GP surgeries managing patients with long-term or chronic diseases typically had 20 to 40 minute time slots for their appointments. This was so they had time to conduct a medicine review, conduct and/or review other tests and talk to the patient about other issues (e.g. lifestyle). Those working in WICs and OOHs centres had no predetermined appointment time slots and typically spent as much time as needed with patients. NMPs working in community roles, such as the advanced practitioners and community matrons, also spent as much time with patients as required. One advanced practitioner said her appointment times could range from five minutes to one-hour depending on the patient's circumstances. Further information about the nature of participants' role is presented in Appendix 10.0.

The majority of NMPs felt they had more time to spend with patients compared with GPs. NMPs considered the benefits of longer consultations to be the ability to spend more time acquiring necessary information from the patient, explaining their decision to the patient, answering patients' questions, explaining the use of devices (e.g. inhalers) and documenting the patient's symptoms and any prescribing decision. Some NMPs said they used the time to double check the accuracy of their prescription. This benefit was particularly important for those working in community settings who were handwriting their prescriptions for patients. Some NMPs felt that additional consultation time helped with patient adherence and satisfaction. Interestingly, even NMPs with similar consultation times to GPs felt they spent more time than GPs listening and explaining medicine and other issues to the patient. As discussed in Section 7.3.6, NMPs felt that additional time in consultations helped manage patient pressure as they had more time to explain to the patient why a prescription was not needed. NMPs compared this with GPs who they felt did not have time, but more importantly, did not utilise the time, to explain to the patient why a prescription was not needed.

NMPs described workload pressure despite also saying they have additional time to spend with patients in consultations. This time pressure arose because of insufficient consultation time and general workload pressure (e.g. having too many patients to manage).

"We're very short staffed to start off with, we're a busy walk-in centre, erm and, you know, there's always a queue, it's very rare that we're, we've got a waiting room that is empty, erm so yeah, you are under pressure" (WIC 007, In-depth Interview, Study 1)

NMPs admitted, that in response to patient pressure, it would be sometimes easier to prescribe for a patient than to explain why the prescription was not needed. Despite this all NMPs were clear that time factors did not influence their prescribing in a negative way (e.g. by prescribing a medicine for a patient to speed up the consultation and *"to get rid"* of the patient). This quote below illustrates this attitude:

"As far as prescribing goes it is, it is easier, it's much much easier to write a prescription and they go, it takes much much longer to actually explain why they don't need something, especially if it's somebody that feels, that they need to walk out with a prescription, err it does take longer, but we really try not to sort of issue things when we don't need to" (Palliative Care Specialist Nurse 008, In-depth Interview, Study 1)

NMPs sometimes linked being a *"bad"* or *"irresponsible"* prescriber with succumbing to time pressure. Some NMPs emphasised how important it was for them to take their role seriously. The implication of this was that if they do not succumb to time pressure they are not taking their role

seriously. In this quote below a WIC nurse expresses similar sentiments to this and says she should not be a prescriber if she prescribes just to get rid of a patient:

"I'll just give them a prescription to get rid of them, I don't think any of us would think that really, you know we're all too, I think we all feel too responsible for that you know, at the end of the day this is my, my career on the line, this is my role on the line and you know if I'm prescribing willy nilly just to get rid of a patient then I shouldn't be doing it you know, we do take it quite seriously really" (WIC Nurse 007, In-depth Interview, Study 1)

7.7.2 Impact on Others Within and Outside own Service

The impact of the decision on others, within and outside their own service, was rarely mentioned by NMPs as a source of influence on their prescribing. However, as this quote illustrates, it is clearly something that some NMPs reflect on when making prescribing decisions. In this case below the practice pharmacist mentioned he considered the impact of the prescribing decision on DNs' workload:

"Yes some of it's also cost to society, you know, if we erm have someone with diabetes and they can manage taking tablets but they can't self-inject because their visions poor, too poor now and they can't see and you know manipulate the pen device for example, if we, if we move them off tablets onto insulin then there is a cost to society of having to have districting nursing visits twice a day to administer it" (Practice Pharmacist 003, In-depth Interview, Study 1)

7.8 Pharmaceutical Industry

NMPs main contact with the pharmaceutical industry was through pharmaceutical representatives. All of the NMPs interviewed had some contact with pharmaceutical representatives at some point. There were however three NMPs who did not have any contact in their current role. Pharmaceutical representatives were viewed as a valuable and an up-to-date education source. Typically, NMPs did not meet representatives one-on-one. However, if the representative was promoting a product that was relevant to the NMPs' practice they were invited to give a presentation at team meetings, study and training days. In some cases the pharmaceutical company provided sponsorship for education and training days.

"We have some interaction with [pharmaceutical] reps, it's generally associated with sort of team meetings, some reps come in and see us at team meetings about various things, so we do have interaction with reps, we usually ask for an educational kind of approach to telling us about new drugs" (Advanced Practitioner 006, In-depth Interview, Study 1)

Although NMPs considered pharmaceutical representatives as a useful information source they were still viewed as sales people. NMPs believed that pharmaceutical representatives overriding aim would be to promote their company's products. In order to try and influence their decisions NMPs believed pharmaceutical representatives sometimes presented 'biased' and 'selective'

information. Free gifts, such as pens, diaries, notepads, free lunches and badge holders were considered as attempts to influence their prescribing decisions. However, NMPs were confident they were not influenced by pharmaceutical representatives at all when making prescribing decisions.

"I've always found it fairly straight forward, if it's not something I'm used to prescribing, or it's not familiar to me, I won't start using it just because somebody gave me some leaflets on it. You know so, and it's like heart failure there's a new drug on the market but it's not really something we would use and yeah we've seen the rep but I'm not going to start prescribing it tomorrow" (Practice Nurse and Specialist Nurse 012, In-depth Interview, Study 1)

NMPs felt confident that they were able to identify biased information. In many cases NMPs described how they cross referenced information provided by representatives with independent sources. This was particularly the case when information provided by the representative seemed *"too good to be true"*.

"We had a [pharmaceutical] rep last week we did actually seek out a paper afterwards, because he didn't have it with him and it just seemed a little bit too good to be true, so we did actually seek out that particular paper, and sure enough it was a little bit too good to be true" (Advanced Practitioner 004, In-depth Interview, Study 1)

7.9 Discussion

Many of the influences on NMPs' prescribing decisions identified in Study One have been previously discussed in the literature in relation to doctors' and CNPs' prescribing. However, this research has provided insight into the breadth and nature of these influences on the prescribing decisions of nurse and pharmacist independent and supplementary prescribers which has not, as yet, been presented in the literature.

All NMPs said the recommendations of national, local and PCT guidelines and formularies influenced their prescribing decisions. The recommendations of PGDs were also mentioned by a small number of nurse prescribers. The influence of these sources on NMPs reflects guidance for NMPs which states that they should consider the recommendations of relevant guidelines and formularies when prescribing (Manchester PCT 2009; Nursing and Midwifery Council 2006). NMPs in this research said they would deviate from the recommendations of these sources if required. This is consistent with doctors (Buusman et al. 2007; Denig et al. 2002; Higgins and Tully 2005; Jacoby et al. 2003; Ljungberg et al. 2007; Schumock et al. 2004; Wathen and Dean 2004; Wood et al. 2007) and CNPs (Hall et al. 2004). Moreover, doctors appear to have a more liberal attitude in regards to adhering to guidelines and formularies. Doctors are sometimes not aware of guidelines for some conditions they prescribe for (Cavazos et al. 2008) and others feel guidelines are too restrictive and limit their clinical freedom (Armstrong and Ogden 2006). Some

doctors feel cynical about the cost saving rationale behind guidelines (Wood et al. 2007). Doctors recognise the benefit of formularies but show less commitment to following their recommendations in practice (Armstrong and Ogden 2006). In contrast, the NMPs in this research were positive about the role of guidelines and formularies in their prescribing practice and did not generally cite cost as a concern. Some NMPs in Study One said they were content deviating from guidelines and formularies. However, examples of them doing so were rare. This finding is consistent with Hall et al.'s study that indicated it was only a small minority of mainly experienced CNPs that were prepared to deviate from guidelines (Hall et al. 2003). It is also consistent with the findings of Study Two that found NMPs were uncomfortable taking prescribing responsibility when deviation from guidelines and formularies was required. In the US context Undeland et al. found that, when prescribing for a first presentation of a single pharyngitis illness, nurse prescribers adhered to guidelines more than doctors (Undeland et al. 2010). Undeland et al.'s study and the research presented in this thesis provide foundations for further research, in the UK context, which compares the adherence of doctors and NMPs to guidelines and formularies (see Section 9.4.1 for further discussion).

The cost of the prescribing decision to the NHS when making decisions was cited as a source of influence on NMPs' decisions. NMPs prescribed the cheaper of more than two products when they were equivalent on other factors (e.g. efficacy) and also prescribed generically where possible. Doctors as well as CNPs also consider cost when prescribing and, like the prescribers in this research, prescribe generically where appropriate (Greenfield et al. 2005; Hall et al. 2003; Jacoby et al. 2003). It is interesting that patients believe cost is a major influence on doctors' prescribing decisions (Schafheutle et al. 2002). This research demonstrated, along with available literature for doctors (Ljungberg et al. 2007; Prosser and Walley 2006), that whilst cost is considered, prescribers reject the notion they would make prescribing decisions based purely on cost.

It was not previously known the extent to which nurse and pharmacist prescribers experience cost related pressure. Previously, CNPs had not come under a lot of pressure in regards to cost issues because of the limited amount of prescribing they did (Hall et al. 2004). However, it would appear that in contrast to a decade ago, there is more pressure on NMPs to consider cost when prescribing. This is perhaps understandable given the increase in non-medical prescribing over recent years and the expansion in the range of products NMPs can prescribe. In a small number of cases NMPs overlooked some of the prescribing advice their PCT because they believed it to be purely driven by cost factors. This behaviour coincides with GPs' attitudes that PCT managers are 'cost cutters' (Carthy et al. 2000; Prosser and Walley 2007). However, rejection of PCTs' authority was not prevalent amongst NMPs.

The patient related factors cited by NMPs in this research (e.g. patient's social responsibility, anticipated adherence) have also been found to influence the prescribing decisions of doctors and CNPs (Buusman et al. 2007; Carthy et al. 2000; Hajjaj et al. 2010; Hall et al. 2003; Ljungberg et al. 2007; Luker et al. 1998). NMPs in this research wished patients to be satisfied with the prescribing decision they made. However, they said that this did not extend to prescribing in clinically inappropriate ways. NMPs felt pressure for clinically inappropriate medicine but this is not unique to NMPs as similar pressures have been reported by GPs, hospital doctors and CNPs (Lewis and Tully 2011; Luker et al. 1998; Petursson 2005; Stevenson et al. 1999). The majority of NMPs in this research reported that in most situations they would not prescribe just because of pressure. In contrast, doctors admit that they 'give in' to patient pressure and prescribe even when they know the prescription is not clinically required or evidence-based (Butler et al. 1998; Lewis and Tully 2011; Petursson 2005; Stevenson et al. 1999). Furthermore, when doctors perceive that the patient expects or a prescription, or when the patient reports they expect a prescription, the patient is more likely to be given one (Cockburn and Pit 1997; Macfarlane et al. 1997; Webb and Lloyd 1994). This research suggests NMPs are able to overcome patient pressure. This could represent a deviation between doctors' and NMPs' behaviour in regards to patient pressure.

What are the potential reasons behind any differences between doctors and NMPs in regards to managing patient pressure? Doctors give in to patient pressure because they are concerned about maintaining good patient relationships, wish to avoid conflict with patients, want to respond to patients' suffering, have a desire to give in to patients and want to be compassionate (Butler et al. 1998; Coenen et al. 2006; Dybwad et al. 1997). Interestingly, when a small number of NMPs described situations when they did issue a prescription in the face of patient pressure, they reported feelings of guilt. This is not unique as doctors too report feelings of guilt when issuing prescriptions for purely non-pharmacological reasons (Lewis and Tully 2011; Petursson 2005). However, perhaps for doctors, particularly GPs, negative feelings resulting from the breakdown of the patient-practitioner relationship or an inability to respond to the patient's suffering out weigh those generated from prescribing in non evidence-based ways. NMPs may feel more negative about prescribing in non evidence-based ways but less negative about refusing patients' requests. It may also be easier for NMPs who may have shorter and more transient relationships with patients to refuse medicine requests. In this research, NMPs said they managed patient pressure with discussion and negotiation. This involved providing patients with written information about their condition. NMPs' reports of their behaviour are consistent with patients' attitudes that they are provided with high quality information from NMPs (Brooks et al. 2001; Courtenay et al. 2011; Luker et al. 1998). It may be that NMPs manage patient pressure more effectively than doctors through discussion and information. It could be that the extra consultation time, some NMPs

reported, helps them to do this. This echoes previous claims by CNPs who said they used their extra time to manage patient pressure (Hall et al. 2003).

This research provides a more detailed examination of how a wide range of colleagues influence NMPs' prescribing decisions that is not available in the current literature. The influence of GPs, hospital and secondary care practitioners, community pharmacists, other NMPs, non-prescribing nurses and DMPs were all discussed. Both Study One and Study Two suggested that NMPs' relationship with GPs is complex. GPs were NMPs main source of contact when faced with difficult prescribing decisions. GPs also had an important role in developing and helping to maintain NMPs' competency levels. However, Study One found that GPs were rarely consulted when NMPs felt comfortable prescribing. Furthermore, NMPs contested that GPs do not 'influence' them. In previous research CNPs also strongly denied that GPs influence their prescribing. They also claimed that they rarely used GPs as a resource when it came to making decisions (Hall et al. 2003). CNPs felt they had at least equivalent knowledge, if not more knowledge, than GPs about the conditions they manage (Hall et al. 2003). It was clear from Study One and Study Two that NMPs did require GPs' advice on some aspects of prescribing (e.g. when the patient had complex poly-pharmacy). However, generally, NMPs preferred the recommendations of other sources to GPs. This second finding is consistent with the research with CNPs. This finding is also interesting because it suggests that NMPs are presented with prescribing decisions they are unhappy to manage independently. This explains why assessment of their competency is such an important part of their practice. CNPs, in contrast, need less support from other HCPs. This is likely to be a product of the narrow range of medicine they can prescribe (see Section 2.3.1.1).

NMPs sometimes contacted hospital and secondary care doctors when they felt they required specialist advice. Specialist nurses and those managing long-term or chronic conditions mentioned seeking advice these practitioners more than other types of prescribers. In previous research CNPs also said they contacted clinical specialists when they needed help with difficult cases (Hall et al. 2009). GPs make contact with hospital specialists through patient referral letters (Armstrong and Ogden 2006). Communication between NMPs in this research and hospital and secondary care doctors also occurred through formal discharge and referral letters. However, many NMPs in this research, especially those in the GP surgery setting or in a general community roles (e.g. advanced practitioner), said that they would ask the patient's GPs to make referrals to hospital and secondary care on their behalf. The contact between NMPs and hospital and secondary care doctors might therefore be less than exists between GPs and these practitioners.

Until now, the research that has examined the interaction between community pharmacists and NMPs had focused on their interaction with CNPs only. Many of the findings from research with CNPs and doctors were replicated in this research. In this research community pharmacists' role was generally limited to practical medicine support and issues of medicine supply. Doctors and CNPs too contact community pharmacists for practical medicine support and value the knowledge of pharmacists but, like NMPs, rarely use pharmacists to help with medicine selection (Carthy et al. 2000; Hall et al. 2003; Higgins and Tully 2005; Mahoney and Ladd 2010; Pearson et al. 2002; Stenner and Courtenay 2008). In the hospital context, pharmacists are sometimes not considered 'teachers' by junior doctors because of their low profile (Pearson et al. 2002). There is also a perception amongst some GPs that community pharmacists are simply 'shop-keepers' (Hughes and McCann 2003). Clearly for difficult prescribing decisions NMPs preferred the advice of a doctor than a community pharmacist. This may simply be as a result of practical issues of NMPs accessing a community pharmacist. However, it may also be that NMPs hold some similar beliefs as doctors.

The interaction between NMPs and other NMPs had, until now, mainly focused on CNPs. In this research NMPs relationship with their peers was characterised by an informal exchange of information, advice and ideas. Doctors communicate with one another about prescribing issues (Armstrong et al. 1996; Lewis and Tully 2009b; Ljungberg et al. 2007; Prosser et al. 2003; Wood et al. 2007). However, some GPs sometimes feel reluctant to compare their prescribing with others because of lack of confidence or fear of criticism (Carthy et al. 2000). Some GPs communicate with each other 'through a form of clinical etiquette' that avoids open discussion of specific patient management so that 'professional exposure or embarrassment is avoided' (Armstrong and Ogden 2006). The barriers between doctors did not exist between the NMPs in this research. It is important that the current situation, in regards to the communication between NMPs, is maintained so NMPs receive as much support with regards to prescribing as possible. However, more could be done to improve interaction between pharmacist prescribers as they currently only interact with nurse prescribers. This will become increasingly easier to achieve as the number of pharmacist prescribers continue to increase in the UK. The relationship with their peers was important for NMPs. However, the influence NMPs had others' prescribing decisions appeared limited. This issue is explored further in the next chapter of this thesis.

Other colleague factors, such as non-prescribing nurses and the influence of DMPs, were also discussed in Study One. There was no evidence that NMPs followed prescribing recommendations suggested by their DMP during training, as has been found in research with CNPs (Hall et al. 2008). Where a relationship between the NMP and the DMP continued to exist after qualification the DMP was a useful resource for NMPs. However, only half of the NMPs in Study One still had contact with their DMP post-qualifying. One way to improve the support that NMP receive post-

qualifying as a prescriber would be to make contact with the DMP a mandatory requirement for a set time period following the course (see Section 9.3). Although, as discussed in Section 6.4.1, non-prescribing nurses placed pressure on WIC nurse prescribers to issue prescriptions for their patients the nurse prescribers maintained they would examine the patient themselves and form their own independent prescribing decision. Doctors admit that nurse pressure can be an influence on their prescribing behaviour (Wood-Mitchell et al. 2008). In contrast, NMPs that experienced pressure from nurses maintained that nurses did not influence their eventual prescribing decision.

NMPs were influenced by the prescribing behaviour of both GPs and hospital and secondary care doctors. However, the way these HCPs influenced their prescribing differed. GPs' prescribing behaviour was examined by NMPs in situations they were unable to manage the patient independently. This is similar to NMPs seeking GPs' advice when faced with difficult prescribing decisions. However, GPs' behaviour had little impact on them when managing patients they felt comfortable managing themselves. NMPs did not want to replicate or copy GPs behaviour for the patients they felt comfortable managing independently. Many NMPs felt that GPs prescribed contrary to guidelines and criticised GPs in relation to their management of patient pressure (see Section 7.3.6) and their submission to time pressures (see Section 7.7.1). NMPs' attitudes suggested that GPs' behaviour should not be a 'role model' for their own behaviour. Instead there was a suggestion that other sources of information were prioritised. This finding uncovers the complex relationship between NMPs and GPs that has not, as yet, been discussed in the literature.

It was clear that hospital and secondary care doctors' prescribing behaviour influenced NMPs. In one direct way NMPs were influenced by these practitioners because they were reluctant, although not completely averse, to change medicine initiated by hospital consultants. This echoes the opposition of CNPs and GPs to alter hospital prescriptions even for medicine they would not normally prescribe (Armstrong and Ogden 2006; Buusman et al. 2007; Hall et al. 2009). Some NMPs sought to replicate hospital consultants' behaviour in their own practice. One nurse prescriber described this as following *"what's in vogue"*. GPs have expressed similar sentiments. GPs feel that use of new medicine by consultants gives the medicine credibility (Jones et al. 2001). Moreover, hospital consultants' behaviour influences GPs' uptake of new medicine (Jones et al. 2001; Prosser et al. 2003). However, even for medicine in the same class, hospital consultants influence GPs' medicine selections (Buusman et al. 2007). It is an important finding that some NMPs in primary and community care are using the prescribing behaviour of prescribers in hospital and secondary care when making prescribing decisions. This is despite NMPs' reduced interaction with these HCPs as a result of asking GPs to refer patients on their behalf. NMPs' attitudes suggested that they did not want their behaviour to be exceptional or different in anyway. This meant they were keen to prescribe within prescribing practices perceived to be accepted and

established. These perceptions were based on both GPs' and hospital and secondary care practitioners' behaviour. This clearly adds a further dimension to NMPs already complex relationship with GPs.

A small number of NMPs in this research described how their own prescribing experience influenced their current practice. However, very few NMPs spontaneously cited this as a source of influence. Doctors, as well as CNPs, incorporate their own past professional prescribing experience into their practice (Hall et al. 2008; Schwartz et al. 1989; Wood-Mitchell et al. 2008). However, less experienced doctors rely on their clinical experience to a lesser extent than more experienced colleagues (Tichelaar et al. 2010). It would be sensible to assume that less experienced practitioners are not as influenced by past experience because they do not have as much experience to draw upon. In this research prescribers of all experience levels did not spontaneously cite professional experience as an influence on their prescribing decisions. Study One therefore suggested that even NMPs with more experience continue to prioritise other sources of information (e.g. guidelines, colleagues, prescribing culture) over their own professional experience.

NMPs described how the prescribing training course was not an ongoing source of influence on their prescribing decisions. This finding reflects the fact that the course is not intended to provide NMPs with specific advice and information about specific therapy areas but rather practical, legal and ethical information about prescribing. A small number of NMPs mentioned they had attended conferences, training courses and study days as part of ongoing CPD. Although NMPs in this research were positive about the opportunities for further learning, as nurse prescribers have said in other research (Green et al. 2009), there was little evidence that NMPs related and applied the information from CPD to their own prescribing practices. In contrast, education has been found to be important to medical students, GPs and specialists when selecting medicine for their patients (Tichelaar et al. 2010). NMPs working in primary care find it difficult, because of time and workload commitments, to access training opportunities (Hacking and Taylor 2010). Hacking and Taylor found that nearly 30% of 516 NMPs had no training or updates in the year before taking part in their research. Instead, most of the support they received in relation to prescribing came from doctors as well as other NMPs (Hacking and Taylor 2010). This finding may explain why clinical support is vital in the development and maintenance of NMPs' competency (see Section 6.3.1). More should be done to increase training opportunities for NMPs. This is discussed further in Chapter Eight and Chapter Nine.

The findings of this research, in relation to the use of literature and studies from academic and professional journals to inform prescribing decisions, replicate previous research in two ways. Firstly, as has been found in other research (Banning 2005), there was variation in the extent to

which NMPs used this source or information in their prescribing practice. Secondly, this research found that prescribers with roles that involved prescribing for patients with complex, chronic or long-term conditions mentioned this source of influence more than other types of prescribers. This finding partly replicates research with doctors that found specialist doctors rely on the scientific literature more than their GP colleagues when prescribing (Allery et al. 1997; Tichelaar et al. 2010). Although some NMPs did mention literature and studies from academic and professional journals as an influence on their prescribing it was, on the whole, rarely mentioned by prescribers. Difficulties interpreting and using research in practice, noted in research with acute care nurses (McCaughan et al. 2002), were not identified in this research. There was also no evidence to suggest, in contrast with research with GPs (Wood et al. 2007; Wood-Mitchell et al. 2008), that NMPs were rejecting research findings because of issues with 'real-life applicability' of the research. Some NMPs said they did not have time to refer to research in their practice. However, other NMPs actively rejected the use research findings when making prescribing decisions. Pharmacist prescribers said, that whilst they used research in other parts of their role, they prefer other sources of information when making prescribing decisions. Many of the NMPs comments suggested a need to be evidence-based, in line with the principles of EBM, but they considered other sources (e.g. guidelines, formularies, NHS CKS, MHRA, NPC) fulfilled this requirement. Some NMPs described how they did not consult literature because they wished to *"keep things simple"*. The findings of Study One strongly suggested that research has a low impact on NMPs' prescribing decisions.

NMPs described time pressure in their practice. This time pressure arose because of a limited consultation time and general workload pressure. Although there are a small number of studies with CNPs (Hall et al. 2003; Hall et al. 2006) there was little known about the time pressures that NMPs face in their practice and how any time pressure influences their prescribing decisions. The majority of NMPs claimed that time pressure was not a factor in their prescribing and, in relation to patient pressure, said they would rather spend time with the patient explaining why a prescription was not needed than prescribe. In contrast, GPs say they sometimes prescribe just to relieve pressure on their workload (Kumar et al. 2003; Petursson 2005) and admit these prescriptions are sometimes unnecessary and against available evidence (Buusman et al. 2007; Carthy et al. 2000; Petursson 2005). Furthermore, GPs report whether they resist patient pressure is largely as a result of the time they have available (Carthy et al. 2000). This research highlights a difference between doctors and NMPs with regards to their management of time pressure. Support for this difference, at least between nurses and doctors, is provided in a study where nurses claimed, in stark contrast to other clinicians, that their management decisions (including prescribing) were not influenced by time factors (Hajjaj et al. 2010). NMPs in this research took the task of resisting time pressures very seriously. This influenced how they dealt with time pressure and how they wished to be seen

to manage time pressure (see Section 7.7.1 for further details). This is clearly an important issue to identify in relation to understanding how time pressure, as well as other pressure, influences NMPs.

Many of the attitudes expressed by NMPs in this research, with respect to pharmaceutical representatives, are also evident in the current literature in this field. However, in contrast with CNPs in earlier research (Luker et al. 1998), the majority of NMPs in this research had contact with representatives. This suggests that, since the early days of non-medical prescribing, the activities of the pharmaceutical industry have been directed towards NMPs. NMPs met with pharmaceutical representatives as part of a team approach but not individually. Like doctors and CNPs (Hall et al. 2003; Prosser and Walley 2003), NMPs viewed pharmaceutical representatives as a valuable and an up-to-date education source. NMPs in this research acknowledged that the representatives try and influence their prescribing, as CNPs suggest (Hall et al. 2009), but they claimed they were not influenced by this themselves. This finding is consistent with much of the literature concerning doctors' attitudes to the influence of the pharmaceutical industry (Carthy et al. 2000; Prosser and Walley 2003; Wood et al. 2007) and is also consistent with the limited research conducted with UK based nurse independent prescribers (Lewis-Evans and Jester 2004). However, whilst NMPs claim that they are not influenced by the activities of the pharmaceutical industry, further research beyond simply asking them, should be used to fully understand the impact of the industry on NMPs. Such research may become important if evidence emerges of a negative impact of the pharmaceutical industry on NMPs' prescribing.

7.9.1 Reflections on Method

This chapter has presented findings from Study One which used in-depth interviews. Chapter Four has partly reflected on the methods used in Study One. However, it is important to reflect on the methods used in Study One again now the findings have been presented in full. The in-depth interviews allowed NMPs the opportunity to talk about the influences on their prescribing decisions. Interviews, such as those conducted in this research, have been used by others to explore influences on prescribing (Carthy et al. 2000). The in-depth interviews enabled the researcher to explore the nature of some of the influences. For example, participants were asked about what guidelines they used, how they managed patient pressure and the nature of their interaction with their DMP. This would have been more difficult using quantitative methods such as questionnaires. The in-depth interviews allowed participants to talk about the prescribing influences in their own words. If questionnaires had been used there might have been an inclination to 'force' some of the terms in the doctors' prescribing literature on NMPs.

It was evident from the interviews that almost any factor could be a source of influence on NMPs. As a result, it was difficult to gauge the relative influence of the factors on NMPs. This was made

even more difficult because of time constraints during the interviews. Therefore, the Q-method was used in Study Three in order to encourage participants to prioritise the factors that influence their prescribing decisions. This method grouped participants that agreed their prescribing decisions to be influenced by the same factors together This created perspectives amongst NMPs about the influences on their prescribing decisions.

7.10 Chapter Summary

This chapter has explored the influences on NMPs' prescribing decisions. Prescribing decisions can be thought of as the choice between a pharmacological versus non-pharmacological approach, the choice of specific medicine, the choice of dosage and the choice of formulation. This decision is different, albeit very related, to that of prescribing responsibility which focuses on whether NMPs take responsibility for making a prescribing decision for a patient or issuing a prescription. The influences on NMPs were discussed under the following headings: regulatory factors, patient factors, colleague factors, prescribing culture and professional experience, training and information sources, logistical factors and the pharmaceutical industry. The next chapter of this thesis presents findings from Study Three which employed the use of the Q-method.

Chapter Eight – Perspectives on Prescribing Influences

The purpose of this chapter is to describe the range of perspectives amongst NMPs about the sources of influence on their prescribing decisions. The findings presented in this chapter are derived from Study Three, which was designed using the principles of the Q-method. The chapter ends with a discussion of the findings and a reflection of the Q-method.

8.1 Introduction

Study Three furthered the understanding of the influences on NMPs' decisions by asking 56 participants to arrange statements about prescribing influences, derived from Study One as well as available literature, on a grid according to the extent to which they agreed with the statements for prescribing decisions they make. Participants were asked to think of prescribing decisions they make for their 'normal patient group'. The data produced in Study Three was then analysed using PCA and varimax rotation analysis according to the principles of data analysis in Q-method studies. The aim of the analysis was to group NMPs together that ordered the statements in a similar manner to create perspectives about prescribing influences amongst NMPs. The perspectives represent NMPs that perceive their prescribing decisions to be influenced by similar sources of influence. The method and data analysis procedure used in Study Three has been discussed in extensive detail in Chapter Five. The initial part of this chapter describes how the output from the analysis was interpreted.

8.2 Interpretation Process

Chapter Five of this thesis provided an overview of the data analysis procedure for Study Three. As outlined, PCA was initially preformed on the Study Three data. The aim of PCA is to identify the number of natural groupings of q-sorts (the arrangement of statements on the grid) by virtue of their similarity to one another. PCA produces eigenvalues which can be used to determine how many perspectives resulting from PCA should be taken forward for varimax rotation. In Q-method analysis, and factor analysis more generally, these perspectives are commonly referred to as factors during the analysis stage. This section of the chapter will therefore use the term 'factor'. However, in the findings part of this chapter and the rest of the thesis these factors are referred to as perspectives.

As a general rule in Q-method studies, and factor analysis more generally, it is factors with eigenvalues of more than one that are used following PCA. This is often referred to as 'EVG 1 rule', (Kaiser 1960). In this study 15 eigenvalues of more than one existed following PCA. As a result, the EVG 1 rule was not applied as it would have been impossible to provide a meaningful

interpretation of the output. Indeed, it has been argued by some authors that the EVG 1 rule leads to too many factors unnecessarily being retained (Patil 2008). Cattell suggests using a scree plot to determine the point at which the eigenvalues level off (Cattell 1996). A scree plot was produced in this study (see Appendix 24.0) where the eigenvalue was plotted against the number of the eigenvalue (factor number) in a line graph.

Some authors have described the interpretation of the scree plot as an 'art' rather than a 'science' (Turner 1998). Indeed, this was the case in this study as there was no obvious drop off in the eigenvalues at any point apart from after the first eigenvalue number. After close examination it was felt that the eigenvalues levelled off to some extent after either the second and fifth eigenvalue number. Due to this ambiguity the scree plot was used as a starting point at which to begin the interpretation process. Eventually all possible factor solutions, up to eight factors, were examined. A maximum of an eight-factor solution was explored because of limitations of the PCQ software used and because it was felt a factor solution greater than eight would not be meaningful. The author followed the advice of McKeown and Thomas that 'common sense offers the best counsel when determining the importance of factors, that is, their contextual significance in light or the problems, purposes and theoretical issues in the research project' (McKeown and Thomas 1988, pg.52). The final factor solution considered other criteria suggested by Webler et al. specifically for Q-method studies (Webler et al. 2009). This criteria is listed in Box 8-1.

Box 8-1: Criteria Used to Aid Selection of Final Factor Solution (Modified from Webler et al., 2009)

1. Distinctness: Low correlation between factors
2. Simplicity: As low number of factors as possible without limiting meaningfulness of factors
3. Stability: Groups of similar participants stable across factor solutions.
4. Clarity: Large number of participants loading significantly on one of the factors, small number of 'null' or 'confounders'.

A five factor solution was deemed the best solution. The five factor solution met Webler's distinctness criterion because there was a low correlation between most of the factors. There was no difference between any of the factor solutions on the stability criterion because participant groups were relatively stable between all solutions. It was difficult to fulfil Webler's clarity criterion with any of the viable factor solutions. The three factor solution had the least number of null or confounder participants, of only 13, but did not perform well on the distinctness criterion as there was high correlation between the factors. The concepts of 'null' and 'confounder' participants are discussed in Section 8.2.1. The four factor solution had the next least number of null or confounder participants, of 17, but this was only marginally better than the number for the five factor solution of 18. However, the five factor solution performed better on the simplicity and the distinctness criteria. The five factor solution explained 56% of the total variance of the rotated correlation matrix. The four factor and six factor solution explained 52% and 60% of the variance

respectively. However, the four factor solution was not selected because it accounted for less of the variance within the data with only one less null or confounder participant. Whilst the six factor solution explained more of the variance it was difficult to interpret, especially as three of the factors had five or less participants significantly 'loading' to that factor. The concept of participants 'loading' to a factor is discussed in Section 8.2.1. On Webler's simplicity criterion, and in inline with McKeown and Thomas' recommendations that common sense should drive factor selection, the factor five solution was selected because it made more sense and was more meaningful than other solutions.

There is little discussion in the Q-method literature about an accepted threshold of variance that Q-method studies should seek to explain but it is intuitive that Q-method studies should explain as much variance as possible in its findings. The variance reported in this study falls somewhere in the middle of that reported in published studies that have used the Q-method. For example, Baker presented three factors accounting for 44% of the variance (Baker 2006). Fairweather and Swaffield presented five factors accounting for 61% of the variance in their data (Fairweather and Swaffield 2001). Morecroft et al. et al. present five factors that accounted for 73% of the variance (Morecroft et al. 2006).

The factors selected as a result of PCA are then taken forward for varimax rotation analysis. The aim of varimax rotation analysis is to yield interpretable factors by rotating the selected factors. This analysis results in a rotated factor loadings file which provides a correlation value (between -1.00 and 1.00) for each participant and factor. As described in Chapter Five, in order to produce the final report, the researcher must first determine what factors, if any, participants significantly load to. The process of determining this is described in the next section.

8.2.1 Determining Participant's Significance on Rotated Factor

In order to determine participants' significance on each factor one must examine the factor loadings file (resulting from varimax rotation). This file provides a correlation value for each participant and factor. A correlation value of 1 would indicate perfect correlation or similarity with an overall factor. A low value indicates limited similarity with an overall factor and a minus value can indicate polarity with a factor. Those participants with a high correlation value for a factor is said to 'load' to that factor. A distinction is made between participants that load to one, and only one factor, and participants that load on to one or more factors or none at all. Generally these groups are referred to as 'defining' participants or sorts, 'confounders' and 'null' participants or sorts respectively. In the analysis it is the defining sorts that help interpret the factors but examining confounders can be useful. In order to determine which factors participants load to it is necessary to determine a level at which the correlation value becomes significant. In the PCQ software the

significance level is set at +/- 0.45 but it can be manually overridden should you wish to change the level. In this study a new significance level was set using a formula, described below, which is commonly used in Q-method studies. This formula calculates the significance level at 99%:

Significance Level = 2.58 / √N

(where 'N' = number of statements)

Based on this formula participants in this study were considered to significantly load to a factor when their correlation value for that factor exceeded 0.3857. In this study, of the 56 participants, 38 participants had defining sorts as they loaded significantly to only one factor. Sixteen participants were confounders meaning they loaded significantly to more than one factor. In the PCQ software it is necessary to 'mark' each defining sort in order to complete the analysis. Two null participants loaded to none of the factors (Nurse 3 and Nurse 33). Appendix 26.0 and Appendix 27.0 provide the correlation values of participants with defining q-sorts and the correlation values of confounder participants respectively.

8.2.2 Interpretation of Factors

The loading of the participants to the factors was indicated in the PCQ software. The final analysis was complete by selecting the qanalyse option. This re-expresses the factors as the best estimate of the q-sorts or participants that represent them. The output of the qanalyse is a report which can be used to interpret the factors. For each factor, the PCQ software produces a z-score for each of the statements. Z-scores are measures of how far the position of the statement lies from the mid-point of the distribution (Webler et al. 2009). Essentially, z-scores provide an understanding of the statements that participants loading to each factor agreed and disagreed with most. This information is necessary to help interpret the factors. In the forthcoming description of each factor the six statements that received the highest positive z-score for the factor, and the six statements that received the lowest positive z-score for the factor have been provided. In this chapter the asterisks indicate if the statement received a significantly different z-score on one factor compared with the z-score, for the same statement, on any other factor. The significance level of 95% and 99% are reported for each statement, indicated by: * = 95% significance ** = 99% significance, to distinguish between different levels of significance.

The statements that received a significantly different z-score (at either 95% or 99%) on one factor compared with the same statements on another factor have also been provided in the description of each factor. Attention was also given to statements that received higher z-scores on one factor compared with the statement's z-score on other factors even when it was not significant. As

described in Chapter Five, participants were also asked to comment on their choice of the two statements they placed in the most agreed with column and the two statements they placed in the most disagreed with column. The comments made by participants, loading significantly on the factor (either as a defining sort or confounder), were used to interpret the factors. The label for each factor was mainly derived from the differentiating statements for the factor and the six statements that received the highest positive z-scores.

In order to discuss each of the factors in a consistent and concise way the 42 statements used in Study Three are discussed under seven themes. These seven themes include: regulatory factors, patient factors, colleague factors, prescribing culture and professional experience, training and information sources and logistical factors. These themes were generated following the analysis of Study One and were used during the statement development. The statements within each are these themes are outlined in Appendix 22.0. The categories provide a framework to discuss the results of the Q-method study. However, as mentioned previously, they did not represent a theory as to how participants may be divided. From this point in the chapter onwards the term factor is replaced by perspective.

8.3 Demographic Profile of Participants Loading to each Perspective

The demographic details of the participants loading to each perspective are described below. In the case of professional group, numbers are provided for defining participants and confounders. For all other demographic characteristics analysis is only provided for those with defining sorts. Further interpretation of these findings is provided in conjunction with the description of each of the five perspectives from Section 8.5.

8.3.1 Professional Group

As Table 8-1 shows, nearly half of nurses with defining sorts loaded significantly to Perspective One (P1). This compares with approximately one in 10 pharmacists. The remaining nurses with defining sorts loaded fairly evenly to Perspective Two (P2), Perspective Three (P3) and Perspective Four (P4). In total, 35% of pharmacists with defining sorts loaded significantly to P2. This represented the largest number of pharmacists loading to any one perspective. As with nurses, the remaining pharmacists with defining sorts loaded fairly evenly to P1, P3, P4 and P5. When examining the percentage of participants that loaded significantly to each of the perspectives as either a defining sorts or confounders the similar trend as that described emerges.

Table 8-1: Number and Percentage of Nurse Prescribers and Pharmacist Prescribers with Defining Sorts Loading to Each Perspective and Number and Percentage of All Nurse Prescribers and Pharmacist Prescribers (Defining and Confounders) Loading to Each Perspective

PERSPECTIVE	DEFINING SORTS		DEFINING SORTS & CONFOUNDERS	
	Nurses	Pharmacists	Nurses	Pharmacists
P1 PCT Driven Prescribers	**10** [48%]	**2** [12%]	**18** [56%^]	**3** [14%^]
P2 Patient-Centred Driven Prescribers	**4** [19%]	**6** [35%]	**8** [25%^]	**9** [41%^]
P3 Prescribing Culture Driven Prescribers	**2** [10%]	**4** [24%]	**8** [25%^]	**7** [32%^]
P4 Evidence-Based Driven Prescribers	**4** [19%]	**3** [18%]	**10** [31%^]	**6** [27%^]
P5 Long-term Impact and Logistical Prescribers'	**1** [5%]	**2**^^ [12%]	**1** [3%^]	**2** [9%^]
TOTAL	**21**	**17**	**32**	**22**

^ Percentage calculated as number of all participants loading to perspective by all participants (either defining perspective or as confounder). As a result the percentages within the columns will not equal 100% and the total number of participants loading to each perspective will total more than the total number of participants. ^^ Includes one pharmacist loading negatively to perspective.

8.3.2 Role

The number of participants with defining sorts by role employed loading significantly to each perspective is provided in Table 8-2. The data suggests there is no one role associated with any one particular perspective. However, two thirds of community matrons/active case managers loaded to P1. Additionally, one third of nurse practitioners for GP surgeries/practice nurses loaded to P1 and one third loaded to P4.

Table 8-2. Number of Participants by Role Loading to Each Perspective as Defining Sort

	NURSES							PHARMACISTS					TOTAL
PERSPECTIVE	Ad. Prac. (Nursing Homes/ General)	Com. Matron/ Active Case Manager	Spec. Nurse		Nurse Prac. GP Surgery/ Prac. Nurse	WIC Nurse/ OOHs	Comb. Role Nurse	OOHs Care Prac.	Prac. Pharm/ Pres. Support Pharm.	Com. Pharm.	Other	Comb. Role Pharm.	
			Palliative Care	All Other									
P1 PCT Driven Prescribers	1	4	1	-	3	1	-	-	2	-	-	-	**12**
P2 Patient-Centred Driven Prescribers	-	1	-	1	1	-	1	-	4	-	1	1	**10**
P3 Prescribing Culture Driven Prescribers	-	-	1	-	1	-	-	-	2	1	-	1	**6**
P4 Evidence-Based Driven Prescribers	-	1	-	-	3	-	-	1	1	1	-	-	**7**
P5 Long-term Impact and Logistical Prescribers	-	-	-	-	1	-	-	-	1	-	-	1	**3**
TOTAL	**1**	**6**	**2**	**1**	**9**	**1**	**1**	**1**	**10**	**2**	**1**	**3**	**38**

Ad. Prac. = Advanced Practitioner, Com. = Community, Spec. = Specialist, Prac = Practice, Comb = Combined, Pres = Prescribing, Pharm. = Pharmacist.

8.3.3 Years Experience in Prescribing Field

The number of participants with defining sorts by years experience in their prescribing area loading significantly to each perspective is provided in Table 8-3. Participants with defining sorts with low experience loaded similarly to all five perspectives. A higher proportion of participants with moderate levels of experience loaded significantly to P1 and P4 compared with other perspectives. Almost half of those participants with a defining sort and high levels of experience loaded significantly to P2 compared with a quarter loading to P1.

Table 8-3: Number of Participants by Years Experience Loading to Each Perspective as Defining Sort

PERSPECTIVE	LOW < 4 years	MODERATE > 4 years & < 10 years	HIGH > 10 years	TOTAL
P1 PCT Driven Prescribers	3 [33%]	6 [38%]	3 [25%]	**12**
P2 Patient-Centred Driven Prescribers	2 [22%]	2 [13%]	6 [46%]	**10**
P3 Prescribing Culture Driven Prescribers	3 [33%]	1 [6%]	2 [15%]	**6**
P4 Evidence-Based Driven Prescribers	1 [11%]	5 [31%]	1 [8%]	**7**
P5 Long-term Impact and Logistical Prescribers	-	2 [13%]	1 [8%]	**3**
TOTAL	**9**	**16**	**13**	**38**

8.3.4 Date of Qualification

The number of participants with defining sorts by date of prescribing qualification loading significantly to each perspective is provided in Table 8-4. Table 8-5 and Table 8-6 provide the number of nurses and pharmacists with defining sorts by date of prescribing qualification loading significantly to each perspective. Table 8-4 shows a roughly similar percentage of participants with defining sorts, who qualified to prescribe between 2003 and 2005, loaded significantly to each of the four first perspectives. However, slightly more loaded to P4. Nearly three in five participants qualifying to prescribe from 2006 loaded to either P1 or P2. However, slightly more of these participants loaded to P1. Seven in 10 nurses who qualified to prescribe since 2006 loaded to P1 compared with only 15% of pharmacists. The vast majority of pharmacists qualifying to prescribe from 2006 onwards loaded to either P2 or P3.

Table 8-4: Number of Participants with Defining Sorts by Date of Prescribing Qualification Loading to Each Perspective as Defining Sort

PERSPECTIVE	Before 2003	2003 – 2005	2006 to Present	TOTAL
P1 PCT Driven Prescribers	-	3 [21%]	9 [39%]	**12**
P2 Patient-Centred Driven Prescribers	-	3 [21%]	7 [30%]	**10**
P3 Prescribing Culture Driven Prescribers	-	2 [14%]	4 [17%]	**6**
P4 Evidence-Based Driven Prescribers	1	4 [29%]	2 [9%]	**7**
P5 Long-term Impact and Logistical Prescribers	-	2 [14%]	1 [4%]	**3**
TOTAL	**1**	**14**	**23**	**38**

Table 8-5: Number of Nurse Prescribers with Defining Sorts by Date of Prescribing Qualification Loading to Each Perspective as Defining Sort

PERSPECTIVE	Before 2003	2003 - 2005	2006 to Present	TOTAL
P1 PCT Driven Prescribers	-	3 [30%]	7 [70%]	**10**
P2 Patient-Centred Driven Prescribers	-	2 [20%]	2 [20%]	**4**
P3 Prescribing Culture Driven Prescribers	-	2 [20%]	-	**2**
P4 Evidence-Based Driven Prescribers	1	2 [20%]	1 [10%]	**4**
P5 Long-term Impact and Logistical Prescribers	-	1	-	**1**
TOTAL	**1**	**10**	**10**	**21**

Table 8-6: Number of Pharmacist Prescribers with Defining Sorts by Date of Prescribing Qualification Loading to Each Perspective as Defining Sort

PERSPECTIVE	Before 2003	2003 - 2005	2006 to Present	TOTAL
P1 PCT Driven Prescribers	NA	-	2 [15%]	**2**
P2 Patient-Centred Driven Prescribers	NA	1 [25%]	5 [38%]	**6**
P3 Prescribing Culture Driven Prescribers	NA	-	4 [31%]	**4**
P4 Evidence-Based Driven Prescribers	NA	2 [50%]	1 [8%]	**3**
P5 Long-term Impact and Logistical Prescribers	NA	1 [25%]	1 [8%]	**2**
TOTAL	**NA**	**4**	**13**	**17**

8.3.5 Number of Prescriptions

The number of participants with defining sorts by prescribing frequency classification loading significantly to each perspective is provided in Table 8-7. The percentage of participants with defining sorts, classified as medium or high frequency prescribers was similar across the perspectives. However, over two in five participants classified as low frequency prescribers loaded significantly to P1.

Table 8-7: Number of Participants with Defining Sorts by Classification of Prescribing Frequency Loading to Each Perspective as Defining Sort

PERSPECTIVE	LOW < 5 Prescriptions	MEDIUM > 5 and < 20 Prescriptions	HIGH >20 Prescriptions	TOTAL
P1 PCT Driven Prescribers	3 [43%]	5 [33%]	4 [25%]	**12**
P2 Patient-Centred Prescribers	2 [29%]	4 [27%]	4 [25%]	**10**
P3 Prescribing Culture Prescribers	1 [14%]	3 [20%]	2 [13%]	**6**
P4 Evidence-Based Driven Prescribers	1 [14%]	2 [13%]	4 [25%]	**7**
P5 Long-term Impact and Logistical Prescribers	-	1 [7%]	2 [13%]	**3**
TOTAL	**7**	**15**	**16**	**38**

8.4 Similarities

It is important to note that there were many similarities across the perspectives. These similarities are discussed in this section. The positioning of some of the statements across the perspectives supported some of the findings described in Chapter Seven.

The majority of participants perceived logistical issues to influence their prescribing decisions less than other influences. The following statements received high negative z-scores for all the major perspectives (P1, P2, P3 and P4): "the anticipated impact the prescribing decision will have on my service in the future (follow-up appointments, monitoring, etc)" (statement 15), "the anticipated impact the prescribing decision will have on other health care services of health care professionals outside my own service"(statement 14), "whether I feel I have sufficient time during the consultation" (statement 22), and "the anticipated impact of the prescribing decisions on future presentations to my service from the patient in question or other patients" (statement 39). The reasons behind participants' agreement or disagreement with these statements, as well as the other statements throughout this chapter, were explained in some of the comments participants provided when asked to explain their choice of the two statements they most agreed with and the two statements they least agreed with. In regards to statement 22, some NMPs said that time was not an issue in their consultations, that they would prefer to *"run late"* than succumb to time pressures and that they do not want to make *"rushed decisions"* or *"snap decisions"*. They also felt part of being a professional is managing time pressure and that they should not be a prescriber if they succumb to time pressure. This last point is illustrated in the comment below:

(s22) "I don't feel I should be a nurse prescriber if time saved in a consultation entered into it" (Practice Nurse 009, Perspective One, Study 3)

The comments about time pressure supports the findings of Study One and Study Two discussed in Section 6.4.2 and Section 7.7.1 respectively.

Participants generally thought that "recommendations from my prescribing course mentor or my designed medical practitioner" (statement 1), "advice from other NMPs" (statement 4), "advice from academic practitioners" (statement 6) and "advice from non-prescribing health care professionals" (statement 7) influenced their prescribing less than other influences. This finding is unsurprising as these HCPs were not generally mentioned by NMPs in Study One as sources of influence on their prescribing decisions. NMPs expressed a number of viewpoints about these HCPs. They said they had little or no contact with these HCPs in their practice (particularly statement 1, 4 and 6), they may listen to advice from these HCPs but give preference to other influences (particularly statement 4) and they would prefer to take advice from HCPs with similar levels of prescribing responsibility (particularly statement 6 and 7). This latter point is illustrated in the comment below:

(s7) "I take general advice from non prescribing practitioners but I feel if you are taking on the responsibility of independent prescribing you need advice from someone who has the same experience of that responsibility" (Community Matron 001, Perspective Two, Study 3).

There were some significant differences between perspectives in response to guideline, protocol and formulary statements. However, on the whole participants agreed that their prescribing decisions were influenced by "national guidance" (statement 20) and "recommendations of the BNF or other national formularies" (statement 17). NMPs said these sources consider cost implications, are up-to-date, evidence-based, peer reviewed, accessible and promote 'safe' prescribing behaviour. The remaining description of the perspectives generated from this analysis focuses mainly on the differences between perspectives.

8.5 Description and Interpretation of Perspectives

8.5.1 Perspective One – 'PCT Driven Prescribers'

12 participants' q-sorts defined P1. These 12 participants consisted of 10 nurses and two pharmacists. P1 represented 16% of the total variance of the rotated correlation matrix. There were nine confounders loading significantly on to P1 comprising eight nurses and one pharmacist.

Five statements differentiated P1 from other perspectives. Each of the statements began with 'my prescribing decisions are influenced by'. The following statements received a significantly higher

z-score on P1 than they did on the four other perspectives: "the patient's financial situation" (statement 41, -0.30**), "information from my prescribing training course(s)" (statement 27, 0.48**), and "the recommendations of my PCT's formulary" (2.00**). The following statements received a significantly lower z-score on P1 than they did on the four other perspectives: "recommendations from my course mentor or designated medical practitioner" (statement 1, -1.17*) and "what the patient asks for in the consultation" (statement 33, -2.06**).

The six statements with the highest positive z-score and the six statements with the lowest negative z-score for P1 are provided in Table 8-8. Each of the statements began with 'my prescribing decisions are influences by'.

Table 8-8: P1: 6 Statements with Highest Positive Z-Score and 6 Statements with Highest Negative Z-Score

18	"…the recommendations of my PCTs' formulary" **	2.000
16	"…the anticipated *concordance*[10] of the patient"	1.896
42	"…the effect of the prescribing decision on the patient's quality of life"	1.722
19	"…local or PCT protocols or guidance"	1.692
8	"…information from the medicines management team"	1.452
17	"…the recommendations of the BNF or other national formularies"	1.425
33	"…what the patient asks for in the consultation" **	-2.056
22	"…whether I feel I have sufficient time during the consultation"	-1.724
39	"…the anticipated impact on the prescribing decision on future presentations to my service from the patient in question or other patients"	-1.443
11	"…other NMPs' prescribing behaviour"	-1.314
1	"…recommendations from course mentor or DMP" *	-1.175
15	"…the anticipated impact the prescribing decision will have on my service in the future (follow-up appointments, monitoring, etc)"	-1.036

** 99% significance, * 95% significance

8.5.2 Interpretation of P1

Participants significantly loading to P1 felt their prescribing decisions were influenced by local, PCT and national guidance, protocols and formularies, particularly "the recommendations of the BNF or other national formularies" (statement 17, 1.425) and "local or PCT protocols or guidance" (statement 19, 1.692). Their level of agreement with statement 18, "the recommendations of my PCT's formulary" (statement 18, 2.00**) differentiated P1 from other participants loading to other perspectives. Participants loading to P1 are supported by their PCT in relation to prescribing as statement 8 "information from the medicines management team" (statement 8, 1.1452) also received a high positive z-score. Those participants that held the view that their prescribing decisions were influenced by local and PCT guidance, protocols and formularies expressed a number of common viewpoints. Mainly, that local and PCT guidance, protocols and formularies

[10] It is important to note that 'concordance' was used rather than adherence in the statements for Study Three. This was done to reflect the language used by participants in Study One. As is discussed in Section 8.10.1, based on the official definitions of these terms, it might have been more appropriate to use 'adherence'. However, participants used these terms interchangeably to mean whether the patient takes the medication.

were research based, up-to-date and the research contained within them is evaluated and presented in terms of local health needs.

(s18) "I use this guide as they have assessed the latest research and evaluated it in contact with local needs" (Nurse Practitioner for a GP Surgery 004, Perspective One, Study 3)

Participants that loaded to P1 felt they were expected and encouraged to adhere to PCT guidance, protocols and formularies.

(s19) "I use this every day and we are encouraged to keep to locally agreed guidelines" (Community Matron 006, Perspective One, Study 3)

Furthermore, as the quote below by one pharmacist illustrates, many participants expressed the view that there was no need or justification to prescribe outside the recommendations of local and PCT guidance, protocols and formularies as they manage simple clinical cases. This view was also expressed by a number of participants in Study One (see Section 7.2.1).

(s18) "We are expected to use the PCT formulary for 80% of prescribing since the group of patients I see are not complicated, there is no need/justification to prescribe outside of this. The formulary is evidence-based and peer reviewed". (Practice Pharmacist 004, Perspective One, Study 3)

Participants demonstrated active concern about prescribing outside PCT guidance, protocols and formularies. One nurse described how they would leave themselves open to question if they did not adhere to these recommendations:

(s19) "If we don't adhere to policy then we can leave ourselves open to question and have to justify why we make certain decisions outside of local policy" (Practice Nurse 022, Perspective One, Study 3)

As this comment illustrates, another nurse felt she needed to adhere to local or PCT guidance, protocols and formularies to be supported by her PCT:

(s19) "I feel that trust guidelines need to be adhered to ensure that you are supported by the trust in your clinical decisions" (WIC Nurse 018, Perspective One, Study 3)

This suggests that NMPs characterising P1 were keen to prescribe within local and PCT guidance, protocols and formularies due to their concerns regarding appropriate legal support. Some NMPs in Study One and Study Two also expressed concerns about deviating from formularies and guidelines (see Section 6.3.4). Participants loading to P1 did not feel that their prescribing decisions were influenced by "the cost of the decision to the NHS" (statement 13, -0.04). This

suggests that participants loading to P1 were not knowingly driven by cost issues when adhering to guidance, protocols and formularies.

Participants significantly loading to P1 agreed that their prescribing decisions were influenced by some patient issues such as "the effect of the prescribing decision on the patient's quality of life" (statement 42, 1.722) and "the anticipated *concordance* of the patient" (statement 16, 1896). Participants loading to P1 also agreed significantly more than participants loading to other perspectives with statement 41 "the patient's financial situation" (statement 41,-0.30**). However, it is important to note this statement did not feature in their top six statements and received a modest z-score. One nurse suggested they would give priority to addressing issues surrounding patient *concordance* over adhering to the PCT formulary. Whilst this is evident in this comment below it was not evident in the majority of the comments provided by participants loading to P1:

(s18) "This formulary is up to date evidence-based and is relevant to my local clinical health care needs. I will consider the recommendations from this formulary when prescribing. It is not exclusive and issues of concordance take precedence" (Community Matron 026, Perspective One, Study 3)

Participants loading to P1 disagreed strongly that their prescribing decisions were influenced by "what the patient asks for in the consultation" (statement 33, -2.056**). As the comment below suggests, the common reason provided by participants who placed this statement in the bottom two, was that often patients' requests are inappropriate:

(s33) "I do not let what the patients ask for influence my decisions as often what they are asking for may be inappropriate" (Community Matron 006, Perspective One, Study 3)

This resistance to patients' requests for medicine amongst some NMPs is consistent with the findings from Study One. It may be that these participants do not want to prescribe inappropriately because it would mean straying from guidance, protocols and formularies.

Generally, participants significantly loading to P1 did not either strongly agree or disagree that their prescribing decisions were influenced by recommendations or advice from colleagues. That is with the exception of statement 1, "recommendations from my course mentor or DMP" (statement 1, -1.17*), which received a significantly lower z-score on P1 than it did on the four other perspectives. Conversely, participants loading to P1 agreed significantly more than participants loading to other perspectives that their prescribing decisions were influenced by "information from my prescribing training course" (statement 27, 0.48**). This suggests that, for these participants, the training course continues to have a greater influence on their prescribing than their DMP.

Generally, participants significantly loading to P1 did not strongly agree or strongly disagree that their prescribing decisions were influenced by prescribing culture or their own prescribing experience. Statement 11, "other NMPs' prescribing behaviour" (statement 11, -1.314) was placed in the bottom six statements by participants loading to P1. However, the z-score for this statement was not significantly different to its z-score on other perspectives. Some of the logistical statements, discussed in Section 8.4 of this chapter, were also placed in the bottom six statements.

8.5.3 Demographic Profile of Participants Loading to P1

The fact that a higher proportion of nurses loaded to P1 than pharmacists suggests nurse prescribers are driven more by PCT factors than pharmacist prescribers. The characteristics of P1 are more attributable to those recently qualified to prescribe. This is especially the case for nurse prescribers. The relative inexperience of these prescribers might explain why they feel more comfortable prescribing in accordance with PCT guidelines, protocols and formularies. It might also explain why the prescribing training course had more influence on their prescribing than it did on participants loading to other perspectives. It is noteworthy that a similar trend is not replicated for years experience in the prescribing field. As described in Section 8.3.5, the percentage of participants with defining sorts, classified as low frequency prescribers, medium frequency prescribers and high frequency prescribers loading to each perspective was relatively similar across all perspectives. However, over two in five participants (43%) classified as low frequency prescribers loaded to P1 compared with 29% of low frequency prescribers loading to P2. This might suggest that the characteristics of P1 are more attributable to low frequency prescribers than medium or high frequency prescribers. It may be those prescribing less regularly feel less comfortable deviating from the recommendations of guidelines, protocols and formularies.

8.5.4 Summary: Key Attributes of P1

Participants loading to P1:

- Perceived their prescribing decisions to be influenced by guidelines, protocols and formularies particularly at the local/PCT level. These participants desire to prescribe within these recommendations was driven by a number of attitudes:
    - Their PCT expects them to prescribe within these recommendations
    - Their prescribing decisions may be open to question if they do not prescribe within these recommendations
    - They manage simple patient cases for which there is no need to prescribe outside these recommendations
    - They may not receive PCT support if they prescribe outside these recommendations
    - These sources are research-based, up-to-date and relevant to local health needs

- Perceived their prescribing decisions to be influenced by some patient issues (e.g. patient *concordance* and quality of life) but not by patients' requests for medicine
- Are more recently qualified to prescribe than participants loading to other perspectives, are more likely to be nurses and, perhaps, prescribe more infrequently than others

8.6 Perspective Two – 'Patient-Centred Driven Prescribers'

Ten participants' q-sorts defined Perspective Two (P2). These 10 participants consisted of four nurses and six pharmacists. P2 represented 14% of the total variance of the rotated correlation matrix. There were seven confounders loading significantly on to P2 comprising four nurses and three pharmacists.

Three statements differentiated P2 from other perspectives. Each of the statements began with 'my prescribing decisions are influenced by'. The following statements received a significantly higher z-score on P2 than they did on the other four perspectives: "whether the decision fulfils the patient's expectations" (statement 35, 0.83**) and "whether the patient will be satisfied with the prescribing decision" (statement 36, 1.42*). The following statement received a significant lower z-score on P2 than it did for the other four perspectives: "whether the prescribing decision occurs before a weekend or bank holiday" (statement 23, -1.89**).

The six statements with the highest positive z-score and the six statements with the lowest negative z-score for P2 are provided in Table 8-9. Each of the statements began with 'my prescribing decisions are influenced by'

Table 8-9: P2: 6 Statements with Highest Positive Z-Score and 6 Statements with Highest Negative Z-Score

20	"…national guidance"	1.789
19	"…local or PCT protocols or guidance"	1.625
13	"…the cost of the decision to the NHS"	1.607
16	"…the anticipated *concordance* of the patient"	1.473
36	"…whether the patient will be satisfied with the prescribing decision" *	1.424
8	"…information from the medicines management team"	1.370
23	"…whether the prescribing decision occurs before a weekend or bank holiday" **	-1.890
6	"…advice from academic based practitioners"	-1.520
4	"…advice from other NMPs"	-1.494
22	"…whether I feel I have sufficient time during the consultation"	-1.206
7	"…advice from non-prescribing HCPs"	-1.162
11	"…other NMPs' prescribing behaviour"	-1.120

** 99% significance, * 95% significance

8.6.1 Interpretation of P2

Participants loading to P2 agreed that their prescribing decisions were influenced by "the anticipated *concordance* of the patient" (statement 16, 1.473). Participants loading to P2 agreed significantly more, than other participants loading to other perspectives, that their prescribing decisions were influenced by "whether the decision fulfils the patient's expectations" (statement 35, 0.83**) and by "whether the patient will be satisfied with the prescribing decision" (statement 36, 1.42*). The agreement with these two statements suggests that the participants loading to P2 are patient-centred driven prescribers.

In Study One, it was apparent that NMPs wished to maximise patient satisfaction to increase the patients' adherence with the treatment. This is also true of participants loading to P2. This is illustrated by the following comment:

(s36) "If the patient is not in full concordance with you when deciding on therapy then it will have a detrimental effect on outcome" (Diabetes Specialist Nurse 032, Perspective Two and Perspective Three, Study 3)

The placement of statement 16, "the anticipated *concordance* of the patient" (statement 16, 1.473), which was in the top four statements for this perspective, gives weight to this argument. However, it is important to note that this statement was also placed in the top six statements for two of the other perspectives (P1, P2). Participants in Study One also discussed how patient adherence reduced wasted prescriptions and medicine. It may be that participants loading to P2 also wish to satisfy patients to improve adherence and avoid waste. Statement 13, "the cost of the decision to the NHS", received a higher z-score on this perspective compared with other perspectives. This suggests that cost motives partly underlie these participants desire to satisfy patients. Participants loading to P2 agreed more with statement 38, "what impact the decision will have on my future relationship with the patient" (statement 38, 0.63) than participants loading to three other perspectives (P1, P3 and P4). It may be that these participants are concerned about their future relationship with the patient when prescribing.

It is noteworthy that participants loading to P2 agreed with statement 35, "whether the decision fulfils the patient's expectations" (statement 35, 0.83**) and statement 36, "whether the patient will be satisfied with the prescribing decision". In the cognitive interviews fulfilling patients' expectations was generally regarded as negative as it was thought to be succumbing to patient pressure for inappropriate prescriptions. It is conceivable that participants loading to P2 interpreted the meaning of this statement in a similar way to statement 36. This might explain why it also received a high positive z-score. However, it is also conceivable that participants loading to P2 simply wish to avoid displeasing the patient.

Participants loading to P2 agreed that their prescribing decisions were influenced by "national guidance" (statement 20, 1.789) and "local or PCT protocols or guidance" (statement 19, 1.625). "Information from the medicines management team" (statement 8, 1.370) also received a high positive z-score. Participants loading to P2 also agreed that their prescribing decisions were influenced by "the cost of the decision to the NHS" (statement 13, 1.607). Although this statement did not differentiate P2 from other perspectives, the z-score for this perspective was higher compared to the z-score for this statement for three other perspectives (P1, P2, and P5) and received a high positive z-score compared with other statements for P2. This suggests that participants loading to P2 believe their prescribing decisions are influenced by cost more than some participants loading to other perspectives. A few of the comments provided by participants reflect this view:

(s13) "We need to have a national responsibility for what we prescribe. 20% of the entire NHS spend is on drugs. We need to ensure value for money" (Practice Pharmacist 008, Perspective Two, Study 3)

Some of the logistical statements, discussed in Section 8.4 of this chapter, were placed in the bottom six statements for this perspective. Some of the statements relating to the advice and recommendations of colleagues, discussed in Section 8.4, were also placed in the bottom six statements. Other statements concerning the advice and recommendations of other prescribers did not generally have high positive or negative z-scores for P2. With the exception of statement 7, "other NMPs' prescribing behaviour" (statement 7, -1.162) statements concerning prescribing culture and personal experience did not have high positive or negative z-scores for P2. Furthermore, participants significantly loading to P2 did not strongly agree or disagree that their prescribing decisions were influenced by information and training sources.

8.6.2 Demographic Profile of Participants Loading to P2

Nearly one fifth of nurses with a defining sort loaded significantly to P2 compared with almost two fifths of pharmacist prescribers. One quarter of nurse cofounders loaded to P2 compared with nearly half of pharmacist confounders. This suggests P2 represents both nurses and pharmacist prescribers' views. However, arguably, P2 represents pharmacist prescribers to a greater extent. Slightly more pharmacists qualifying to prescribe from 2006 onwards loaded to P2 compared with other perspectives. However, this was only 38% loading to P2 compared with 31% loading to P1. Slightly under half of those participants with high levels of experience in their prescribing field (10 years or more) loaded to P2. This compares with one quarter loading to P1. Participants loading to P2 may feel confident with prescribing, because of their experience, and are therefore able to adapt their prescribing to meet patients' needs.

8.6.3 Summary: Key Attributes of P2

Participants loading to P2:

- Perceived their prescribing decisions to be driven by patient factors such as patient *concordance*, patients' expectations and patients' satisfaction levels. The importance of patient issues is driven by:
    - Participants desire to improve *concordance* and avoid waste
    - Participants desire to maintain a good relationship with their patient
- Are relatively more experienced in their prescribing field compared with other participants and are slightly more likely to be pharmacist prescribers

8.7 Perspective Three – 'Prescribing Culture Driven Prescribers'

Six participant's q-sorts defined P3. These six participants consisted of two nurses and four pharmacists. P3 represented 9% of the total variance of the rotated correlation matrix. There were nine confounders loading significantly to P3 comprising six nurses and three pharmacists.

Six statements differentiated P3 from other perspectives. Each of the statements began with 'my prescribing decisions are influenced by'. The following statements received a significantly higher z-score on P3 than they did on the four other perspectives: "what the patient asks for in the consultation" (statement 33, 0.03**), "whether the potential prescribing decision has been established amongst other prescribers" (statement 25, 1.93**) and "the level of success I have personally experienced with similar prescribing decisions in the past" (statement 24, 2.10**). The following statements received a significantly lower z-score on P3 than they did on the other four perspectives: "national prescribing centre" (statement 20, 0.75**), "the prescribing practice of hospital/secondary care based practitioners" (statement 12, -1.40**), "the anticipated impact the prescribing decision will have on other services or health care professionals outside own service" (statement 14, -1.64*).

The six statements with the highest positive z-score and the 6 statements with the lowest negative z-score for P3 are provided in Table 8-10. Each of the statements began with 'my prescribing decisions are influenced by'.

Table 8-10: P3: 6 Statements with Highest Positive Z-Score and 6 Statements with Highest Negative Z-Score

24	"…the level of success I have personally experienced with similar prescribing decisions in the past" **	2.096
25	"…whether the potential prescribing decision is established amongst other prescribers" **	1.931
26	"…whether the prescribing decision is an accepted practice amongst other prescribers"	1.931
20	"…national guidance"	1.629
16	"…the anticipated *concordance* of the patient"	1.505
42	"…the effect of the prescribing decision on the patient's quality of life"	1.466
14	"…the anticipated impact the prescribing decision will have on other services or HCPs outside own service" *	-1.639
22	"…whether I feel I have sufficient time during the consultation"	- 1.613
12	"…the prescribing practice of hospital/secondary care practitioners" **	- 1.405
41	"…the patient's financial situation"	- 1.375
23	"…whether the prescribing decision occurs before a weekend or bank holiday"	-1.026
34	"…what would be best for the patient's relatives or carers"	- 1.024

** 99% significance, * 95% significance

8.7.1 Interpretation of P3

Statement 24, "the level of success I have personally experienced with similar prescribing decisions in the past" (statement 24, 2.096**), statement 25, "whether the potential prescribing decision has been established amongst other prescribers" (statement 25, 1.931**) and statement 26, "whether the potential prescribing decision is an accepted practice amongst other prescribers" (statement 26, 1.931) received the three highest z-scores for this perspective. The z-score of the first two statements significantly differentiated P3 from other perspectives. Participants' response to statement 24 suggests that these prescribers' prescribing decisions were influenced by the outcomes of their own professional experience. One participant that placed statement 24 in their top two statements commented:

"If it works continue, if it doesn't change" (Community Pharmacist 003, Perspective Three, Study 3).

Participants loading to P3 perceived their prescribing to be influenced by whether the practice is 'established' and 'accepted' amongst other prescribers. In Study One NMPs judged whether the prescribing practice was 'established' by the length and extent of its use amongst other prescribers and by the available research evidence. Whether the practice was 'accepted' was judged on NMPs' perception of the views and behaviours of other prescribers about the prescribing practice (see Section 7.5.2 for further information). Participants loading to P3 can be considered prescribing

culture driven prescribers because they are influenced by their own and others' prescribing behaviour and experiences. This argument is supported by a non-significant trend as the z-score for statement 9, "the prescribing behaviour of others in my service, group, clinic, etc" (statement 9, 0.51), statement 10, "GPs' prescribing behaviour" (statement 10, 0.08) and statement 11, "other NMPs' prescribing behaviour" (statement 11, 0.01) were highest for P3 in comparison with other perspectives.

Comments provided by participants loading to P3 illustrate the influence prescribing culture has on their own prescribing. For instance, a specialist nurse for palliative care commented that others' experiences of using off-license drugs can be useful:

(s25) "In palliative care some drugs are used off-licence and although can be well documented, other's experience of using them can be useful" (Specialist Nurse Palliative Care 019, Perspective Three, Study 3)

One nurse practitioner mentioned how they would draw on others' experience and behaviour as they have limited prescribing experience themselves:

(s25) "I am aware that my prescribing is limited and am always keen to seek guidance" (Nurse Practitioner for GP Surgery 027, Perspective Three, Study 3)

A quote from an OOHs and practice pharmacist illustrates how their prescribing is influenced by prescribing culture, particularly when the decision is not led by national guidance:

(s9) "We work as a team and where I need to make a decision that isn't led by national guidance (and reflected in our own protocols) the next biggest influence is what the other trusted members of the team normally do" (OOHs Practitioner and Practice Pharmacist 013, Perspective Two and Three, Study 3)

One community pharmacist *(003, Perspective Three, Study 3)* simply said that *"best practice is important"*. This suggests that participants loading to P3 are keen to adhere to prescribing 'norms'.

Participants loading to P3 did not feel their prescribing decisions were influenced by hospital or secondary care practitioners. Statement 12, "the prescribing practice of hospital/secondary care practitioners", received a significantly lower z-score on P3 compared with its z-scores on other perspectives (statement 12, -1.405**). The low z-score could indicate that these participants have limited contact with these practitioners. However, a comment from an OOHs and practice pharmacist suggests that instead, hospital and secondary care practitioners' prescribing behaviour challenges other prescribing 'norms':

"(s12) Secondary care does not directly influence my prescribing, more often I tend to question the use of certain drugs" (OOHs and Practice Pharmacist 015, Perspective Three, Study 3)

It is not exactly clear why some NMPs might feel that hospital and secondary care practitioners' prescribing behaviour challenges other prescribing norms. However, in Study One NMPs said they would seek input from hospital and secondary care doctors in specialist cases. Participants taking part in Study Three were asked to complete the exercise for their normal patient group. This suggests that hospital and secondary care practitioners influence NMPs in specialist cases but do not influence their normal practice.

Some patient factors such as "the effect of the prescribing decision on the patient's quality of life" (statement 42, 1.466) and "the anticipated *concordance* of the patient" (statement 16, 1.505) were perceived by participants loading to P3 to influence their prescribing decisions. Other patient issues such as the "patient's financial situation" (statement 41, 1-.375) and "what would be best for the patient's relatives or carers" (statement 34, -1.024) were considered to influence their prescribing decisions less. It is noteworthy that participants loading to P3 agreed significantly more, than participants loading to other perspectives, that their prescribing decisions were influenced by "what the patient asks for in the consultation" (statement 33, 0.03**). Although the z-score was modest there is an argument that participants loading to P3 are influenced more by other people, this includes both patients and colleagues.

Participants loading to P3 did not agree that their prescribing decisions were influenced by "the cost of the decision to the NHS" (statement 13, -0.97). This statement received the lowest z-score on P3 in comparison with its z-score on other perspectives. A comment from one pharmacist loading to P3 illustrates the apparent rejection of cost as source of influence on their prescribing decisions:

"The most important thing is the patient - talk of cost to the NHS winds me up the wrong way!" (Practice Pharmacist 012, Perspective Three, Study 3)

Other than "national guidance" (statement 20, 1.629) there were no other regulatory statements placed in the top six statements for P3. Generally, participants loading to P3 did not either strongly agree or disagree that their prescribing decisions were influenced by training and information sources. Statement 31, "relevant updates and information from the national prescribing centre" (statement 31, 0.75**) did however receive a significantly lower z-score on P3 compared to its z-score on other perspectives. Participants loading to P3 appear to reject information sources and regulatory influences in favour of their own experience and the prescribing culture.

Participants significantly loading to P3 did not strongly agree or strongly disagree that their prescribing decisions were influenced by advice and recommendations from colleagues. Many logistical statements, discussed in Section 8.4 of this chapter, were also placed in the bottom six statements.

8.7.2 Demographic Profile of Participants Loading to P3

P3 represents both nurses and pharmacists prescribers. All pharmacists loading to P3 qualified to prescribe from 2006 onwards whereas all nurses loading to P3 qualified to prescribe from 2003 to 2005. Very few participants with high or moderate levels of clinical experience within their field loaded to P3. The relative inexperience of participants loading to P3 might explain why prescribing culture is a key source of influence on their prescribing. However, it is more difficult to explain why these prescribers might draw on their own relatively limited experience when prescribing. This is discussed further in Section 8.10 of this chapter.

8.7.3 Summary: Key Attributes of P3

Participants loading to P3:

- Perceived their prescribing decisions were influenced by their own past prescribing experiences, the accepted and established prescribing practices and, with the exception of hospital and secondary care based practitioners, the prescribing behaviour of others
- Perceived their prescribing decisions to be influenced by patient issues such as *concordanc*e, quality of life, and what the patient wants
- Perceived regulatory influences, particularly PCT guidelines, protocols and formularies and cost, to influence their prescribing decisions less than other sources of influence
- Have relatively limited experience in their prescribing field compared with other participants loading to other perspectives

8.8 Perspective Four –'Evidence-Based Driven Prescribers'

Seven participants' q-sorts defined P4. These seven participants consisted of four nurses and three pharmacists. P4 represented 12% of the total variance of the rotated correlation matrix. There were nine confounders loading significantly to P4 comprising six nurses and three pharmacists.

Four statements differentiated P4 from other perspectives. Each of the statements began with 'my prescribing decisions are influenced by'. The following statements received a significantly higher z-score on P4 than they did on the other four perspectives: "national prescribing centre" (statement 31, 2.02*), "advice from GPs" (statement 2, 0.93**), "advice from hospital/secondary care

practitioners" (statement 5, 1.00**). The following statement received a significantly lower z-score on P4 than it did for other four perspectives: "GPs' prescribing behaviour" (statement 10, -1.48*).

The six statements with the highest positive z-score and the six statements with the lowest negative z-score for P4 are provided in Table 8-11. Each of the statements began with 'my prescribing decisions are influenced by'

Table 8-11: P4: 6 Statements with Highest Positive Z-Score and 6 Statements with Highest Negative Z-Score

31	"…relevant updates and information from the national prescribing centre" *	2.016
13	"…the cost of the decision to the NHS"	1.616
20	"…national guidance"	1.478
30	"…relevant updates and information from NHS Clinical Knowledge Summaries"	1.313
17	"…the recommendations of the BNF or other formularies"	1.230
29	"…what I have read about in academic and professional journals"	1.228
34	"…what would be best for the patient's relative or carers"	-1.546
10	"…GPs' prescribing behaviour" *	-1.482
22	"…whether I feel I have sufficient time during the consultation"	-1.402
38	"…what impact the decision will have on future relationship with the patient"	-1.342
35	"…whether the decision will fulfil the patient's expectations"	-1.037
9	"…the prescribing behaviour of others in my service, group, clinic, etc"	-1.036

** 99% significance, * 95% significance

8.8.1 Interpretation of P4

Participants loading to P4 perceived their prescribing decisions to be influenced by information sources such as "relevant updates and information from the national prescribing centre" (statement 31, 2.016*), "relevant updates and information from NHS clinical knowledge summaries" (statement 30, 1.313) and "what I have read about in academic and professional journals" (statement 29, 1.228). Participants loading to P4 considered these information sources as *"evidence-based", "concise", "up-to-date"* and *"useful"*. The two following comments illustrate this attitude:

(s30) "Always use CKS when it was prodigy and continued as a prescriber, rarely lets you down" (Practice Pharmacist 010, Perspective Three and Four, Study 3)

(s31) "I have used NPC material for many years I know it is impartial evidence-based practical and concise" (Practice Pharmacist 001, Perspective Two and Four, Study 1)

Participants loading to P4 also agreed that their prescribing decisions were influenced by "advice from GPs" (statement 2, 0.93*) and "advice from hospital/secondary care practitioners" (statement 5, 1.00**) significantly more so than participants loading to other perspectives. Advice from GPs

and hospital and secondary care practitioners was valued. Hospital and secondary care advice was considered particularly useful where it coincided with patient admission to hospital.

(s5) "My patients are often in and out of hospital and I base many of my decisions on advice given by secondary care consultants" (Community Matron 034, Perspective Four, Study 3)

Participants loading to P4 agreed that their prescribing decisions were influenced by "national guidance" (statement 20, 1.478) and "the recommendations of the BNF or other formularies" (statement 17, 1.230). However, they did not agree with these statements more than participants loading to other perspectives. Participants loading to P4 considered these guidelines, protocols and formularies to be *"evidence-based"*.

(s17) "Evidence-based up-to-date research" (Nurse Practitioner for GP Surgery 017, Perspective Four, Study 3)

(s20) "Carry out evidence-based practice" (Practice Pharmacist 014, Perspective Four, Study 3)

(s20) "Evidence-based = NICE" (Practice Pharmacist 011, Perspective Four and Four One, Study 3)

(s17) "Ensures that I am kept up to date with evidence-based clinically validated safe drug treatments" (Advanced Practitioner 031, Perspective Four and One, Study 3)

Participants loading to P4 wanted to use sources they considered evidence-based. This led the participants loading to P4 to be labelled evidence-based driven prescribers. Participants loading to P4 agreed that their prescribing decisions were influenced by "the cost of the decision to the NHS" (statement 13, 1.616). The z-score on this statement did not differentiate P4 from other perspectives. However, these participants' responses to these statements suggests that regulatory factors influence their prescribing decisions. The absence of local and PCT related statements in the top six statements for P4 suggests that these participants are influenced more by national regulatory factors than local or PCT regulation.

Participants loading to P4 desire for evidence-based prescribing led them to reject prescribing culture as an influence on their own decisions. The z-scores for behaviour and experience statements were lower for P4 compared with the other perspectives. Participants loading to P4 are happy to seek advice from GPs and hospital and secondary care practitioners but do not feel they are influenced by others' prescribing behaviour. One community nurse said they do not follow GPs' prescribing behaviour because GPs do not adhere to guidelines. This attitude was also expressed by a number of participants in Study One (see Section 7.5.1). The perception that GPs do

not adhere to guidelines appears to be the underlying motivation for some NMPs' rejection of GPs' prescribing behaviour as a source of influence on their own.

(s10) "Although I treat patients in conjunction with GPs I follow guidelines that many of them do not" (Community Nurse 034, Perspective Four, Study 3)

Participants loading to P4 were clear that prescribing culture would not influence them. This attitude is characterised by the comment of one participant loading to P4:

(s25) "Though as nurse prescribers we do prescribe in similar way as mentioned above, I would not base all my prescribing practice on what my colleagues prescribe" (Nurse Practitioner for GP Surgery 017, Perspective Four, Study 3)

One participant, in response to statement 9 "the prescribing behaviour of others in my service etc", commented:

(s9) "My decisions are influenced not by 'hearsay' but by evidence that has been validated" (Advanced Practitioner 031, Perspective Four and One, Study 3)

This comment again highlights participants loading to P4 focus on evidence. Statements relating to patients were noticeably absent from the six statements with the highest positive z-scores on P4. Statement 38, "what impact the decision will have on my future relationship with the patient" (statement 38, -1.342), statement 34, "what would be best for the patient's relatives or carers" (statement 34,-1.546) and statement 35, "whether the decision will fulfils the patient's expectations" (statements 35, -1.037) were placed in the bottom six statements for this perspective. This suggests that participants loading to P4 are less influenced by patients when making prescribing decisions than other participants. Some of the logistical statements, discussed in Section 8.4 of this chapter, received the lowest negative z-scores.

8.8.2 Demographic Profile of Participants Loading to P4

P4 represents both nurses and pharmacist prescribers' perspectives on prescribing influences. A slightly higher proportion of all participants qualifying to prescribe between 2003 and 2005 loaded to P4. However, it was only 29% loading to P4 compared with 21% loading to P1 and P2. Only a small number of participants who qualified to prescribe from 2006 onwards loaded to P4. Participants loading to P4 are therefore slightly more likely to have qualified to prescribe earlier than other participants.

8.8.3 Summary: Key Attributes of P4

Participants loading to P4:

- Perceived their prescribing decisions to be influenced by information sources (e.g. research findings, information from the NPC, and NHS CKS) and national guidelines and formularies. Participants considered these sources to be, above everything, evidence-based
- Sought advice from GPs and hospital and secondary care based practitioners
- Perceived their prescribing decisions to be influenced by patient factors less than participants loading to other perspectives
- Rejected prescribing culture and professional experience as an influence on their own decisions
- Are slightly more likely to have qualified to prescribe earlier than other participants

8.9 Perspective Five – 'Long-term Impact and Logistical Prescribers'

Three participants' q-sorts defined P5. These three participants comprised one nurse and two pharmacists. However, one pharmacist that helped to define this perspective loaded negatively to P5. In total, P5 represented 5% of the total variance of the rotated correlation matrix. There were no confounders loading significantly on to P5.

Seven statements differentiated P5 from other perspectives. Each of the statements began with 'my prescribing decisions are influenced by'. The following statements received a significantly higher z-score on P5 than they did on the four other perspective: "the anticipated impact the prescribing decision will have on my service in the future (follow-up appointments, monitoring etc)" (statement 15, 1.88*), "the anticipated impact on the prescribing decision on future presentations to my service from the patient in question or other patients" (statement 39, 1.26**), "whether I feel I have sufficient time during the consultation" (statement 22, 0.57**), "the prescribing practice of hospital/secondary care practitioners" (statement 12, 0.93**). The following statements received significantly lower z-scores on P5 than they did for the four other perspectives: "national guidance" (statement 20, -1.42**), "the recommendations of the BNF or other national formularies" (statement 17, -1.09**) and "advice from non-prescribing health care professionals" (statement 7, -2.21**).

The six statements with the highest positive z-score and the six statements with the lowest negative z-score for P5 are provided in Table 8-12. Each of the statements began with 'my prescribing decisions are influenced by'.

Table 8-12: P5 6 Statements with Highest Positive Z-Score and 6 Statements with Highest Negative Z-Score

15	"…the anticipated impact the prescribing decision will have on my service in the future (follow-up appointments, monitoring etc)" **	1.883
40	"…the anticipated impact of the prescribing decision on the wider community" **	1.693
26	"…whether the potential prescribing decision is an accepted practice amongst other prescribers"	1.636
29	"…what I have read about in academic and professional journals"	1.302
39	"…the anticipated impact of the prescribing decisions on future presentations to my service from the patient in question or other patients"	1.264
31	"…relevant updates and information from the national prescribing centre" *	1.238
4	"…advice from other NMPs"	-1.537
11	"…other NMPs' prescribing behaviour"	-1.475
20	"…national guidance" **	-1.425
6	"…advice from academic based practitioners"	-1.350
41	"…the patient's financial situation"	-1.180
17	"…the recommendations of the BNF or other formularies" **	-1.089

** 99% significance, * 95% significance

8.9.1 Interpretation of P5

As few participants loaded positively to P5 there was difficultly characterising this perspective. There were however two main findings noteworthy of discussion. Firstly, the prescribing of participants loading to P5 appeared to be influenced by long-term considerations more than participants loading to other perspectives. For example, some logistical statements received higher z-scores compared with the z-scores on P5 than they did on other perspectives. Other logistical statements also received significantly higher z-scores on P5 compared with their z-scores on other perspectives.

The second noteworthy point is that participants loading to P5 did not agree that their prescribing decisions were influenced by regulatory factors. Statements such as "national guidance" (statement 20, -1.42**) and "the recommendations of the BNF or other formularies" (statement 17, -1.00**) received significantly lower z-scores on P5 compared with their scores on other perspectives.

There is little explanation in the comments provided by the participants loading to P5 as to why they believe their prescribing decisions were influenced by long-term issues and logistical issues but not by regulatory factors (e.g. national guidelines). However, the inclusion of this perspective in the analysis is important to highlight that some NMPs feel very differently about the influences on their prescribing. The inclusion of one participant that loaded negatively to the perspective is noteworthy as it indicates that the perspective is in fact the complete opposite to that held by other participants. In fact, in addition to the one participant that loaded negatively to this perspective, the correlation values of 26 other participants on this perspective were negative. This suggests that this perspective is by the far the most controversial of those emerging from this analysis.

As only three participants loaded to P5, one of which loaded negatively there is very little information about the profile of the participants loading to P5.

8.9.2 Summary: Key Attributes of P5

Participants loading to P5:

- Were difficult to characterise because of their limited number
- Perceived their prescribing decisions to be influenced by long-term logistical issues and other logistical issues (e.g. time in the consultation)
- Perceived their prescribing decisions to be influenced less by national guidelines and formularies than participants loading to other perspectives

8.10 Discussion

Study Three used the Q-method to study prescribing influences. A reflection of the method is given in the next part of this section. Through exploring the perspectives generated from Study Three it was possible to reflect on similarities and differences between prescribers in terms of the factors they perceive influence their prescribing decisions. The method also facilitated an understanding of the relative influence of factors on NMPs' decisions. This study has contributed to previous understanding by providing a systematic means to study differences between NMPs. Such methods have not been previously employed in this field. The findings are discussed in this section in terms of the current literature, with a particular focus on EBM and patient-centred medicine.

PCT driven prescribers (P1) were more likely to be nurses, more recently qualified and prescribing less frequently compared with others. PCT driven prescribers (P1) perceived their prescribing decisions to be influenced by guidelines, protocols and formularies, particularly at the PCT level. It is important to note that other prescribers, loading to other perspectives, also perceived their decisions to be influenced by these sources. However, P1 prescribers were differentiated by their motivation to adhere to these sources because of their belief that the PCT expects them to prescribe within these recommendations, their prescribing decisions may be open to question from their PCT if they prescribe outside these recommendations and they may not receive PCT support if they prescribe contrary to these recommendations. The PCT driven prescribers (P1) also claimed they manage relatively simple patient cases where there is no need to prescribe outside PCT and local recommendations. Although the PCT driven prescribers (P1) considered these sources to be research-based the 'safety' that these sources provided for them personally underlined their motivation for following their recommendations. Nurses believe that working outside the traditional remit of their practice increases liability, but operating within standard protocols affords 'protection' in case anything should go wrong (Rycroft-Malone et al. 2008). Nurses do admit

however that working to protocols might give them a 'false-sense of security' (Rycroft-Malone et al. 2008). It is important that NMPs, when following the recommendations of protocols, guidelines and formularies, still fully understand the rationale for their decision. After all, whilst following guidelines, protocols and formularies may be the best option for a NMP it may not represent the most appropriate prescribing decision for the patient.

The PCT driven prescribers (P1) also perceived their decisions to be influenced by patients' quality of life and issues of *concordance*. However, their desire to conform to PCT guidelines, protocols and formularies led them to reject patients' requests for medicine they regarded as inappropriate and therefore contrary to these recommendations. There is clearly a risk that a prescriber might adhere to such recommendations but fail to individualise patient care. Indeed, in other research, Fontana et al. found that US nurse prescribers used adherence to protocols and policies to 'avoid' treating chronic pain despite patients' clinical need (Fontana et al. 2000). The behaviour of the PCT driven prescribers (P1) could be considered 'prescriber-centred' rather than 'patient-centred' as they reject patients' requests and prescribe within guidelines, protocols and formularies because of personal concerns regarding 'safety'. It may be the relative inexperience of these prescribers, both because of their lack of prescribing experience post-qualification and the low number of prescriptions they issue per week, which promotes this behaviour. The concept of patient-centred medicine is a key concept in modern medical care (Bensing 2000). Bensing states patient-centred medicine 'puts a strong focus on patient participation in the clinical decision making by taking into account the patient's perspective, and tuning medical care to the patient's needs and preferences' (Bensing 2000, pg. 17). There is a strong argument that the PCT driven prescribers' (P1) rejection of some patient influences on their prescribing makes them less patient-centred than other NMPs in this research. This issue is discussed further in Chapter Nine.

The patient centred prescribers (P2) believed their prescribing decisions to be influenced by patient issues such as *concordance*, patients' expectations and patients' satisfaction levels. Participants characterising this perspective wished to increase adherence to medicine, reduce wasted prescriptions and wanted to maintain good patient relations. Doctors also make prescribing decisions that prioritise patients' needs rather than reflect issues such as cost and the recommendations of guidelines (Prosser and Walley 2006; Wood et al. 2007). However, it is generally more experienced and more senior doctors that make choices such as these (Higgins and Tully 2005; Lewis 2006). This research also indicates that NMPs, both nurses and pharmacists, with relatively high levels of experience in their prescribing area, despite relatively low prescribing experience, feel confident to take a holistic or patient-centred approach to prescribing. This finding has not previously been reported for those NMPs with full prescribing rights but echoes previous findings that found experienced CNPs prescribe contrary to guidance in favour of patient factors

(Hall et al. 2004). Using this argument, it may be the relative inexperience and lack of prescribing experience of the PCT driven prescribers (P1) that resulted in their seemingly prescriber-focused rather than patient-centred approach to prescribing.

In contrast to the patient-centred prescribers (P2) the evidence-based driven prescribers (P4), which represented both nurses and pharmacists, were concerned about adhering to the principles of EBM when prescribing. As outlined previously (see Section 2.4.2.7), EBM has been defined as the 'conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients' (Sackett et al. 1996, pg. 71). EBM applies to all aspects of medical care including prescribing decisions. The principles of EBM have found to be attractive for prescribers and represent the 'ideal' (Lewis 2006). The majority of nurses, pharmacists and GPs feel it is their 'duty' to keep up-to-date with current best evidence relating to practice (O'Donnell 2004). This is perhaps not surprising given the focus on EBM in the NHS through bodies such as NICE. The comments from evidence-based driven prescribers (P4) indicated their desire to conform to the principles of EBM. The words 'evidence-based' were mentioned more by participants loading to this perspective than any other, even when similar statements were being discussed, and they relied on sources they considered evidence-based. These sources included research findings, information from the NPC, CKS and national guidelines and formularies. This research has clearly shown that some NMPs actively seek to conform to the idealistic principles of EBM when prescribing. The attractiveness of EBM is apparent for all prescribers, including doctors (Lewis 2006),

Statements relating to patients were, however, noticeably absent from the top six statements chosen by the evidence-based driven prescribers (P4). Furthermore, some statements concerning patient issues were placed in the bottom six statements. Arguably the evidence-based driven prescribers (P4), whilst motivated by the principles of EBM, were less patient-centred than any other group of prescribers. It is therefore interesting to note that EBM has been described as the opposite of patient-centred medicine (Bensing 2000). Bensing argues that EBM and patient-centred medicine 'belong to different worlds' but both strongly influence modern medical care (Bensing 2000). Patients' expectations and desires for certain medicines are cited as a barrier by GPs to practising EBM because patients' requests sometimes run contrary to available evidence (McColl et al. 1998). Doctors, both in primary and secondary care, report discomfort and 'a sense of failure' if they are unable to convince patients to accept evidence-based prescribing decisions (Lewis 2006; Lipman et al. 2004). The evidence-based driven prescribers (P4) prioritised evidence over patient factors but other NMPs, including the patient-centred prescribers (P2), prioritised patient factors over others. The evidenced-based driven prescribers (P4) perspective suggests there is difficulty amongst some NMPs converging EBM with patient-centred medicine when prescribing. This is consistent with

findings from the medical literature (Lewis 2006) but has not been previously discussed in the non-medical prescribing literature.

The evidence-based driven prescribers (P4) sought advice and guidance from GPs and hospital and secondary care practitioners. Given their determination to practise EBM it is important to understand where this behaviour might fit in to their perspective. It may be that, as has been found in other research, multiple information sources are used as a way of endorsing prescribing decisions (Prosser and Walley 2006). It may also be, as has been found in other research, advice from colleagues is sometimes preferred over research findings because it offers 'decision-specific advice' (McCaughan et al. 2002). Some doctors reject research findings because the sample used in the research does not reflect the patients they manage in normal clinical practice (Wood et al. 2007; Wood-Mitchell et al. 2008). It may be that in some cases GPs and hospital and secondary care practitioners offer support to NMPs in cases where other research evidence is difficult to apply to individual patient cases.

The evidence-based driven prescribers (P4) were actively concerned with the principles of EBM but other NMPs in Study Three appeared to be less concerned. The PCT driven prescribers (P1) perceived they were influenced by many of the same sources as the evidence-based driven prescribers (P4) but they rarely mentioned their explicit desire to be evidence-based. The patient-centred driven prescribers (P2) did not, by any means, reject the principles of EBM. National, local and PCT formularies and guidelines featured in the top perceived influences on their prescribing decisions. However, it was clear that these prescribers were comfortable prioritising patient issues in some cases. This was most likely due to their relative experience compared with other prescribers.

The prescribing culture driven prescribers (P3) appear most weakly aligned with the principles of EBM. These prescribers perceived their prescribing decisions to be influenced by their past treatment success or failure as opposed to other factors. Professional experience is part of the EBM model but is not the most favoured information source. Instead, other sources, such as systematic reviews, meta-analysis, randomised controlled trials, cohort studies, are preferred (Akobeng 2005). Both doctors and CNPs cite clinical experience as important when making prescribing decisions (Hall et al. 2008; Luker and Kenrick 1992; Schwartz et al. 1989; Wood-Mitchell et al. 2008) and some doctors prioritise their own experience over other factors, such as scientific evidence and cost, when prescribing (Ljungberg et al. 2007; Schwartz et al. 1989; Wood-Mitchell et al. 2008). However, Tichelaar et al. found that it is more experienced doctors that base their prescribing decisions on their own clinical experience rather than less experienced doctors (Tichelaar et al. 2010). It may be a concern, in terms of prescribing quality, that given the relative clinical

inexperience of the prescribing culture driven prescribers (P3), their own experience seemingly takes priority over other factors. However, it is also an important finding that some NMPs feel confident deviating from other factors, such as guidelines and formularies, in favour of their own experience. These prescribers also appear to be integrating their own experience with other sources of information.

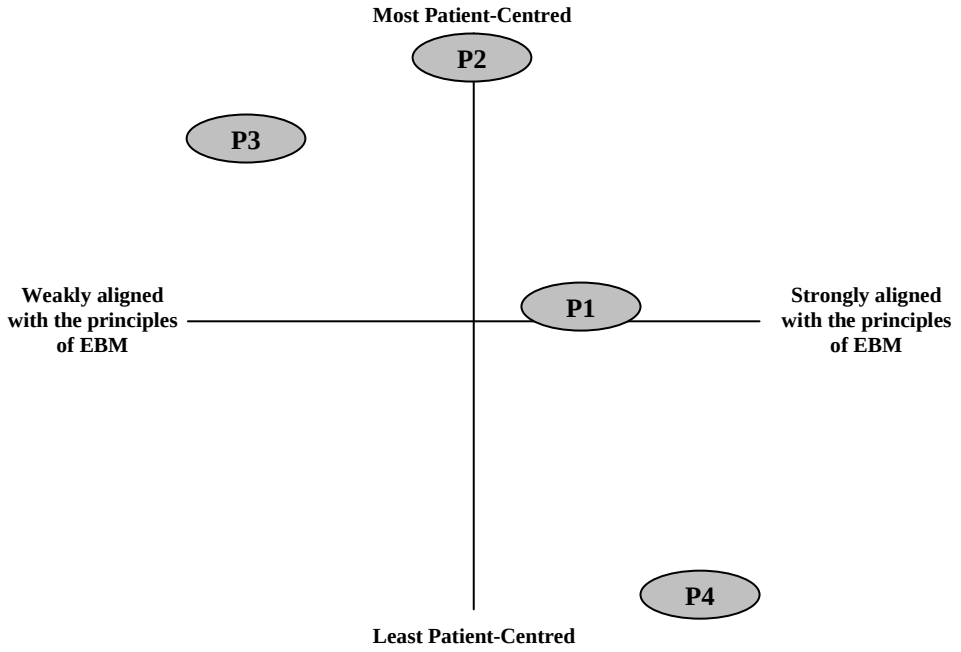
The prescribing culture driven prescribers (P3) also perceived their prescribing decisions to be influenced by whether the prescribing practice was 'established' and 'accepted' amongst others. These prescribers also agreed that their prescribing decisions were influenced by other prescribers' prescribing behaviour more than other prescribers loading to other perspectives. Doctors, nurse clinicians and US nurse prescribers sometimes follow informal 'rules' or 'traditions' that are not based on clinical need or evidence when prescribing (Bishop et al. 2011; Fontana et al. 2000; Ljungberg et al. 2007). It may be that the prescribing culture driven prescribers (P4) are also adhering to prescribing 'norms' with little evidence-base. Interestingly, the evidence-based driven prescribers (P4) rejected prescribing culture as a source of influence on their own prescribing because of concerns regarding other prescribers' adherence to guidelines. Those most concerned with the principles of EBM are keen to reject prescribing culture as a source of influence of their own. This might be because they are aware that replicating others' behaviour can lead to non evidence-based prescribing. 'Clinical inertia' refers to clinicians 'failure to deviate from established prescribing patterns' (Cavazos et al. 2008). It may be, as Cavazos et al. argues, that 'clinician inertia', arguably present in the prescribing culture driven prescribers (P3), arises from their disagreement with guidelines or overestimation of the quality of care provided. The lack of statements concerning the recommendations of guidelines and formularies in the top six, and the apparent rejection of some information sources, gives weight to this argument. However, it may also be, as Fontana et al. has argued, that insufficient formal education leads nurse prescribers to replicate non-evidence based prescribing practices (Fontana et al. 2000). The relatively low level of clinical inexperience of the prescribing culture driven prescribers (P3) might encourage this behaviour. This finding is important and has ramifications for the training of NMPs. It may be important that, because the prescribing course is generic and does not focus on what to prescribe, NMPs receive appropriate training about prescribing in their specific clinical area. This suggestion is supported further because, as Study One found, current training opportunities for NMPs do not currently influence their prescribing decisions.

Whilst the prescribing culture driven prescribers (P3) did copy others' prescribing behaviour they did not perceive their prescribing decisions to be influenced by the practice of hospital and secondary care practitioners. Primary care prescribers' rejection of hospital and secondary care prescribing practices is evident in the literature. Though not all GPs share this view, some GPs feel

that too many of their own prescribing decisions are determined by hospital doctors' decisions (Weiss et al. 1996). GPs feel reluctant to accept recommendations from hospital and secondary care doctors because of the significant differences between general practice, which typically treats a wide range of patients with multiple conditions, and hospital practice, which typically focuses on one narrow disease area (Armstrong and Ogden 2006). The prescribing culture driven prescribers (P3) may share similar concerns as these GPs. Additionally, these prescribers might have difficulty contacting hospital specialists for advice as CNPs have reported (Hall et al. 2009). They might also have no immediate need to contact hospital and secondary care practitioners for advice because of the conditions they manage. When prescribing culture driven prescribers (P3) use the behaviour of others to guide their own it is the behaviour of those immediately around them they prioritise.

Patient statements, particularly relating to quality of life and *concordance*, were amongst the statements the prescribing culture driven prescribers (P3) agreed with most. These prescribers also said their prescribing decisions were influenced by "what the patient wants". These prescribers' prescribing practices may not be evidence-based because patients' requests are often not clinically appropriate. However, it at least demonstrates they are more patient-centred than the PCT driven prescribers (P1) or the evidence-based driven prescribers (P4). The relative patient-centeredness of each of the four perspectives is represented visually on Figure 8-1 along with the strength of alignment with the principles of EBM. Figure 8-1 provides a visual representation of the findings from Study Three. The relative distance between the circles is not to scale and the sizes of the circles are not meaningful. The behaviour of the evidence-based driven prescribers (P4) was most aligned with the principles of EBM. The PCT driven prescribers (P1) could be considered 'accidental' adherers to the principles of EBM because their motivation to confirm to guidelines, protocols and formularies related to personal safety concerns. As discussed, it is possible the prescribing culture driven prescribers (P3) were least aligned with the principles of EBM because of the informal prescribing practices they followed. The patient-centred driven prescribers (P2) did not, by any means, reject the principles of EBM but patient factors took precedent.

Figure 8-1: Visual Depiction of the Relative Patient-Centeredness and Strength of Alignment with the Principles of EBM of P1, P2, P3 and P4



The long-term impact and logistical prescribers' perspective (P5) is not presented on Figure 8-1. This is because of the low number of participants positively loading to this perspective and difficulties characterising the perspective. The long-term impact and logistical prescribers (P5) represented a marked difference in comparison with the views of the other prescribers loading to the first four perspectives in Study Three. These prescribers were influenced by long-term and logistical factors but largely rejected regulatory factors as a source of influence on their prescribing decisions. Doctors acknowledge that logistical factors, such as time during their consultations, sometimes influence their prescribing decisions (Buusman et al. 2007; Carthy et al. 2000). However, this was largely rejected as a source of influence by other NMPs in Study One, Study Two and Study Three. P5 is an important finding in this research because is it highlights the diversity in opinion amongst a select few NMPs with regards to the influences on their prescribing decisions. More research would however be needed to expand the understanding of this perspective. It is important to reflect on why this particularly unusual perspective, compared with the other perspectives generated from Study Three, emerged from the analysis. Ideas for further research, that could help explore this perspective, are discussed in Chapter Nine.

8.10.1 Reflections on Method

The Q-method provided a means to study the influences on NMPs' decisions in a way not previously used in the literature. The Q-method made a valuable contribution in terms of understanding, in a systematic way, the similarities and differences between NMPs and the perceived relative influence of factors on prescribing decisions made by NMPs. However, it is important to acknowledge the limitations of the method in relation to understanding prescribing influences. The limitations of the Q-method fall into four categories which are: completeness of the statements, interpretation of the statements, wording of the statements and interpreting the perspectives.

If any statements regarding prescribing influences were missing from the Q-method study then NMPs would not be able to adequately represent their viewpoint. As discussed in Chapter Four, the cognitive interviews were used to assess the breadth of the statements. The statements were found to be satisfactory. However, one prescriber commented at the end of the survey that they could think of other influences on their prescribing that were not presented. Therefore, this prescriber may not have been able to adequately represent their view. Given the testing of the statements in the cognitive interviews, and the use of interviews with NMPs and the medical prescribing literature to design the statements, it is likely that all the main prescribing influences were included in the study. But it is important to acknowledge that other influences may have been missing from the Q-method that could have been important for a small number of prescribers. Conducting future Q-method studies with more homogeneous participants (e.g. practice pharmacists only) would make it possible to include statements more specific to an individual type of prescriber.

Participants differing interpretation of the statements may have led to differing levels of agreement. As discussed before, the meaning of the statements was tested in the cognitive interviews. Additionally, the statements were designed using the language of participants in Study One. Despite this it is conceivable that some participants interpreted some of the statements differently. This issue may be particularly relevant to this research because it included prescribers from a wide range of settings and professional groups. It may have been that P5, which was a particularly unusual perspective in comparison with the others, was a product of this differing interpretation. However, for the statements that received high or low agreement scores there was a lot of consistency in the comments provided by prescribers. This suggests that prescribers interpreted the statements in a similar manner.

As discussed previously, the wording of the statements mirrored the language of NMPs in Study One. This meant that 'concordance' was used instead of 'adherence' in one of the statements. 'Concordance' was used by participants in Study One to mean whether the patient takes the

medicine. However, a more accepted definition of concordance is whether the doctor and patient agree therapeutic decisions that incorporate their respective views. The definition of adherence is the extent to which the patient's behaviour matches the agreed recommendations from the prescriber. It may therefore have been more appropriate to use 'adherence' in the statement in Study Three rather than 'concordance' as its use is more consistent with the official definition. An inspection of the comments participants provided about this statement in Study Three suggests that, like those in Study One, participants interpreted 'concordance' to mean whether the patient takes their medicine. It is therefore unlikely to be a major issue in this research.

In the Q-method survey participants were asked to reflect on their agreement with statements relating to prescribing influences and then to compare their agreement with the statements to their agreement with all of the other statements. This process assumes that all statements can be compared with one another. In this research, care was taken to ensure that each statement could be compared with all the other statements for the purpose of ranking. However, there are subtle differences between the statements. For instance, the patient's financial situation might not be relevant for 90% of prescribers' patients. However, when this issue is relevant NMPs may place a great deal of importance on it. In contrast, the recommendations of guidelines, formularies and protocols may have more consistent influence leading to high agreement amongst prescribers with the statement. Although asking NMPs to compare these statements is still relevant and the data produced from this is meaningful, this limitation must be considered when interpreting the results of Study Three.

Another potential limitation of the Q-method is the subjective nature of the data interpretation process. As discussed in Section 8.2, the researcher used a number of different methods and criteria to decide on the final perspective 'solution' but it is important to acknowledge that there is subjectivity in the decisions made. Potentially, other researchers, with their own biases and views, might arrive at a different solution. This issue of subjectivity in this research was addressed by seeking the advice of more experienced researchers who examined the plausibility of the perspectives emerging. A detailed description of the data interpretation process and findings can also provide the reader with an ability to make their own assessments about the decisions that were made.

8.11 Chapter Summary

The purpose of Study Three, and therefore Chapter Eight, was to explore perspectives amongst NMPs about the influences on their prescribing decisions. In order to do this, prescribers were asked to order statements about prescribing influences according to their agreement or disagreement with the statement. Understanding the relative agreement or disagreement with the

statements enabled an understanding of the relative influence of these factors. By asking prescribers to order statements, similarities and differences between NMPs were uncovered and perspectives were formed. It was clear from the results that there were differences, as well as similarities, between NMPs with regards to the sources of influence on their prescribing decisions. The findings from Study Three, along with findings from others parts of the programme of research, are brought together in the next and final chapter of this thesis.

Chapter Nine – Conclusions

The aim of this thesis was to explore the influences on the prescribing behaviour of nurse and pharmacist independent and/or supplementary prescribers working in primary and community care. Findings arising from the programme of research have been presented and discussed in separate chapters. This final chapter provides an overview of the key themes emerging from the research, reflects upon the general limitations of the research, outlines the recommendations from these findings and suggests areas for further research. The chapter brings the thesis to a conclusion with some final thoughts.

9.1 Conclusions

The aim of this programme of research was **to explore the influences on the prescribing behaviour of nurse and pharmacist independent and/or supplementary prescribers working in primary and community care.** Through Study One it became apparent that to understand the influences on the prescribing behaviour of these HCPs it was important to understand the influences, not only on their prescribing decisions, but also on whether NMPs take responsibility for prescribing in the first place. The remainder of the programme of research was split into two studies so an in-depth picture of the prescribing influences on NMPs' behaviour could be obtained. The second study, conducted as part of this programme of research, examined the influences on whether NMPs took responsibility for making a prescribing decision or issuing a prescription for a patient. The third study examined in more depth the influences on NMPs' prescribing decisions by seeking to identify and explore perspectives amongst NMPs.

The wide range of influences on the *prescribing decisions* of nurse and pharmacist prescribers in primary and community are better understood by considering how, and in what situations, NMPs take *responsibility* for prescribing. This chapter therefore integrates the information from all aspects of this programme of research. This research has demonstrated the complexity and diversity of the influences on NMPs' prescribing behaviour. There were many issues that the majority of NMPs agreed with (e.g. time pressure, competency and cautiousness). However, there were differences between NMPs on some of the issues discussed and these have been outlined in individual findings chapters. These differences created, what appeared to be, contradictions in NMPs' attitudes to prescribing influences. This complex situation makes it difficult to present one description of the prescribing influences on NMPs that will provide a 'one size fits all'. This chapter discusses some of the key themes that have emerged from the research. These key themes are: 'feeling safe', 'keeping it simple', 'code of practice' and 'fitting in with prescribing culture'. It

is important to note that these headings will apply to individual NMPs to different degrees. However, the author argues that it is through these headings that the influences on NMPs' prescribing behaviour, outlined in this thesis, can be best discussed.

9.1.1 Feeling Safe

NMPs sought feelings of personal 'safety' (e.g. in terms of liability issues) when prescribing. This influenced many areas of their prescribing practice. NMPs need for personal safety coincides with the anxiety many have about their prescribing duties (Latter et al. 2010). In order to feel safe NMPs took a cautious approach to take prescribing responsibility (Section 6.2), did not take responsibility when insufficiently competent (see Section 6.3.1) even when they felt pressure to do so (see Section 6.4.1), did not prescribe outside their perceived role (see Section 6.3.2) and did not prescribe when it was illegal to do so (see Section 6.3.3.2). Some NMPs used their p-formulary, or equivalent head-held formulary, to control the scope of their prescribing. There was evidence that this formulary made them feel safer and more measured in their practice (see Section 6.3.1.2). Study One and Study Three found that the vast majority of NMPs adhered to the recommendations of guidelines, formularies and protocols when making prescribing decisions. The largest perspective generated from Study Three, PCT driven prescribers (P1), demonstrated how for many prescribers, perceptions of personal safety were increased by following the recommendations of such sources when making prescribing decisions (see Section 8.5.1). The perception that adherence to these sources equates to more personal safety was more prominent amongst nurse prescribers, those more recently qualified as a prescriber and those prescribing more infrequently relative to others. Nurses' attitudes may be encouraged, in part, by the concerns they have about legal and professional support. It may therefore be helpful to reassure nurse prescribers of the support they are entitled to (see Section 9.3).

What are the implications of NMPs' adherence to the recommendations of guidelines, formularies and protocols on the appropriateness of their prescribing? Whilst this research did not directly address this question, inferences can be drawn from the findings of this research and the available literature. Fontana et al. found that US nurse prescribers sometimes followed guidelines but failed to individualise patient care (Fontana et al. 2000). Does NMPs' desire to prescribe within the recommendations of guidelines, formularies and protocols make their prescribing less adaptive to patients' circumstances? Study One and Study Two found that, in fact, many NMPs did not take responsibility for prescribing where deviation from guidelines or formularies was required (see Section 6.3.4). If NMPs do not take responsibility for these cases, the influence of the recommendations of these sources on the prescribing decisions they do make will be high. Furthermore, the patient-centred prescribers' perspective (P2) generated from Study Three demonstrated, with clinical experience comes more confidence in prescribing outside of these

recommendations in favour of patient issues. It therefore seems unlikely, in contrast to Fontana et al.'s findings, that patients' needs are overlooked by NMPs. However, given NMPs' reliance on guidelines, formularies and protocols it is important they reflect best available evidence, are kept up-to-date, are easily accessible and are clear. If NMPs cannot access the information they require then many are unlikely to take responsibility for prescribing.

When NMPs were uncomfortable or uncertain they used strategies to improve their perceptions of personal safety. These involved referring the patient to a doctor, seeking advice from doctors or asking a doctor to issue a prescription on their behalf. Doctors also seek colleagues' advice as a way to manage discomfort or uncertainty associated with prescribing (Bendtsen et al. 1999a; Di Caccavo and Reid 1995; Lewis and Tully 2009b). It would be interesting to further explore how NMPs consider interaction with colleagues impacts the legal accountability they have for the prescribing task. The importance of understanding this area is discussed in Section 9.4.3. Doctors were, in this research, found to be central to NMPs' support network. Other NMPs were also important but to a lesser extent. Where such support was lacking NMPs found it difficult to maintain and increase their competency. It is clearly important for NMPs to have a support structure. Steps should be taken to ensure this is the case for *all* prescribers (see Section 9.3 recommendations).

Many doctors feel that working with NMPs adds significant time to their own workload because of the support they need to give to NMPs (Hacking and Taylor 2010). If current trends regarding the number of nurses, pharmacists and AHCPs qualifying to prescribe continues, as it has done (see Section 2.3.3.1), then the number of NMPs requiring support from doctors is likely to increase. It may be helpful for doctors to receive guidance in terms of how best to support NMPs (see Section 9.3). In the longer-term, currently trained NMPs will become more experienced and will be able to provide support to less experienced NMPs. In the future it is feasible that NMPs could even become DMPs for other trainee NMPs during the prescribing training course.

It is noteworthy that generally NMPs favoured doctors' advice when prescribing. Interactions with other HCPs, most notably community pharmacists, when faced with prescribing difficulties were limited. Similarly, in both Study One and Study Three, NMPs largely rejected the influence of these HCPs on their prescribing decisions (see Section 7.4 and Section 8.4). It may be that NMPs favour advice from doctors because they help lessen the discomfort of prescribing by increasing feelings of personal safety. It is important to diversify the range of support NMPs receive to ensure undue burden is not placed on doctors, and the skills of other HCPs are utilised. Recommendations regarding this are provided in Section 9.3.

9.1.2 Keeping it Simple

The findings of this programme of research echo the views expressed by nurse and pharmacist independent prescribers in other research who said that their prescribing authority does not mean they can manage all patients (Latter et al. 2010). Some NMPs commented that doctors should be risk-takers in regards to prescribing (see Section 6.2). NMPs felt it is not their role to issue repeat prescriptions (see Section 6.5.1). NMPs, including both nurses and pharmacists, described referring patients or seeking advice when prescribing for higher risk patients (see Section 6.3.4). In the case of nurses this extended to their avoidance of taking prescribing responsibility for high risk patients, when a high risk medicine needed to be prescribed, when the decision involved deviation from guidelines or a formulary, or a medicine prescribing off-label. Pharmacist prescribers largely avoided taking prescribing responsibility for patients who needed medicine prescribing off-label or contrary to guidelines or formularies. It can be argued that NMPs demonstrate their wish to limit their prescribing to more 'simple' patient cases and leave the more complex or more risky patient cases to doctors. NMPs have a simpler role in the healthcare system compared with doctors.

NMPs' desire to keep things simple impacted on the influence of other factors on their prescribing decisions. Guidelines, formularies and protocols are typically written for more standard and simple patient cases. The recommendations of these sources are less likely to apply in more complex patient cases. They are therefore likely to be more applicable to the types of patients NMPs manage. This might explain why, as discussed in Section 7.9, these sources appear to have more influence on NMPs than doctors. Although some NMPs described being influenced by hospital and secondary care doctors overall prescribing patterns (see Section 7.5.1) generally NMPs described only minimal contact with these practitioners (see Section 7.4.3). Clearly, if NMPs are referring more complex cases to doctors, rather than taking responsibility, then there will be less need to seek the advice of hospital and secondary care practitioners. It is important to re-state at this stage that this research was with NMPs in primary and community care. Clearly, this finding may not be applicable to NMPs in the hospital and secondary care setting. This reinforces the need for further research with NMPs specifically in this setting. This is discussed more in Section 9.4 This is because these practitioners typically manage more complex patients that cannot be managed in primary and community care. NMPs also often asked GPs to refer patients to hospital and secondary care on their behalf. This is further evidence of the simpler role they have, and appear to prefer, in the healthcare system.

NMPs' prescribing practice was also simple in terms of the information sources they used. Although there were exceptions, generally, NMPs rejected research findings and literature as an influence on their prescribing decisions. This was apparent from Study One (see Section 7.6.2), and the general positioning of the statement relating to research findings in most of the perspectives

generated from Study Three. Instead, NMPs preferred summarised and digested information sources such as guidelines, formularies, protocols and sources such as NHS CKS. For some NMPs there was evidence that, even if they wanted to, they did not have time to use such sources in their practice. However, many NMPs actively selected not to use research findings in their practice. There is strong evidence from this research that the vast majority of NMPs would not feel confident to prescribe in line with research findings if they ran contrary to current guidelines, formularies and protocols anyway. The lack of desire to refer to these sources may also be a reflection of the 'simple' patients NMPs take responsibility for. This is because guidelines, formularies and protocols and other information sources are sufficient to manage most of their patients without the need to seek additional information.

What are the implications of NMPs' avoidance of complex or high risk patients on overall patient care? Weiss et al. has argued that NMPs' discomfort with prescribing for co-morbid patients and those with complex poly-pharmacy could result in fragmented care (Weiss et al. 2006). Clearly Weiss' concerns are, to some extent, realised in the findings of this research as NMPs did describe referring such patients to doctors. NMPs' worries about prescribing for these complex or high risk patients could be addressed by further training and support. However, it is important to ask whether it is necessary for NMPs to take responsibility for such patients. After all, doctors already benefit from more time to manage more complex and acute patients because of non-medical prescribing (Stewart et al. 2009b; Watterson et al. 2009). Additionally, doctors and patients expect NMPs to refer if they are uncertain about an aspect of prescribing (Stenner et al. 2010; Watterson et al. 2009). The DoH state that non-medical prescribing should lead to the more effective use of HCPs' skills (Department of Health n.d.). Currently, many NMPs do not feel they have the skills to manage these patients. It is unlikely to be in patients' and prescribers' interests for NMPs to take responsibility for prescribing when they do not feel comfortable doing so. If the expectations of NMPs change then they may need further support to allow them to take responsibility for more complex prescribing cases.

9.1.3 Code of Practice

NMPs have a 'code of practice' which shapes what they consider acceptable prescribing behaviour. This code of practice leads them to reject the influence of time and patient pressures (see Section 7.3.6 and Section 7.7.1) that, in the medical prescribing literature, have been found to contribute to non evidence-based prescribing (Bradley 1992a; Carthy et al. 2000; Coenen et al. 2006; Kumar et al. 2003; Lewis and Tully 2011; Miller et al. 1999; Petursson 2005; Stevenson et al. 1999). In this research NMPs rejected the notion that non-prescribing nurses led them to take responsibility for prescribing outside their competency, or that they influenced their prescribing decisions (see Section 6.4.1). NMPs rely on doctors when faced with difficult prescribing decisions. However, it

is interesting that they reject the influence of GPs' behaviour on their own prescribing. Some NMPs said this was because GPs prescribe outside the recommendations of guidelines (see Section 7.5.1). Most prescribers viewed the influence of many of these pressures as negative and suggested that succumbing to such influences would be unprofessional and irresponsible (see Section 7.3.6, Section 7.7.1 and Section 8.4). NMPs reported very negative feelings when they had succumbed to these pressures (see Section 7.3.6). This code of practice was particularly apparent in the evidence-based driven prescribers' perspective (P4) generated from Study Three in which prescribers prioritised information sources they considered to be evidence-based (see Section 8.8).

It is encouraging to find that NMPs perceive they are not influenced by factors that have been found to contribute to non evidence-based prescribing in the literature. It is interesting that NMPs spontaneously compared their rejection of these influences to that of doctors who they feel are influenced by such sources (see Section 7.3.6 and Section 7.7.1). This research demonstrated that, although NMPs feel the same pressures as doctors, they respond to them differently. In some cases though, NMPs perpetuated pressure on doctors for prescriptions by asking them to sign prescriptions on their behalf. This suggests NMPs' code of practice is at odds with their expectations of doctors. Indeed many nurse prescribers said it was doctors' roles to be risk takers. It may be some nurse prescribers' concerns about legal protection that encourages their rejection of non evidence-based practices. It may also be the criticism they have experienced or expect to experience from doctors and the media in cases of prescribing error (see Section 6.2) that encourages their rejection of non evidence-based practices. Simply, by rejecting these sources of influence, NMPs might feel they are doing the 'right thing' in regards to prescribing which is less likely to attract negative consequences of any kind.

How does NMPs' rejection of patient pressure on their prescribing impact on patients' satisfaction level with their care? Some NMPs did say patients left dissatisfied with their decision not to issue a prescription. NMPs said that generally, once they explained the rationale for their decision to the patient, patients left satisfied (see Section 7.3.6). Some NMPs used extra consultation time they had available to do this. However, even more importantly, even under time pressure, NMPs created time to offer an explanation about their decision to the patient. The prescribers characterising the evidence-based driven prescribers' perspective (P4) in Study Three appeared the most evidence-based but least patient-centred. As a result, there is concern that some NMPs are struggling to adhere to the principles of EBM and patient-centred medicine. However, although NMPs might appear less patient-centred in their prescribing, patients seem to be still satisfied. Furthermore, apart from patient pressure, other patient issues such as quality of life were considered by many NMPs (see Section 7.3.1, Section 7.3.2). It is clearly an important finding that NMPs have found

ways to manage patient pressure as this is an issue that has dominated discussion in the medical prescribing literature.

9.1.3 Fitting in with the Prescribing Culture

Some NMPs copied the prescribing behaviour of other prescribers. They were also influenced by what they felt was 'accepted' and 'established' practice. This was apparent in some of the comments in Study One (see Section 7.5.1, Section 7.5.2) and was reinforced by the emergence of the prescribing culture driven prescribers' perspective (P3) in Study Three. This perspective was characterised by clinically inexperienced prescribers influenced by their own limited experience and the prescribing culture of others (see Section 8.7). It is possible that the prescribing behaviour NMPs are following is clinically appropriate. However, research demonstrating how doctors follow prescribing practices, despite lack of evidence demonstrating its effectiveness (Ljungberg et al. 2007), opens up the possibility that some NMPs are not practising evidence-based prescribing. Latter et al. found that nurse and pharmacist independent prescribers do not challenge others' prescribing behaviour (Latter et al. 2010). It may be the fear of criticism from doctors, highlighted in Study Two (see Section 6.2), that results in some NMPs' desire to 'fit in' and their resulting alignment of their own behaviour with others. Specifically, in the case of the prescribing culture driven prescribers (P3), it may also be the prescribers' lack of clinical experience that reduces their confidence to deviate from existing prescribing culture.

There is a concern, as has been found with research in the US (Fontana et al. 2000), that NMPs adhere to informal prescribing rules because of a lack of formal education. This research found that the prescribing training course has more influence on those NMPs most recently qualified (P1) (see Section 8.5.1). However, it was not found to have an ongoing influence in terms of supporting actual prescribing decisions in specific therapy areas. Other training, study days, and conferences were found to have a limited influence on NMPs (see Section 7.6.1). In light of these findings, it is understandable why some NMPs may be particularly influenced by prescribing culture as they slip into accepted norms that remain unchallenged. There is clearly a need in some cases for therapy-area specific training for NMPs in clinical areas (see Section 9.3 for recommendations). However, it may be important that NMPs receive this training so they can increase their confidence to challenge others' prescribing practices.

9.2 Limitations of Research

The advantages and limitations of each of the individual data collection techniques used in this programme of research have been discussed previously (see Section 5.1.2.5, Section 5.2.2.5, Section 6.7, Section 7.9.1 and Section 8.10.1). However, there were other, more general,

limitations of the programme of research. These limitations fall in to two categories, sample and measuring prescribing influences.

The sample of this programme of research may be limited in two respects. Firstly, participants may have been of a certain personality type. The NMPs that selected to take part may have done so because they have a special interest in this area. This may mean they hold views that are not reflected in the wider population. However, the sample of NMPs of this research worked in different areas and had wide ranging levels of experience in both prescribing and their healthcare field. The research used snowball sampling which might have encouraged NMPs not immediately wishing to take part in the research to come forward. The majority of participants were not exceptional and did not appear to hold exceptional views. In fact, there was a high level of consistency between the views of NMPs and, to some extent, the views of doctors reported in the literature. The critical incidents discussed in Study Two were explored with NMPs through focus groups. This helped to assess the 'frequency' of the incidents and whether they were exceptional.

The second limitation with regards to the sample is the limited sample size for each of the three studies as well as the limited geographical locations from the sample was drawn. Moreover, only a small number of pharmacist prescribers took part in the research. This reflects the low proportion of pharmacist prescribers relative to nurse prescribers in the healthcare system. This issue relates to external validity which has been discussed in Section 3.2.1.3. It is generally accepted that a small non-random sample means that the findings cannot be generalised beyond the initial sample population. Although a number of strategies were used in this research to help strengthen the external validity (e.g. providing a 'thick-description' and including a wide range of NMPs) further research in this area could employ other data collection techniques such as questionnaires and surveys. Such techniques have been used by others to sample the attitudes of HCPs to prescribing influences (Schumock et al. 2004). These data collection techniques lend themselves to collecting the views of random and larger samples, which in turn increases the external validity of the findings. Suggestions for use of such methods are provided in Section 9.4.

There are issues with exploring the influences on prescribing, including prescribing responsibility and prescribing decisions, by simply asking prescribers what influences them. Firstly, prescribers may not actually be aware of the factors that influence their decisions. NMPs are not going to be able to verbalise the sources of influence on their prescribing if this is the case. Even if prescribers are aware of the influences on their decisions they might find it difficult to explain this complex process. Such difficulty was evident in the interviews conducted in Study One, where NMPs sometimes found it difficult to provide examples of prescribing processes to which they were referring. In this research, prescribers were provided with various means to explain the factors that

influence their decisions. In Study One, participants were asked to explain the factors that influence their decisions in their own words. Probes were sometimes used but the participants guided the conversations. In Study Two, participants were provided with instructions pre-interview which asked them to reflect on one particular aspect of prescribing. This provided a critical reflection of the prescribing process beyond simply asking NMPs what influences their prescribing. In Study Three, participants were provided with statements about prescribing influences and were asked to indicate their agreement with the statements in terms of their own experiences. It was intended that the Q-method processes, whereby statements on prescribing influences were sorted in a quasi-normal distribution according to the participant's agreement, mirrored the complex prescribing process. It is impossible to eliminate difficulty with verbalising a process such as prescribing. It is hoped however that the range of methods used in this research provided NMPs with a range of opportunities to explain the influences on their decisions. The process by which you compare the data from difference sources is often referred to as 'methods triangulation' and is considered a way of increasing the validity of research findings.

NMPs may have been impacted by social desirability bias when discussing their prescribing behaviour. Social desirability bias refers to the tendency of respondents to reply in a manner that will be viewed favorably by others. This will generally take the form of over reporting good behavior or underreporting bad behavior. To reduce this potential bias all participants were encouraged to be honest during the interviews, focus groups and in the Q-method survey. Despite these efforts, it is possible that participants in this research were not completely honest in their views. Social desirability bias is evident in research that has focused on the influence of the pharmaceutical industry on doctors' prescribing. Doctors' self-reported behaviour suggests a limited influence of the industry on their prescribing (Prosser and Walley 2003) but research, studying changes in prescribing data and industry activity, suggests otherwise (Muijrers et al. 2003; Watkins et al. 2003). As discussed in Section 6.6, some participants were particularly keen to 'protect' non-medical prescribing from criticism. This may have led NMPs to over report good behaviour. This bias might have been a greater issue in the face-to-face interviews and focus groups. However, the anonymity of the Q-method survey should have reduced this bias to some extent. To alleviate the influence of social desirability bias, future research may want to directly study NMPs' prescribing data. Research such as this was conducted by Wathen and Dean who used prescribing data to evaluate the influence of NICE guidance on GPs' prescribing behaviour (Wathen and Dean 2004). By relying less on self-reported behaviour, and focusing on actual behaviour, it is possible that an additional understanding of the influences on NMPs' behaviour may be obtained. However, research such as this could only focus on specific influences (e.g. guidelines, pharmaceutical industry) and not focus on a wide range of influences, as this research has done.

9.3 Recommendations

The recommendations from this programme of research have been discussed briefly in various parts. The purpose of this section is to bring this information together as follows:

- **Clarify the professional and legal support nurse prescribers are entitled to receive**

  A number of nurse prescribers expressed concern about the professional and legal support they would receive from their professional body and healthcare managers in case of prescribing errors. Nurse prescribers felt there is a culture of protection surrounding doctors that does not exist for nurses. To increase nurses' confidence their concerns about the professional and legal support they are entitled to, particularly with regards to prescribing, need to be allayed.

- **Consider NMPs needs when designing the provision of healthcare services**

  Healthcare managers have an important role in supporting NMPs when they organise the provision of healthcare services. It is important that they consider the following:

  - NMPs should not be isolated and where possible should have access to doctors, other NMPs and pharmacists. Moreover, it is important there is a critical mass of doctors and NMPs who can support each other.
  - NMPs should not be put in positions where they need to take responsibility for managing patients they are not competent to manage. Healthcare managers must therefore be aware of NMPs' limitations. Where NMPs are being asked to take responsibility for new clinical areas they must be supported and receive the appropriate training.
  - Healthcare provision must be organised so NMPs are not continuously put in positions where prescribing contrary to regulations (e.g. issuing repeat prescriptions for medicine outside competency) is necessary for patients to receive the medication they need.

- **Support NMPs to uphold prescribing regulations**

  Healthcare managers have an important role in supporting NMPs to uphold prescribing regulations. It is important that they take action, where appropriate, on the following issues:

  - NMPs face pressure from nurses to prescribe medicine they perceive to be outside their competency and for patients they have not examined. Nurses may have similar expectations of doctors and NMPs when it comes to prescribing. It is important that NMPs' requirement, to only issue prescriptions for medicines they are competent to prescribe and for patients they have examined, is reinforced to nurses as well as other HCPs. This might be particularly important in nurse-only clinics, such as WICs, where nurse and NMPs are working independently from doctors.

- Because of the pressures that NMPs face in relation to repeat prescribing it is important that HCPs are informed of the regulations regarding repeat prescribing for NMPs. It is also important that the requirement of NMPs to abide by these regulations is highlighted to all HCPs. Given that pressure in regards to repeat prescriptions came from patients, it is important that patients are educated about NMPs' roles. This may take the form of information leaflets or posters in clinics and surgeries.

- **Offer formal training within clinical fields**

  This research suggests that some NMPs use general prescribing practices to inform their own prescribing decisions. Fontana et al. argued that insufficient formal education leads prescribers to replicate the prescribing practices of those around them (Fontana et al. 2000). It is not possible to say, based on this research, whether NMPs replicate the practice of those around them because they lack sufficient formal education. However, Fontana et al. raises an important point. What are prescribers, without formal education relating to their clinical areas, basing their prescribing decisions on? NMPs may have experience from many years working in their field and by observing the prescribing behaviour of doctors. This may or may not be evidence-based. However, NMPs who have not received formal training about their area of practice might benefit from formal training opportunities in specific clinical areas. NMPs should be given the time in their practice to attend this training. In some cases training may reinforce current evidence-based practices. However, the training may enable NMPs to identify non-evidence-based practices they may want to rectify.

- **Increase the clinical support NMPs receive**

  Latter et al. found that NMPs working in primary care feel there are insufficient opportunities for appraisal of their prescribing practices (Latter et al. 2010). This research reinforced Latter et al.'s finding by highlighting instances where some NMPs were not receiving sufficient clinical support. It is important that the level of support for NMPs is increased and the channels through which they receive this support are diversified.

  Currently NMPs are supported through the prescribing training course by a DMP. There is no requirement for NMPs to maintain any contact with their DMP post-qualifying. Only half of the 18 participants in Study One maintained contact with their DMP post-qualifying. Similarly in Study Two, a small number of participants said they no longer have contact with their DMP because of cost and resource issues. Clinical support might therefore be increased by making contact with DMPs post-qualifying a mandatory requirement of the prescribing course. Clearly doctors should be made aware of this requirement at the beginning of the course. If NMPs

change role or locations, doctors willing to fulfil the role of a DMP could be re-assigned to NMPs.

It is also important that NMPs have the opportunity to interact with other NMPs. Currently, PCT led non-medical prescribing group meetings provide opportunities to do this but the meetings focus on practical prescribing issues rather than support at a clinical level. Communication between NMPs in the same PCT that are prescribing in similar clinical areas, but who work in isolation, could be facilitated through online forums and internet-based discussions. PCT non-medical prescribing group meetings could also, from time to time, focus on prescribing issues within specific clinical areas.

Finally, as introduced by some NMPLs in the North West, a 'buddy' scheme where newly qualified NMPs are matched with a more experienced NMP could be extended to other PCTs. The 'buddy' scheme provides NMPs with informal support (Hacking and Taylor 2010). It is important that NMPs are matched with those prescribing in a similar field so advice can be provided on a clinical, as well as practical level. It would also be useful to implement this scheme between pharmacist prescribers as they currently have limited interaction with other pharmacist prescribers.

- **Help doctors to support NMPs**

  Senior doctors are required to support junior doctors with prescribing duties (Lewis and Tully 2009b). Moreover, doctors now also have an important role in supporting NMPs with all aspects of patient care including prescribing. It is important that consideration is given to the impact that regular contact with NMPs, particularly those recently qualified, will have on doctors' workload. If may be important to evaluate the ways doctors can support NMPs. If doctors are overwhelmed with the demands on their time from NMPs then further support could come from community pharmacists. Strategies should be implemented to facilitate communication between these groups of HCPs. For example, NMPs could be linked with named community pharmacists who have agreed to help support NMPs.

- **Introduce legislation allowing independent prescribing of CDs by pharmacist prescribers**

  A number of pharmacists were not prepared to set-up a CMP just to prescribe CDs for their patients. Instead, they asked doctors to issue the prescription on their behalf. It is important that changes in legislation allowing pharmacist prescribers to prescribe CDs are made as soon as possible because pharmacists are reverting back to old practices of asking doctors to sign prescriptions. This behaviour might have serious implications for the safety of the patient if no-one is taking full responsibility for the decision because of reliance on their colleagues.

9.4 Future Research

Ideas for future research have been discussed throughout this thesis. The purpose of this section is to discuss these, as well as other ideas, in further depth.

9.4.1 Extensions to this Programme of Research

This programme of research was conducted as part of a PhD. It was therefore limited, like most research, by time and resource constraints. Should opportunities arise the following research could be conducted to directly extend the findings of this programme of research with a larger number of NMPs across the UK.

- **Focus groups with Q-method participants**

  The five perspectives arising from Study Three helped to understand the sources of influences on the prescribing decisions of NMPs. The comments NMPs made about the statements fed into the perspectives that were generated. However, it would be interesting in further research to present these perspectives to groups of NMPs as a way of increasing their validity. This is a form of the member validation that was used in Study Two of this programme of research (see Section 3.2.1.2).

- **Application of the Q-method with doctors**

  The quantitative research completed with doctors about their prescribing influences has typically employed conventional survey methods. For instance, Schumock et al. asked doctors, clinical pharmacists and formulary committee members to rate the importance of a list of factors thought to influence drug prescribing (Schumock et al. 2004). The Q-method has not been used with doctors to understand the influences on their prescribing decisions. One key advantage of the Q-method, compared with conventional survey methods, is that participants order the statements in relation to each of the other statements. It is therefore possible to understand how prescribers 'trade-off' or 'prioritise' certain influences. The use of the Q-method with doctors will add to the current understanding of doctors' prescribing in the literature. Although research has explored how doctors prioritise influences over other influences there has not been a comprehensive and systematic study in this area. Such a study could be compared to the findings of this programme of research.

- **Further research comparing the sources of influences on NMPs and doctors prescribing decisions**

  This research has highlighted some potential differences between how doctors and NMPs perceive their prescribing decisions to be influenced. However, it was only possible to compare

doctors prescribing with non-medical prescribing by examining the medical prescribing literature. A direct comparison within one research study between doctors and NMPs would contribute significantly to this area. This could take the form of Schumock et al.'s study, described above, where participants were asked to rate the importance of certain factors on the prescribing decisions they make (Schumock et al. 2004). Hypothesis for such research, based on the findings of this research, are provided in Box 9-1. Understanding the differences between NMPs and doctors would be important if, for whatever reason, healthcare managers and policy makers needed to alter the prescribing behaviour of these HCPs. The findings of this research could help target any intervention directly to the type of prescriber. However, the findings that such research would produce must be interpreted in light of the findings of this research about how, and in what circumstances, NMPs take responsibility for prescribing.

- **Hospital and secondary care settings**

  Because this programme was conducted as part of a PhD it was not possible to explore the influences on all NMPs working in all healthcare settings. Instead, the author selected to focus on the prescribing decisions of those working in primary and community care. Further research would be beneficial to understand the influences on the prescribing behaviour of NMPs working in hospital and secondary care settings. This research would provide further insight into the training and support requirements of these HCPs. It is important not to rely on this research to make assumptions on the prescribing behaviour and training and support requirements of hospital and secondary care based NMPs because of the differences in working environment between the two groups.

Box 9-1: Hypotheses for Future Research Comparing the Influences on Doctors and Non-Medical Prescribers' Prescribing Behaviour

Doctors, compared with non-medical prescribers, will be:

- Less influenced by the recommendations of guidelines, formularies and protocols
- Less influenced by information sources (e.g. NHS CKS)
- Less influenced by patient adherence
- More influenced by training and CPD
- More influenced by patient pressure and maintenance of the patient-practitioner relationship
- More influenced by hospital and secondary practitioners
- More influenced by time and other logistical factors
- More influenced by nurses
- More influenced by professional experience
- More influenced by research findings
- The influence of cost and community pharmacists will be the same.

9.4.2 Professional Support and Legal Accountability

A number of attitudes about professional support and legal accountability emerged during this research that may be interesting to explore in further depth.

- **Attitudes to professional support amongst nurses and pharmacist prescribers**

  A number of nurse prescribers described how they feel doctors would receive more support in cases of prescribing errors than they would. One nurse practitioner described how doctors have a "cloak of protection" around them. It would be interesting to explore this topic with NMPs in more depth through interviews or focus groups. It would be important to explore the origins of this view and identify actual events that contributed to it.

- **Accountability**

  In this research NMPs sought advice and guidance from doctors when they felt insufficiently competent to prescribe independently and when they felt uncertain or uncomfortable prescribing. This shared-responsibility helped some NMPs feel safe when prescribing and relieve their negative feelings. In some cases NMPs actually documented advice they had been given in patients' notes. It would be important to explore in future research NMPs' attitudes to accountability for prescribing and how, seeking others advice influences their own accountability for issuing a prescription. It would be important to identify if NMPs have incorrect perceptions of their accountability for prescribing when they have sought advice. If they do, issues such as this should be addressed comprehensively in the prescribing training course.

9.4.3 Safety

- **Prescribing errors**

  Clearly, it is important that HCPs prescribing behaviour is safe. Further research is required to evaluate the safety of non-medical prescribing. Given that NMPs only prescribe when they feel competent to do so, do they make any prescribing errors? Do pharmacist prescribers, with all their medicine knowledge, make prescribing errors? How does NMPs' position in the healthcare system, of having the option to refer difficult cases, influence the amount of prescribing errors they make?

9.5 Final Thoughts

This programme of research has provided insight into the factors that influence the prescribing behaviour of nurse and pharmacist independent and/or supplementary prescribers working in primary and community care. This area has been until now under-researched. The research has

enabled recommendations to be made about the support and training requirements of NMPs. It has also made a contribution to understanding how the influences on NMPs should be researched by academics in the future. It has highlighted how, to understand the influences on NMPs' prescribing decisions, it is important to understand how, and in what circumstances, NMPs decide to take responsibility for prescribing.

This research is timely given the proposed changes to the NHS and the current economic situation in the UK. The government's proposed changes to the NHS, that will increase GPs' role in the commissioning of NHS healthcare services, may take GPs further away from providing front-line services to patients and increase the role of NMPs. The increased pressure on the NHS' budget might also mean NMPs will have a greater role in providing prescribing services to patients. There may be more nurse-led, pharmacist-led or other non-doctor led services in the healthcare system. It is therefore important that strategies are put in place to support NMPs with their prescribing role so they can be a successful part of an ever evolving NHS.

References

Agarwal, G., Nair, K., Cosby, J., Dolovich, L., Levine, M., Kaczorowski, J., Butler, C., and Burns, S. 2008. GPs' approach to insulin prescribing in older patients: A qualitative study. *British Journal of General Practice*, 58 (553) 569-575.

Akobeng, A. 2005. Understanding randomised control trials. *Archives of Disease in Childhood*, 90 (9) 840-844.

Allery, L., Owen, P., and Robling, M. 1997. Why general practitioners and consultants change their clinical practice: A critical incident. *British Medical Journal*, 314 (7084) 870-874.

Armstrong, D. and Ogden, J. 2006. The role of etiquette and experimentation in explaining how doctors change behaviour: A qualitative study. *Sociology of Health and Illness*, 28 (7) 951-968.

Armstrong, D., Reyburn, H., and Jones, R. 1996. A study of general practitioners' reasons for changing their prescribing behaviour. *British Medical Journal*, 312 (7036) 949-952.

Baird, A. 2003. Nurse prescribing – how did we get here? *Journal of Clinical Nursing*, 17 (4) 4-10.

Baker, R. 2006. Economic rationality and health and lifestyle choices for people with diabetes. *Social Science and Medicine*, 63 (9) 2341-2353.

Banning, M. 2005. Conceptions of evidence, evidence-based medicine, evidence-based practice and their use in nursing: Independent nurse prescribers' views. *Journal of Clinical Nursing*, 14 (4) 411-417.

Barber, N., Rawlins, M., and Dean, B. 2003. Reducing prescribing error: Competence, control, and culture. *Quality and Safety in Health Care*, 12 (Suppl 1) 29-32.

Bendtsen, P., Hensing, G., Ebeling, C., and Schedin, A. 1999a. What are the qualities of dilemmas experienced when prescribing opioids in general practice? *Pain*, 82 (1) 89-96.

Bendtsen, P., Hensing, G., McKenzie, L., and Stridsman, A. 1999b. Prescribing benzodiazepines - a critical incident study of a physician dilemma. *Social Science and Medicine*, 49 (4) 459-467.

Bensing, J. 2000. Bridging the gap. The separate worlds of evidence-based medicine and patient-centred medicine. *Patient Education and Counselling*, 39 (1) 17-25.

Bishop, L., Faithfull, S., and Allan, H. 2011. An exploration of the influences on clinical decision making and the culture of blood transfusion practise in cancer-related anaemia using an ethnographic methodology. *Supportive Care in Cancer*, 19 (2) 203-210.

Bissell, P., Cooper, R., Guillaume, L., Anderson, C., Avery, A., Hutchinson, A., James, V., Lymn, J., Marsden, E., Murphy, E., Ratcliffe, J., Ward, P., and Woolsey, I. 2008. *An evaluation of supplementary prescribing in nursing and pharmacy*. [online] London, Department of Health. Available at: http://www.sheffield.ac.uk/content/1/c6/09/11/83/Supplementary_prescribing.pdf [Accessed: 30 March 2011].

Blaikie, N. 2007. *Designing Social Research.* Cambridge, Polity Press.

Blenkinsopp, A., Tann, J., Evans, A., and Grime, J. 2008. Opportunity or threat? General practitioner perceptions of pharmacist prescribing. *International Journal of Pharmacy Practice*, 16 (1) 29-34.

Bowling, A. 2002. *Research Methods in Health*, 2nd ed. Buckingham, Philadelphia, Open University Press.

Bradley, C. 1992a. Factors which influence the decision whether or not to prescribe - the dilemma facing general practitioners. *British Journal of General Practice*, 42 (364) 454-458.

Bradley, C. 1992b. Uncomfortable prescribing decisions - a critical incident study. *British Medical Journal*, 304 (6822) 294-296.

Bradley, E., Hynam, B., and Nolan, P. 2007. Nurse prescribing: Reflections on safety in practice. *Social Science and Medicine*, 65 (3) 599-609.

British Medical Association. 2007. *The British Medical Association illustrated medical dictionary*, 2nd ed. London, Dorling Kindersley.

Britten, N. 1995. Patients' demands for prescriptions in primary care. Patients cannot take all the blame for over prescribing. *British Medical Journal*, 310 1084-1085.

Brooks, N., Otway, C., Rashid, C., Kilty, E., and Maggs, C. 2001. The patient's view: The benefits and limitations of nurse prescribing. *British Journal of Community Nursing*, 6 (7) 342-348.

Brown, S. 1980. *Political Subjectivity: Application of Q Methodology in Political Science.* New Haven, Connecticut, Yale University Press.

Brown, S. 1993. A primer on Q-methodology. *Operant Subjectivity*, 16 (3) 91-138.

Brown, S. and Ungs, T. 1970. Representativeness and the study of political behaviour: An application of Q technique to reactions to the Kent State incident. *Social Science Quarterly*, 51 (3) 514-526.

Butler, C., Rollnick, S., Pill, R., Maggs-Rapport, F., and Stott, N. 1998. Understanding the culture of prescribing: Qualitative study of general practitioners' and patients' perceptions of antibiotics for sore throats. *British Medical Journal*, 317 (7159) 637-642.

Buusman, A., Andersen, M., Merrild, C., and Elverdam, B. 2007. Factors influencing GPs' choice between drugs in a therapeutic drug group. A qualitative study. *Scandinavian Journal of Primary Health Care*, 25 (4) 208-213.

Cantrill, J., Dowell, J., and Roland, M. 2000. Qualitative insights into general practitioners' views on the appropriateness of their long-term prescribing. *International Journal of Pharmacy Practice*, 8 (1) 20-26.

Carthy, P., Harvey, I., Brawn, R., and Watkins, C. 2000. A study of factors associated with cost and variation in prescribing among GPs. *Family Practice*, 17 (1) 36-41.

Cattell, R. 1996. The scree test for the number of factors. *Multivariate Behavioural Research*, 1 (2) 245-276.

Cavazos, J., Naik, A., Woofter, A., and Abraham, N. 2008. Barriers to physician adherence to non steroidal anti-inflammatory drug guidelines: A qualitative study. *Alimentary Pharmacology and Therapeutics*, 28 (6) 789-798.

Central Manchester University Hospitals NHS Foundation Trust. 2010. *Research Ethics*. [online] Available at: http://www.cmft.nhs.uk/trust/research-ethics.aspx [Accessed: 28 February 2011].

Clauson, K., Khanfar, N., Polen, H., and Gibson, F. 2009. Nurse prescribers' interactions with and perceptions of pharmaceutical sales representatives. *Journal of Clinical Nursing*, 18 (2) 228-233.

Clinical Knowledge Summaries NHS Evidence. 2011. *CKS Clinical Knowledge Summaries*. [online] Available at: http://www.cks.nhs.uk/home [Accessed: 12 August 2011].

Cockburn, J. and Pit, S. 1997. Prescribing behaviour in clinical practice: Patients' expectations and doctor's perceptions of patients' expectations - a questionnaire study. *British Medical Journal*, 315 (7107) 520-523.

Coenen, S., Michiels, B., Renard, D., Denekens, J., and Van Royen, P. 2006. Antibiotic prescribing for acute cough: The effect of perceived patient demand. *British Journal of General Practice*, 56 (524) 183-190.

Conrad, F. and Blair, J. 2009. Sources of error in cognitive interviews. *Public Opinion Quarterly*, 73 (1) 32-55.

Courtenay, M. and Berry, D. 2007. Comparing nurses' and doctors' views of nurse prescribing: A questionnaire survey. *Nurse Prescribing*, 5 (5) 205-2010.

Courtenay, M., Carey, N., Stenner, K., Lawton, S., and Peters, J. 2011. Patients' views of nurse prescribing: Effects on care, concordance and medicine taking. *British Journal of Dermatology*, 164 (2) 396-401.

Crowe, S., Tully, M., and Cantrill, J. 2009. The prescribing of specialist medicines: What factors influence GPs' decision making? *Family Practice*, 26 (4) 301-308.

Crown, J. and Miller, P. 2005. Access to the whole BNF a long-awaited triumph of the wrong decision. *Nurse Prescribing*, 3 (6) 228-230.

Darlington, Y. and Scott, D. 2002. *Qualitative Research in Practice: Stories from the Field.* Buckingham, Open University Press.

de Vaus, D. 1996. *Surveys in Social Research*, 4th ed. London, UCL Press Limited.

De Vries, T., Daniels, J., Mulder, C., Groot, O., Wewerinke, L., Barnes, K., Bakathir, H., Hassan, N., Van Bortel, L., Kriska, M., Santoso, B., Sanz, E., Thomas, M., Ziganshina, L., Bezemer, P., Van Kan, C., Richir, M., and Hogerzeil, H. 2008. Should medical students learn to develop a personal formulary? *European Journal of Clinical Pharmacology*, 64 (6) 641-646.

Denig, P., Witteman, C., and Schouten, H. 2002. Scope and nature of prescribing decisions made by general practitioners. *Quality and Safety in Health Care*, 11 (2) 137-143.

Dennis, K. 1986. Q methodology: Relevance and application to nursing research. *Advances in Nursing Science*, 8 (3) 6-17.

Department of Health. 1989. *Report of the Advisory Group on Nurse Prescribing (Crown Report).* London, DoH.

Department of Health. 1998. *Review on prescribing supply and administration of medicines. Report on the supply and administration of medicines under group protocol arrangements (Crown I)*. London, DoH.

Department of Health. 1999. *Review of Prescribing, Supply and Administration of Medicines: Final report (Crown II)*. London, DoH.

Department of Health. 2005. *Supplementary Prescribing by Nurses, Pharmacists, Chiropodists/Podiatrists, Physiotherapist and Radiographers within the NHS in England: a guide for implementation - Updated May 2005*. [online] London, DoH. Available at: http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4110032 [Accessed: 24 February 2011].

Department of Health. 2006a. *Improving Patients' Access to Medicines: A Guide Implementing Nurse and Pharmacist Independent Prescribing within the NHS in England.* [online] London, DoH. Available at: http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4133747.pdf [Accessed: 24 February 2011].

Department of Health. 2006b. *Medicine Matters. A guide to mechanisms for the prescribing, supply and administration of medicines.* [online] London, DoH. Available at: http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_064326.pdf [Accessed: 23 February 2011].

Department of Health. 2010a. *Nurse prescribing FAQ*. [online] (Updated 22 March 2010) Available at: http://www.dh.gov.uk/en/Healthcare/Medicinespharmacyandindustry/Prescriptions/TheNon-MedicalPrescribingProgramme/Nurseprescribing/DH_4123003 [Accessed: 12 August 2011].

Department of Health. 2010b. *Optometrist independent prescribing*. [online] Available at: http://www.dh.gov.uk/en/Healthcare/Medicinespharmacyandindustry/Prescriptions/TheNon-MedicalPrescribingProgramme/Optometristindependentprescribing/index.htm [Accessed: 24 February 2011].

Department of Health. 2010c. *Pharmacist independent prescribing FAQ*. [online] (Updated 22 March 2010) Available at: http://www.dh.gov.uk/en/Healthcare/Medicinespharmacyandindustry/Prescriptions/TheNon-MedicalPrescribingProgramme/Independentpharmacistprescribing/DH_4133943 [Accessed: 24 February 2010].

Department of Health. 2010d. *Supplementary Prescribing FAQ*. [online] (Updated 23 March 2010) Available at: http://www.dh.gov.uk/en/Healthcare/Medicinespharmacyandindustry/Prescriptions/TheNon-MedicalPrescribingProgramme/Supplementaryprescribing/DH_4123034 [Accessed: 12 August 2011].

Department of Health. n.d. *Non-Medical Prescribing Programme: Background.* [online] Available at: http://www.dh.gov.uk/en/Healthcare/Medicinespharmacyandindustry/Prescriptions/TheNon-MedicalPrescribingProgramme/Background/index.htm [Accessed: 6 June 2011].

DHSS. 1986. *Neighbourhood Nursing: A Focus for Care. Report of the Community Nursing Review (Cumberledge Report)*. London, HMSO.

Di Caccavo, A. and Reid, F. 1995. Decisional conflict in general practice: Strategies of patient management. *Social Science and Medicine*, 41 (3) 347-353.

Dybwad, T., Kjolsrod, L., Eskerud, J., and Laerum, E. 1997. Why are some doctors high-prescribers of benzodiazepines and minor opiates? A qualitative study of GPs in Norway. *Family Practice*, 14 (5) 361-368.

Eccles, M., Soutter, J., Bateman, D., Campbell, M., and Smith, J. 1996. Influences on prescribing in non-fund holding general practices. *British Journal of General Practice*, 46 (406) 287-290.

Fairweather, J. and Swaffield, S. 2001. Visitor Experiences of Kaikoura, New Zealand: An interpretative study using photographs of landscapes and Q method. *Tourism Management*, 22 (3) 219-228.

Fisher, R. 2009. Relationships in nurse prescribing: Revealing the processes. *British Journal of Community Nursing*, 14 (12) 518-524.

Fisher, R. 2010. Nurse prescribing: A vehicle for improved collaboration, or a stumbling block to inter-professional working? *International Journal of Nursing Practice*, 16 (6) 579-585.

Flanagan, J. 1954. The Critical Incident Technique. *Psychological Bulletin*, 51 (4) 327-358.

Flick, U. 2009. *An Introduction to Qualitative Research*, 4th ed. London, SAGE.

Fontana, S., Devine, E., and Kelber, S. 2000. Nurse practitioner student prescriptive patterns. *Journal of the American Academy of Nurse Practitioners*, 12 (1) 3-10.

Garbutt, J., Highstein, G., Jeffe, D., Dunagan, W., and Fraser, V. 2005. Safe medication prescribing: Training and experience of medical students and housestaff at a large teaching hospital. *Academic Medicine*, 80 (6) 594-599.

General Medical Council. 2006. *Good Medical Practice*. [online] London, GMC. Available at: http://www.gmc-uk.org/Good_Medical_Practice_0510.pdf_32611016.pdf [Accessed: 11 March 2011].

George, J., McCaig, D., Bond, C., Cunningham, I., Diack, H., and Stewart, D. 2007. Benefits and challenges of prescribing training and implementation: Perceptions and early experience of RPSGB prescribers. *International Journal of Pharmacy Practice*, 15 (1) 23-30.

Glesne, C. 1999. *An introduction to qualitative research*, 2nd ed. New York, Longman.

Green, A., Westwood, O., Smith, P., Peniston-Bird, F., and Holloway, D. 2009. Provision of continued professional development for non-medical prescribers within a South of England Strategic Health Authority: A report on a training needs analysis. *Journal of Nursing Management*, 17 (5) 603-614.

Greenfield, S., Bryan, S., Gill, P., Gutridge, K., and Marshall, T. 2005. Factors influencing clinicians' decisions to prescribe medication to prevent coronary heart disease. *Journal of Clinical Pharmacy and Therapeutics*, 30 (1) 77-84.

Gremler, D. 2004. The critical incident technique in service research. *Journal of Service Research*, 7 (1) 65-89.

Hackert, C. and Braehler, G. 2007. *Flash-q*. [online] (Updated 9 June 2007) Available at: http://www.hackert.biz/flashq/home/ [Accessed: 12 August 2011].

Hacking, S. and Taylor, J. 2010. *An evaluation of the scope and practice of non-medical prescribing in the North West for NHS North West*. [online] Preston, University of Central Lancashire. Available at: http://www.prescribingforsuccess.co.uk/documents/pfs_FinalNMP10.09.10.pdf [Accessed: 4 March 2011].

Hajjaj, F., Salek, M., Basra, M., and Finlay, A. 2010. Non clinical influences, beyond diagnosis and severity, on clinical decision making in dermatology: Understanding the gap between guidelines and practice. *British Journal of Dermatology*, 163 (4) 789-799.

Hall, J., Noyce, P., and Cantrill, J. 2009. How do district nurses choose which products to prescribe. *British Journal of Community Nursing*, 14 (1) 12-17.

Hall, J., Cantrill, J., and Noyce, P. 2003. Influences on community nurse prescribing. *Nursing Prescribing*, 1 (3) 127-132.

Hall, J., Cantrill, J., and Noyce, P. 2004. Managing independent prescribing: The influence of primary care trusts on community nurse prescribing. *International Journal of Pharmacy Practice*, 12 (3) 133-139.

Hall, J., Cantrill, J., and Noyce, P. 2006. Why don't trained community nurse prescribers prescribe? *Journal of Clinical Nursing*, 15 (4) 403-412.

Hall, J., Cantrill, J., and Noyce, P. 2008. Why do district nurses alter their prescribing patterns? *British Journal of Community Nursing*, 13 (11) 507-513.

Hassell, K., Atella, V., Schafheutle, E., Weiss, M., and Noyce, P. 2003. Cost to the patient or cost to the healthcare system? Which one matters the most for GP prescribing decisions? *European Journal of Public Health*, 13 (1) 18-23.

Higgins, M. and Tully, M. 2005. Hospital doctors and their schemas about appropriate prescribing. *Medical Education*, 39 (2) 184-193.

Hobson, R., Scott, J., and Sutton, J. 2010. Pharmacists and nurses as independent prescribers: Exploring the patient's perspective. *Family Practice*, 27 (1) 110-120.

House of Commons Health Committee. 2010. *Public Expenditure on Health and Personal Social Services 2009*. London, House of Commons.

Hughes, C. and McCann, S. 2003. Perceived inter professional barriers between community pharmacists and general practitioners: A qualitative assessment. *British Journal of General Practice*, 53 (493) 600-606.

Iedema, R., Brownhill, S., Haines, M., Lancashire, B., Shaw, T., and Street, J. 2010. 'Hands on, hands off': A model of clinical supervision that recognises trainees' need for support and independence. *Australian Health Review*, 34 (3) 286-291.

Jacoby, A., Smith, M., and Eccles, M. 2003. A qualitative study to explore influences on general practitioners' decisions to prescribe new drugs. *British Journal of General Practice*, 53 (487) 120-125.

Jones, M., Greenfield, S., and Bradley, C. 2001. Prescribing new drugs: Qualitative study of influences on consultants and general practitioners. *British Medical Journal*, 323 (7309) 378-381.

Jutel, A. and Menkes, D. 2010. Nurses' reported influence on the prescription and use of medication. *International Nursing Review*, 57 (1) 92-97.

Kaiser, H. 1960. The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20 (1) 141-151.

Kessenich, C. and Westbrook, M. 1999. Pharmaceutical companies and the prescriptive practices of nurse practitioners. *Journal of the American Academy of Nurse Practitioners*, 11 (12) 533-538.

Kirk, J. and Miller, M. 1986. *Reliability and Validity in Qualitative Research. SAGE University Paper series on Qualitative Research Methods (Vol. 2).* Beverly Hills, SAGE.

Knight, B. 1992. *Legal Aspects of Medical Practice*, 5th ed. Edinburgh, Churchill Livingstone.

Kumar, S., Little, P., and Britten, N. 2003. Why do general practitioners prescribe antibiotics for sore throat? Grounded theory interview study. *British Medical Journal*, 326 (7381) 138-141.

Ladd, E. 2005. The use of antibiotics for viral upper respiratory tract infections: An analysis of nurse practitioner and physician prescribing practices in ambulatory care, 1997-2001. *Journal of the American Academy of Nurse Practitioners*, 17 (10) 416-424.

Latter, S., Blenkinsopp, A., Smith, A., Chapman, S., Tinelli, M., Gerrard, K., Little, P., Gelino, N., Granby, T., Nicholls, P., and Dorer, G. 2010. *Evaluation of nurse and pharmacist independent prescribing.* Southampton, Keele, Faculty of Health Sciences, University of Southampton; School of Pharmacy, Keele University on behalf of Department of Health.

Latter, S., Maben, J., Myall, M., Courtenay, M., Young, A., and Dunn, N. 2005. *An Evaluation of Extended Formulary Independent Nurse Prescribing: Executive Summary of Final Report*. [online] London, Department of Health. Available at: http://www.dh.gov.uk/prod_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4114086.pdf [Accessed: 24 February 2011].

Lesar, T., Briceland, L., and Stein, D. 1997. Factors related to errors in medication prescribing. *Journal of the American Medical Association*, 277 (4) 312-317.

Lewis, J. and Ritchie, J. 2003. "Generalising from Qualitative Research". In: *Qualitative Research Practice*, J. Lewis and J. Ritchie, eds., London, SAGE, pp. 263-286.

Lewis, P. 2006. *Uncomfortable prescribing decisions in secondary care.* Ph.D. University of Manchester.

Lewis, P. and Tully, M. 2011. The discomfort caused by patient pressure on the prescribing decision of hospital prescribers. *Research in Social and Administrative Pharmacy*, 7 (1) 4-15.

Lewis, P. and Tully, M. 2009a. The discomfort of an evidence-based prescribing decision. *Journal of Evaluation in Clinical Practice*, 15 (6) 1152-1158.

Lewis, P. and Tully, M. 2009b. Uncomfortable prescribing decisions in hospitals: The impact of teamwork. *Journal of the Royal Society of Medicine*, 102 (11) 481-488.

Lewis-Evans, A. and Jester, R. 2004. Nurse prescribers' experiences of prescribing. *Journal of Clinical Nursing*, 13 (7) 796-805.

Lipman, T., Murtagh, M., and Thomson, R. 2004. How research-conscious GPs make decisions about anticoagulation in patients with atrial fibrillation: A qualitative study. *Family Practice*, 21 (3) 290-298.

Little, P., Dorward, M., Warner, G., Stephens, K., Senior, J., and Moore, M. 2004. Importance of patient pressure and perceived pressure and perceived medical need for investigations, referral, and prescribing in primary care: Nested observational study. *British Medical Journal*, 328 (7437) 444-446.

Ljungberg, C., Lindblad, A., and Tully, M. 2007. Hospital doctors' views of factors influencing their prescribing. *Journal of Evaluation in Clinical Practice*, 13 (5) 765-771.

Lloyd, F., Parsons, C., and Hughes, C. 2010. 'It's showed me the skills that he has': Pharmacists' and mentors' views on pharmacist supplementary prescribing. *International Journal of Pharmacy Practice*, 18 (1) 29-36.

Lofland, J. and Lofland, L. 2006. *Analyzing Social Settings: A Guide to Qualitative Observation and Analysis*, 3rd ed. Belmont, California, Wadsworth Publishing Company.

Luker, K., Hogg, C., Austin, L., Ferguson, B., and Smith, K. 1998. Decision making: The context of nurse prescribing. *Journal of Advanced Nursing*, 27 (3) 657-665.

Luker, K. and Kenrick, M. 1992. An exploratory study of the sources of influence on the clinical decisions of community nurses. *Journal of Advanced Nursing*, 17 (4) 457-466.

Macfarlane, J., Holmes, W., Macfarlane, R., and Britten, N. 1997. Influence of patients' expectations on antibiotic management of acute lower respiratory tract illness in general practice: Questionnaire study. *British Medical Journal*, 315 (7117) 1211-1214.

Mahoney, D. and Ladd, E. 2010. More than a prescriber: Gerontological nurse practitioners' perspectives on prescribing and pharmaceutical marketing. *Geriatric Nursing*, 31 (1) 17-27.

Manchester PCT. 2009. *Non-medical prescribing policy*. [online] Manchester, Manchester PCT. Available at: http://www.manchester.nhs.uk/document_uploads/Public_Policies_and_Procedures/Non-medical%20prescribing%20Policy%20-%20Jan%202009.pdf [Accessed: 10th June 2011].

McCaughan, D., Thompson, C., Cullum, N., Sheldon, T., and Thompson, D. 2002. Acute care nurses' perceptions of barriers to using research information in clinical decision-making. *Journal of Advanced Nursing*, 39 (1) 46-60.

McColl, A., Smith, H., White, P., and Field, J. 1998. General practitioners' perceptions of the route to evidence based medicine: A questionnaire survey. *British Medical Journal*, 316 (7128) 361-365.

McKeown, B. and Thomas, D. 1988. *Q Methodology. Sage University Paper Series on Quantitative Applications in the Social Sciences*. Newbury Park, London, SAGE publications.

Merriam, S. 1995. What can you tell from an N of 1?: Issues of validity and reliability in qualitative research. *PAACE Journal of Lifelong Learning*, 4 51-60.

Miller, E., MacKeigan, L., Rosser, W., and Marshman, J. 1999. Effects of perceived patient demand on prescribing anti-infective drugs. *Canadian Medical Association Journal*, 161 (2) 139-142.

Morecroft, C., Cantrill, J., and Tully, M. 2006. Individual's patient's preferences for hypertension management: A Q-methodological approach. *Patient Education and Counselling*, 61 (3) 354-362.

Morse, J. 1995. The significance of saturation. *Qualitative Health Research*, 5 (2) 147-149.

Muijrers, P., Knottnerus, A., Sijbrandij, J., Janknegt, R., and Grol, R. 2003. Changing relationships: Attitudes and opinions of general practitioners and pharmacists regarding the role of the community pharmacist. *Pharmacy World and Science*, 25 (5) 235-241.

National Prescribing Centre. 2006. *Maintaining competency in prescribing. An outline framework to help pharmacist prescribers.* [online] Liverpool, National Prescribing Centre. Available at: http://www.npc.nhs.uk/non_medical/resources/competency_framework_oct_2006.pdf# [Accessed: 30th March 2011].

National Prescribing Centre. n.d. *Quality in prescribing.* [online] Liverpool, National Prescribing Centre. Available: http://www.npc.nhs.uk/improving_safety/improving_quality/resources/5mg_qualityprescibing.pdf [Accessed: 12 August 2011].

NHS Choices. 2009. *What is controlled medicine (drug)?* [online] (Updated 5 November 2009) Available: http://www.nhs.uk/chq/Pages/1391.aspx?CategoryID=73&SubCategoryID=100 [Accessed: 18 July 2011].

NHS Choices. 2010. *Health records: Introduction to summary care records.* [online] (Updated 15 December 2010) Available: http://www.nhs.uk/NHSEngland/thenhs/records/healthrecords/Pages/servicedescription.aspx [Accessed: 9 June 2011].

NHS Prescription Services. 2009. *Update on Growth in Prescription Volume and Cost in the Year to September 2009*. [online] Fleetwood, NHS Business Services Authority. Available at: http://www.nhsbsa.nhs.uk/PrescriptionServices/Documents/Volume_and_Cost_year_to_September_2009.pdf [Accessed: 23 February 2011].

NHS Prescription Services. 2011. *Update on Growth in Prescription Volume and Cost Year to September 2010*. [online] Fleetwood, NHS Business Services Authority. Available at: http://www.nhsbsa.nhs.uk/PrescriptionServices/Documents/Volume_and_Cost_Report_year_to_Sep_2010.pdf [Accessed: 23 February 2011].

Nursing and Midwifery Council. 2006. *Standards of proficiency for nurse and midwives prescribers*. [online] London, Nursing and Midwifery Council. Available at: http://www.nmc-uk.org/Documents/Standards/nmcStandardsofProficiencyForNurseAndMidwifePrescribers.pdf [Accessed: 11 March 2011].

Nursing and Midwifery Council. 2011. *Nurse Prescribers*. [Email] (Personal Communication, 27 April 2011).

O'Donnell, C. 2004. Attitudes and knowledge of primary care professionals towards evidence-based practice: A postal survey. *Journal of Evaluation in Clinical Practice*, 10 (2) 197-205.

Office for National Statistics. 2008. *National Statistics 2011 Area Classification.* [online] (Updated 6 March 2008) Available at: http://www.statistics.gov.uk/about/methodology_by_theme/area_classification/ [Accessed: 12 August 2011].

Offredy, M., Kendall, S., and Goodman, C. 2008. The use of cognitive continuum theory and patient scenarios to explore nurse prescribers' pharmacological knowledge and decision-making. *International Journal of Nursing Studies*, 45 (6) 855-868.

Otway, C. 2001. Informal peer support: A key to success for nurse prescribers. *British Journal of Community Nursing*, 6 (11) 586-591.

Oxford dictionary of English 2005. *Oxford dictionary of English*, 2nd ed. Oxford, Oxford University Press.

Patil, V. 2008. Efficient theory development and factor retention criteria: Abandon the eigenvalue greater than one' criterion. *Journal of Business Research*, 61 (2) 162-170.

Pearson, S., Rolfe, I., and Smith, T. 2002. Factors influencing prescribing: An intern's perspective. *Medical Education*, 36 (8) 781-787.

Petursson, P. 2005. GPs' reasons for "non-pharmacological" prescribing of antibiotics - a phenomenological study. *Scandinavian Journal of Primary Health Care*, 23 (2) 120-125.

Polgar, S. and Thomas, S. 2000. *Introduction to Research in the Health Sciences*, 4th ed. Edinburgh, Churchill Livingstone.

Prosser, H. and Walley, T. 2007. Perceptions of the impact of primary care organizations on GP prescribing: The iron fist in the velvet glove? *Journal of Health Organisation and Management*, 21 (1) 5-26.

Prosser, H., Almond, S., and Walley, T. 2003. Influences on GPs' decision to prescribe new drugs - the importance of who says what. *Family Practice*, 20 (1) 61-68.

Prosser, H. and Walley, T. 2003. Understanding why GPs see pharmaceutical representatives: A qualitative interview study. *British Journal of General Practice*, 53 (489) 305-311.

Prosser, H. and Walley, T. 2006. New drug prescribing by hospital doctors: The nature and meaning of knowledge. *Social Science and Medicine*, 62 (7) 1565-1578.

NVivo qualitative data analysis software; QSR International Pty Ltd. Version 8, 2008.

Ritchie, J. and Spencer, L. 1994. "Qualitative data analysis for applied policy research". In: *Analyzing Qualitative Data*, A. Bryman and R. Burgess, eds., London, Routledge, pp. 173-194.

Royal Pharmaceutical Society of Great Britain. 2007. *Professional Standards and Guidance for Pharmacist Prescribers*. London, RPSGB.

Running, A., Kipp, C., and Mercer, V. 2006. Prescriptive patterns of nurse practitioners and physicians. *Journal of the American Academy of Nurse Practitioners*, 18 (5) 228-233.

Rycroft-Malone, J., Fontenla, M., Bick, D., and Seers, K. 2008. Protocol-based care: Impact on roles and service delivery. *Journal of Evaluation in Clinical Practice*, 14 (5) 867-873.

Sackett, D., Rosenberg, W., Gray, J., and Haynes, R. 1996. Evidence-based medicine: What it is and what it isn't. *British Medical Journal*, 312 (7023) 71-72.

Schafheutle, E., Hassell, K., Noyce, P., and Weiss, M. 2002. Access to medicines: Cost as an influence on the views and behaviour of patients. *Health and Social Care in the Community*, 10 (3) 187-195.

Schluter, J., Seaton, P., and Chaboyer, W. 2008. Critical incident technique: A user's guide for nurse researchers. *Journal of Advanced Nursing*, 61 (1) 107-114.

Schumock, G., Walton, S., Park, H., Nutescu, E., Blackburn, J., Finley, J., and Lewis, R. 2004. Factors that influence prescribing decisions. *Annals of Pharmacotherapy*, 38 (4) 557-562.

Schwartz, R., Soumerai, S., and Avorn, J. 1989. Physician motivations for non-scientific drug prescribing. *Social Science and Medicine*, 28 (6) 577-582.

Seston, E. and Hassell, K. 2010. Workforce update - joiners, leavers, and practising and not practising pharmacists on the 2009 Register. *The Pharmaceutical Journal*, 284 80-82.

Snowden, A. 2008. Quantitative analysis of mental health nurse prescribers in Scotland. *Journal of Psychiatric and Mental Health Nursing*, 15 (6) 471-478.

Stenner, K., Carey, N., and Courtenay, M. 2009. Nurse prescribing in dermatology: Doctors' and non-prescribing nurses' views. *Journal of Advanced Nursing*, 65 (4) 851-859.

Stenner, K., Carey, N., and Courtenay, M. 2010. Implementing nurse prescribing: A case study in diabetes. *Journal of Advanced Nursing*, 66 (3) 522-531.

Stenner, K. and Courtenay, M. 2008. The role of inter-professional relationships and support for nurse prescribing in acute and chronic pain. *Journal of Advanced Nursing*, 63 (3) 276-283.

Stenner, K., Courtenay, M., and Carey, N. 2011. Consultations between nurse prescribers and patients with diabetes in primary care: A qualitative study of patient views. *International Journal of Nursing Studies*, 48 (1) 37-46.

Stevenson, F., Greenfield, S., Jones, M., Nayak, A., and Bradley, C. 1999. GPs' perceptions of patient influence on prescribing. *Family Practice*, 16 (3) 255-261.

Stewart, D., George, J., Bond, C., Cunningham, I., Diack, H., and Mccaig, D. 2008. Exploring patients' perspectives of pharmacist supplementary prescribing in Scotland. *Pharmacy World and Science*, 30 (6) 892-897.

Stewart, D., George, J., Diack, H., Bond, C., and Mccaig, D. 2009a. Cross sectional survey of the Scottish general public's awareness of, views on, and attitudes toward non-medical prescribing. *The Annals of Pharmacotherapy*, 43 (6) 1115-1121.

Stewart, D., George, J., Bond, C., Diack, L., McCaig, D., and Cunningham, S. 2009b. Views of pharmacist prescribers, doctors and patients on pharmacist prescribing implementation. *International Journal of Pharmacy Practice*, 17 (2) 89-94.

Stricklin, M. and Almeida, R. 2004. *PCQ for Windows Standard Edition.* [online] (Updated 11 January 2010) Available at: http://www.pcqsoft.com/ [Accessed: 12 August 2011].

Tann, J., Blenkinsopp, A., Grime, J., and Evans, A. 2010. The great boundary crossing: Perceptions on training pharmacists as supplementary prescribers in the UK. *Health Education Journal*, 69 (2) 183-191.

The NHS Information Centre. 2010a. *Hospital Prescribing, England: 2009*. [online] Leeds, The NHS Information Centre. Available at: http://www.ic.nhs.uk/webfiles/publications/007_Primary_Care/hospre09/Hospital_Prescribing_2009.pdf [Accessed: 23 February 2011].

The NHS Information Centre. 2010b. *Prescriptions Dispensed in the Community: England, Statistics for 1999 to 2009.* [online] Leeds, The NHS Information Centre. Available at: http://www.ic.nhs.uk/webfiles/publications/prescriptionsdispensed/Prescriptions_Dispensed_1999_2009%20.pdf [Accessed: 23 February 2011].

Thomas, D. and Baas, L. 1992. The issue of generalization in Q-methodology "reliable schematics" revisited. *Operant Subjectivity*, 16 (1) 18-36.

Tichelaar, J., Richir, M., Avis, H., Scholten, H., Antonini, N., and De Vries, T. 2010. Do medical students copy the drug treatment choices of their teachers or do they think for themselves? *European Journal of Clinical Pharmacology*, 66 (4) 407-412.

Tobin, L., Neto, A., Wutzke, S., and Patterson, C. 2008. Influences on the prescribing of new drugs. *Australian Family Physician*, 37 (1-2) 78-81.

Tully, M., Latif, S., Cantrill, J., and Parker, D. 2007. Pharmacists' changing views of their supplementary prescribing authority. *Pharmacy World and Science*, 29 (6) 628-634.

Turner, N. 1998. The effect of common variance and structure pattern on random data eigenvalues: Implications for the accuracy of parallel analysis. *Educational Psychology Measurement*, 58 (4) 541-568.

Undeland, D., Kowalski, T., Berth, W., and Gundrum, J. 2010. Appropriately prescribing antibiotics for patients with pharyngitis: A physician-based approach vs. a nurse-only triage and treatment algorithm. *Mayo Clinic Proceedings*, 85 (11) 1011-1015.

van Exel, J. and de Graaf, G. 2005. *Q methodology: A sneak preview*. [online] q-methodology.net Available at: http://www.qmethodology.net/PDF/Q-methodology%20-%20A%20sneak%20preview.pdf [Accessed: 28 February 2011].

Wall, D., Bolshaw, A., and Carolan, J. 2006. From undergraduate medical education to pre-registration house officer year: How prepared are students? *Medical Teacher*, 28 (5) 435-439.

Wathen, B. and Dean, T. 2004. An evaluation of the impact of NICE guidance on GP prescribing. *British Journal of General Practice*, 54 (499) 103-107.

Watkins, C., Harvey, I., Carthy, P., Moore, L., Robinson, E., and Brawn, R. 2003. Attitudes and behaviour of general practitioners and their prescribing costs: A national cross sectional survey. *Quality and Safety in Health Care*, 12 (1) 29-34.

Watterson, A., Turner, F., Coull, A., and Murrary, I. 2009. *An Evaluation of the Expansion of Nurse Prescribing in Scotland (Final Report).* [online] Scotland, Scottish Government in Social Research. Available at: http://www.scotland.gov.uk/Resource/Doc/285830/0087056.pdf [Accessed: 12 August 2011].

Webb, S. and Lloyd, M. 1994. Prescribing and referral in general practice - A study of patients' expectations and doctors actions. *British Journal of General Practice*, 44 (381) 165-169.

Webler, T., Danielson, S., and Tuler, S. 2009. *Using Q-method to reveal social perspectives in environmental research*. [online] Greenfield, Massachusetts, Social and Environmental Research Institute. Available at: www.seri.us.org/pubs/Qprimer.pdf [Accessed: 26 January 2011].

Webler, T., Tuler, S., and Krueger, R. 2001. What is a good public participation process? Five perspectives from the public. *Environmental Management*, 27 (3) 435-450.

Weiss, M., Deave, T., Peters, T., and Salisbury, C. 2004. Perceptions of patient expectation for an antibiotic: A comparison of walk-in centre nurses and GPs. *Family Practice*, 21 (5) 492-499.

Weiss, M., Sutton, J., and Adama, C. 2006, *Exploring innovation in pharmacy practice: a qualitative evaluation of supplementary prescribing by pharmacists*. [online] London, Royal Pharmaceutical Society of Great Britain. Available at: http://www.pprt.org.uk/Documents/Publications/Exploring_innovation_in_pharmacy_practice_supplementary_prescribing.pdf [Accessed: 12 August 2011].

Weiss, M. and Sutton, J. 2009. The changing nature of prescribing: Pharmacists as prescribers and challenges to medical dominance. *Sociology of Health and Illness*, 31 (3) 406-421.

Weiss, M. 1994. Clinical pharmacy: Uncovering the hidden dimension. *Journal of Social and Administrative Pharmacy*, 11 (2) 67-77.

Weiss, M., Fitzpatrick, R., Scott, D., and Goldacre, M. 1996. Pressures on the general practitioner and decisions to prescribe. *Family Practice*, 13 (5) 432-438.

Wood, F., Simpson, S., and Butler, C. 2007. Socially responsible antibiotic choices in primary care: A qualitative study of GPs' decisions to prescribe broad-spectrum and fluroquinolone antibiotics. *Family Practice*, 24 (5) 427-434.

Wood-Mitchell, A., James, I., Waterworth, A., Swann, A., and Ballard, C. 2008. Factors influencing the prescribing of medications by old age psychiatrists for behavioural and psychological symptoms of dementia: A qualitative study. *Age and Ageing*, 37 (5) 547-552.

World Health Organisation. 2000. *Good Guide to Prescribing - A Practical Manual*. [online] Geneva, WHO. Available at: http://whqlibdoc.who.int/hq/1994/who_dap_94.11.pdf [Accessed: 12 August 2011].

Appendix 1.0 - Grey Literature Sources Searched in Literature Searches

Manual searches of a number of internet sites relevant to the topic were conducted. The internet sites searched included the following:

- Department of Health website
- British Medical Association website
- Nursing and Midwifery Council website
- The General Medical Council website
- Royal Pharmaceutical Society of Great Britain website
- The National Prescribing Centre website
- NHS – Business Services Authority Prescription Pricing Division website
- The NHS Information Centre website

Appendix 2.0 - Databases Searched in Literature Searches

The British Nursing Index (BNI) - The British Nursing Index is a bibliographic database that indexes articles from the most popular English language nursing journals published primarily in the UK. BNI is a comprehensive index covering all aspects of nursing, midwifery and community healthcare from 1994 to the present, and is updated monthly.

PsycInfo - Is an electronic bibliographic database providing abstracts and citations to the scholarly literature in the psychological, social, behavioural, and health sciences.

OVID Medline - MEDLINE® is the United States National Library of Medicine's bibliographic database providing information from the following fields: Medicine, Nursing, Dentistry, Allied Health, Pre-clinical sciences and Veterinary medicine.

EMBASE – EMBASE consists of three separate databases: the Excerpta Medica Database (EMBASE), EMBASE Drugs and Pharmacology (EMDP), and EMBASE Psychiatry (EMPS). EMBASE is one of the most widely used biomedical and pharmaceutical databases. Approximately 375,000 records are added each year.

Allied and Complementary Medicine Database Guide (AMED) - The AMED is a unique bibliographic database produced by the Health Care Information Service of the British Library. It covers a selection of journals in complementary medicine, palliative care, and several professions allied to medicine.

Web of Science – Includes the following: Science Citation Index Expanded, Social Sciences Citation Index, Arts & Humanities Citation Index, Conference Proceedings Citation Index- Science, Conference Proceedings Citation Index- Social Science & Humanities.

OVID Books Database – Includes key medical, nursing, and pharmacy texts from a variety of publishers.

Appendix 3.0 - Study One - NHS Ethical Approval Letter

NHS

National Research Ethics Service
Tameside & Glossop Local Research Ethics Committee

Room 181
Gateway House
Piccadilly South
Manchester
M60 7LP

Telephone: 0161 237 2392
Facsimile: 0161 237 2383

16 December 2008

Miss Clare Alison Maddox
PhD Student
University of Manchester
School of Pharmacy and Pharm. Sci.
Stopford Building, Oxford Road
Manchester
M13 9PT

Dear Miss Maddox

Full title of study: **Understanding the factors influencing the prescribing decisions of nurse and pharmacist non-medical prescribers - An exploratory study**

REC reference number: **08/H1013/80**

The Research Ethics Committee reviewed the above application at the meeting held on 12 December 2008.

Ethical opinion

The members of the Committee present gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, **subject to the conditions specified below.**

Ethical review of research sites

The Committee agreed that all sites in this study should be exempt from site-specific assessment (SSA). There is no need to submit the Site-Specific Information Form to any Research Ethics Committee. The favourable opinion for the study applies to all sites involved in the research.

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

Management permission at NHS sites ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk.

Other conditions specified by the REC

a the Committee would like to see all documentation with the full study title at the top and with version numbers and date

b The committee would like to see the Participant Information Sheet revised under the heading 'What will happen to me if I decide to take part?' to include the following statement 'tapes will be anonymised and destroyed at the end of the study and direct quotes may be used in the write up but in such a way as not to identify individuals'

You should submit the revised documentation to the REC office as soon as possible.

Approved documents

The documents reviewed and approved at the meeting were:

Document	Version	Date
CV - Dr Mary Tully		
CV - Dr Jason Hall		
Thank you letter (2)	1.0	27 November 2008
Confirmation Letter	1.0	27 November 2008
Thank you letter	1.0	27 November 2008
Participant Consent Form	1.0	27 November 2008
Participant Information Sheet	1.0	27 November 2008
Letter of invitation to participant	1.0	27 November 2008
Questionnaire	1.0	27 November 2008
Interview Schedules/Topic Guides	1.0	27 November 2008
Letter from Sponsor	1	27 November 2008
Covering Letter		28 November 2008
Protocol	1.0	27 November 2008
Investigator CV		27 November 2008
Application	2.0	27 November 2008

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Now that you have completed the application process please visit the National Research Ethics Website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

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
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email referencegroup@nres.npsa.nhs.uk.

08/H1013/80 Please quote this number on all correspondence

With the Committee's best wishes for the success of this project

Yours sincerely

Dr Lorraine Lighton
Chair

Email: Shehnaz.ishaq@northwest.nhs.uk

Enclosures: List of names and professions of members who were present at the meeting
"After ethical review – guidance for researchers" SL-AR2

Copy to: Dr Karen Shaw
Linda Dack

NHS
National Research Ethics Service

Tameside & Glossop Local Research Ethics Committee
Room 181
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Piccadilly South
Manchester
M60 7LP

Telephone: 0161 237 2392
Facsimile: 0161 237 2363

06 January 2009

Miss Clare Alison Maddox
PhD Student
University of Manchester
School of Pharmacy and Pharm. Sciences
Stopford Building, Oxford Road
Manchester
M13 9PT

Dear Miss Maddox

Full title of study: **Understanding the factors influencing the prescribing decisions of nurse and pharmacist non-medical prescribers - An exploratory study**
REC reference number: **08/H1013/80**
Protocol number: **2**

Thank you for your email of 16 December 2008. I can confirm the REC has received the documents listed below as evidence of compliance with the approval conditions detailed in our letter dated 12 December 2008. Please note these documents are for information only and have not been reviewed by the committee.

Documents received

The documents received were as follows:

Document	Version	Date
Protocol	2	16 December 2008
Interview Schedules/Topic Guides	2	16 December 2008
Questionnaire	2	16 December 2008
Letter of invitation to participant	2	16 December 2008
Participant Information Sheet	3.0	16 December 2008
Participant Consent Form	2	16 December 2008
Thank you letter (1)	2	16 December 2008
Thank you letter (2)	2	16 December 2008
Confirmation Letter	2	16 December 2008
Summary/Synopsis	2	16 December 2008

Appendix 4.0 - Study Two - NHS Ethical Approval Letter

NHS

National Research Ethics Service
North West 10 Research Ethics Committee - Greater Manchester North

Room 181
Gateway House
Piccadilly South
Manchester
M60 7LP

Telephone: 0161 237 2438
Facsimile: 0161 237 2383

01 December 2009

Miss Clare Alison Maddox
PhD student
University of Manchester
School of Pharmacy and Pharma. Sci.
Stopford Building, Oxford Road
Manchester
M13 9PT

Dear Miss Maddox

Study Title: **Factors Influencing the Decision to Prescribe**
REC reference number: **09/H1011/68**
Protocol number: **1.0**

The Research Ethics Committee reviewed the above application at the meeting held on 23 November 2009. Thank you for attending to discuss the study.

Ethical opinion

The Committee thanked you for attending the meeting and the following points were raised:

- The Committee told you that they were not clear why those participating in the mini group had the option of notes being taken rather than the group being recorded but that those participating in the interviews did not have that option.
  - You apologised and told the Committee that it was a mistake and in fact those who participate in the interviews would have the option of notes being taken but that, due to the number of people involved in a mini group, it would not be logistically possible to take notes instead during the groups.
- The Committee asked you whether you would be able to identify any patient safety issues and if you had any concerns how you would deal with them.
  - You informed the Committee that both of your supervisors are pharmacists and if any patient safety or misconduct issues were raised you would discuss them with your supervisors and if necessary clarify things with the participants before taking it further.
- The Committee told you that they thought that the PIS should refer to the fact that participants may benefit from their participation in the study, rather than they will and should be consistent in the use of my project, rather than a mix of 'my project' and 'our project'.
- The Committee told you that they thought that 'highly unlikely' under the heading 'Are there any risks or benefits to taking part?' in the PIS should not be underlined.

The members of the Committee present gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, subject to the conditions specified below.

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" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

For NHS research sites only, management permission for research ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk. Where the only involvement of the NHS organisation is as a Participant Identification Centre, management permission for research is not required but the R&D office should be notified of the study. Guidance should be sought from the R&D office where necessary.

Sponsors are not required to notify the Committee of approvals from host organisations.

Other conditions specified by the REC:

a) Amendments to the Participant Information Sheet:
   - Refer to the fact that participants may benefit from their participation study.
   - Be consistent in the use of my project.
   - Remove the underlining of 'highly unlikely' under the heading 'Are there any risks or benefits to taking part?'

Please provide the REC with a copy of the final version of the Participant Information Sheet.

The REC has nominated the Vice-Chair to be a point of contact, via the Co-ordinator Dr S Parker, should you require further clarification upon receipt of this letter.

It is responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The documents reviewed and approved at the meeting were:

Document	*Version*	*Date*
Covering Letter		
REC application	2.5	26 October 2009
Protocol	1.0	23 November 2009
Investigator CV		27 October 2009

With the Committee's best wishes for the success of this project

Yours sincerely

Dr Ken Cook
Vice-Chair

Email: sian.parker@northwest.nhs.uk

Enclosures: *List of names and professions of members who were present at the meeting*

"After ethical review – guidance for researchers"

Copy to: *Mr Mohammed Zubair, Research Office, The University of Manchester*

Ms Rachel Georgiou, R&D Office, GM PCT ReGroup

NHS
National Research Ethics Service
North West 10 Research Ethics Committee - Greater Manchester North
Room 181
Gateway House
Piccadilly South
Manchester
M60 7LP

Telephone: 0161 237 2438
Facsimile: 0161 237 2383

09 December 2009

Miss Clare Alison Maddox
PhD student
University of Manchester
School of Pharmacy and Pharma. Sci.
Stopford Building, Oxford Road
Manchester
M13 9PT

Dear Miss Maddox

Full title of study: **Factors Influencing the Decision to Prescribe**
REC reference number: **09/H1011/68**
Protocol number: **1.0**

Thank you for your email of 08 December 2009. I can confirm the REC has received the documents listed below as evidence of compliance with the approval conditions detailed in our letter dated 23 November 2009. Please note these documents are for information only and have not been reviewed by the committee.

Documents received

The documents received were as follows:

Document	Version	Date
Participant Information Sheet	2.0	07 December 2009

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

09/H1011/68 **Please quote this number on all correspondence**

Yours sincerely

Dr Sian Parker
Committee Co-ordinator

E-mail: sian.parker@northwest.nhs.uk

Copy to: *Mr Mohammed Zubair, Research Office, The University of Manchester*

Ms Rachel Georgiou, R&D Office, GM PCT ReGroup

Appendix 5.0 - Study Three - NHS Ethical Approval Letter

NHS

National Research Ethics Service

NORTH WEST 10 RESEARCH ETHICS COMMITTEE – GREATER MANCHESTER NORTH

3rd Floor, Barlow House
4 Minshull Street
Manchester
M1 3DZ
Tel: 0161 625 7817
Email: cynthia.carter@northwest.nhs.uk

Miss Clare Maddox
PhD student
University of Manchester
School of Pharmacy and Pharma Sci
Stopford Building, Oxford Road
M13 9PT

6 May 2010

Dear Miss Maddox

Study Title: **Perspectives on Prescribing Influences amongst Non-medical Prescribers**
REC reference number: **10/H1011/22**
Protocol number: **1.0**

The Research Ethics Committee reviewed the above application at the meeting held on 26 April 2010. Thank you for attending to discuss the study.

Ethical opinion

The Chair welcomed you to the meeting. They were asked by the Committee to clarify the following issues:

The Committee asked why there is no upper limit stated for the number of times the researcher will contact the prescribing leads to ask and remind them to send the email to their staff. You assured the members present that the maximum number of times would be three, including the initial request.

The Committee suggested that, for clarity, the word 'prescribing' be inserted after 'supplementary' (third paragraph, 3rd line) in the template email letter and that it should be on headed paper before it is sent to prescribing leads.

The members of the Committee present gave a favourable ethical opinion of the above research on the basis described in the application form, protocol and supporting documentation, **subject to the conditions specified below**.

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" below).

Conditions of the favourable opinion

The favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission or approval must be obtained from each host organisation prior to the start of the study at the site concerned.

For NHS research sites only, management permission for research ("R&D approval") should be obtained from the relevant care organisation(s) in accordance with NHS research governance arrangements. Guidance on applying for NHS permission for research is available in the Integrated Research Application System or at http://www.rdforum.nhs.uk. Where the only involvement of the NHS organisation is as a Participant Identification Centre, management permission for research is not required but the R&D office should be notified of the study. Guidance should be sought from the R&D office where necessary.

Sponsors are not required to notify the Committee of approvals from host organisations.

Other conditions specified by the REC

1. Confirm the upper limit stated for the number of times the researcher will contact the prescribing leads to ask and remind them to send the email to their staff
2. The template email letter, before it is sent to prescribing leads,
   a) amend by inserting the word 'prescribing' be inserted after 'supplementary' (third paragraph, 3rd line)
   b) include the formal institution heading. This can be embedded so that it can not be copied/cut & pasted

Please ensure that you submit revised documentation with version numbers and dates to the REC co-ordinator for acknowledgement.

It is responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).

Approved documents

The documents reviewed and approved at the meeting were:

Document	*Version*	*Date*
Covering Letter		
REC application	2.5	23 March 2010
Protocol	1.0	25 March 2010
Investigator CV	Maddox	27 September 2009
Participant Information Sheet	1.0	25 March 2010
Letter of invitation to participant	1.0	25 March 2010
Evidence of insurance or indemnity	1.0	23 March 2010
Questionnaire: Final Survey material & statements		
Expression of interest form	1.0	25 March 2010
Thank you letter	1.0	25 March 2010
Survey details email/letter	1.0	25 March 2010
Reminder letter	1.0	25 March 2010
CV Tully - Academic Supervisor		

Membership of the Committee

The members of the Ethics Committee who were present at the meeting are listed on the attached sheet.

Dr Klimiuk and Mr Cook both know the Academic Supervisor in their capacities as Chairs of RECs for study 10/H1011/22 but have no contact with the research project.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees (July 2001) and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

After ethical review

Now that you have completed the application process please visit the National Research Ethics Service website > After Review

You are invited to give your view of the service that you have received from the National Research Ethics Service and the application procedure. If you wish to make your views known please use the feedback form available on the website.

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
- Progress and safety reports
- Notifying the end of the study

The NRES website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

We would also like to inform you that we consult regularly with stakeholders to improve our service. If you would like to join our Reference Group please email referencegroup@nres.npsa.nhs.uk.

10/H1011/22	**Please quote this number on all correspondence**

With the Committee's best wishes for the success of this project

Yours sincerely

C. Carter

pp **Dr Peter Stanley Klimiuk**
Chair

Enclosures: List of names and professions of members who were present at the meeting and those who submitted written comments

"After ethical review – guidance for researchers" SL-AR2

Copy to: Mr Mohammed Zubair, Research Governance, The University of Manchester

NHS
National Research Ethics Service
NORTH WEST 10 RESEARCH ETHICS COMMITTEE – GREATER MANCHESTER NORTH
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Miss Clare Maddox
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M13 9PT

20 May 2010 (Revised 21 May 2010 to add NHS site to receive copies of letters)

Dear Miss Maddox

Full title of study:	**Perspectives on Prescribing Influences amongst Non-medical Prescribers**
REC reference number:	**10/H1011/22**
Protocol number:	**2.0**

Thank you for your email dated 10 May 2010. I can confirm the REC has received the documents listed below as evidence of compliance with the approval conditions detailed in our letter dated 26 April 2010. Please note these documents are for information only and have not been reviewed by the committee.

Documents received

The documents received were as follows:

Document	*Version*	*Date*
Protocol	2.0	10 May 2010
Covering Letter	Email	10 May 2010
Letter of invitation to participant	2.0	10 May 2010

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

10/H1011/22	**Please quote this number on all correspondence**

Yours sincerely

C. Carter

Ms Cynthia Carter
Committee Co-ordinator

Copy to: Mr Mohammed Zubair, Research Governance, The University of Manchester

Clare Hornby, R & D office for Cumbria PCT

Appendix 6.0 - Study One - Participant Form

Understanding The factors Influencing the Prescribing Decisions of Nurse and Pharmacist NMPs - An Exploratory Study

If you would be willing to participate in this research please fill in the form below. The details you provide on this form will be used to select participants for interview and if selected you will be contacted using the contact details you provide. This form does not assume that you are consenting to the research and a further consent form will need to be signed before an interview is conducted. The information you provide on this form is strictly confidential.

Title	Dr / Mr / Ms /Other (please specify) …….
Name:	……..
Post(s):	……..
Details of post(s):	…… …… ……..
Address:	…… ……..
Contact telephone number:	……..
Email address:	……..
Preferred method of contact:	Telephone Email Letter

Please indicate below which type of prescribing you are qualified to use, when you qualified and whether or not you use it in your current role?

	Are you qualified to use this type of prescribing?	**When did you qualify to use this type of prescribing?**	**Do you use this type of prescribing in your current role?**
Independent Prescribing	Yes No	Approx. date: OR N/A	Yes No
Supplementary Prescribing	Yes No	Approx. date: OR N/A	Yes No
***(Nurses only*) Community nurse prescribing**	Yes No	Approx. date: OR N/A	Yes No

Thank you for taking time to fill in the questionnaire
Please return the questionnaire in the stamped address envelope provided or email to clare.maddox@postgrad.manchester.ac.uk

Appendix 7.0 - Study One - Invitation Letter

[Nurse/pharmacist name]
[Address]

[Date]

Dear [Name of nurse/pharmacist],

I am a PhD student at the University of Manchester and I am currently investigating prescribing decisions made by pharmacist and nurse prescribers. In particular, the research aims to identify and explore the factors that are thought to influence prescribing decisions made by nurse and pharmacist prescribers in primary care. It is hoped that, through this research, more knowledge will be gained about the influences on non-medical prescribing which is an area that is currently under researched.

Participation in the study will involve a single interview lasting approximately 1 hour. It will involve discussion of your current role and use of prescribing and also discussion of some of the factors which you believe influence your prescribing. No information relating to specific patients is required. The interviews will be arranged for a time and location convenient for you.

I am writing to ask if you would consider participating in the study. If, after reading the participant information leaflet, you have any questions or clarifications, please do not hesitate to contact me. If you are interested then please fill in the form attached and send it back to me via email or in the envelope that has been provided. This questionnaire provides me with background information and details so that you can be contacted. All questionnaires will remain strictly confidential.

Thank you for your time.

Kindest regards

Clare Maddox

Appendix 8.0 - Study One - Participant Information Sheet

Understanding The factors Influencing the Prescribing Decisions of Nurse and Pharmacist NMPs - An Exploratory Study

Introduction

You are being invited to take part in the research study. Before you decide whether or not 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 and discuss it with others if you wish. The information provided below will hopefully give you a good understanding of what the research is about and how you might be able to help. However, if you have any other questions or clarifications, please do not hesitate to contact me on the telephone number or email address given below. Please take time to decide whether or not you wish to take part.

What is the purpose of the study?

The research aims to identify and explore the factors that are thought to influence prescribing decisions made by nurse and pharmacist prescribers in primary care. It is also hoped that, through this research, more knowledge will be gained about the influences on non-medical prescribing, which is an area that is currently under-investigated.

Why have I been chosen?

You have been chosen as you are a qualified nurse or pharmacist prescriber working in primary care.

What will happen to me if I decide to take part?

If you decide to take part in this study you may be asked to participate in a single interview. This interview will be conducted at a time and place suitable for you. During the interview you will be asked about your role and the factors that influence your prescribing decisions. It is estimated that the interview should take about an hour. No specific patient information is needed during the interview. The interview will be audio-recorded with your permission; if you object, then I will just take notes. You may request that the audio-recorder to be turned off or to stop the interview at any point. Direct quotations may be used for the purposes of disseminating the research findings, but in such a way as not to identify you. The audio-recordings will be stored securely and anonymised. The audio-recordings will be destroyed at the end of the study.

At the end of the interview you may be asked if you know a colleague or friend who might like to take part in the study. If you do know someone, I will give you an information pack that you can pass on to the person. If the person wishes to participate in the study then they will be asked to contact me directly. Similarly, if you are not able or interested in taking part in the study but you know someone who might be interested, then I would be grateful if you could pass the information pack you have received on to them.

Are there any risks or benefits to taking part?

It is expected you will benefit from the process of reflection involved in the study. In the highly unlikely event you disclose information in the interview that may reveal a serious patient safety issue then confidentiality will be broken to allow details of the disclosure to be given to the relevant authority.

Do I have to take part?

No, participation is entirely voluntary.

Will the information about me remain confidential?

Except in a situation where a serious patient safety issue has been disclosed (as described above) all information obtained from the interview and any other contact with you will be kept confidential. Other than my supervisors, your participation in the study will not be divulged to any person. In order to respect patient and colleague confidentiality and you will be asked to not mention patients or your colleagues by name during the interview. However, if identifying information is mentioned it will be removed from the interview data.

What do I do next?

If you decide you may like to take part then please complete the attached form. This form provides me with information about your post and also your contact details so that I can send you further information. It does not mean that you are agreeing to take part in this study and you may decline any further involvement at a later stage. It is possible that you may not be selected for the study and if this is the case then we will let you know by letter that no further participation is required. In this case your personal details will be destroyed.

What if there is a problem?

If, after taking part in this research, you are unhappy with any aspect of the process you can telephone the University of Manchester's research governance co-ordinator on 0161 2758093 or email them at research-governance@manchester.ac.uk.

Thank you for your time

Clare Maddox
Email: clare.maddox@postgrad.manchester.ac.uk
Tel: 0161 275 2363
1st Floor, Stopford Building
School of Pharmacy and Pharmaceutical Sciences
University of Manchester
Manchester
M13 9PT

If you need further information please do not hesitate to contact me or if you would rather talk to my supervisors about this project please feel free to do so.

Dr Mary Tully: 0161 275 4242 or email: mary.p.tully@manchester.ac.uk
Dr Jason Hall: 0161 275 2720 or email: jason.hall@manchester.ac.uk

Appendix 9.0 - Study One - Number of Participants by Role, Year of Prescribing Qualification, Type of Prescribing Qualification, Use of Prescribing and Number of Prescriptions Issued Per Week

		Advanced Practitioner (General)	Community Matron/ Active Case Manager	Specialist Nurse		Nurse Practitioner for GP Surgery	WIC Nurse	OOHs/ WIC Nurse	Nurse – Various*	Practice Pharmacist/ Prescribing Support Pharmacist	Pharmacist – Various**	TOTAL
				Palliative Care	All Other							
TOTAL		**4**	**1**	**2**	**0**	**2**	**3**	**1**	**1**	**3**	**1**	**18**
Year of Prescribing Qualification	Before 2003	-	-	-	-	-	-	-	-	-	-	**0**
	2003 – 2005	-	-	1	-	2	2	1	-	3	-	**9**
	2006 to Present	4	1	1	-	-	1	-	1	-	1	**9**
Type of Prescribing Qualification	IP only	-	-	1	-	-	1	-	-	-	-	**2**
	SP & IP	4	1	1	-	2	2	1	1	3	1	**16**
	SP only	-	-	-	-	-	-	-	-	-	-	**0**
Use of Prescribing	IP only	4	-	2	-	2	3	1	1	1	1	**15**
	SP & IP	-	1	-	-	-	-	-	-	2	-	**3**
	SP only	-	-	-	-	-	-	-	-	-	-	**0**
No. of Prescriptions issued per Week	Low < 5	1	1	-	-	-	-	-	1	-	-	**3**
	Medium ≥5 & <20	3	-	1	-	-	2	-	-	3	1	**8**
	High ≥20	-	-	-	-	2	1	1	-	-	1	**6**
	Not Known	-	-	1	-	-	-	-	-	-	-	**1**

* Practice Nurse, WIC Nurse and Specialist Nurse, ** Practice Pharmacist, Intermediate Care Pharmacist and OOHs Practitioner

Appendix 10.0 - Nature of Participants' Roles

	Consultation/ Appointment Setting	Appointment Length	Typical Age of Patients	Conditions managed	Examples of Medications Prescribed	Type of Patient Referral	Responsibility for Diagnosis	Base	Source of Support	Other Information
Advanced Practitioner (AP)	Patients' homes, telephone consultations	Long, sometimes more than one-hour	Mainly elderly	Long-term/ chronic conditions. Examples provided: COPD, heart failure, diabetes and asthma	Wide ranging dependent on conditions managed. Examples provided: steroids, beta-blockers and antibiotics	Referral mainly from GPs although other HCPs sometimes refer to APs	GPs, Hospital/second -dary care doctors and APs	Community office setting	GPs and other APs	None
AP for Nursing Homes	Nursing home	Various, as required	Elderly	Acute complaints. Examples provided: urinary tract infections, constipation, ear wax, eye infections and dizziness	Wide ranging dependent on conditions managed. Examples provided: antibiotics, laxatives, antiemetics, eye ointments and ear drops	Staff at nursing homes	AP	Community office setting	GPs	Might alter medication for chronic/long-term conditions if it is within the AP's competency
AP for School Health	Young person drop-in service	Various, as required	Young adolesc-ents	Minor ailments. Examples provided: chest infections, ear infections, throat infections, skin infections and head lice	Mainly antibiotics but also emergency contraception and head lice products	Self referral	AP	Young person drop-in service clinic	Patient referral to GP	None

	Consultation/ Appointment Setting	Appointment Length	Typical Age of Patients	Conditions managed	Examples of Medications Prescribed	Type of Patient Referral	Responsibility for Diagnosis	Base	Source of Support	Other Information
Community Matron (CM)/ Active Case Manager	Patients' homes and nursing homes	Various, as required	Mainly elderly, although one CM managed children only	As for AP	Wide ranging dependent on conditions managed. Examples provided: diuretics, antihypertens-ives and antibiotics.	Referral mainly from GPs although other HCPs sometimes refer to CMs	GPs, hospital/second-ary care doctors and CMs	Community office setting	GPs and other CMs	Different from APs as they are responsible for the entire management of the patient, including referral to other HCPs
Specialist Nurses	Clinics and hospices	Wide ranging but typically fixed length of time	Patients any age	Wide ranging (see Specialist Table)	Wide ranging (see Specialist Table)	Wide ranging (see Specialist Table)	GP, hospital and secondary doctor and specialist nurses	Clinic, hospice or community office setting	GPs and hospital/ secondary care practitioners in same speciality	None
Nurse Practitioner/ Practice Nurse	GP surgery, although sometimes home visits	10 to 15 minutes, but longer if managing long-term chronic conditions	Patients any age	Minor ailments/ injuries and also long-term/chronic conditions. Some NPs were also responsible for immunisation clinics, new-born baby clinics and family-planning clinics	Wide ranging dependent on conditions. Too extensive to list examples	Self-referral, reception (if no GP appointment available) and regular check-ups (indicated by computer system)	Nurse practitioners/ practice nurses and GPs	GP surgery	GPs	Practice nurses are involved less in the initial diagnoses than nurse practitioners

	Consultation/ Appointment Setting	Appointment Length	Typical Age of Patients	Conditions managed	Examples of Medications Prescribed	Type of Patient Referral	Responsibility for Diagnosis	Base	Source of Support	Other Information
WIC Nurse	WIC clinic	Various, as required	Patients any age	Minor ailments/ injuries	Wide ranging dependent on conditions managed. Examples provided: analgesics, antibiotics, inhalers, emergency contraception and topical creams	Patients walk-in to clinic. Patients typically those that cannot get GP appointment for whatever reason	WIC nurse	WIC clinic	Other nurses in clinic. GPs sometimes in same clinic. Referral to GP surgery in case of no access to a doctor within the clinic	None
OOHs practitioner	OOHs centre and telephone consultations	Various, as required.	Patients any age.	Minor ailments/ injuries. Potential for more serious conditions than WIC	As for WIC nurses	Patient referral and triage by OOHs practitioner	OOHs practitioner	OOHs centre	GPs or referral to secondary care	Both nurses and pharmacists included in this category
Practice Pharmacist/ Prescribing Support Pharmacist	GP surgery	15 minutes for minor ailments. 20 to 40 minutes for long-term/ chronic conditions	Patients any age	Long-term chronic conditions Examples provided: COPD, asthma, hypertension and heart failure. Some also treated minor ailments in the surgery	Wide ranging dependent on conditions. Too extensive to list examples	Self-referral, reception (if no GP appointment available) and regular check-ups (indicated by computer system)	For long-term/chronic conditions mainly GPs. Pharmacist focuses on treatment optimisation but sometimes managed acute exacerbations Diagnosis in the case of minor ailments	GP surgery	GPs	Practice pharmacist and prescribing support pharmacist used interchangeably. Pharmacists have a wide range of other responsibilities (e.g. audit work, advice to nursing homes, medicine queries).

	Consultation/ Appointment Setting	Appointment Length	Typical Age of Patients	Conditions managed	Examples of Medications Prescribed	Type of Patient Referral	Responsibility for Diagnosis	Base	Source of Support	Other Information
Community Pharmacist	Community pharmacy, office setting in health centre and telephone consultations	Various, as required	Patients any age	Wide ranging. Examples provided: Malaria prophylaxis, wound care, substance misuse and minor ailments and injuries	Wide ranging. Examples provided: Simple analgesics malaria prophylaxis, antibiotics, benzodiazep-ines and hypnotics	Patient, GP and private travel vaccination company	Pharmacist, GPs and secondary practitioner	Community pharmacy and office in health centre	GPs, community drug misuse teams and hospital/ secondary care practitioners	Difficult to characterise this role because of the diversity of those interviewed

Key Details about Nurse Specialists Roles

Role	Conditions	Prescribed Medicine	Referrals
Palliative Care Specialist/Macmillan Nurse	Patients with a cancer diagnosis requiring pain relief, symptom control or treatment for other acute ailments	Antibiotics, antiemetics, analgesics, antidepressants and antiepileptics	GPs, district nurses, hospital practitioners and self/relative referral
Diabetes (Adult and Paediatric)	Diabetes and congestive heart disease	Insulin, statins and oral diabetes medication	GP or hospital practitioners (particularly surgeons).
Heart Failure	Heart failure and atrial fibrillation.	ACE inhibitors, BETA blockers and diuretics	GPs or hospital practitioners
Epilepsy	Epilepsy and seizure activity	Anticonvulsants, anti-inflammatory, folic acid and antidepressants	Hospital consultants, GP referral, self/relative referral and employer referral
Dermatology	Scalp fungal infections, acne, skin lesions, eczema and psoriasis	Complete emollients therapies, topical steroid preparation, immunomodulating creams, vitamin D, shampoo, bandages and steroid plasters	GP or hospital consultants (including paediatricians
Continence (Paediatric)	Complex continence issues	Laxatives, anticholinergics and antibiotics	Paediatricians, GPs, schools nurses and health visitors
Leg Ulcers	Wounds, pressure ulcers, leg ulcers, lymphedema and dermatology conditions	Wound care products, steroids, compression therapy, analgesia and antibiotics	GPs, district nurses, other community nurses, nurses in intermediate care settings
Tissue Viability	Wound care, wound infections and cellulitis	Antibiotics, steroid creams and dressings	Community, GPs, nursing homes, hospital and self referrals

Appendix 11.0 - Study Two - Participant Form

Factors Influencing the Decision to Prescribe

If you would be willing to participate in this research please fill in the form below. The details you provide on this form will be used to select participants. If selected you will be contacted using the contact details you provide. This form does not assume that you are consenting to the research and a further consent form will need to be signed. The information you provide on this form is strictly confidential.

Title Dr / Mr / Mrs / Miss/ Ms/Other (please specify) …….

Name: ……

Post Title: ……

Address: ……

……

……

Contact tel no: ……

Email address: ……

Preferred method of contact Telephone Email Letter

Approx. no. of prescriptions you write per week: ……. **Length of time in field you are prescribing in:** …….

Please indicate below which type of prescribing you are qualified to use, when you qualified and whether or not you use it in your current role?

	Are you qualified to use this type of prescribing?	**When did you qualify to use this type of prescribing?**	**Do you use this type of prescribing in your current role?**
IP	Yes No	Approx. date: OR N/A	Yes No
SP	Yes No	Approx. date: OR N/A	Yes No

Please indicate which of the following you would prefer to be involved in:

Face-to-face interview
Group discussion with 2 to 4 people
No preference

THANK YOU

Please return the questionnaire in the stamped address envelope provided, email to clare.maddox@postgrad.manchester.ac.uk or send to FREEPOST address:

Miss Clare Maddox, School of Pharmacy and Pharmaceutical Sciences, University of Manchester, FREEPOST MR 9661, Room 1.131, 1st Floor Stopford Building, Oxford Road, Manchester, M13 9PT

Appendix 12.0 - Study Two - Invitation Email

[Nurse/pharmacist name]
[Address]

[Date]

Dear [Name of nurse/pharmacist],

I am a PhD student at the University of Manchester and I am currently investigating prescribing decisions made by pharmacist and nurse prescribers working in primary and community care. In previous research I found that as well as making treatment choices NMPs often needed to decide whether they should issue a prescription or take responsibility for making a prescribing decision for a patient. In this research I am interested in exploring further how nurse and pharmacist prescribers decide when to prescribe and when not to prescribe and the factors that influence these decisions. It is hoped that through this research more knowledge will be gained about non-medical prescribing which is an area that is currently under researched.

Participation in the study will involve a single interview **OR** a group discussion with 2 to 4 other people. Both will last approximately 1 hour. Both will involve discussion of your current role and use of prescribing and also some of the factors that you take into consideration when deciding whether or not to prescribe. If you take part in an interview you will be asked to think of some examples of prescribing situations before the interview takes place. The interview or group discussion will be arranged for a time and location convenient for you.

I am writing to ask if you would consider participating in the study. If, after reading the participant information leaflet, you have any questions or clarifications, please do not hesitate to contact me. If you are interested then please fill in the form attached and send it back to me via email or in the envelope that has been provided. This questionnaire provides me with background information and details so that you can be contacted. All questionnaires will remain strictly confidential.

Thank you for your time.

Kindest regards

Clare Maddox BSc

Appendix 13.0 - Study Two - Participant Information Sheet

Factors Influencing the Decision to Prescribe

You are being invited to take part in our research study. Before you decide whether or not 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 and discuss it with others if you wish. If you have any other questions or clarifications, please do not hesitate to contact me on the details given below.

What is the purpose of the study?

Previous research has found that as well as making treatment choices NMPs often needed to decide whether they should take professional responsibility for issuing a prescription or for making a prescribing decision for a patient. This research aims to explore how nurse and pharmacist prescribers decide when to prescribe and when not to prescribe and the factors that influence these decisions.

Why have I been invited?

You have been invited because you are a qualified nurse or pharmacist prescriber working in primary or community care.

Do I have to take part?

No. it is up to you whether you to decide to take part in the study. If you agree to take part you will be asked to sign a consent form. You are free to withdraw at any time, without giving a reason.

What will happen to me if I decide to take part?

If you decide to take part in this study you may be asked to participate in an interview **or** a group discussion with between 2 and 4 other people (you will be asked to state your preference on the participant form). If you take part in an interview you will be asked to think of some examples of prescribing scenarios before you come to the interview (you will be given a form to note down the key details of these scenarios but the form will not be collected). In both the interview and group discussion you will be asked to talk about your current role and use of prescribing and also some of the factors that you take into consideration when deciding to issue a prescription or take responsibility for making a prescribing decision for a patient. The interview or group discussion will be conducted at a time and place suitable for you. It is expected that the interview and group discussion will last no more than 1 hour. The discussion will be audio-recorded with your permission; if you object, then I will just take notes.

At the end of the discussion you may be asked if you know a colleague or friend who might like to take part in the study. If you do know someone, I will give you an information pack that you can pass on to the person. If the person wishes to participate in the study then they will be asked to contact me directly.

Are there any risks or benefits to taking part?

You may benefit from the process of reflection involved in the study. In the highly unlikely event you disclose information in the discussion that may reveal a serious patient safety issue then confidentiality will be broken to allow details of the disclosure to be given to the relevant authority.

However, if this was to happen this would be discussed with you before the relevant authority is contacted.

Will the information about me remain confidential?

Yes. Except in situations where a serious patient safety issue has been raised all the information which is collected about you during the course of the research project will remain confidential at all times. Audio-recordings of interviews or group discussions will be erased as soon as the findings have been published. The audio-recordings will be stored securely and anonymised.

What will happen with the results of the study?

The results of the study will be analysed and may be published in professional journals and at conferences. The results will also contribute to the completion of a postgraduate thesis which will be stored in the University of Manchester's library. Direct quotations may be used for the purposes of disseminating the research findings, but in such a way as not to identify you.

Who has organised and reviewed the study?

The study has been organised and funded by the School of Pharmacy and Pharmaceutical Sciences at the University of Manchester and approved by a NHS Ethics Committee and the University of Manchester.

What if there is a problem?

If, after taking part in this research, you are unhappy with any aspect of the process you can telephone the University of Manchester's research governance co-ordinator on 0161 2758093 or email them at research-governance@manchester.ac.uk.

What do I do next?

If you decide you may like to take part then please complete the participant form. This form provides me with information about your post and also your contact details so that I can send you further information. It does not mean that you are agreeing to take part in this study and you may decline any further involvement at a later stage. It is possible that you may not be selected for the study and if this is the case then we will let you know by letter that no further participation is required. In this case your personal details will be destroyed.

Thank you for your time

Clare Maddox
Email: clare.maddox@postgrad.manchester.ac.uk, Tel: 0161 275 2363
Address: School of Pharmacy and Pharmaceutical Sciences, University of Manchester, FREEPOST MR9661, Room 1.131, 1st Floor Stopford Building, Manchester, M13 9PT

If you need further information please do not hesitate to contact me or if you would rather talk to my supervisors about this project please feel free to do so.

Dr Mary Tully: 0161 275 4242 or email: mary.p.tully@manchester.ac.uk
Dr Jason Hall: 0161 275 2720 or email: jason.hall@manchester.ac.uk

Appendix 14.0 - Study Two - Number of Participants by Role, Year of Prescribing Qualification, Type of Prescribing Qualification, Use of Prescribing, Years Experience and Number of Prescriptions Issued Per Week

		Adv. Prac. Nursing Homes	Advanced Prac. School Health	Com. Matron/ Active Case Manager	Spec. Nurse		Nurse Prac. for GP Surgery	Prac. Nurse	WIC Nurse	Com. Matron & WIC Nurse	Spec. Nurse & WIC Nurse	Practice Pharmacist/ Prescribing Support Pharmacist	Community Pharmacist	Other	TOTAL
					Palliative Care	All Other									
TOTAL		3	1	3	1	5	7	1	1	1	1	3	2	1	30
Year of Prescribing Qualification	Before 2003	-	-	-	-	-	-	-	-	-	-	-	-	-	1
	2003 – 2005	1	-	-	-	4	5	-	-	-	-	1	1	-	12
	2006 to Present	2	1	2	1	1	2	1	1	1	1	2	-	1	16
	Not Known	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Type of Prescribing Qualification	IP only	-	-	1	-	-	-	-	-	-	-	-	-	-	1
	SP & IP	3	1	2	1	5	7	1	1	1	1	3	1	1	28
	Not Known	-	-	-	-	-	-	-	-	-	-	-	1	-	1
Use of Prescribing	IP only	3	-	3	1	4	6	1	1	1	1	2	1	1	25
	SP & IP	-	1	-	-	1	1	-	-	-	-	1	1	-	5
	SP only	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Years Experience	Low < 4 years	2	-	2	-	-	-	-	-	-	-	-	1	1	6
	Moderate ≥ 4 yrs & <10 yrs	-	1	1	-	4	2	1	1	-	1	2	1	-	14
	High ≥ 10 years	1	-	-	1	1	5	-	-	1	-	-	-	-	9
	Not Known	-	-	-	-	-	-	-	-	-	-	1	-	-	1
No. of Prescriptions issued per Week	Low < 5	-	-	1	1	1	-	-	-	-	-	-	-	1	4
	Medium ≥5 & <20	-	1	2	-	1	2	1	-	1	1	3	1	-	13
	High ≥20	3	-	-	-	3	5	-	1	-	-	-	1	-	13

Appendix 15.0 - Study Two - Discussion Guide - Semi-structured Interview

Interviewer Say: As a NMP you are able to prescribe any licensed medicine out of the British National Formulary (as well as some CDs – *nurse only*). However, in reality you are unlikely to prescribe the entire range of products out of the BNF. This means therefore, that there will be instances where you have to decide whether or not to issue a prescription or take responsibility for making a prescribing decision for a patient.

The purpose of this interview is to understand more about the factors that you take into consideration when deciding whether or not to issue a prescription or take responsibility for making a prescribing decision for a patient. I would like to do this through reflecting on two prescribing scenarios, the first where you felt that it was not appropriate for you to issue a prescription or make a prescribing decision for a patient, secondly, where you felt uncertain or uneasy about issuing a prescription or making a prescribing decision for a patient.

Confidentiality is assured at all times and information analysed or reported from this interview will not enable anyone to recognise you. Patient information is not required; if however patients are mentioned during the interview their details will be immediately removed from all records.

The interview will last approximately 1 hour and the topics to be covered include a few questions about your role and use of prescribing and also discussion of the two types of prescribing scenarios I outlined above.

The interview will be audio recorded unless you oppose to this? The recordings will be kept securely until publication of the results.

Do you have any questions before starting the discussion?

Section One: Current Role and Use of Prescribing

- **Please tell me about your current role(s)?**

Prompts to be used where appropriate:

Where are you based (GP practice, WIC, hospital)?
By what method do you see patients (pre-arranged appointments, house visit, same-day appointments etc...)?
What type of conditions/symptoms do you treat?
How do patients get referred to you?
How long have you been in your current post for? How long have you worked in the field you are now prescribing in?
How many patients do you see per week/session? How many patients for each condition?

- **Please tell me about your use of prescribing in your current role?**

Prompts to be used where appropriate:

How many prescriptions do you write per week/session?

What type/class of medicine do you often prescribe?
What types of prescriptions do you usually give to your patients (e.g. Acute vs. repeat)?
What type of prescribing are you operating under (e.g. independent, supplementary, patient group directives)?

Section Two: Discussion of Prescribing Decisions

INTERVIEWER SAY: In the letter I sent you, I asked you to make a note of two prescribing scenarios, firstly a situation where you felt that it was not appropriate for you to issue a prescription or take responsibility for making a prescribing decision for a patient, secondly, where you felt uncertain or uneasy about issuing a prescription or taking responsibility for making a prescribing decision for a patient.

INTERVIEWER SAY: I would initially like to talk about the first prescribing decision you thought about (where you did not feel it was appropriate). I would like to remind you that you do not need to mention the patient's name or names of your colleagues.

- **Could you please tell me about this prescribing decision?**

Prompts to be used where appropriate:

Why did you feel it was not appropriate for you to issue the prescription or make the prescribing decision for the patient?

What were the factors involved in this decision?

What was the condition(s) or symptom(s) involved?

What was the drug(s) involved?

On reflection, would you do the same thing again?

How did you feel about making the decision not to prescribe?

What happened to the patient? Did this involve another health care professional? Who was this?

How do you perceive the patient felt about your decision? How did this make you feel?

How do you think your medical colleagues would behave in a similar situation?

What leads you to think that you should not prescribe in situations such as these?

- Guidance/protocols. If so, who from?
- Any individual(s). If so, what did they say?
- Training. If so, what did it say?

Has this happened before?

INTERVIEWER SAY: I would now like to talk about the second prescribing decision you thought about (where you where uncertain or uneasy).

- **Could you please tell me about this prescribing decision?**

Prompts to be used where appropriate:

Why were you uncertain or uneasy about issuing a prescription or making the prescribing decision for the patient?

What were the factors involved in this uncertainty?

What was the condition(s) or symptom(s) involved?

What was the drug(s) involved?

What was the final decision you made?

Do you think the final decision you made was appropriate? Why was it appropriate/not appropriate?

How did this situation make you feel?

What happened to the patient? Did this involve another health care professional? Who was this?

How do you perceive the patient felt about your decision? How did this make you feel?

What does guidance/protocols/ other individuals/ training say about what you should do in this situation?

What would help you address this uncertainty or unease in situations such as these?

Has this happened before? What did you do then?

INSTRUCTION: IF THE PARTICIPANT DID NOT THINK OF EXAMPLES BEFORE THEY CAME TO THE INTERVIEW USE THE FOLLOWING TWO QUESTIONS.

- **Are there any prescribing situations where you did not feel it was appropriate for you to issue a prescription or take responsibility for making a prescribing decision for a patient? Could you please tell me about this/these prescribing decision(s)?**
  Use prompts above

- **Are there any prescribing situations where you where uncertain or uneasy about issuing a prescription or taking responsibility for making a prescribing decision for a patient? Could you please tell me about this/these prescribing decision(s)?**
  Use prompts above

Section Three: General Discussion ***(If section two was very brief or not covered at all ask the following)***

- **What factors do you take into consideration when deciding whether you should issue a prescription or take responsibility for making a prescribing decision for a patient?**

- **Are there any situations where you do not feel that you should prescribe? What situations?**

- **What do you consider a high risk situation?**

- **Are there any situations that you cannot prescribe in? What prevents you from prescribing?**

- **In which situations do you feel very confident to prescribe in? Why?**

- **Has anyone ever asked you not to prescribe in a certain situation? Did you do this?**

- **Have you received guidance which has directed you not to prescribe in certain situations?**

- **Are there any situations where you feel unsure whether you should be prescribing or not?**
  Why?

Section Four: Competency and Competency Framework

- **What does the word 'competency' in relation to prescribing mean to you?**

- **Do you believe your competency levels differ according to the:**
  Patient's age
  Patient's condition/symptoms
  Severity of the patient's symptoms
  Drug or likely drug required by the patient

- **In situations where you do not feel competent enough to prescribe what do you do?**

- **Have you heard of the 'competency framework' specifically for prescribing?**
  IF RELEVANT:
  When and where were you first introduced to the competency framework?
  How do you use the competency framework?

CONCLUSON

Is there anything else you would like to talk about?

Is there anything that you would like to go back to?

SWITCH OFF THE RECORDER

Appendix 16.0 - Study Two - Discussion Guide - Focus Groups

Interviewer Say: As a NMP you are able to prescribe any licensed medicine out of the British National Formulary (as well as some CDs – *nurse only*). However, in reality you are unlikely to prescribe the entire range of products out of the BNF. This means therefore, that there will be instances where you have to decide whether or not to issue a prescription or take responsibility for making a prescribing decision for a patient.

The purpose of this group discussion is to understand more about the factors that you take into consideration when deciding whether or not to issue a prescription or take responsibility for making a prescribing decision for a patient. The topics to be covered include a few questions about each your role and use of prescribing. We will then begin to talk about the factors that influence whether or not you decide to prescribe. I would firstly like to get each of your individual opinions on the factors you take into consideration before showing you some examples of prescribing scenarios which I would like you to talk about through your own experiences.

Confidentiality is assured at all times and information analysed or reported from this group discussion will not enable anyone to recognise you. Patient information is not required; if however patients are mentioned during the interview their details will be immediately removed from all records.

The discussion will be audio recorded unless anyone opposes to this? The recordings will be kept securely until publication of the findings.

Does anyone have any questions before starting the discussion?

Section One: Current Role and Use of Prescribing

INTERVIEWER INSTRUCTION: ASK EACH PARTICIPANT

- **Please tell me about your current role(s)?**

Probes to be used where appropriate:

What is your first name?
Where are you based (GP practice, WIC, hospital)?
By what method do you see patients (pre-arranged appointments, house visit, same-day appointments etc...)?
What type of conditions/symptoms do you treat?
How do patients get referred to you?
How long have you been in your current post for? How long have you worked in the field you are now prescribing in?
How many patients do you see per week/session? How many patients for each condition?

- **Please tell me about your use of prescribing in your current role?**

Prompts to be used where appropriate:

How many prescriptions do you write per week/session?

What type/class of medicine do you often prescribe?
What types of prescriptions do you usually give to your patients (e.g. Acute vs. repeat)?
What type of prescribing are you operating under (e.g. independent, supplementary, patient group directives)?

Section Two: General Discussion

- **What factors do you take into consideration when deciding whether you should issue a prescription or take responsibility for making a prescribing decision for a patient?**

- **What do you consider a high risk situation?**

- **Are there any situations where you do not feel that you should prescribe? What situations?**

- **Are there any situations that you cannot prescribe in? What prevents you from prescribing?**

- **In which situations do you feel very confident to prescribe in? Why?**

- **Has anyone ever asked you not to prescribe in a certain situation? Did you do this?**

- **Have you received guidance which has directed you not to prescribe in certain situations?**

- **Are there any situations where you feel unsure whether you should be prescribing or not?**
  Why?

Section Three: Examples of Prescribing Scenarios

INSTRUCTION: SHOW OR READ EXAMPLE 1 OF PRESCRIBING SCENARIO TO PARTICIPANTS AND ASK:

- **Is this something that you have experienced yourself?**
  IF YES:
  Please describe when it happened to you?
  In what ways was it similar or different?
  What was the condition/symptom or drug involved?
  Is this something that happens frequently? How frequently?
  How did this prescribing situation make you feel?

  IF NO:
  Has anything similar happened to you? Please describe this situation.
  Why do you think this example is not relevant to you?

INSTRUCTION: REPEAT ABOVE WITH ANY FURTHER EXAMPLES OF PRESCRIBING SCENARIOS

Section Four: Competency and Competency Framework

- **What does the word 'competency' in relation to prescribing mean to you?**

- **Do you believe your competency levels differ according to the:**

Patient's age
Patient's condition/symptoms
Severity of the patient's symptoms
Drug or likely drug required by the patient

- **In situations where you do not feel competent enough to prescribe what do you do?**

- **Have you heard of the 'competency framework' specifically for prescribing?**
  IF RELEVANT:
  When were you first introduced to the competency framework?
  How do you use the competency framework?

CONCLUSON

Is there anything else you would like to talk about?

Is there anything that you would like to go back to?

SWITCH OFF THE RECORDER

Appendix 17.0 - Study Three - Invitation to RPSGB Pharmacists Only

Dear (Name of Pharmacist prescriber)

I am a PhD student at the University of Manchester. The overall aim of my research it to understand the factors that influence the prescribing decisions of pharmacist and nurse independent/supplementary prescribers. Your name has been identified from the Society's Pharmaceutical Register because you are a pharmacist prescriber working in primary and/or community care.

I wish to invite you to take part in an online survey. The survey aims to further explore what factors you perceive to influence your prescribing decisions by using a technique called the Q-method. This method provides a new way of studying prescribing not previously used. The survey is expected to last no more than 35 minutes in total.

I am contacting you to ask you if you would be willing to take part in the survey. Included in the letter is the participant information sheet that will provide more information on the study. The criteria for taking part in the research is that you are a pharmacist using independent and/or SP in a primary/community care role. If you fit this criteria and would like to take part in the survey please access the internet link below:

www.link to survey.co.uk

Then type in your unique username and password:

Username: (Type in username)
Password: (Type in password)

Please contact me on clare.maddox@postgrad.manchester.ac.uk or telephone 0161 2752363 if you require any further information.

I hope that you will consider taking part.

Kind Regards
Clare Maddox

Appendix 18.0 - Study Three - Invitation Letter to PCTs

Dear Nurse and Pharmacist prescribers,

I am a PhD student at the University of Manchester. Over the last two years I have been conducting research with NMPs from the Greater Manchester region. The aim of my research has been to explore what factors prescribers use to make prescribing decisions.

The culmination of my programme of work is an internet survey. The hope is that a number of prescribers from different PCTs in the North West complete the survey. The survey aims to further explore what factors you perceive to influence your prescribing decisions by using a technique called the Q-method. This method provides a new way of studying prescribing not previously used. In the survey you will be asked to sort a number of statements depending on the extent of your agreement in relation to the prescribing decisions you make. The survey is expected to last 35 minutes in total.

Attached is the participant information sheet that will provide more information on the study. The criterion for taking part in the research is that you are a nurse or pharmacist using independent and/or SP in a primary/community care role. If you would like to take part in the survey please fill in the expression of interest form (attached) and email or post it back to me (using the freepost address provided on the form). I will then send you a username and password you can use to access the internet link. The survey can then be completed at a time and location that is suitable for you.

Please contact me on clare.maddox@postgrad.manchester.ac.uk or telephone 0161 2752363 if you require any further information.

I hope that you will consider taking part.

Kind Regards
Clare Maddox
(Contact Details)

Appendix 19.0 - Study Three - Expression of Interest Form PCT

Perspectives on Prescribing Influences amongst NMPs

If you would be willing to participate in this research please fill in the form below. The details you provide on this form will be used to select participants. If selected you will be contacted using the contact details you provide. This form does not assume that you are consenting to the research and you can still withdraw at a later date. The information you provide on this form is strictly confidential.

Title Dr / Mr / Mrs / Miss/ Ms/Other (please specify) …….

Name: ……

Post Title: ……

Address: ……

……

……

Contact tel no: ……

Email address: ……

Once this form has been returned, I will send you details of how to access and complete the survey, how would you like to be sent this information?

Email Letter

Please indicate below which type of prescribing you are qualified to use, when you qualified and whether or not you use it in your current role?

	Are you qualified to use this type of prescribing?	When did you qualify to use this type of prescribing?	Do you use this type of prescribing in your current role?
IP	Yes No	Approx. date: OR N/A	Yes No
SP	Yes No	Approx. date: OR N/A	Yes No

THANK YOU

Please return the form via email to clare.maddox@postgrad.manchester.ac.uk or post to the FREEPOST address:

Miss Clare Maddox, School of Pharmacy and Pharmaceutical Sciences, University of Manchester, FREEPOST MR 9661, Room 1.131, 1st Floor Stopford Building, Oxford Road, Manchester, M13 9PT

Appendix 20.0 - Study Three - Participant Information Sheet

Perspectives on Prescribing Influences amongst NMPs

You are being invited to take part in a research study. Before you decide whether or not 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 and discuss it with others if you wish. If you have any other questions or clarifications, please do not hesitate to contact me on the details given below.

What is the purpose of the study?

The research aims to understand what factors NMPs perceive influence the prescribing decisions they make. It is hoped that, through this research, more knowledge will be gained about the influences on non-medical prescribing which is an area that is currently under-investigated.

Why have I been invited?

You have been invited because you are a qualified pharmacist prescriber working in primary or community care.

Do I have to take part?

No. it is up to you whether you to decide to take part in the study. You are free to withdraw at any time, without giving a reason.

What will happen to me if I decide to take part?

If you decide to take part you will be asked to access a link to an internet based survey. You have also been sent a unique username and password which you will need to access the internet survey. During the survey you will be asked to sort a number of statements according to the extent to which you agree with them. After sorting the statements you will be asked to briefly explain some of the choices you have made. The survey will end with a few questions about your role and use of prescribing and a few questions about how you found the survey process. It is expected the survey will last no more than 35 minutes.

Are there any risks or benefits to taking part?

I am not aware of any risks or disadvantages you may experience. However, participation may provide you with a chance to reflect on your practice, especially in relation to prescribing. You could use your experience of taking part in this study as part of your continued professional development (CPD).

Will the information about me remain confidential?

Yes. All the information which is collected about you during the course of the research project will remain confidential at all times.

What will happen with the results of the study?

The results of the study will be analysed and may be published in professional journals and at conferences. The results will also contribute to the completion of a postgraduate thesis which will

be stored in the University of Manchester's library. Findings reported from the study will not enable anyone to recognise you.

Who has organised and reviewed the study?

The study has been organised and funded by the School of Pharmacy and Pharmaceutical Sciences at the University of Manchester and approved by a NHS Ethics Committee and the University of Manchester.

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions. If they are unable to resolve your concern or you wish to make a complaint regarding the study, please contact a University Research Practice and Governance Co-ordinator on 0161 2757583 or 0161 2758093 or by email to research-governance@manchester.ac.uk.

Thank you for your time

Clare Maddox
Email: clare.maddox@postgrad.manchester.ac.uk, Tel: 0161 275 2363
Address: School of Pharmacy and Pharmaceutical Sciences, University of Manchester, FREEPOST MR9661, Room 1.131, 1st Floor Stopford Building, Manchester, M13 9PT

If you need further information please do not hesitate to contact me or if you would rather talk to my supervisors about this project please feel free to do so.

Dr Mary Tully: 0161 275 4242 or email: mary.p.tully@manchester.ac.uk
Dr Jason Hall: 0161 275 2720 or email: jason.hall@manchester.ac.uk

Appendix 21.0 - Study Three - Number of Nurses and Pharmacists by Role, Year of Prescribing Qualification, Type of Prescribing Qualification, Use of Prescribing, Years Experience and Number of Prescriptions Issued Per Week

Nurse Sample

		Adv. Prac.	Advanced Prac. for Nursing Homes	Com. Matron/ Active Case Manager	Spec. Nurse		Nurse Prac. for GP Surgery	Prac. Nurse	WIC Nurse	Specialist Nurse and Practice Nurse	Other	TOTAL
					Palliative Care	All Other						
TOTAL		**2**	**1**	**7**	**4**	**4**	**10**	**3**	**1**	**1**	**1**	**34**
Year of Prescribing Qualification	Before 2003	-	-	-	-	-	1	-	-	-	-	1
	2003 – 2005	1	-	2	1	3	4	1	-	1	-	13
	2006 to Present	1	1	5	3	1	5	2	1	-	1	20
Type of Prescribing Qualification	IP only	-	-	-	-	-	1	-	-	-	-	1
	SP & IP	2	1	7	4	4	9	3	1	1	1	33
Use of Prescribing	IP only	2	-	5	4	4	10	2	1	1	1	30
	SP & IP	-	1	2	-	-	-	1	-	-	-	4
Years Experience	Low < 4 years	1	1	2	-	-	1	-	1	-	-	6
	Moderate ≥ 4 yrs & <10 yrs	1	-	5	2	1	2	2	-	-	-	13
	High ≥ 10 years	-	-	-	2	3	7	1	-	1	1	15
No. of Prescriptions issued per Week	Low < 5	-	-	2	2	1	-	-	-	-	1	6
	Medium ≥5 & <20	1	1	4	1	2	3	1	-	-	-	13
	High ≥20	1	-	1	1	1	7	2	1	1	-	15

Pharmacist Sample

		OOHs Care Practitioner	Practice Pharmacist/ Prescribing Support Pharmacist	Community Pharmacist	Practice Pharmacist/ Prescribing Support Pharmacist and Other	Practice Pharmacist/ Prescribing Support Pharmacist and OOHs Practitioner	Other	TOTAL
TOTAL		**1**	**13**	**3**	**1**	**3**	**1**	**22**
Date of Prescribing Qualification	2003 – 2005	1	3	2	-	2	-	8
	2006 to Present	-	10	1	1	1	1	14
Type of Prescribing Qualification	SP & IP	1	12	2	1	3	1	20
	SP only	-	1	1	-	-	-	2
Use of Prescribing	IP only	1	5	2	1	3	-	12
	SP & IP	-	6	-	-	-	-	6
	SP only	-	2	1	-	-	-	3
	Not Known	-	-	-	-	-	1	1
Years Experience	Low < 4 years	-	6	1	-	1	-	8
	Moderate ≥ 4 yrs & <10 yrs	1	3	2	-	2	-	8
	High ≥ 10 years	-	4	-	1	-	1	6
No. of Prescriptions issued per Week	Low < 5	1	2	1	1	-	-	5
	Medium ≥5 & <20	-	5	1	-	1	1	8
	High ≥20	-	6	1	-	2	-	9

Appendix 22.0 – Study Three - Statements

Colleague Factors

1. My prescribing decisions are influenced by.... recommendations from my prescribing course mentor or my designated medical practitioner.
2. My prescribing decisions are influenced by.... advice from General Practitioners.
3. My prescribing decisions are influenced by.... information from community pharmacists.
4. My prescribing decisions are influenced by.... advice from other NMPs.
5. My prescribing decisions are influenced by.... advice from hospital/secondary care practitioners.
6. My prescribing decisions are influenced by.... advice from academic based practitioners.
7. My prescribing decisions are influenced by.... advice from non-prescribing health care professionals.

Regulatory Factors

8. My prescribing decisions are influenced by.... information from the medicines management team.
13. My prescribing decisions are influenced by.... the cost of the decision to the National Health Service.
17. My prescribing decisions are influenced by.... the recommendations of the British National Formulary or other national formularies.
18. My prescribing decisions are influenced by.... the recommendations of my primary care trust's formulary.
19. My prescribing decisions are influenced by.... local or primary care trust protocols or guidance.
20. My prescribing decisions are influenced by.... national guidance.
21. My prescribing decisions are influenced by.... the recommendations of patient group directives.

Patient Factors

16. My prescribing decisions are influenced by.... the anticipated concordance of the patient.
33. My prescribing decisions are influenced by.... what the patient asks for in the consultation.
34. My prescribing decisions are influenced by.... what would be best for the patient's relatives or carers.
35. My prescribing decisions are influenced by.... whether the decision will fulfil the patient's expectations.
36. My prescribing decisions are influenced by.... whether the patient will be satisfied with the prescribing decision.
37. My prescribing decisions are influenced by.... whether the prescribing decision will accommodate the patient's social responsibilities (job, holiday, etc).
38. My prescribing decisions are influenced by.... what impact the decision will have on my future relationship with the patient.
41. My prescribing decisions are influenced by.... the patient's financial situation.
42. My prescribing decisions are influenced by.... the effect of the prescribing decision on the patient's quality of life.
40. My prescribing decisions are influenced by.... the anticipated impact of the prescribing decision on the wider community (antibiotic resistance, herd immunity, etc).

Prescribing Culture and Professional Experience

9. My prescribing decisions are influenced by.... the prescribing behaviour of other prescribers working in my service, group, clinic, etc.
10. My prescribing decisions are influenced by.... general practitioners' prescribing behaviour.
11. My prescribing decisions are influenced by... other NMPs' prescribing behaviour.
12. My prescribing decisions are influenced by.... the prescribing practice of hospital/secondary care practitioners.

24. My prescribing decisions are influenced by.... the level of success I have personally experienced with similar prescribing decisions in the past.
25. My prescribing decisions are influenced by.... whether the potential prescribing decision has been established amongst other prescribers (both medical and non-medical).
26. My prescribing decisions are influenced by.... whether the potential prescribing decision is an accepted practice amongst other prescribers (both medical and non-medical).

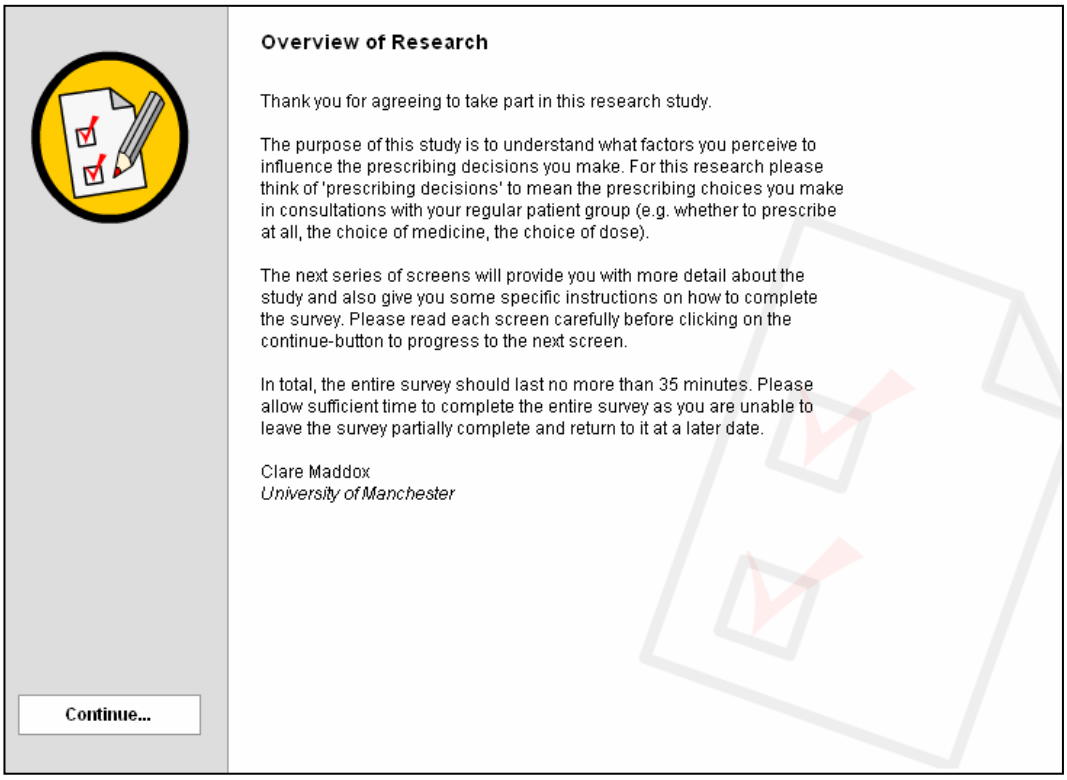
Training and Information sources

27. My prescribing decisions are influenced by.... information from my prescribing training course(s).
28. My prescribing decisions are influenced by.... information from training courses, study days and conferences.
29. My prescribing decisions are influenced by.... what I have read about in academic and professional journals.
30. My prescribing decisions are influenced by.... relevant updates and information from NHS Clinical Knowledge summaries.
31. My prescribing decisions are influenced by.... relevant updates and information from the National Prescribing Centre.
32. My prescribing decisions are influenced by.... relevant updates and information from the Medicines and Healthcare products Regulatory Agency.

Logistical Factors

14. My prescribing decisions are influenced by.... the anticipated impact the prescribing decision will have on other health care services or health care professionals outside my own service.
15. My prescribing decisions are influenced by.... the anticipated impact the prescribing decision will have on my service in the future (follow-up appointments, monitoring, etc).
22. My prescribing decisions are influenced by.... whether I feel I have sufficient time during the consultation.
23. My prescribing decisions are influenced by.... whether the prescribing decision occurs before a weekend or bank holiday.
39. My prescribing decisions are influenced by.... the anticipated impact of the prescribing decision on future presentations to my service from the patient in question or other patients.

Appendix 23.0 – Study Three - Survey



Overview of Research

Thank you for agreeing to take part in this research study.

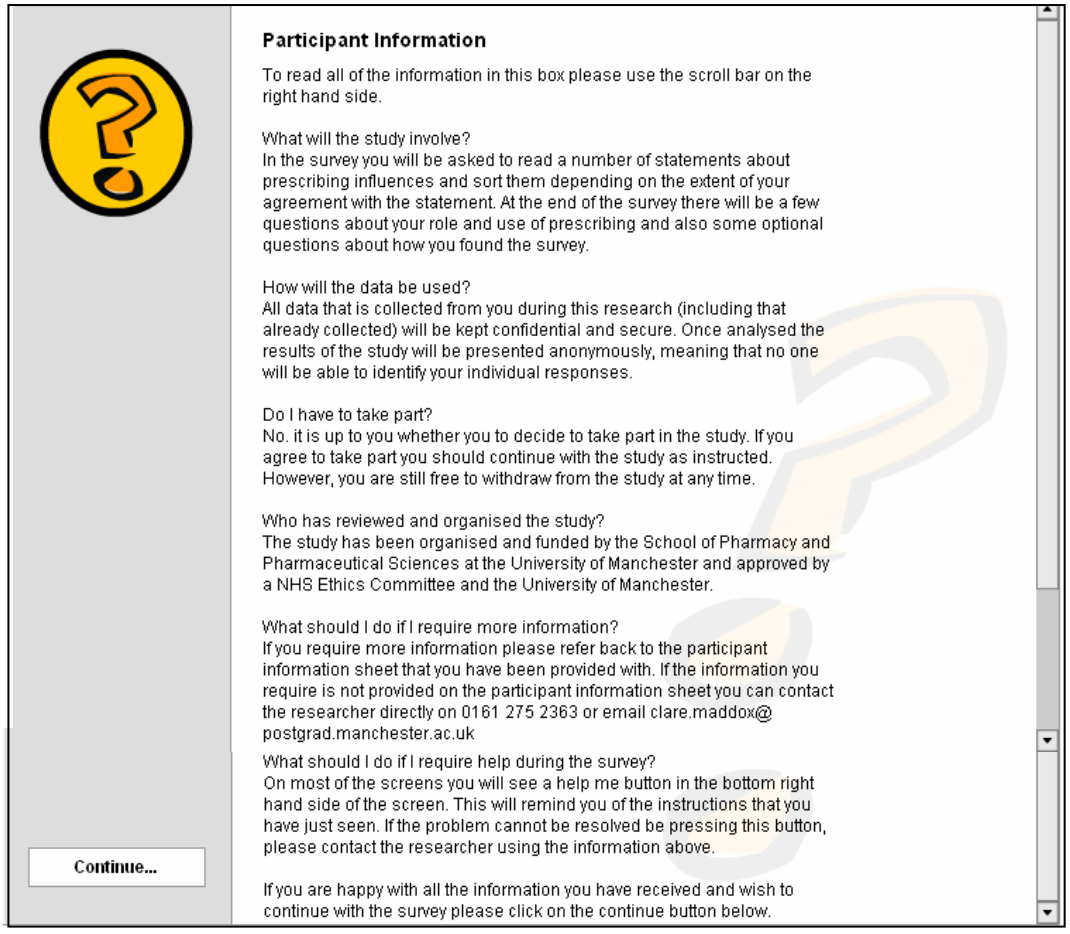
The purpose of this study is to understand what factors you perceive to influence the prescribing decisions you make. For this research please think of 'prescribing decisions' to mean the prescribing choices you make in consultations with your regular patient group (e.g. whether to prescribe at all, the choice of medicine, the choice of dose).

The next series of screens will provide you with more detail about the study and also give you some specific instructions on how to complete the survey. Please read each screen carefully before clicking on the continue-button to progress to the next screen.

In total, the entire survey should last no more than 35 minutes. Please allow sufficient time to complete the entire survey as you are unable to leave the survey partially complete and return to it at a later date.

Clare Maddox
University of Manchester

Continue...



Participant Information

To read all of the information in this box please use the scroll bar on the right hand side.

What will the study involve?
In the survey you will be asked to read a number of statements about prescribing influences and sort them depending on the extent of your agreement with the statement. At the end of the survey there will be a few questions about your role and use of prescribing and also some optional questions about how you found the survey.

How will the data be used?
All data that is collected from you during this research (including that already collected) will be kept confidential and secure. Once analysed the results of the study will be presented anonymously, meaning that no one will be able to identify your individual responses.

Do I have to take part?
No. it is up to you whether you to decide to take part in the study. If you agree to take part you should continue with the study as instructed. However, you are still free to withdraw from the study at any time.

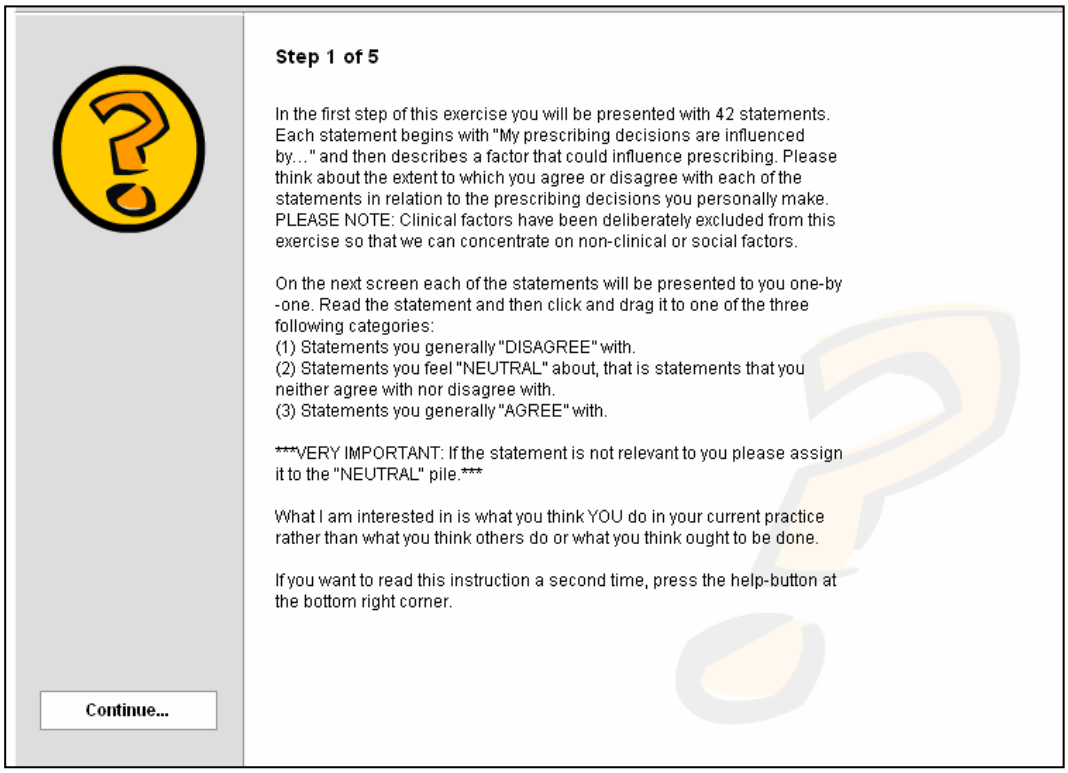
Who has reviewed and organised the study?
The study has been organised and funded by the School of Pharmacy and Pharmaceutical Sciences at the University of Manchester and approved by a NHS Ethics Committee and the University of Manchester.

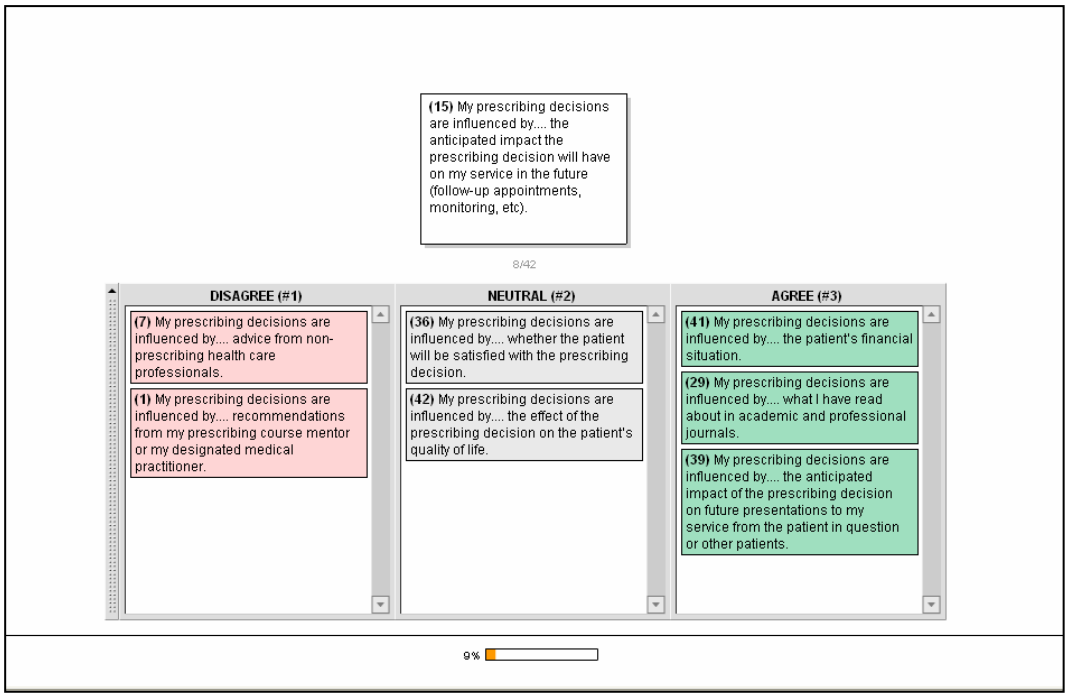
What should I do if I require more information?
If you require more information please refer back to the participant information sheet that you have been provided with. If the information you require is not provided on the participant information sheet you can contact the researcher directly on 0161 275 2363 or email clare.maddox@postgrad.manchester.ac.uk

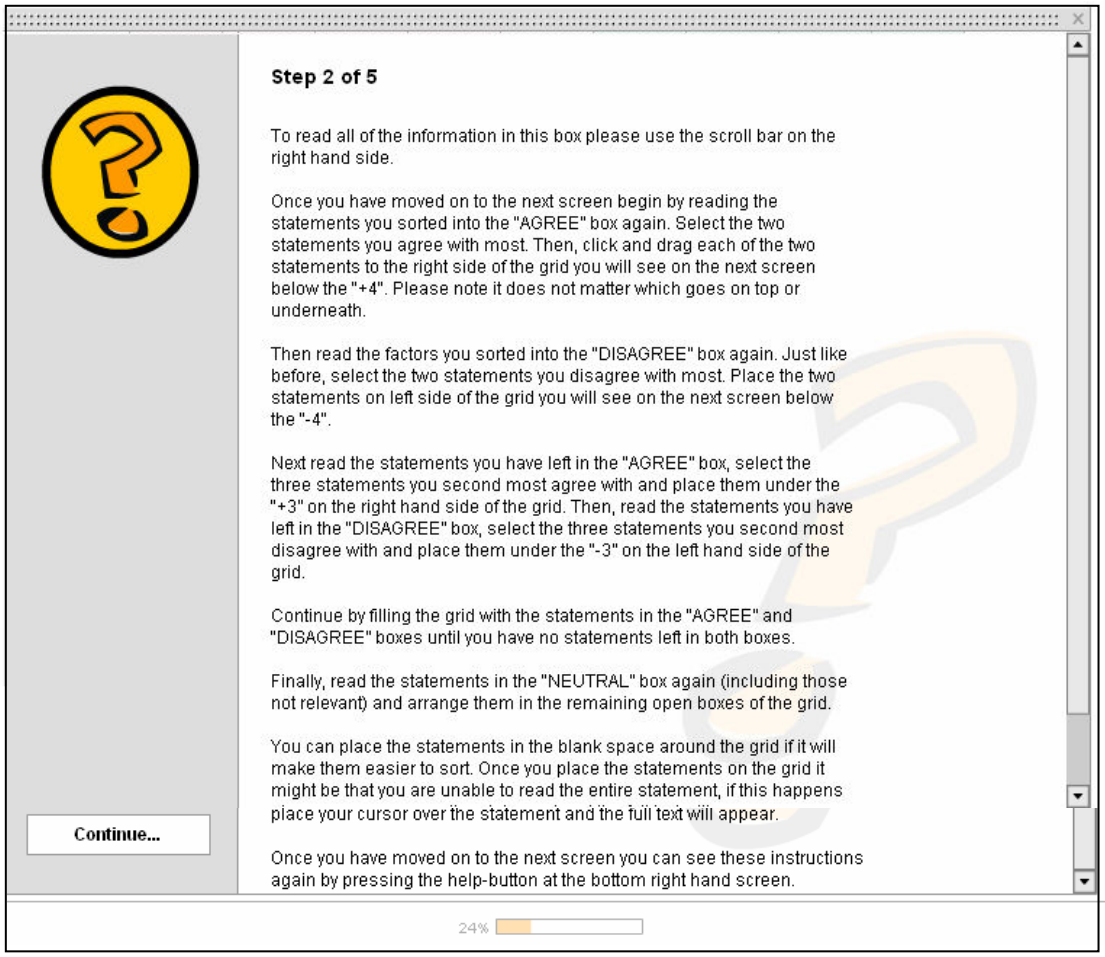
What should I do if I require help during the survey?
On most of the screens you will see a help me button in the bottom right hand side of the screen. This will remind you of the instructions that you have just seen. If the problem cannot be resolved be pressing this button, please contact the researcher using the information above.

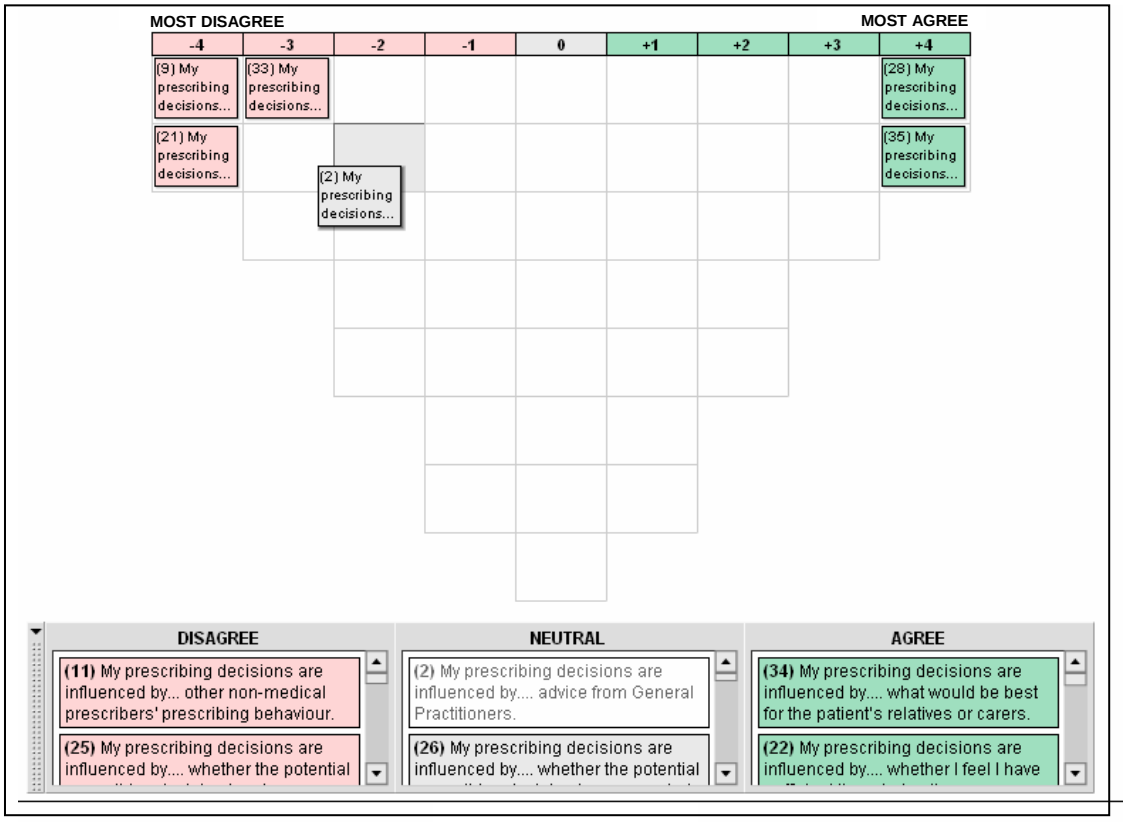
If you are happy with all the information you have received and wish to continue with the survey please click on the continue button below.

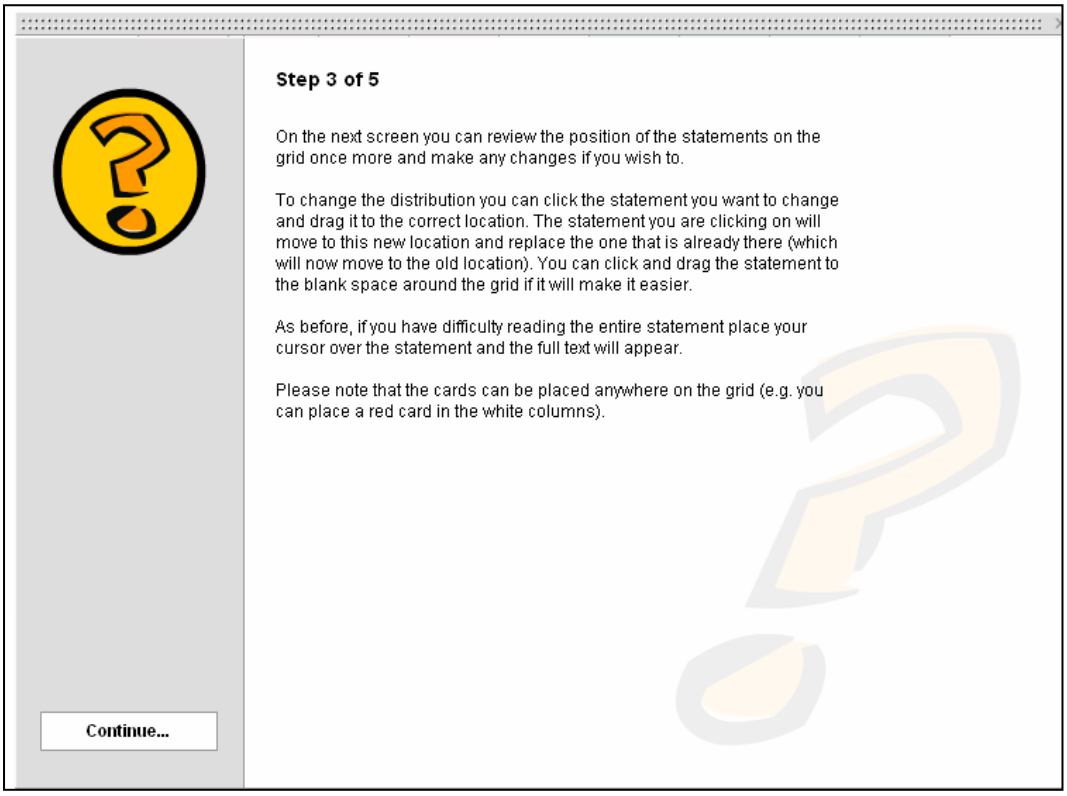
Continue...

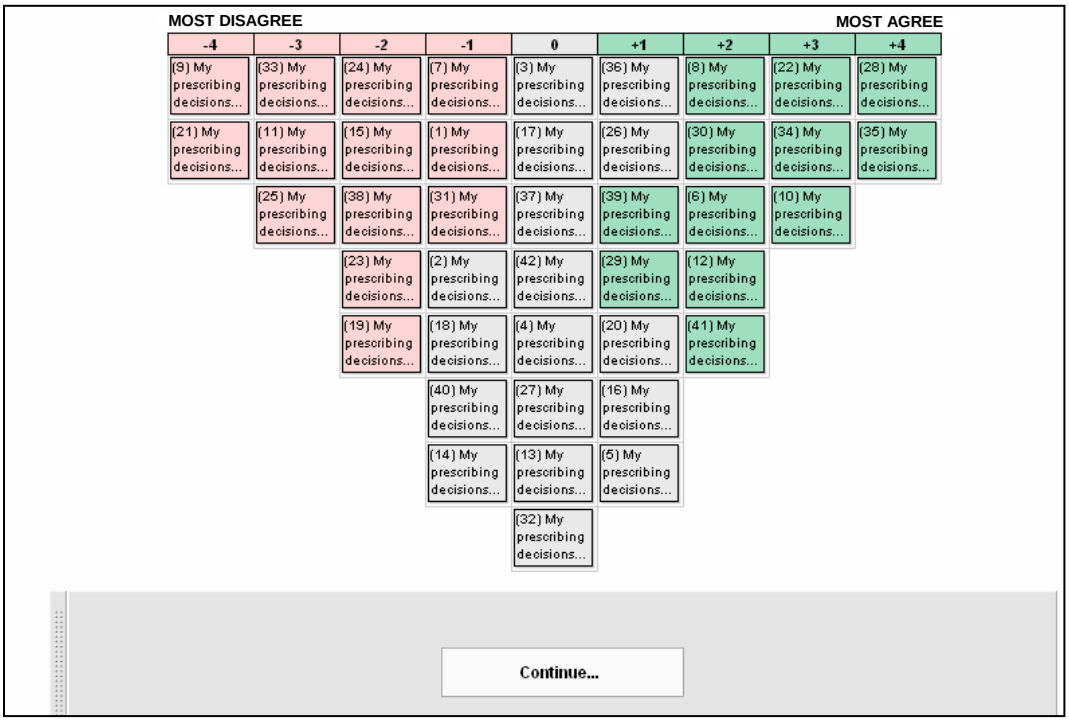

Step 1 of 5
In the first step of this exercise you will be presented with 42 statements. Each statement begins with "My prescribing decisions are influenced by…" and then describes a factor that could influence prescribing. Please think about the extent to which you agree or disagree with each of the statements in relation to the prescribing decisions you personally make. PLEASE NOTE: Clinical factors have been deliberately excluded from this exercise so that we can concentrate on non-clinical or social factors.
On the next screen each of the statements will be presented to you one-by-one. Read the statement and then click and drag it to one of the three following categories:
(1) Statements you generally "DISAGREE" with.
(2) Statements you feel "NEUTRAL" about, that is statements that you neither agree with nor disagree with.
(3) Statements you generally "AGREE" with.
VERY IMPORTANT: If the statement is not relevant to you please assign it to the "NEUTRAL" pile.
What I am interested in is what you think YOU do in your current practice rather than what you think others do or what you think ought to be done.
If you want to read this instruction a second time, press the help-button at the bottom right corner.
Continue...

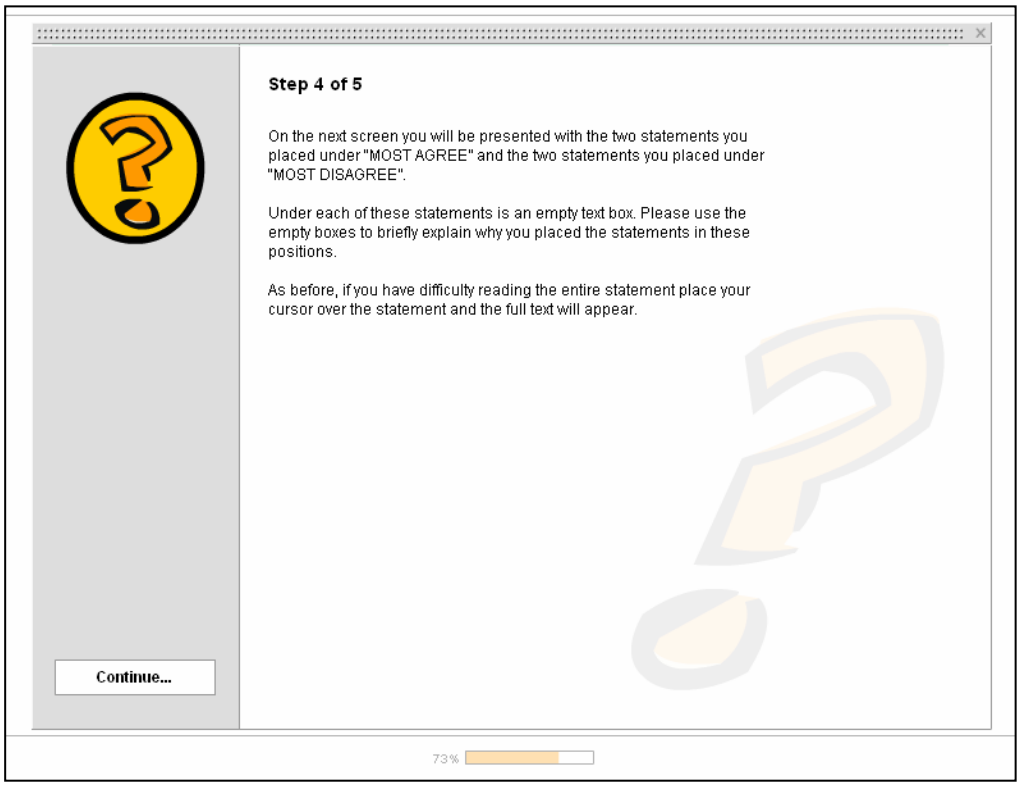

(15) My prescribing decisions are influenced by.... the anticipated impact the prescribing decision will have on my service in the future (follow-up appointments, monitoring, etc).
8/42
DISAGREE (#1)
(7) My prescribing decisions are influenced by.... advice from non-prescribing health care professionals.
(1) My prescribing decisions are influenced by.... recommendations from my prescribing course mentor or my designated medical practitioner.
NEUTRAL (#2)
(36) My prescribing decisions are influenced by.... whether the patient will be satisfied with the prescribing decision.
(42) My prescribing decisions are influenced by.... the effect of the prescribing decision on the patient's quality of life.
AGREE (#3)
(41) My prescribing decisions are influenced by.... the patient's financial situation.
(29) My prescribing decisions are influenced by.... what I have read about in academic and professional journals.
(39) My prescribing decisions are influenced by.... the anticipated impact of the prescribing decision on future presentations to my service from the patient in question or other patients.
9%

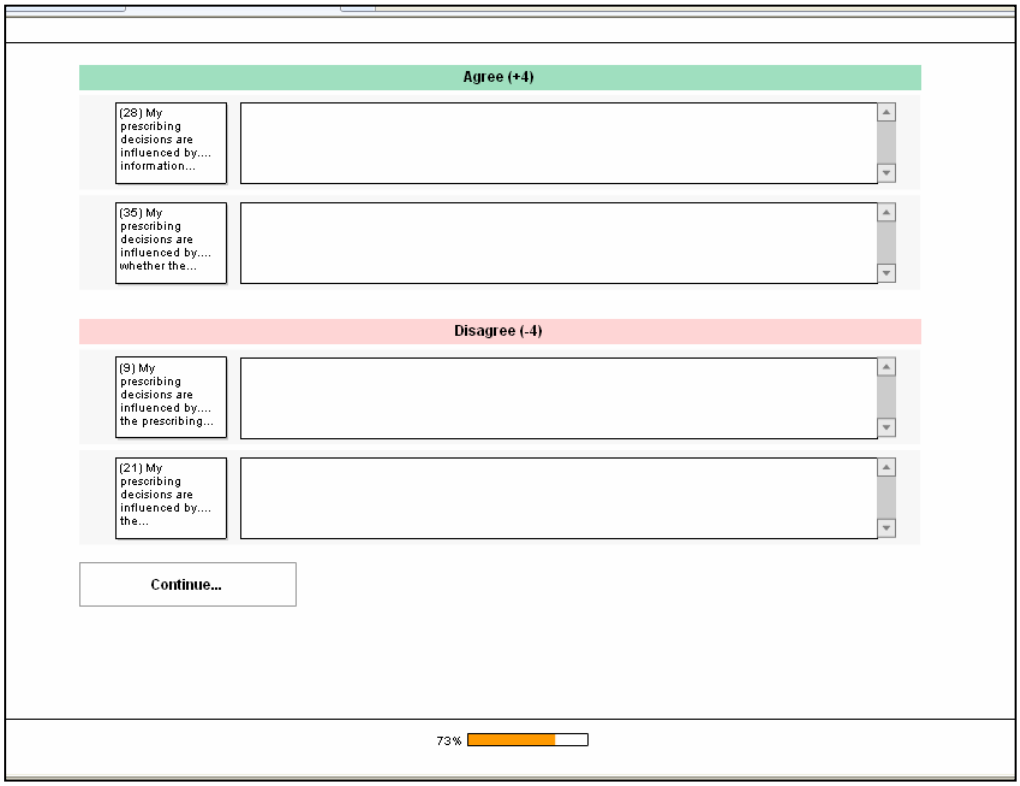

Step 2 of 5
To read all of the information in this box please use the scroll bar on the right hand side.
Once you have moved on to the next screen begin by reading the statements you sorted into the "AGREE" box again. Select the two statements you agree with most. Then, click and drag each of the two statements to the right side of the grid you will see on the next screen below the "+4". Please note it does not matter which goes on top or underneath.
Then read the factors you sorted into the "DISAGREE" box again. Just like before, select the two statements you disagree with most. Place the two statements on left side of the grid you will see on the next screen below the "-4".
Next read the statements you have left in the "AGREE" box, select the three statements you second most agree with and place them under the "+3" on the right hand side of the grid. Then, read the statements you have left in the "DISAGREE" box, select the three statements you second most disagree with and place them under the "-3" on the left hand side of the grid.
Continue by filling the grid with the statements in the "AGREE" and "DISAGREE" boxes until you have no statements left in both boxes.
Finally, read the statements in the "NEUTRAL" box again (including those not relevant) and arrange them in the remaining open boxes of the grid.
You can place the statements in the blank space around the grid if it will make them easier to sort. Once you place the statements on the grid it might be that you are unable to read the entire statement, if this happens place your cursor over the statement and the full text will appear.
Once you have moved on to the next screen you can see these instructions again by pressing the help-button at the bottom right hand screen.
Continue...
24%

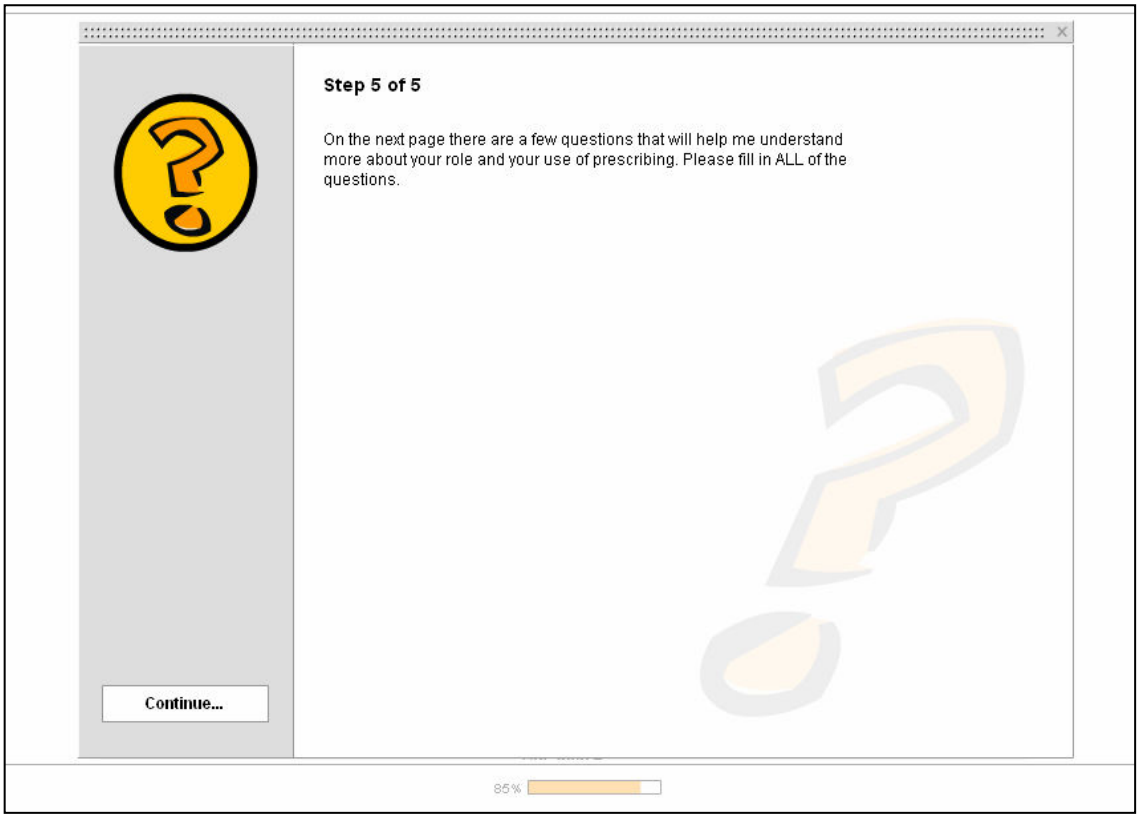

MOST DISAGREE
MOST AGREE
-4
-3
-2
-1
0
+1
+2
+3
+4
(9) My prescribing decisions...
(33) My prescribing decisions...
(28) My prescribing decisions...
(21) My prescribing decisions...
(35) My prescribing decisions...
(2) My prescribing decisions...
DISAGREE
NEUTRAL
AGREE
(11) My prescribing decisions are influenced by... other non-medical prescribers' prescribing behaviour.
(25) My prescribing decisions are influenced by.... whether the potential
(2) My prescribing decisions are influenced by.... advice from General Practitioners.
(26) My prescribing decisions are influenced by.... whether the potential
(34) My prescribing decisions are influenced by.... what would be best for the patient's relatives or carers.
(22) My prescribing decisions are influenced by.... whether I feel I have

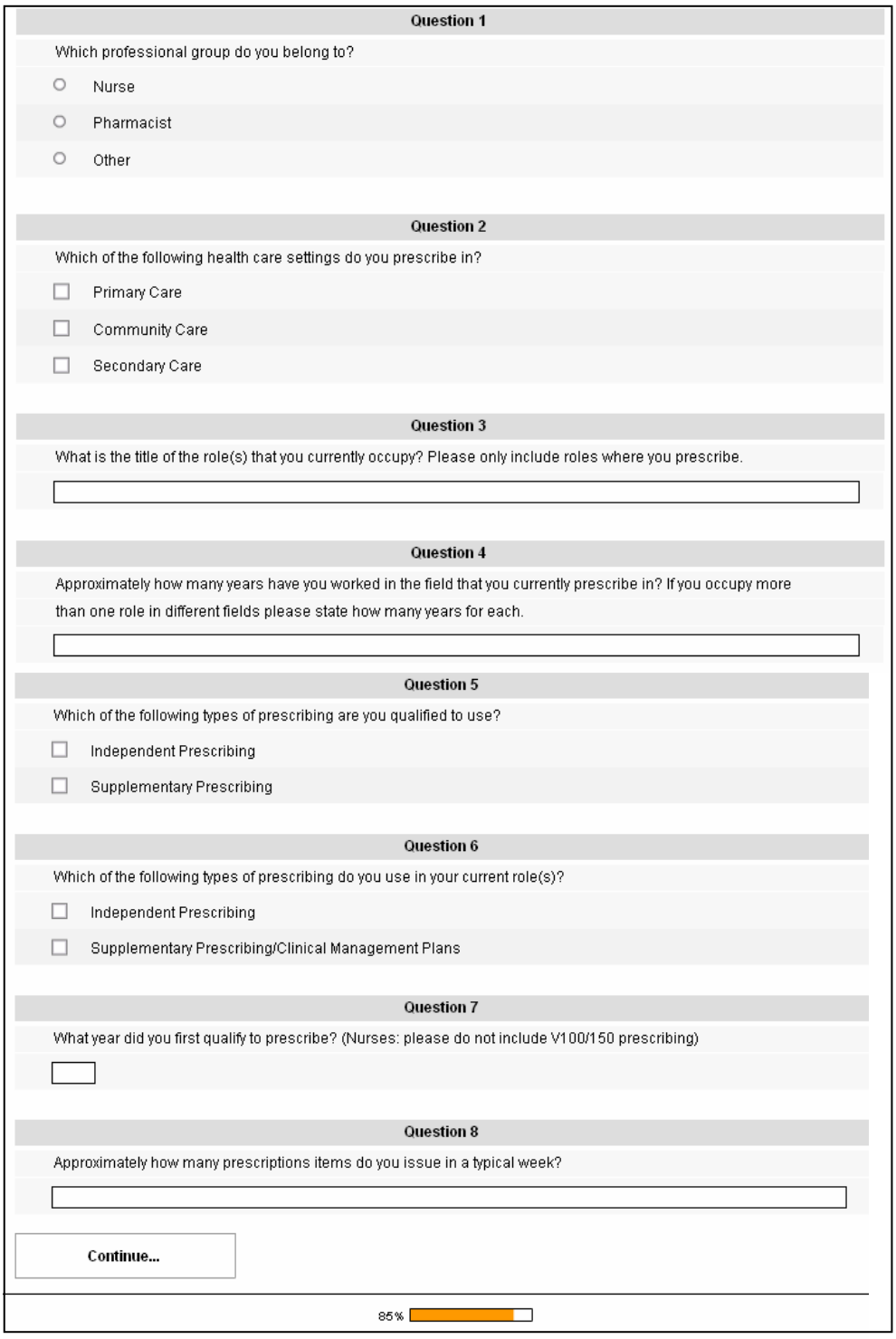

Step 3 of 5
On the next screen you can review the position of the statements on the grid once more and make any changes if you wish to.
To change the distribution you can click the statement you want to change and drag it to the correct location. The statement you are clicking on will move to this new location and replace the one that is already there (which will now move to the old location). You can click and drag the statement to the blank space around the grid if it will make it easier.
As before, if you have difficulty reading the entire statement place your cursor over the statement and the full text will appear.
Please note that the cards can be placed anywhere on the grid (e.g. you can place a red card in the white columns).
Continue...


MOST DISAGREE
MOST AGREE
-4
-3
-2
-1
0
+1
+2
+3
+4
(9) My prescribing decisions...
(33) My prescribing decisions...
(24) My prescribing decisions...
(7) My prescribing decisions...
(3) My prescribing decisions...
(36) My prescribing decisions...
(8) My prescribing decisions...
(22) My prescribing decisions...
(28) My prescribing decisions...
(21) My prescribing decisions...
(11) My prescribing decisions...
(15) My prescribing decisions...
(1) My prescribing decisions...
(17) My prescribing decisions...
(26) My prescribing decisions...
(30) My prescribing decisions...
(34) My prescribing decisions...
(35) My prescribing decisions...
(25) My prescribing decisions...
(38) My prescribing decisions...
(31) My prescribing decisions...
(37) My prescribing decisions...
(39) My prescribing decisions...
(6) My prescribing decisions...
(10) My prescribing decisions...
(23) My prescribing decisions...
(2) My prescribing decisions...
(42) My prescribing decisions...
(29) My prescribing decisions...
(12) My prescribing decisions...
(19) My prescribing decisions...
(18) My prescribing decisions...
(4) My prescribing decisions...
(20) My prescribing decisions...
(41) My prescribing decisions...
(40) My prescribing decisions...
(27) My prescribing decisions...
(16) My prescribing decisions...
(14) My prescribing decisions...
(13) My prescribing decisions...
(5) My prescribing decisions...
(32) My prescribing decisions...
Continue...


Step 4 of 5
On the next screen you will be presented with the two statements you placed under "MOST AGREE" and the two statements you placed under "MOST DISAGREE".
Under each of these statements is an empty text box. Please use the empty boxes to briefly explain why you placed the statements in these positions.
As before, if you have difficulty reading the entire statement place your cursor over the statement and the full text will appear.
Continue...
73%


Agree (+4)
(28) My prescribing decisions are influenced by.... information...
(35) My prescribing decisions are influenced by.... whether the...
Disagree (-4)
(9) My prescribing decisions are influenced by.... the prescribing...
(21) My prescribing decisions are influenced by.... the...
Continue...
73%


Step 5 of 5
On the next page there are a few questions that will help me understand more about your role and your use of prescribing. Please fill in ALL of the questions.
Continue...
85%



Question 1

Which professional group do you belong to?

- ○ Nurse
- ○ Pharmacist
- ○ Other

Question 2

Which of the following health care settings do you prescribe in?

- ☐ Primary Care
- ☐ Community Care
- ☐ Secondary Care

Question 3

What is the title of the role(s) that you currently occupy? Please only include roles where you prescribe.

Question 4

Approximately how many years have you worked in the field that you currently prescribe in? If you occupy more than one role in different fields please state how many years for each.

Question 5

Which of the following types of prescribing are you qualified to use?

- ☐ Independent Prescribing
- ☐ Supplementary Prescribing

Question 6

Which of the following types of prescribing do you use in your current role(s)?

- ☐ Independent Prescribing
- ☐ Supplementary Prescribing/Clinical Management Plans

Question 7

What year did you first qualify to prescribe? (Nurses: please do not include V100/150 prescribing)

Question 8

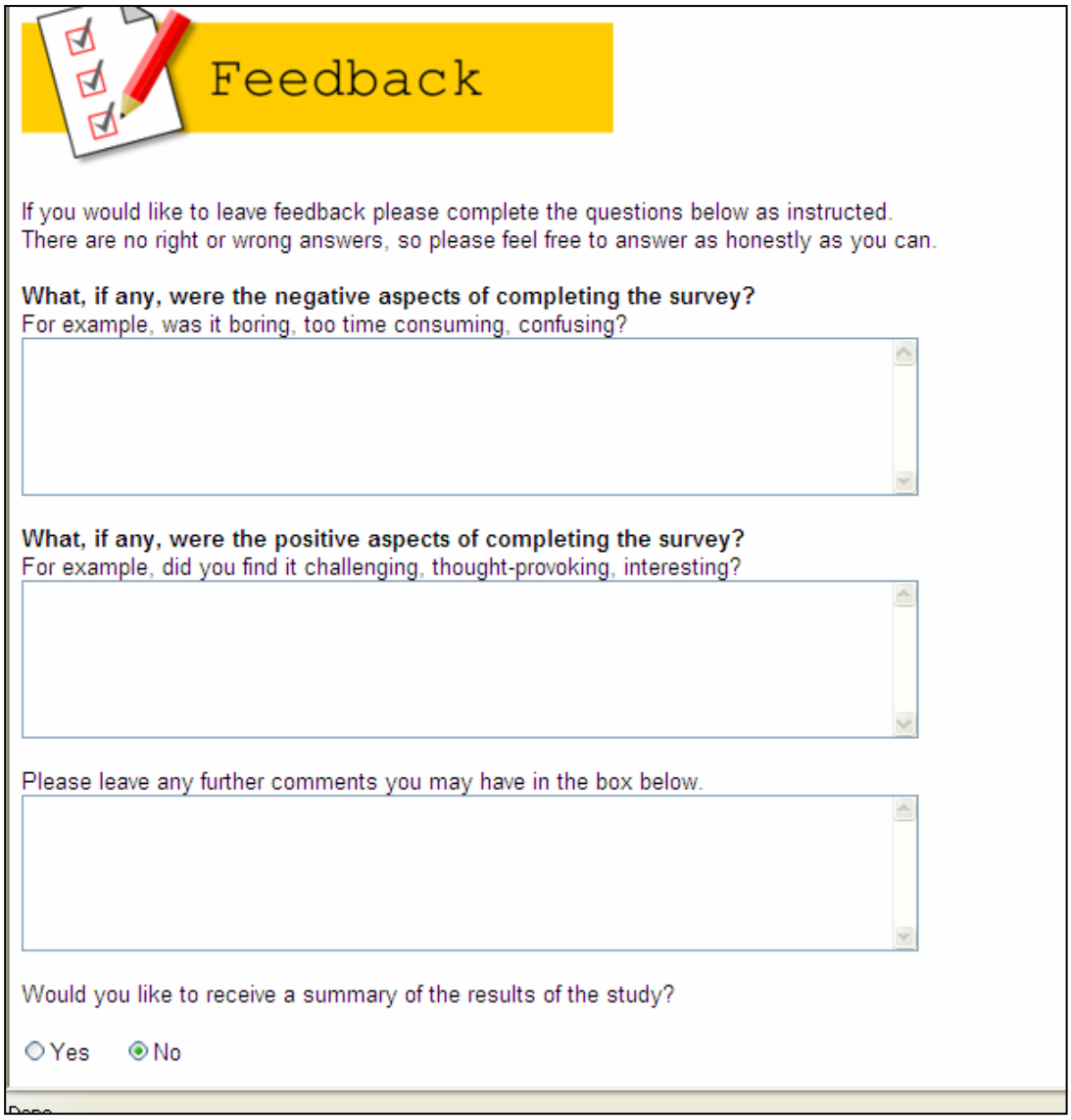
Approximately how many prescriptions items do you issue in a typical week?

Continue...

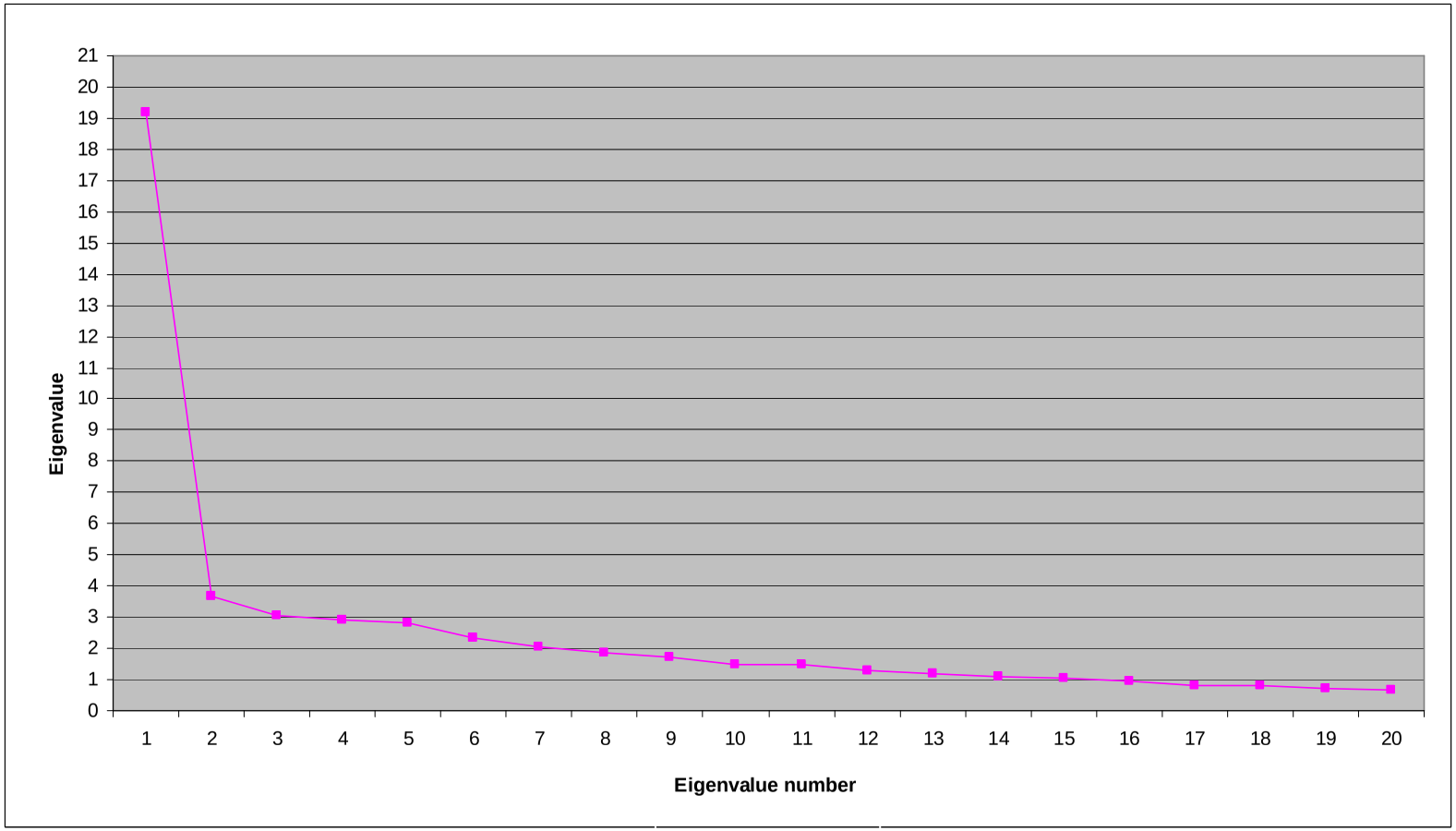
85%

Save Data
You've nearly finished the survey. Please save your data now.
Save data
97%

Save Data
Thank you for completing the survey. Your data has now been saved
The method used in this survey has not previously been used to study prescribing influences. As a result, we are very interested in hearing about how you found the survey. On the next page there are a few optional questions we would like you to answer.
Please press the continue button if you would like to answer these questions
Continue...
100%


Feedback
If you would like to leave feedback please complete the questions below as instructed.
There are no right or wrong answers, so please feel free to answer as honestly as you can.
What, if any, were the negative aspects of completing the survey?
For example, was it boring, too time consuming, confusing?
What, if any, were the positive aspects of completing the survey?
For example, did you find it challenging, thought-provoking, interesting?
Please leave any further comments you may have in the box below.
Would you like to receive a summary of the results of the study?
Yes
No

Appendix 24.0 – Study Three – Scree Plot



Appendix 25.0 - Study Three - Correlation Values of Defining Participants

	PERSPECTVE ONE **PCT Driven Prescribers**	**PERSPECTIVE TWO** **Patient-Centred Driven Prescribers**	**PERSPECTIVE THREE** **Prescribing Culture Driven Prescribers**	**PERSPECTIVE FOUR** **Evidence-Based Driven Prescribers**	**PERSPECTIVE FIVE** **Long-term Impact and Logistical Prescribers**
Nurse 4	0.7474 **	-	-	-	-
Nurse 6	0.6769 **	-	-	-	-
Nurse 8	0.5914 **	-	-	-	-
Nurse 9	0.5568 **	-	-	-	-
Nurse 11	05463 **	-	-	-	-
Nurse 18	0.5171 **	-	-	-	-
Nurse 22	0.7232 **	-	-	-	-
Nurse 23	0.6773 **	-	-	-	-
Nurse 25	0.6251 **	-	-	-	-
Nurse 26	0.7258 **	-	-	-	-
Pharmacist 2	0.5467 **	-	-	-	-
Pharmacist 4	0.7937 **	-	-	-	-
Nurse 1	-	0.5389 **	-	-	-
Nurse 7	-	0.5097 **	-	-	-
Nurse 15	-	0.6125 **	-	-	-
Nurse 29	-	0.6880 **	-	-	-
Pharmacist 5	-	0.6565 **	-	-	-
Pharmacist 6	-	0.6966 **	-	-	-
Pharmacist 8	-	0.4930 **	-	-	-
Pharmacist 18	-	0.7359 **	-	-	-
Pharmacist 19	-	0.6637 **	-	-	-
Pharmacist 20	-	0.6155 **	-	-	-
Nurse 19	-	-	0.4608 **	-	-
Nurse 27	-	-	0.5653 **	-	-
Pharmacist 3	-	-	0.7039 **	-	-
Pharmacist 12	-	-	0.6529 **	-	-
Pharmacist 15	-	-	0.4107 **	-	-
Pharmacist 21	-	-	0.5455 **	-	-
Nurse 2	-	-	-	0.5560 **	-
Nurse 13	-	-	-	0.5802 **	-
Nurse 17	-	-	-	0.4044 **	-
Nurse 34	-	-	-	0.6624 **	-
Pharmacist 14	-	-	-	0.6480 **	-
Pharmacist 16	-	-	-	0.5622 **	-
Pharmacist 22	-	-	-	0.4751 **	-
Nurse 30	-	-	-	-	0.7050 **
Pharmacist 7	-	-	-	-	*-0.5716***
Pharmacist 17	-	-	-	-	0.6428 **

** A factor loading at significance level 0.01 (99%). An italic values indicate a negative loading to a factor.

Appendix 26.0 - Study Three - Correlation Values of Confounder Participants

	PERSPECTVE ONE PCT Driven Prescribers	**PERSPECTIVE TWO** Patient-Centred Driven Prescribers	**PERSPECTIVE THREE** Prescribing Culture Driven Prescribers	**PERSPECTIVE FOUR** Evidence-Based Driven Prescribers	**PERSPECTIVE FIVE** Long-term Impact and Logistical Prescribers
Nurse 16	0.4247 *	0.5274 *	-	-	-
Nurse 20	0.4745 *	0.4117 *	-	-	-
Nurse 21	0.4123 *	0.4577 *	-	-	-
Nurse 24	0.5713 *	-	0.4477 *	-	-
Nurse 5	0.5435 *	-	-	0.6024 *	-
Nurse 12	0.4753 *	-	-	0.4300 *	-
Nurse 28	0.4096 *	-	-	0.6576 *	-
Nurse 31	0.5513 *	-	-	0.5677 *	-
Pharmacist 11	0.4058 *	-	-	0.7135 *	-
Nurse 32	-	0.4865 *	0.4475 *	-	-
Pharmacist 9	-	0.5481 *	0.4315 *	-	-
Pharmacist 13	-	0.5806 *	0.4806 *	-	-
Pharmacist 1	-	0.6700 *	-	0.4258 *	-
Nurse 10	-	-	0.4081 *	0.5704 *	-
Nurse 14	-	-	0.4422 *	0.4051 *	-
Pharmacist 10	-	-	0.5683 *	0.4232 *	-

* A factor loading at significance level 0.01 (99%)