An Evaluation of Supplementary Prescribing in Nursing and Pharmacy

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Foreword

The research on which this report is based was commissioned by the Department of Health and was undertaken by a team of researchers from the Universities of Sheffield, Nottingham, South Australia and Flinders, Adelaide. The views expressed in this report are those of the authors and not necessarily those of the commissioning body.

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Background

Supplementary prescribing was introduced in 2003 for nurses and pharmacists (and more recently for other health professionals). It allows suitably trained professionals to prescribe for patients in accordance with a Clinical Management Plan (CMP) following initial diagnosis by an independent medical prescriber and with the patient's agreement.

Aims

This research aimed to explore how supplementary prescribing in nursing and pharmacy was working in practice in England. The objectives of the project were to evaluate barriers and facilitators to the implementation of supplementary prescribing, patient and professional experiences, prescribing practices and issues around the safety and costs of supplementary prescribing.

Method

The research consisted of 3 stages: in stage 1, a thematic review of published and 'grey' literatures, and interviews with key stakeholders involved in supplementary prescribing were undertaken; stage 2 comprised an analysis of community and primary care nurse and pharmacist prescribing using PACT data (2004 – 2007) and a postal questionnaire survey of nurse (n=518) and pharmacist (n=411) supplementary prescribers; in stage 3, ten detailed case studies of supplementary prescribing practice in various settings were conducted, utilising observations, interviews and prescribing data. Research was undertaken from 2006 to 2008.

Key findings

Literature review: The literature review identified predominantly positive views and experiences of those involved in supplementary prescribing, although doctors and patients were perceived to lack awareness of supplementary prescribing. Implementation barrier included inadequate funding for training and support in practice, accessing medical records and information technology and difficulties using CMPs.

Stakeholder interviews: Stakeholders broadly welcomed supplementary prescribing, identifying benefits for both patients and healthcare professionals, whilst also highlighting similar implementation barriers to those in the literature review. The safety of supplementary prescribing was not considered problematic.

PACT analysis: Between 2004 to 2007 the volume (and cost) of nurse prescribing increased from 3.5 million items (£52 million) in 2004 to 9.3 million items (£108 million) in 2007; for pharmacists, it increased from 2706 items (£25,000) in 2004 to 64,883 items (£637,000) in 2007. Nurse and pharmacist prescribing remains a small proportion of all community and primary care prescribing (1.2% for nurses, 0.008% for pharmacists in 2007). Dressings and appliance prescribing constituted the main area of nurse prescribing and pharmacist prescribing was predominantly for cardiovascular medicines.

Questionnaire surveys: Reported current use of supplementary prescribing varied considerably between the two professions. Of nurses surveyed, 28% reported using supplementary prescribing, in community, GP practice and hospital settings, whilst 89% reported using independent prescribing. Of pharmacists surveyed, 51% reported using supplementary prescribing, in GP practice and hospital settings far more

than the community; in relation to independent prescribing, only 11% were trained but 33% were training and 52% intended to train. Prescribed items varied across the two professions although the reported volume of prescribing was similar for both. The majority of pharmacists prescribed cardiovascular medicines (60%), worked as supplementary prescribers for an average of 4 hours a week, saw an average of 15 patients on a recurring basis and issued an average of 4 prescriptions per week. Infections constituted the largest category for nurse supplementary prescribing (46%) and nurses worked as supplementary prescribers for an average of 10 hours a week, saw an average of 20 patients on a recurring basis and issued on average 6 prescriptions a week as supplementary prescribers. Nurses' consultations lasted an average of 20 minutes, compared to an average of 18 minutes for pharmacists. Prescribing training was viewed positively overall, but training needs varied between professions, contributing to mixed views about inter-professional courses; the period of learning in practice and designated medical practitioners (DMPs) were especially praised. Prescribing confidence and perceived competence were high in both professions, with least confidence being expressed about prescribing for patients with co-morbidities. Nurses and pharmacists reported requests by patients and colleagues to prescribe outside of their area of competence. Nurses and pharmacists were positive about the safety climate and culture in which they worked. Prescribing costs per patient consultation were similar for both professions (£7.02 for pharmacists, £6.50 for nurses), but costs for reviewing prescribing were significantly less for nurses (£2.87 and £6.65 per session respectively).

Case Studies: Patients' experiences of supplementary prescribing were positive overall, with nurses and pharmacists considered easier to talk to than doctors whilst also offering longer consultations. Patients lacked awareness and understanding of what supplementary prescribing and Clinical Management Plans (CMPs) entailed. Doctors' experiences of supplementary prescribing were also positive, confirming their expectations that non-medical prescribing should be used in clinical niches, using what they referred to as 'protocols'. They were more cautious about nurses and pharmacists undertaking a diagnostic role. Nurses and pharmacists were positive about their prescribing role, although some had reservations about CMPs and their supplementary prescribing training. Supplementary prescribing represented an innovation in working practice for many pharmacists but tended to formalise nurses' existing practices. Analysis and observation of CMPs revealed differences in application and content: some CMPs were non-patient specific and some were signed retrospectively by doctors. Analysis of consultations revealed variations in length and the number of questions asked by both prescriber and patient. Doctors' continued involvement in patient care was still evident with examples where prescribers sought the doctors' advice during consultations or referred patients on to doctors. Some prescribers could not offer patients signed prescriptions whilst others had to hand-write them, leading to delays in patients receiving prescriptions. Assessment of the prescribing safety of 71 prescribed medicines revealed no prescribing errors, three assessments of inappropriate prescribing – two of which were for use of branded medicines - and transgressions involving CMPs in six case study sites, based on the majority view of assessors.

Lay Summary

Supplementary prescribing means that health care staff other than doctors can now write prescriptions for patients. Before they can prescribe, health care staff have to do a training course and a doctor reviews their prescribing to make sure it is safe. Supplementary prescribers use something called a clinical management plan, which guides what medicines and treatments they give. This guide has to be agreed by a doctor and the patient needs to agree to this arrangement.

Supplementary prescribing started in 2003 with nurses and pharmacists and now other health care staff can also prescribe as well. It was introduced by the government to make it easier to get medicines and treatments and to better use the skills that health care staff have. Because supplementary prescribing is a new thing, the government asked for some research to be done to make sure it was working properly. This research looked at supplementary prescribing by nurses and pharmacists only, in England.

Overall, the research found that nurses and pharmacists were generally happy with supplementary prescribing, although some found it hard to get started with prescribing. A lot of the nurses had now moved on to a new form of prescribing called independent prescribing and many pharmacists also wanted to do this. There were also some problems with computers and the technology used.

Nurses' and pharmacists' prescribing was increasing, but was still very small compared to all the prescribing done in England mainly by doctors. Many nurses were prescribing things like dressings. Both nurses and pharmacists were prescribing for only a small part of the day usually. Both nurses and pharmacist said they had longer appointment times with patients and that patients generally liked this.

Doctors were generally happy with nurses and pharmacists doing supplementary prescribing but weren't sure about them going on to do independent prescribing, which means nurses and pharmacists can diagnose illness. The research also found that the guides that supplementary prescribers were supposed to be using were being used in slightly different ways than were intended, but overall, there were very few cases where they thought there were safety problems with what nurses and pharmacists were prescribing. The researchers found that patients were quite happy with nurses and pharmacists doing supplementary prescribing, but they didn't know much about it. Looking over the work that they had done, the research team made some recommendations to improve how supplementary prescribing worked. These included making everyone more aware of nurse and pharmacist supplementary prescribing, reviewing the guidelines to make sure they are working properly and involving doctors more in the training of supplementary prescribers. We also recommended that more should be done to help supplementary prescribers make their own prescriptions and we think that a review is needed of some aspects of the prescribing training of nurses and pharmacists. Finally, although we found no problems with prescribing safety in this research, we think that research is needed to confirm this.

1 Introduction

The delivery of medicines to patients through prescribing represents an integral aspect of modern healthcare, offering significant benefits in reducing morbidity and mortality, although at increasing cost to the healthcare budget. Throughout most of the twentieth century, doctors in the UK retained their status (alongside dentists) as the primary authorities able to prescribe. However, in response to demands to enhance access to medicines and to better utilise the skills of the health workforce, legislative changes were introduced to confer prescribing privileges upon professionals other than doctors, both in the UK and in other countries (Emmerton *et al* 2005). In the UK, this involved National Health Service (NHS) district nurse and health visitor prescribing from a limited list of medicines and appliances. More recently, suitably trained nurses, pharmacists and other allied health professionals[1] have been able to prescribe for patients from a wider list of medicines. The introduction of two key prescribing models have facilitated these changes in prescribing privileges and these are the introduction of supplementary prescribing in 2003 and nurse and pharmacist independent prescribing in 2006 (Department of Health 2005, 2006).

Supplementary prescribing represents a tripartite model of prescribing between doctor, prescriber and patient, with the doctor providing the initial diagnosis and the prescriber being given authority through a patient-specific clinical management plan (CMP), to prescribe medicines for that patient. Independent prescribing permits assessment and diagnosis of patients by non-medical prescribers, without a clinical management plan. Key to both forms of prescribing is the requirement that healthcare professionals must be suitably trained and prescribing within their clinical competencies.

Whilst independent prescribing is presently permitted for only nurses and pharmacists, supplementary prescribing has been introduced for nurses, pharmacists and some allied health professionals and optometrists, and shares similarities with international models of prescribing, (sometimes referred to as collaborative or dependent prescribing) such as those in the USA (Emmerton *et al* 2005). It may be particularly suited to managing patients with chronic, long-term conditions and promises benefits including faster access to medicines for patients and better use of the skills of prescribers and doctors. Supplementary prescribing represents an innovative policy development in the NHS and may be expected to impact upon the UK healthcare system in terms of healthcare professionals and service users (Cooper *et al In press*), as well as other areas such as the cost and type of prescribing and issues such as salary and consultation times. The importance of patient safety in relation to medicines and prescribing also extends to supplementary prescribing.

[1] Chiropodists/podiatrists, radiographers, physiotherapists, optometrists

Given the innovative nature of supplementary prescribing and the perceived impact that it may have, the Department of Health commissioned this study to evaluate supplementary prescribing in England by the two main professional groups who are presently prescribing - nurses and pharmacists - in relation to its implementation, practice and future challenges.

The specific objectives of this study were to:

- Thematically review the literature relating to supplementary prescribing
- Explore the experiences and perceptions of key stakeholders about supplementary prescribing practice and training.
- Evaluate the overall prescribing of nurses and pharmacists in the primary care setting using PACT data.
- Evaluate the safety of nurse and pharmacist supplementary prescribing, by assessing prescribing safety (in relation to errors and violations), appropriateness and safety climate.
- Evaluate the cost of supplementary prescribing in relation to consultation times, salaries and training.
- Explore nurse and pharmacist prescribing consultations with patients.

In the next chapter, the methods of the study are described, followed by further chapters describing the results of the study. Discussion and recommendation chapters then follow, with a glossary, references and appendices providing additional information.

2 Methods

Based upon the objectives identified, this study was conceptually and logistically divided into three distinct but linked research stages. In the first stage, a thematic review of relevant supplementary prescribing literature was undertaken, together with interviews with key supplementary prescribing stakeholders, to explore current experiences and perceptions of supplementary prescribing and also to inform other aspects of the study such as questionnaires and interview schedules. In the second stage, two distinct areas of research were undertaken: an analysis of PACT data from 2004 to 2007, and two questionnaire surveys, of nurse and pharmacist supplementary prescribers respectively. In the third and final stage, a series of case studies was undertaken, to observe supplementary prescribing practice, interview prescribers, doctors and patients and collect data relating to actual prescribing, and to assess safety and cost factors. In the remainder of this chapter, details of the methods for each stage are provided.

2.1 Stage One: Literature reviews and stakeholder scoping study

2.1.1 Literature search

A thematic literature review was undertaken to explore both empirical pharmacist and nurse supplementary prescribing research and also opinion and commentary and the grey literature relating to supplementary prescribing. The reason for including such potentially diverse literatures was due mainly to supplementary prescribing being a relatively recent development with an associated lack of empirical research, as other reviews have identified in relation to pharmacy (Tonna et al 2007) and nurse non-medical prescribing (Latter and Courtenay 2004). Hence, a thematic rather than systematic review was considered most appropriate and including grey literature offered the opportunity not only of identifying research that would not otherwise be found (such as from conferences, non-peer reviewed publications and commissioned and policy documents) but also of considering more broadly how supplementary prescribing is perceived from the perspectives of the nursing, pharmacy and medical professions. Searches were made of that literature from 1997 to 2007 using combinations of the following keywords: ‘supplementary prescriber’, ‘supplementary prescribing’, ‘nurs* and prescrib*’, ‘pharmac* and prescrib*’. These search criteria were used to allow for the inclusion of papers on non-medical prescribing more generally if these were relevant to supplementary prescribing, especially since the IESP status of many UK nurses means that research may have been undertaken using such nurse samples without specific reference to supplementary prescribing. Although supplementary prescribing was only introduced in 2003, the earlier search date was used to allow for early consultation or policy documents or reflection on the *proposed* use of supplementary prescribing. Exclusion criteria included papers relating to specific but non-supplementary forms of prescribing, such as patient group directions and independent prescribing (e.g. Harris et al 2004). The following electronic databases were searched: MEDLINE,

EMBASE, CINAHL, ISI Web of Knowledge and Zetoc. In addition, on-line searches of *The Pharmaceutical Journal, International Journal of Pharmacy Practice, Journal of Clinical Nursing, Journal of Advanced Nursing, Nurse Prescriber, Nursing Times* and Department of Health websites were made.

2.1.2 Stakeholder Scoping Study

In order to scope the range of issues pertinent to the implementation of supplementary prescribing in nursing and pharmacy, interviews with key stakeholders were conducted. Using purposive sampling, 52 individuals or organisations were initially approached to reflect key stakeholder groups and from these, 43 individual stakeholders were subsequently interviewed during 2006 (appendix B). These stakeholders were identified primary through contacts of the authors, in terms of their involvement currently or previously in the training, research, practice and implementation of supplementary prescribing in both primary (community and general medical practice) and secondary (hospital) care settings. Insights from patient groups and the nursing, pharmacy and medical professions were also considered desirable, and recruitment of stakeholders from appropriate organisations was also undertaken, again using contacts of the authors. In several cases, stakeholders were no longer directly involved in supplementary prescribing, but were recruited based upon their previous experience of supplementary prescribing. Qualitative, semi-structured interviews were undertaken mainly by telephone, as this overcame the problems of interviewing a relatively large number of interviewees across many locations in the UK, in the relatively short time-scale permitted. Although such interviews may lead to less interaction and rapport, this was not considered an issue in this research. A small number of interviews, however, were conducted in person. An interview guide was developed, based upon the thematic literature review undertaken and discussions amongst the authors (Appendix B). Interviews varied in duration from 21 to 82 minutes with a mean of 42 minutes.

One of the research team undertook framework analysis (King 1998) of transcribed interviews initially, using a coding frame based upon broad categories such as education, implementation, safety and cost. This method was used in part because of the relatively large number of participants involved and to make the initial stages of coding more manageable, yet open to refinement and revision (King 1998). A second researcher undertook additional open and axial coding, together with the process of constant comparison, with transcripts being re-read until all emergent themes had been coded.

2.2 Stage Two: PACT analysis & survey of supplementary prescribers

2.2.1 Analysis of PACT data for community and primary care prescribing

Prescribing analysis and cost (PACT) data are routinely collected by the NHS Business Services Authority, Prescription Pricing Division (NHS BSA PPD) for all prescribers working in community and primary care in England. Data are collected at the level of individual prescribers and are aggregated to

provide information at a practice, SHA and national level. PACT data can provide information at the level of individual drugs through to therapeutic areas which broadly map to BNF chapters. PACT data were collected retrospectively from 2003 until December 2007. Data were provided at regional and national (England) level. The regional data correspond to Strategic Health Authority boundaries and the data supplied reflected boundaries changes in 2006. Data were also provided within therapeutic areas which broadly map to BNF chapter and subchapter level. Data on both the number of items prescribed (volume) and the net ingredient cost (NIC) of items were supplied. Supplemental data and statistical analysis was also obtained from the Prescribing Support Unit and NHS Business Services Authority reports and from the Royal Pharmaceutical Society of Great Britain (RPSGB).

2.2.2 Questionnaire Survey of Nurse and Pharmacist supplementary prescribers

A survey of nurse and pharmacist prescribers was undertaken in 2007 to explore issues relating to the demographic and role characteristics of supplementary prescribers, their prescribing practices and their views and experiences of supplementary prescribing. Data on costs and patient safety were also collected. A postal questionnaire was used for the survey (with minor modifications for each profession based on differences in qualifications between nurses and pharmacy). The design of the questionnaires was informed by findings from the scoping study and the literature reviews. The questionnaire included structured and semi-structured questions and an existing validated data collection tool, the Teamwork and Safety Climate Survey (University of Texas). The questionnaire was piloted with nurse and pharmacist colleagues and modified where necessary (see Appendix C).

The method used to recruit respondents to the survey differed between nurses and pharmacists. For pharmacists, the Royal Pharmaceutical Society of Great Britain (RPSGB) provided labels with the names and contact details of all pharmacists registered with them as supplementary prescribers. The questionnaires were sent out in April 2007 with a covering letter, freepost envelope and information sheet. A follow up questionnaire was distributed to non-responders three weeks later.

In relation to recruiting nurses, we initially sought (and received) approval to access the Nursing and Midwifery Council (NMC) register. This was subsequently withdrawn by the NMC because of data protection issues relating to their registration process. Accessing nurses through the employing Trust or PCT was considered, however this would have necessitated separate research governance applications for each participating Trust, which was considered likely to result in unacceptable delays to the project. Therefore, a decision was made to sample supplementary prescribing trained nurses via Higher Education Institutions (HEIs) where prescribing training was offered. All HEIs that had provided supplementary prescribing training courses for nurses were contacted and asked either if they would be prepared to distribute a questionnaire to nurses who had completed their supplementary prescriber training or if they would provide contact details. Approaches to HEIs were made via telephone, email and letter and any administration costs relating to recruitment and distribution were met. Where HEIs were willing to distribute questionnaires, they were sent a stamped envelope containing a letter,

information sheet, questionnaire and freepost envelope and they distributed them themselves. Ethical approval for the study, including a substantial amendment relating to the method of distribution of the nurse questionnaire, was obtained from Central Manchester MREC.

Data from returned questionnaires were entered into SPSS 14 (quantitative) or Word (qualitative). Descriptive and inferential statistics were conducted using SPSS. χ^2 tests and Mann Whitney U Tests were carried out to test for the null hypothesis that there was no association between the professional group (nurse or pharmacist) and a number of key variables.

Costs associated with supplementary prescribing were calculated per consultation (i.e. patient) and for prescribing review per session using nurses' and pharmacists' self-reported estimations in the survey and standard salary data from the Personal Social Services Research Unit Database (Curtis 2007). The data for the cost analysis were analysed using parametric (mean and standard deviation) and non-parametric (median and IQ range) statistical methods. Due to the non-normal distribution of the data, non-parametric methods only (the Mann-Whitney U test) were used to assess for statistically significant differences in key cost variables between pharmacists and nurses.

Qualitative questionnaire data were initially analysed separately for each profession. Open coding of all responses was performed and coding refined until all data were represented in coding categories. Codes and themes were then compared between professions to generate axial codes. Tabulation of qualitative responses was also undertaken to estimate the frequency of responses in order to complement but not replace the qualitative analysis and help identify key themes (Silverman 2001).

2.3 Stage Three: Case studies

2.3.1 Setting up case studies and recruitment

Recruitment of supplementary prescribers

Nurses and pharmacists who had completed questionnaires in the second stage of the study were asked to indicate whether they were interested in participating in case studies and, if so, to provide contact details. Nurses and pharmacists were then contacted by telephone to confirm prescribing status and volume of prescribing (both to ensure they were prescribing as supplementary rather than independent prescribers and that they were prescribing in sufficient volume to make the case study practically feasible). Employer information was collected to facilitate research governance approval to be sought. Snowball sampling was also used to recruit case study participants, whereby participating nurses and pharmacists were asked if they knew of other supplementary prescribers who may be interested in participating. Ethical review for this and all other aspects of the case studies was obtained from Leeds East MREC.

Recruitment of patients

Supplementary prescribers identified patients attending a specific clinic or appointments on the day(s) that the case study was being undertaken. Letters, information sheets and consent forms were sent to these patients in advance, explaining that there would be a researcher present during their consultation, that the consultation would be recorded, that anonymised details of Clinical Management Plans (CMPs) and any medicines that were prescribed would be recorded and that they would be invited to complete a questionnaire which would also invite them to take part in a telephone interview. Patients could either return the consent form in advance or on the day of the consultation.

Recruitment of independent prescribers

Supplementary prescribers were asked to identify independent medical prescribers with whom they worked and forward a letter of invitation, information sheet and consent form asking them if they would consider participating in an interview.

2.3.2 Data collection

Observation of consultations

Where patients consented, the attending researcher maintained detailed field notes of the consultations between supplementary prescribers and their patients. Full details of prescribed medicines were recorded, along with information relating to other current prescribed medicines and a copy of the CMP. On some occasions it was possible to visually inspect the actual prescription but to prevent delays and intrusions into the actual consultation, verbatim prescribing details were often collected *post hoc.* On several occasions, it was not possible to obtain a copy of the CMP, due to the electronic format of some, the lack of printing facilities or the use of 'generic CMPs' that were not patient specific in some sites. These issues are described in detail in the case study results chapter.

Interviews with supplementary prescribers

These were mainly undertaken face to face during the case study and after observing consultations, but a minority were subsequent telephone interviews. Interviews allowed the researcher to explore issues surrounding supplementary prescribing in more detail, to allow the researcher to question the prescriber about aspects of the observations and also to collect data for the analysis of costs. An interview question schedule was developed following discussion with the research team, and was informed by the literature review, the stakeholder study and the questionnaire data.

Interviews with independent prescribers

Interviews were conducted either by telephone or at the case study site, again using an interview schedule that was informed by the literature and data collected in the study. Questions sought to explore experiences and perceptions of supplementary, but also other forms of non-medical prescribing.

Questionnaires and interviews with patients

A questionnaire was developed to elicit information about patients' experiences and perceptions of supplementary prescribing together with measures of their medicine adherence and information provision (the Medication Adherence Report Scale (University of Brighton) and the Satisfaction with Information about Medicines Scale (Horne 2001) respectively). Patients were also invited to provide contact details if they were willing to participate in an interview. The questionnaire was piloted and reviewed by several nurse and pharmacist prescribers. Patients received the questionnaire at the end of the observation and completed it at their convenience (a freepost envelope was provided). Patients willing to be interviewed were subsequently contacted and a telephone interview arranged and conducted. An interview schedule was developed following discussion and was again informed by the literature and data previously collected. In some case studies, it was also possible to interview patients after the consultation, with their consent. All interviews were recorded and consent was gained.

2.3.3 Data analysis

Analysis of prescribing safety and appropriateness

Although prescribing safety is now widely recognised as an important policy and research concern (Barber 1995, Kohn et al 2000, Leap 1997, Wilson and Sheikh 2002), no explicit measure of the safety of prescribing has yet been developed. Following Reason's influential analysis as applied to healthcare (Reason 1990, 2000), a broader interpretation of safety that embraces prescribing culture, errors and intentional violations was utilised. Prescribing culture was addressed in the questionnaire survey, using the Texas instrument, whilst for errors, a definition advanced by Dean *et al* (2000) was used as a standard by which to analyse actual prescribing – this definition having being recognised in official publications relating to patient safety and prescribing (Department of Health 2003). Violations arise in different forms (Parker and Lawton 2006) but given the lack of an explicit measure in the literature, it was decided to focus upon transgressions relating to the CMP. Specifically, and based upon analysis of the stakeholder interviews and questionnaire survey data, transgressions relating to deviation from the standards required for CMPs were measured, in terms of whether a specific CMP had been developed for an individual patient and whether the prescribing was in accordance with the CMP.

Prescribing appropriateness was assessed using the nine questions included in the Prescribing Appropriateness Index (PAI) measure developed by Cantrill, Sibbald and Buetow (1998). This was chosen over the Medication Appropriateness Index (MAI) developed by Hanlon *et al* (1992) since the

PAI has been validated in the context of UK prescribing and also for long-term conditions, which supplementary prescribing would be expected to include. The prescribing data collected during case studies were entered onto specially designed spreadsheets to record exact details of the medicine prescribed, the dose, quantity and form. Details of other current medication were also recorded, as was additional information provided by the prescriber about their prescribing (following recognition that prescribing should include not merely pharmacological but social and personal factors, too (Cribb and Barber 1999). Analysis of prescribing was undertaken by an expert group consisting of four assessors from differing professional backgrounds (general practitioner/academia, pharmacology/nurse prescribing course lecturer, clinical pharmacy and community pharmacy). Each assessor was provided with details of all prescribing from the case studies, the CMP if available and any additional information observed in the consultations or provided by the supplementary prescriber. They were provided with assessment instructions and a checklist form (see Appendix D) which asked them to apply the PAI questions and assess whether any errors or CMP transgressions had occurred. For each act of prescribing, individual assessments based upon error, violation and appropriateness were obtained from each assessor. Assessors then discussed the cases to clarify individual assessments and report observations and a majority view (three or more assessors) on each prescribed medicine was reported. Prescribing appropriateness was assessed using nine indicators, with a negative assessment of any one indicator leading to an overall inappropriate score for that prescribed medicine.

Analysis of consultations

For each case study, a sample of consultations observed were transcribed verbatim. Using these transcripts and associated field notes, an overview of each of the case studies was developed. In addition, simple quantification of the numbers of questions asked by prescriber and patient respectively were undertaken. Furthermore, framework analysis of consultations was undertaken using modified indicators of the success of consultations developed by Barry et al (2001).

Analysis of prescriber, doctor and patient interviews

All interviews were fully transcribed and analysis of the interviews was undertaken separately in relation to the three interviewee groups. One of the researchers analysed the transcripts, by repeatedly reading them and first generating a set of descriptive themes - initial experiences, positives and negatives, for example - which were all fully open coded. Transcripts were then re-read to consider any broader themes and the process of constant comparison also used to consider any links between themes, interviewees and issues such as setting and profession, for example, and additional axial codes generated. Discussion of the emergent themes and coding was undertaken by the researcher with two other team members, who also read the transcripts. In particular, any disagreement or additional themes were discussed and the overall coding refined as a result.

Analysis of the costs of supplementary prescribing

This component considered the costs of supplementary prescribing to the NHS focusing upon initial set-up costs and additional costs such as indemnity insurance and salary changes - the costs of supplementary prescribing consultations and reviews having been derived from the survey data. All resource use and costs data were analysed using the statistical package SPSS version 15.0. Unit costs were based upon the 2006-2007 financial year.

The initial set-up costs incorporated the costs required to provide the relevant training for either a nurse or pharmacist. The initial set-up costs also focus upon the time taken to develop and agree clinical management plans. Resource use data relating to the time taken to develop a clinical management plan for all patients and for each patient were obtained through interviews with supplementary prescribers and costed using national unit costs from the Personal Social Services Research Unit Database (Curtis 2007). An average cost of training courses was developed using information about the cost of training courses from academic institutions that form the main sources of training. The final category described the costs of any additional ongoing training to prescribing nurses or pharmacists. These training costs were obtained via interviews with supplementary prescribers.

As well as the three main categories, several additional costs were considered relevant. Interviews with supplementary prescribers were also used to estimate whether they had received any increase in salary as a result of becoming a supplementary prescriber; whether they had to meet the costs of any levies incurred as a result of registering as a supplementary prescriber and if so, how much these levies cost. In addition, information about whether supplementary prescribers had to pay insurance as a result of their prescribing role and if they did have to pay insurance, how much this was, was also collected.

3 Results - Thematic Literature Review

Using search criteria described in the methods chapter, 35 empirical research papers relating to supplementary prescribing in nursing and pharmacy were identified[2]. A further 25 nurse supplementary prescribing papers and 5 pharmacist supplementary prescribing papers were identified which described anecdotal opinions and experiences of supplementary prescribing practice. One book was identified and 20 key policy documents, plus a number of anonymous reports on supplementary prescribing in publications such as *The Pharmaceutical Journal* and *Nursing Times* (Cooper *et al* 2008). These findings are now presented according to the type of literature identified and key emergent themes.

3.1 Empirical Studies

The empirical studies most frequently focused upon experiences and perceptions of supplementary prescribing practitioners, but also those of other healthcare professionals, patients and public. Studies indicated that supplementary prescribing pharmacists saw clear benefits in terms of increased confidence, job satisfaction and independence, together with a perception that patients were more satisfied and better managed by supplementary prescribing (George *et al* 2006). Weiss *et al* (2006) reported similar findings alongside a perception that pharmacists could offer more medicines information and enjoyed more time with patients as compared to care provided by a doctor. Studies indicated that nurses' experiences of supplementary prescribing were largely positive and suggested that they felt confident about prescribing (Courtenay *et al* 2006). However, several studies revealed that having a supplementary prescribing qualification did not necessarily result in actual supplementary prescribing practice (Candlish 2006, George *et al* 2007).

The views of other health-care professionals - doctors particularly - revealed a more qualified assessment of supplementary prescribing. An over-riding theme was their lack of awareness of supplementary prescribing (George *et al* 2006, Hughes and McCann 2003, Lloyd, McHenry and Hughes 2005, Weiss *et al* 2006), and although broadly positive about supplementary prescribing, doctors had a number of reservations relating to, for example, the erosion of doctors' traditional roles and professional hierarchies. Pre-existing relationships between doctor and supplementary prescriber were considered important in facilitating supplementary prescribing (Avery *et al* 2004).

Very little research appeared to have involved patients although Weiss *et al* (2006) reported that patients struggled to identify benefits in pharmacist supplementary prescribing but suggested potentially reduced GP workloads; pharmacist supplementary prescribing hypertension clinic patients reported greater involvement and understanding in relation to their treatment or condition (Smalley 2006).

Relationships between professions were highlighted in some studies, and, in a study looking at the perceived inter-professional barriers between GPs and community pharmacists, concerns emerged

[2] Of note was that several publications reported different aspects of one overall study and data set.

about pharmacists' '*shopkeeper'* image and subordination to doctors (Hughes and McCann 2003) plus medical practitioners' reservations about non medical prescribing and preference for protocol, rather than independent prescribing (Buckley *et al* 2006). Amongst nurses, Jones (2006) reported a paradox of supplementary prescribing helping 'police' junior doctors, whilst maintaining consultants' dominance.

3.2 Anecdotal Literature

A significant body of anecdotal literature was identified that reported experiences of supplementary prescribing, often in nursing. Echoing the empirical studies, the anecdotal literature reflected positive attitudes about supplementary prescribing but identified clear barriers to successful practice. Ignorance about nurse supplementary prescribing on the part of medical practitioners was reported (Baird 2004), as was the view that supplementary prescribing merely formalised previous informal mechanisms where pharmacists all but made prescribing decisions for doctors (Tomlin 2005). Supplementary prescribing appeared to have been used in many clinical settings, including mental health, renal services, rheumatology, dermatology, epilepsy, substance misuse and diabetes (Cooper *et al* 2008).

3.3 Barriers and facilitators

The implementation of supplementary prescribing was a recurrent theme. Facilitators included a good pharmacist-doctor relationship linked to mutual trust (Lloyd and Hughes 2007) and effective communication and support from peers, doctors and employing organisations. Barriers were often antonymic to facilitators and a lack of communication was identified (Hay *et al* 2004) along with time and financial limitations, no primary care strategy or funding, difficulty in accessing patients' medical records and a perceived lack of awareness of supplementary prescribing amongst other healthcare professionals, patients and public. Additional barriers - often referred to in the anecdotal literature - were identified in the minutiae of practice, including problems obtaining prescription pads after qualification, inadequate IT to print prescriptions, poor administrative support and delays between training and actual prescribing. The CMP was often criticised for its encumbering, time-consuming and restrictive nature.

3.4 Independent Prescribing

Several comparisons between supplementary prescribing and independent prescribing were identified. Lloyd and Hughes (2007) reported many pharmacists' belief that independent prescribing was a natural extension of supplementary prescribing but doubted their skills, whilst doctors' viewed independent prescribing more negatively. Warchal et al (2006) reported pharmacists' intentions to become independent prescribers, but also concerns about medical acceptability. In the nurse palliative care setting, Kinley et al (2004) argued that supplementary prescribing may be a retrograde step compared to independent prescribing as it retained links to medical paternalism, precluding nurse responsibility.

3.5 Education and training

The adequacy or otherwise of non-medical prescribing education was a theme in several studies, particularly in terms of the content of the courses undertaken by nurses and pharmacists. Several studies reported a perception amongst stakeholders that the skills of nurses and pharmacists were different and that additional and profession-specific training was needed, despite several universities offering courses that admitted students from different professions and taught them together. Buckley *et al* (2006), for example, observed that stakeholders perceived nurses as having a lack of necessary pharmacological knowledge and pharmacists, a lack of closeness and knowledge of the patient. Dawoud *et al* (2004) noted that an early cohort of pharmacists undertaking supplementary prescribing training felt they were competent in pharmacology and pharmacokinetics and hence wanted less of this in a course but more training involving the physical examination of patients and counselling. Hobson and Sewell [42] reported several PCT and chief pharmacists' views that the lack of clinical assessment of nurse prescribing trainees was a concern, but not for pharmacists. Although much of the nurse prescribing education literature identified was not specific to supplementary prescribing, two studies referred specifically to this prescribing model. Bradley *et al* (2006) focused upon the implementation of supplementary prescribing on existing nurse prescribing courses at four institutions and interviewed lecturers, identifying themes surrounding recruitment concerns, time limitations, the CMP and a lack of pharmacological knowledge amongst student nurses. Skingsley *et al* (2006) focused on neuropharmacology training requirements for mental health nurse prescribers generally and reported that nurses found it rewarding but challenging, especially in relation to aspects of theory and scientific terminology. The authors noted, however, that the addition of supplementary prescribing training might lead to increased nurse cohorts from more varied clinical settings and questioned whether the courses could cope with this increased demand and variety.

3.6 Grey literature

Three types of grey literature were identified. Firstly, there were publications from official bodies providing formal and often detailed information about how supplementary prescribing would be implemented and controlled. Examples included formal documents relating to the implementation of supplementary prescribing (Department of Health 2005), non-medical prescribing summaries, educational requirements, competency frameworks and resources for assessing supplementary prescribing practice (NPC 2004). RPSGB publications included briefing papers (Weiss *et al* 2006), commissioned research and a conference report on the early progress of pharmacist supplementary prescribing (Royal Pharmaceutical Society 2006) which highlighted many of the issues described in this review. The National Prescribing Centre reported on two studies: one a scoping study which recommended that IT access was important and that CMPs should be relatively quick and simple to develop and implement (NPC 2005), the other a questionnaire survey of non-medical prescribers which identified numerous support and training needs for supplementary prescribing (NPC 2006). Secondly,

there were several reports of supplementary prescribing in the nurse and pharmacy press such as the *Nursing Times* and the *Pharmaceutical Journal* and these were often either positive in tone or simply offered journalistic reportage on supplementary prescribing developments. Thirdly, several more critical articles were identified in the medical and general press. The medical practitioner publication *Pulse*, for example, although reserving most criticism for independent prescribing, referred to supplementary prescribing as a *'controversial plan'* that ignored doctors' concerns about increased workload, safety and funding (Anon 2002). Avery and Pringle (2005), noted that non-medical prescribing and especially independent prescribing could be valuable initiatives only if training and information technology access safeguards were in place. Horton (2002) argued that nurse prescribing could offer valuable benefits but the pace of nurse prescribing was, he argued, 'reckless' and amounted to an 'dangerous uncontrolled experiment,' echoing other arguments about cost and labour savings (McCartney *et al* (1999).

3.7 Summary

Increasing body of literature emerging, with predominantly qualitative and survey data from empirical research revealing generally positive views amongst those involved in supplementary prescribing.

However, more critical tone identified amongst some doctors in opinion pieces and some publications, although it is worth noting that doctors are the group with the least awareness of non medical prescribing.

Supplementary prescribing identified in many clinical areas although empirical and anecdotal literature indicate continuing implementation barriers and perceived lack of awareness of supplementary prescribing by some doctors and patients.

Lack of research exploring cost issues of supplementary prescribing and views of patients neglected.

4 Results - Stakeholder Scoping Study

Analysis of interviews with 43 supplementary prescribing stakeholders revealed several broad themes which, due to the relatively structured nature of the interviews, corresponded closely to the questions asked. Stakeholders' background and expertise appeared to affect their responses and, for example, those involved in research, teaching or policy tended to consider supplementary prescribing in terms of training and competency, whereas practitioners focused more upon barriers and problems in practice. In other respects, however, the views of different stakeholders were broadly similar, such as perceptions of professional competencies, for example. The key emergent themes are now presented in turn.

4.1 Training and Education

Supplementary prescribing training was generally viewed positively and it was argued that it adequately prepared students for prescribing, and also offered flexible study and inter-professional learning opportunities. Negative aspects of training concerned the limited timescale and some aspects of course content, such as the absence of training in clinical specialities. Perceived variation between courses was also identified. Many stakeholders commented on key professional differences in relation to training needs: nurses were perceived to lack pharmacology/therapeutics knowledge, whilst pharmacists lacked the necessary counselling and clinical diagnostic skills:

> *"Nurses have the consultancy skills already and just need to learn the pharmacology and the importance of prescribing whereas pharmacists, from what I have seen, [have] a lot more concerns about how to meet the patients, how to weigh up the patients […] So combined courses can confuse me somewhat."* (Primary care SP pharmacist)

Hence, joint supplementary prescribing courses were seen as inherently problematic by some stakeholders, although others considered such courses advantageous in offering inter-professional insights and support. Academic stakeholders warned that early student cohorts may be unrepresentative of their professions overall and were concerned about the competency and motivation of later prescribing cohorts. Doctors' mentoring roles (as DMPs) were often praised, although students and course providers reported isolated examples of dilatory supervision. Doctors' lack of remuneration and busy workloads were recognised in relation to the DMP role. Many stakeholders were also concerned that continuing professional development (CPD) training for prescribers was limited and not inter-professional.

4.2 Supplementary Prescribing Implementation and Practice

Reducing doctors' workloads and encouraging interaction and understanding between different healthcare professions were perceived to be benefits accruing from supplementary prescribing. There was also a perception that patients were generally positive about supplementary prescribing, valued

potentially enhanced access to medicines and that supplementary prescribing resulted in quicker appointment times:

> *"I get the feeling that the patients have certainly had access to their medicines more quickly […] It has been a much more direct kind of route for them getting what they need, and that has been particularly useful for people with chronic problems."*
> (supplementary prescribing course lecturer)

Patients' lack of awareness of supplementary prescribing was also reported as a concern. Specific benefits of CMPs were identified, including encouraging inter-professional interaction, differentiating different prescribing models and encouraging reviews of current treatment guidelines. Other stakeholders, however, felt there were significant practical difficulties in designing and implementing CMPs.

4.3 Facilitators and Barriers to the Implementation of Supplementary Prescribing

Stakeholders identified several factors that they felt might affect how supplementary prescribing was introduced in practice. Adequate support was considered necessary, both formally in terms of employers' and commissioning bodies' support, and informally from work colleagues and prescriber networks. Access to appropriate information technology (IT) and facilities and a good pre-existing working relationship between supplementary prescriber and doctor were also cited. An enthusiastic approach was also required by supplementary prescribers, to encourage peers to become prescribers and manage any implementation barriers. Delays between training and practice were cited, as was a perceived pressure on prescribers to return to existing tasks (like pharmacists to dispensing) after qualifying:

> *"There are still some people out there, in hospital in particular, that have qualified and can't get practising because they are being dragged back to their dispensary."*
> (Clinical lead)

Poor IT infrastructure was noted in terms of software that could not accommodate supplementary prescribing and lack of access to patients' medical records.

4.4 Professional relationships and boundary encroachment

Views varied as to the impact of supplementary prescribing on inter-professional relationships. Some argued that supplementary prescribing might enhance inter-professional relationships, by offering an opportunity for increased interaction and potentially facilitating trust between professions. Other stakeholders argued that some doctors might feel threatened by supplementary prescribing, with one doctor highlighting a '*certain amount of suspicion and sometimes antipathy*' towards supplementary prescribing from other doctors. It was also noted that supplementary prescribing might be a less threatening model of non-medical prescribing (as compared to independent prescribing) because it did not involve making an initial diagnosis, thus maintaining medical authority in this domain. Occasional inter- and intra-professional tensions were identified, including an example of pharmacists encroaching on nurses' clinics, and concern about resentment of non-medical prescribers by non-prescribing peers:

"I think it has raised some issues with some professional jealousies where some nurses in particular have found that some of their peers don't like it really (the fact that they are prescribing) and [their peers] would sooner go to the GP rather than ask the nurse prescriber about things." (Clinical lead)

4.5 Safety

Issues associated with the safety of supplementary prescribing were frequently cited. Comparisons between supplementary prescribing and independent prescribing were often made and supplementary prescribing was considered by some to be relatively safe, due to the existence of the CMP which guided prescribing decisions and because of less complex patients presenting. Safe prescribing was argued to require adequate training, auditing and practice reviews, but inappropriate IT and record access were considered possible safety threats. Several stakeholders remarked that pharmacists' understanding of pharmacology might lead to safer prescribing, but others argued that nurses' diagnostic training offered an additional safety check.

4.6 Costs of supplementary prescribing

Several cost issues emerged concerning salaries, prescribing and indirect costs, both as cost-saving but also burdens. It was argued that supplementary prescribing might reduce costs since nurses or pharmacists cost less than medical practitioners and would be undertaking routine prescribing:

"It is cost-cutting and that was fully intentional and that was the only reason they would allow nurses to expand their role is to get cheaper labour basically." (Hospital supplementary prescribing nurse)

Conversely, some argued costs might rise since non-medical prescribers might demand higher salaries. Direct prescribing costs were identified, including concerns about the prescribing patterns of nurses and pharmacists and concerns that more prescribers would mean increased prescribing and hence increased costs. Indirect costs were referred to in terms of training prescribers initially and the effects of longer consultation times for non-medical prescribers generally.

4.7 Independent prescribing

Whilst not the main focus of the scoping exercise, many stakeholders referred to independent prescribing, with independent prescribing being perceived as a more flexible model of prescribing. This view was justified on the grounds that it did not require a CMP, would further improve access to medicines and represented a more prestigious and autonomous prescribing model. Concerns emerged that independent prescribing might pose a greater threat to medical authority, that independent prescribing might not suit less confident non-medical prescribers, that independent prescribing might increase prescribing costs, that independent prescribing could lead to prescribing beyond nurses' and pharmacists' competencies and that their diagnostic skills might be inadequate for some presenting conditions.

4.8 Future challenges

Although some stakeholders believed supplementary prescribing would become an integral part of nurses' and pharmacists' roles and their undergraduate training, others argued that it might be superseded by independent prescribing. A minority of stakeholders' comments suggested that nurse and pharmacist prescribing had been introduced too rapidly and that further developments should be more conservative and informed by research. Key challenges were perceived to be increasing awareness of supplementary prescribing, introducing local strategies for implementing supplementary prescribing more effectively, addressing deficiencies in CPD and training and addressing access to patients' medical records generally.

4.9

4.10 Limitations

Stakeholders' views may not necessarily be representative of their peers and, for example, supplementary prescribers interviewed were from early cohorts and medical stakeholders were those who had direct experience of supplementary prescribing. The study also relied upon stakeholders' perceptions of supplementary prescribing and this may differ from actual practice: it was evident from the analysis that some stakeholders appeared to espouse received wisdom or offered responses that reflected what they had read in the literature – especially those not actively involved in practice.

4.11 Summary

Supplementary prescribing appeared to be broadly welcomed by stakeholders and perceived to offer a number of benefits for patients and healthcare professionals.

Several perceived ongoing implementation barriers and challenges were identified and these, along with the emergence of several differences and tensions may be relevant to the success of supplementary prescribing.

5 Results - Analysis of PACT data

The aim of the analysis of PACT data was to explore the volume, costs and trends of nurse and pharmacist prescribing in community and primary care, examining data at a regional and national level, both overall and at therapeutic chapter and subchapter level from 2004-2007[3]. Data on all prescribing in community and primary care (including doctors') were also compared with nurse and pharmacist prescribing. It is worth noting at this stage that the figures for 2004-2006 reflect pharmacist supplementary prescribing only and from 2007 onwards, supplementary and independent prescribing.

5.1 Overall level

5.1.1 Comparison of medical and non medical prescribing

The volume and cost of all nurse and pharmacist prescribing represented a small proportion of the overall prescribing in primary care and the community (Table 5.1)

Table 5-1 Prescribing 2004 and 2007

Year	Profession	Volume	Net Ingredient Cost	% of all prescribing
2004	Nurse	3,539,159	£52,167,484	0.52%
	Pharmacist	2,706	£25,348	0.0004%
	All	686,138,900	£8,079,566,994	100%
2007	Nurse	9,366,309	£107,736,871	1.2%
	Pharmacist	64,883	£637,907	0.008%
	All	786,145,690	£8,169,170,609	100%

5.1.2 Nurse prescribing

The total number of items prescribed by nurses in community and primary care increased from 3.5 million in 2004 to 4 million in 2005, 6.3 million in 2006 and 9.4 million in 2007. There was a 14.3% increase in the number of items prescribed between 2004 and 2005, a 55.9% increase in the number of items prescribed between 2005 and 2006 and a 48.5% increase in the number of items prescribed between 2006 and 2007. These trends can be seen in Figure 5.1. The net ingredient cost of items prescribed by nurses in community and primary care increased from £52.2 million in 2004 to £58.9 million in 2005, £79.3 million in 2006 and £107.7 million in 2007. There was a 12.9% increase in the cost of items prescribed between 2004 and 2005, a 34.7% increase in the number of items prescribed between 2005 and 2006 and a 35.8% increase in the number of items prescribed between 2006 and 2007. The volume of nurse prescribing has increased month on month with the exception of two months (decrease in volume of 1% or less). The largest percentage increase in volume of items prescribed was in June 2006, which saw a 22.7% increase. These increases are also reflected in the net ingredient cost which, in the same month, saw a 14.9% increase.

[3] For analysis and further discussion of pharmacist PACT data from 2004-2006, see Guillaume *et al* 2008

5.1.3 Pharmacist prescribing

The total number of items prescribed by pharmacists in community and primary care increased from 2,706 in 2004 to 11,458 in 2005, 31,052 in 2006 and 64,883 in 2007. There was a 323% increase in the number of items prescribed between 2004 and 2005, a 170% increase in the number of items prescribed between 2005 and 2006 and a 109% increase in the number of items prescribed between 2006 and 2007. These trends can be seen in Figure 5.2. The net ingredient cost of items prescribed by pharmacists in community and primary care increased from £25,348 in 2004 to £96,846 in 2005, £278,634 in 2006 and £637,907.37 in 2007. There was a 282% increase in the cost of items prescribed between 2004 and 2005, a 187% increase in the cost of items prescribed between 2005 and 2006 and a 128.9% increase in the cost of items prescribed between 2006 and 2007. The volume of pharmacist prescribing has increased every month since 2004, with one exception, a 0.2% fall in March 2005. The largest monthly percentage increase was 50.8% (1839 to 2774 items) in June 2005. The largest percentage increase in costs was in September 2006 (55.7%, £79,501 to £105,424).

Figure 5-1 Nurse prescribing trends 2004-07

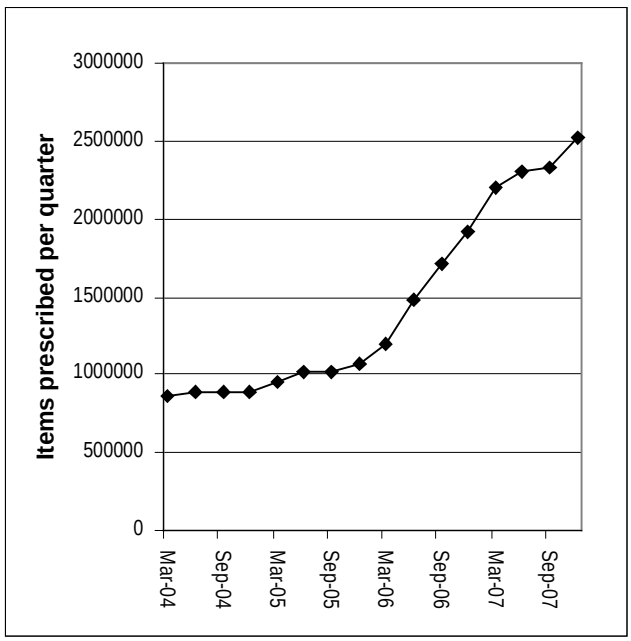
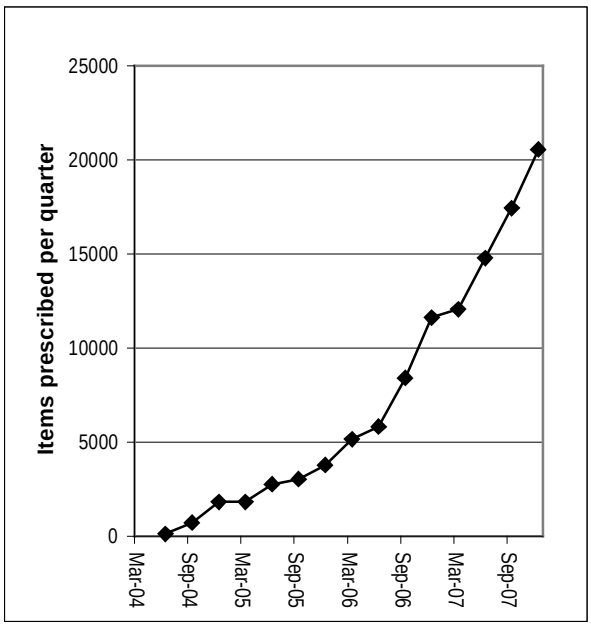


Figure 5-2 Pharmacist prescribing trends 2004-2007



5.2 Therapeutic 'chapter' level

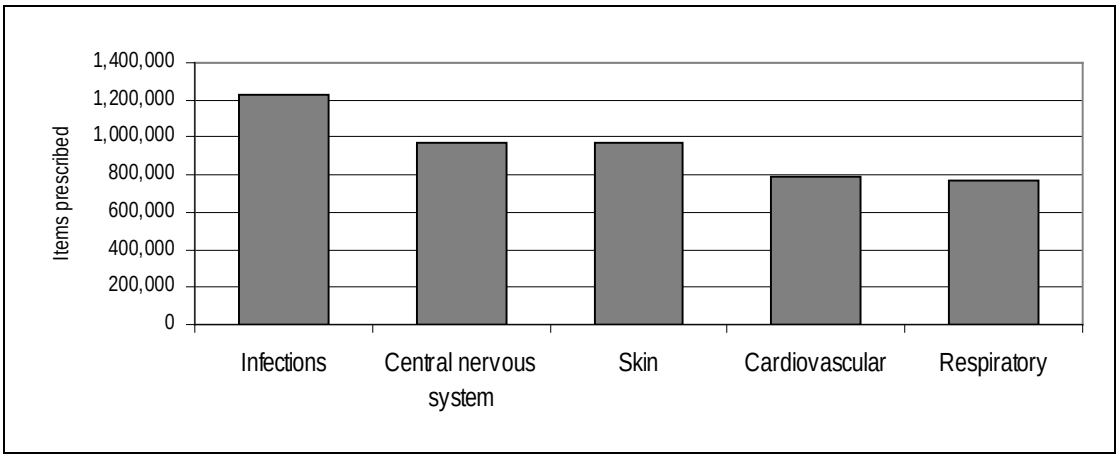
5.2.1 Trends in all prescribing in community and primary care

Between 2004 and 2007, the largest single therapeutic area prescribed in was cardiovascular, which constituted 31.8% of all prescribing in community and primary care in 2007. The largest chapters by volume for all prescribing in community and primary care have remained the same between 2004 and 2007 and are as follows, in order: cardiovascular system, central nervous system, endocrine system, gastro-intestinal system, respiratory system and infections.

5.2.2 Trends in nurse prescribing

The therapeutic area with the largest volume of nurse prescribing in all years from 2004 to 2007 was dressings. However, the percentage of the total volume of nurse prescribing that dressings constitutes has fallen from 56.5% in 2004 to 21.6% in 2007. The chapter with the second highest volume in all years between 2004 and 2007 is skin. Examining chapters which contain drug items only, the highest volume of nurse prescribing in 2007 is in the infections chapter. The chapter which has seen the largest growth in volume of prescribing between 2004 and 2007 is malignant disease and immunosuppression (from 24 to 9413 items) followed by cardiovascular (from 7019 items to 789,152 items). Figure 5.3 shows the five drug chapters with the largest volume of nurse prescribing in 2007.

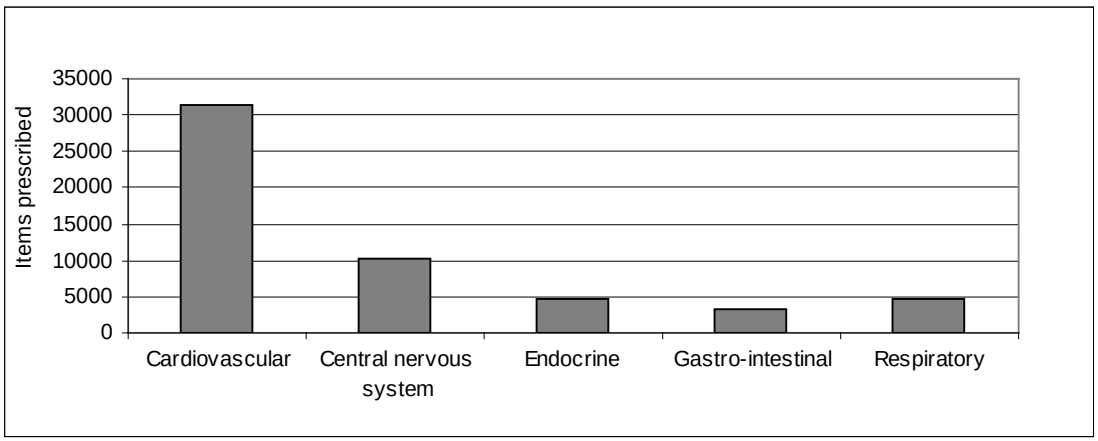
Figure 5-3 Nurse prescribing by chapter (containing drug items) in 2007



5.2.3 Trends in pharmacist prescribing

The therapeutic area with the largest volume of pharmacist prescribing in all years from 2004 to 2007 was cardiovascular, which formed a significant, but decreasing percentage of all pharmacist prescribing. In 2004, cardiovascular constituted 66.1% of all pharmacist prescribing whereas in 2007, cardiovascular constituted 48.3% of all pharmacist prescribing but was still the highest volume chapter (Figure 5.4)

Figure 5-4 Pharmacist prescribing by chapter in 2007



5.3 Subchapter level

5.3.1 Nurse prescribing

At subchapter level, the developing role of nurses in infectious disease management, health promotion and the management of long-term conditions was evident. For example, in the infections therapeutic area the majority of prescribing was for antibacterials (93% in 2007). Health promotion activities were represented by the prescribing of contraceptives (84% of the obstetrics, gynaecology and urinary tract disorders prescription items in 2007) and drugs used in substance dependence (30% of central nervous system prescription items in 2007). Management of long-term conditions was apparent for cardiovascular drugs where a wide range of different types of drug were prescribed including anti-hypertensives and cholesterol lowering medications. There was also evidence of substantial increases in prescriptions for drugs used in diabetes, which constituted 53% of endocrine prescription items in 2007. However, as with all PACT data, it was not clear whether these have been prescribed using supplementary prescribing.

5.3.2 Pharmacist prescribing

Closer examination of pharmacist prescribing at subchapter level revealed several patterns. The dominant chapter was the cardiovascular therapeutic area and the dominant subchapter was hypertension and heart failure (29% in 2007), including angiotension converting enzyme (ACE) inhibitors. This was then followed by three subchapters, within which prescribing appeared to be relatively equally spread (diuretics, nitrates, calcium channel blockers and other anti-anginal drugs and lipid-regulating drugs). In the central nervous system chapter, drugs used in substance dependence, analgesics and hypnotics & anxiolytics were the largest subchapters. In the respiratory chapter, bronchodilators and corticosteroids constituted 88% of the chapter and diabetes medicines constituted over 50% of the endocrine chapter

5.4 Regional level

The North West had the highest number of prescriptions issued by nurses in comparison with the other strategic health authorities, with 1,743,017 items prescribed in 2007. The next highest Strategic Health Authority by volume of items prescribed was Yorkshire and the Humber (1,230,741). The percentage of all nurse prescribing by SHA varied from 19.4% (North West) to 3.5% (South Central). The area with the highest volume of pharmacist prescribing was also the North West, which had 16,371 items prescribed by pharmacists in 2007. This was followed by the West Midlands with 14,152 items. This area experienced the largest percentage increase with 0 items prescribed in 2004 and 2005. The percentage of all prescribing by SHA varies from 25.2% (North West) to 1.8% (South East Coast). As Figures 5.5 and 5.6 highlight, there is a much greater variation by region in the volume of pharmacist

prescribing as compared with nurse prescribing. Horner (2007) reported that, in the year to September 2007, pharmacy prescriptions had been received from 53.9% of PCTs (82 out of 152).

Figure 5-5 Nurse prescribing by region in 2007

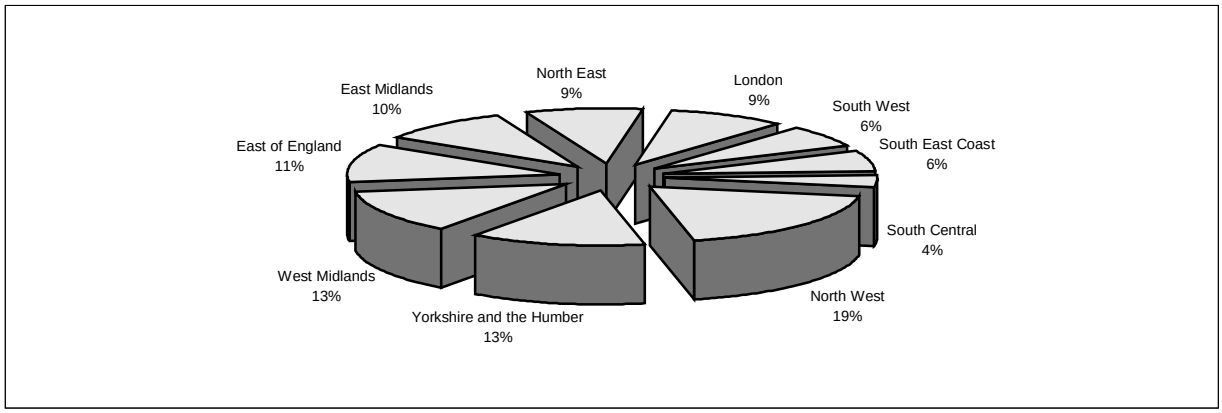
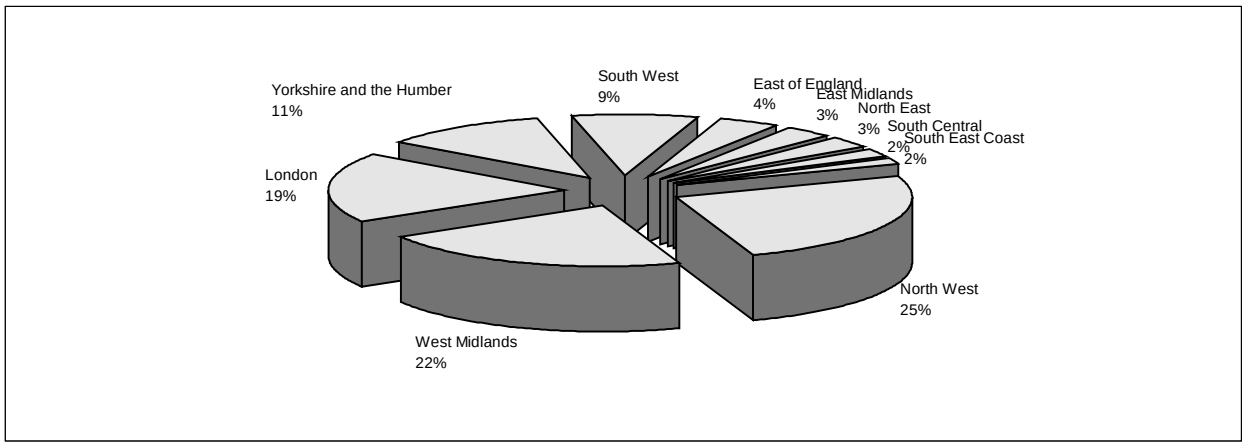


Figure 5-6 Pharmacist prescribing by region in 2007



5.5 Limitations

This data only reflects primary care and community prescribing and not prescribing in the hospital setting so does not give a complete reflection of overall nurse and pharmacist prescribing. It also only related to prescribing in England and included all forms of non-medical prescribing. Finally, prescriber level data was not provided, so it was not possible to comment upon individual variations prescribing.

5.6 Summary

Nurse and pharmacist prescribing increased between 2004 and 2007 as a proportion of all prescribing, from 0.52% to 1.2% for nurses and 0.0004% to 0.008% for pharmacists.

Small overall contribution makes it difficult to compare data and trends more thoroughly.

It is not possible to assess whether non-medical prescribing led to an increase in overall prescribing or represented substitute prescribing with no resultant rise in NHS costs.

The historical legacy of district nurse and health visitor prescribing was observed in the patterns of nurses prescribing dressing and appliances, however medicines prescribing rising.

Pharmacist prescribing was predominantly in the cardiovascular chapter.

6 Results - Survey of Qualified Nurse and Pharmacist Supplementary Prescribers

The results of the postal questionnaire surveys of qualified supplementary prescribing nurses and pharmacists are arranged into sections and both qualitative and quantitative data relating to both professions are presented within these sections. A copy of the questionnaire may be found in Appendix C. Whilst the questions regarding demographics and training were answered by all respondents, only the responses of pharmacists and nurses currently prescribing are reported for brevity after section 6.2.

6.1 Response rates

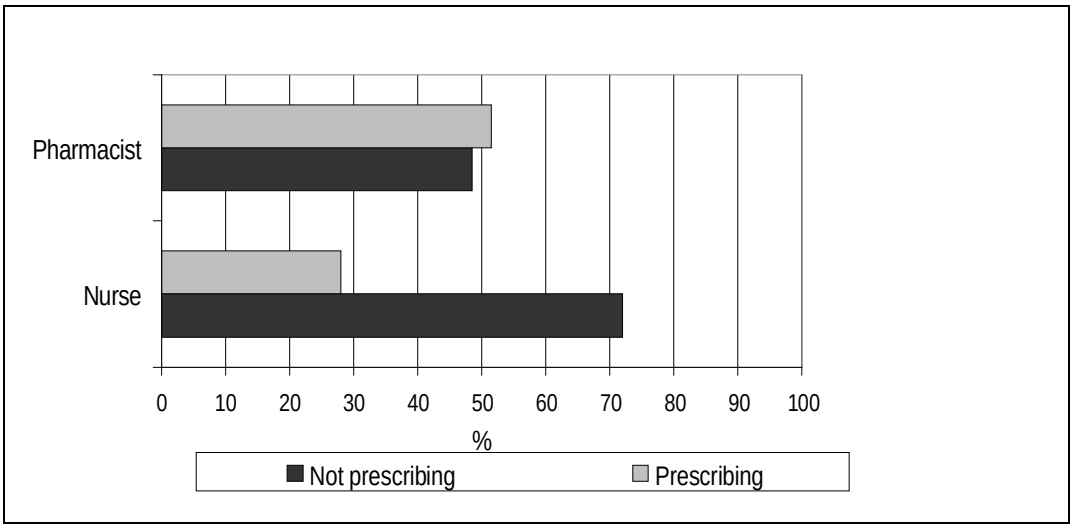
The pharmacist survey was a census of all the supplementary prescribing qualified pharmacists in England as of April 2007. A total of 808 questionnaires were distributed. Four hundred and eleven (51%) were returned after one follow-up to non-responders. Of these 411, 36 pharmacists (8.7%) returned the questionnaire incomplete and 375 (91.3%) completed the questionnaire.

In relation to the nurse survey, 13 HEIs (of a possible 39) agreed to participate. A total of 1628 questionnaires were distributed between July and December 2007 and 518 were returned, which represents 32% of those distributed. Of these 518, 110 (21.2%) nurses returned the questionnaire incomplete and 408 (78.8%) completed the questionnaire.

6.2 Supplementary prescribing status

There was a significant association between profession and prescribing (χ^2 =43.742, d.f. =1, p=0.000) (Figure 6.1). The majority of trained nurse supplementary prescribers (71.9%, n=294) were *not* prescribing as supplementary prescribers, whereas just over half of pharmacists (n=193, 51.0%) were.

Figure 6-1Supplementary prescribing status by profession



Tests for association were undertaken between all prescribers and non-prescribers in relation to gender, attitudes to training and year for qualification as supplementary prescriber. There was significant association between pharmacist but not nurse prescribing status and qualification as a supplementary

prescriber - 70.7% (53/75) of pharmacists qualifying in 2004 reported current prescribing, of those qualifying in 2005, 55.6% (60/108) and of those qualifying in 2006, 44% (53/120) reported current prescribing ((χ^2 = 14.35, d.f. =1, p=0.002) There was significant association between attitude to training and prescribing status for nurses but not pharmacists - 94% (105/112) of currently prescribing nurses agreed/strongly agreed that their prescribing training was useful, compared to 77% (177/230) of non-prescribers (χ^2 = 15.476, d.f. =1, p=0.000).

6.3 Demographics

Key information regarding the demographic characteristics of nurses and pharmacist supplementary prescribers is included in the following table:

Table 6-1 Demographic characteristics

Variable	Categories	Nurse	Pharmacist
Gender	Male	15 (13.0%)	58 (30.2%)
	Female	100 (87.0%)	134 (69.8%)
Age	20-29	3 (2.6%)	22 (6.1%)
	30-39	17 (14.8%)	143 (39.5%)
	40-49	68 (59.1%)	129 (35.6%)
	50-59	27 (23.5%)	62 (17.1%)
	60-65	0 (0.0%)	3 (0.8%)
	66 +	0 (0.0%)	3 (0.8%)

There was a significant association between gender and professional group, with pharmacists being significantly more likely to be male (χ^2 =10.764, d.f. =1, p=0.001). There was no significant association between profession and age.

6.4 Education

The educational qualifications held by nurses and pharmacists are presented in Table 6.2.

Table 6-2 Educational characteristics

Variable	Categories	Nurse	Pharmacist
Qualification	BPharm	N/A	110 (57.0%)
	MPharm	N/A	18 (9.3%)
	Pre registration	30 (26.0%)	N/A
	Advanced Diploma	32 (27.8%)	N/A
	Bachelors	55 (47.8%)	65 (33.7%)
	PG Diploma/Masters	14 (12.2%)	122 (63.2%)
	Doctoral	0 (0.0%)	9 (4.7%)
	Other	22 (19.1%)	16 (8.3%)
Qualifications (n)	1	47 (52.8%)	61 (32.3%)
	2	27 (30.3%)	122 (64.5%)
	3	15 (16.9%)	6 (3.2%)

In the case of the variable 'qualification', as nurses and pharmacists may have had more than one qualification, the percentage figure refers to the percentage of respondents with that qualification. Whilst direct comparisons between nurses and pharmacists were not possible due to different qualifications, it was apparent that less than half of the nurse respondents had a degree but that many pharmacists had a degree, and post-graduate qualification such as clinical pharmacy.

6.5 Role characteristics

Descriptive statistics relating to the roles of nurse and pharmacist supplementary prescribers are presented in Table 6.3. There was no association between work location and profession save nurses being significantly more likely than pharmacists to be working in the community (χ^2 = 51.2, d.f. =1, p=0.000). Of note is that only 7.3% of pharmacists reported working in the largest pharmacy sector - the community. Supplementary prescribing qualified nurses and pharmacists did not appear to be working in more specialised areas. Nurses and pharmacists may have worked in more than one location, therefore the figure for 'location of work', refers to the percentage of respondents in each location.

Table 6-3 Job role characteristics

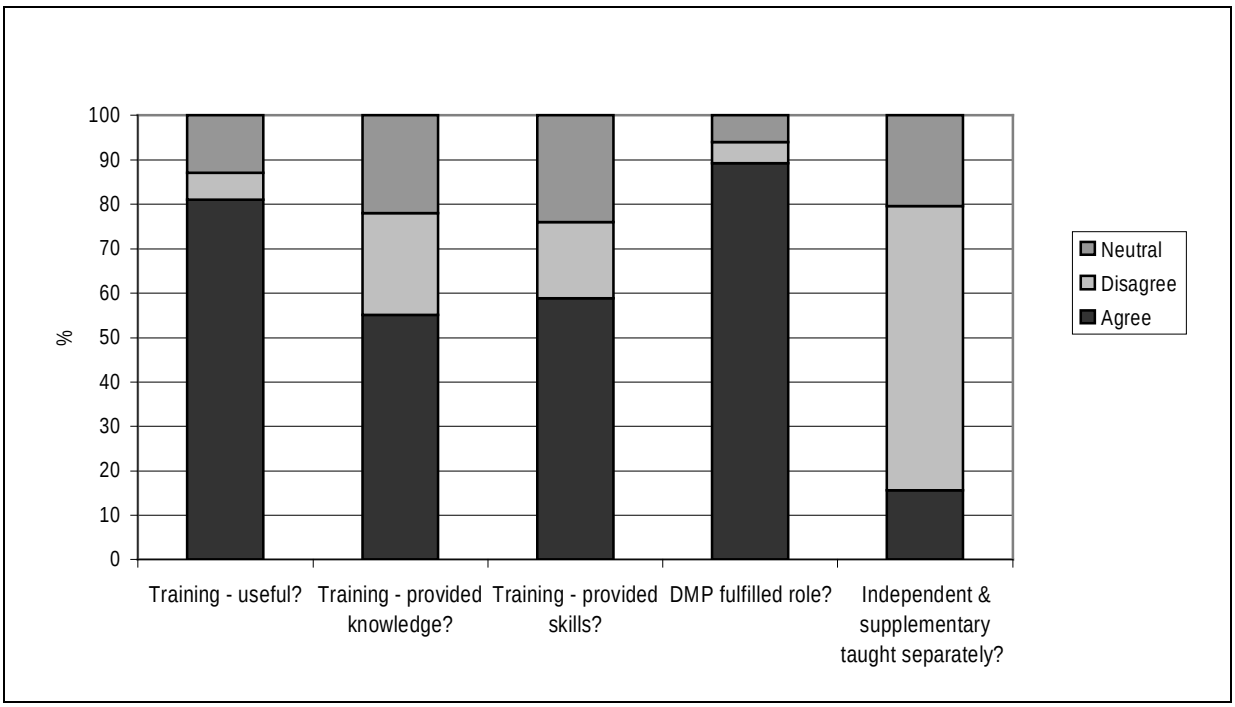
Variable	Categories	Nurse	Pharmacist
Overall hours worked	Range	8-60	2-60
	Median (interquartile range)	37.5 (7.8)	37.5 (7.5)
	Exactly 37.5 hours a week	56 (49.1%)	77 (40%)
Salary Band (per annum)	Less than £20,000	9 (12.3%)	8 (4.3%)
	£21,000-£30,000	43 (37.3%)	19 (10.2%)
	£31,000-£40,000	54 (74.0%)	64 (34.2%)
	£41,000-£50,000	6 (8.2%)	65 (34.8%)
	£51,000-£60,000	0 (0%)	21 (11.2%)
	More than £60,000	1 (1.4%)	10 (5.3%)
Location of work	Hospital	40 (34.8%)	78 (40.4%)
	General Practice	42 (36.5%)	102 (52.9%)
	Community	48 (41.7%)	14 (7.3%)
	Walk in centre	3 (2.6%)	2 (1.0%)
	Care Home	4 (3.4%)	3 (1.6%)
	Prison	0 (0.0%)	2 (1.0%)
	Other	0 (0.0%)	7 (3.6%)
Number of locations worked in	1	89 (79.4%)	170 (91.9%)
	2	21 (18.8%)	15 (8.1%)
	3	2 (1.8%)	0 (0.0%)

Mann-Whitney U Tests showed that there was no significant association between hours worked and profession. Chi squared tests indicated an association between profession and salary (χ^2 = 73.8, d.f. =5, p=0.000) - most pharmacists earned over, and most nurses earned under, £40,000 per annum.

6.6 Training

As Figure 6.2 indicates, pharmacists were positive about the training that they received. The highest level of disagreement was in relation to whether training provided the knowledge (n=43, 22.9% disagreed) and skills (n=32, 17.1% disagreed) that they required to practice as a supplementary prescriber. The majority of pharmacists (n=122, 67.4%) believed that the training that they received allowed them to formalise the practice that they were undertaking before they trained. Pharmacists frequently referred to the period of learning in practice (LIP) and the involvement of their DMP as the most useful aspects of training. Legal aspects of prescribing, consultation and examination skills were also considered valuable parts of supplementary prescribing training. Negative aspects included unnecessary pharmacology training and aspects of course delivery such as excessive paperwork, documenting and demonstrating competencies and reflective practice. Some pharmacists valued training with other professionals, but others considered it inappropriate to teach professions with different needs. Several pharmacists believed no improvements to courses were necessary but others suggested more course content focusing on examination, consultation, clinical skills, and diagnosis.

Figure 6-2 Pharmacist attitudes to training

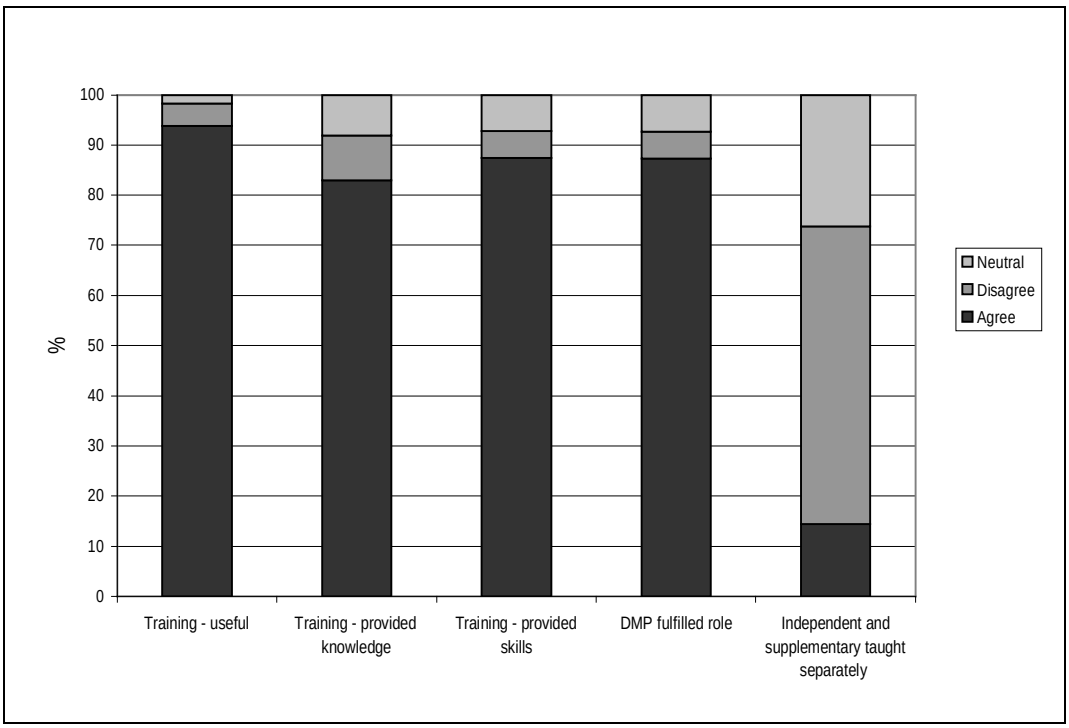


Current nurse prescribers' views were similar to those of pharmacist prescribers, with the majority agreeing that their training was useful (Figure 6.3). Training met the needs of supplementary prescribers in terms of their knowledge and skills. The majority of nurses (n=78, 73.6%) believed that the training that they received allowed them to formalise pre-prescribing work practices.

Nurses' open responses to training questions revealed both positive and negative comments about training and suggested improvements. Positively, nurses valued the pharmacology training offered,

offering them a *'better understanding of medicines.'* Practical course content that could be applied directly to prescribing practice was also praised, including designing and using CMPs, using prescribing software, writing prescriptions and using the BNF. Like pharmacists, nurses also cited legal aspects of prescribing as being useful. Nurses' previous education and knowledge appeared to vary since some nurses reflected that such content was merely an opportunity to *'revisit', 'revise', 'enhance'* and *'update'* existing knowledge. Nurses also praised opportunities for inter-professional interaction. Negative course aspects included their generic nature and neglect of specific clinical areas and occasional references to poor teaching standards, assessment and lack of time to undertake courses. Several nurses - usually those using independent prescribing in practice - questioned why supplementary prescribing was being taught at all, as they did not expect to use this type of prescribing once qualified. Suggested course improvements included more pharmacology and law training, using CMPs and how to manage issues such as '*GP politics'* and *'barriers to prescribing'*.

Figure 6-3 Nurse attitudes to training



Comparing nurses and pharmacists attitudes to training, nurses were significantly more likely to agree that their supplementary prescribing training provided the knowledge they needed to prescribe (χ^2 = 14.2, d.f. =1, p=0.000) and the skills that they needed to prescribe (χ^2 = 8.827, d.f. =1, p=0.003).

6.7 Support and Prescribing Review

Key characteristics relating to the support that nurses and pharmacists receive in their prescribing role are included in Table 6.4. No associations were found between support and prescribing role and profession. There was a significant association between length of sessions to review practice and

profession with nurses having shorter sessions (Mann Whitney U Test =1992.5, Z= -3.277, p=0.001), and between profession and frequency of sessions to review prescribing practice (p<0.002).

Formal and informal review mechanisms for pharmacist prescribing were identified. Formally, these involved existing multi-disciplinary team meetings, or in secondary care, ward rounds or weekly patient reviews. Audits and performance reviews were also considered to be forms of review. Informal review of supplementary prescribing appeared to require pharmacists to initiate them, as *'ad hoc'* discussions with doctors or when *'interesting or difficult cases'* arose - this raising the possibility that prescribing problems might not be identified and addressed if they were not recognised by the pharmacist. A small number of open response comments referred to a complete lack of pharmacist prescribing review.

Table 6-4 Support and prescribing review

Variable	Categories	Nurse	Pharmacist
Satisfied with support regarding prescribing decisions	Agree	85 (80.2%)	144 (81.4%)
Satisfied with support regarding prescribing role	Agree	72 (68.6%)	114 (64.4%)
Prescribing decisions are regularly monitored	Agree	52 (48.6%)	81 (46.5%)
Independent prescriber available to discuss patients	Agree	87 (87.9%)	166 (91.2%)
Frequency of sessions to review prescribing practice*	Once a week	14 (12.2%)	41 (21.2%)
	Once a fortnight	7 (6.1)	11 (5.7)
	Once a month	10 (8.7)	29 (15.0)
	Once every 3 months	12 (10.4)	26 (13.5)
	Once every 6 months	10 (8.7)	4 (2.1)
	Once a year	6 (5.2)	21 (10.9)
	Never	37 (32.2)	34 (17.6)
Length of sessions to review prescribing practice (iminutes)^	Range	0-45	0-90
	Median (interquartile range)	1 (18)	12 (29)

* p<0.002 ^ p<0.001

Nurses also identified several prescribing review mechanisms and informal reviews were common, although several stated that no reviews of their prescribing occurred. Formal, regular reviews of prescribing were reported after supervision or appraisal meeting, or commonly during case review sessions. Nurses noted regular case review sessions attended by several healthcare professionals and, like pharmacists, many examples were identified of *'ad hoc', 'opportunistic'* reviews for nurses' prescribing, often nurse initiated. Some nurses used reflective practice to review their prescribing.

6.8 Prescribing

Nurses and pharmacists varied in relation to different aspects of their prescribing, as indicated in Table 6.5, which presents the prescribing practices of nurses and pharmacists with reference to their self-reported hours worked, prescriptions issued, patients prescribed for and appointment and review times. On average, nurses report spending a greater proportion of their working time as a supplementary

prescriber (a mean of 15 hours per week for a nurse and 6 hours per week for a pharmacist; median of 10 hours per week for a nurse and 4 hours per week for a pharmacist) and these differences are statistically significant (p<0.001). In contrast pharmacists report that they spend a greater proportion of time reviewing their supplementary prescribing practice per session (mean 17 mins; median 15 mins) than do nurses (mean 9 mins; median 1 min and these differences are also statistically significant (p=0.002). Nurses tend to prescribe for a greater number of patients per year on a recurring basis and issue more prescriptions per week on average than do pharmacists although it is important to note that the range for the question relating to 'how many prescriptions per week are issued' for pharmacists is much higher than for nurses (0-700 relative to 0-150) indicating that a proportion of pharmacists are prescribing much more frequently than nurses. Nurses reported that they tend to spend slightly longer on average with each patient for whom they are a supplementary prescriber (mean 21 minutes relative to 18 minutes; median 20 minutes relative to 18 minutes) but these were not statistically significant.

Table 6-5 Prescribing practice

Question		Pharmacists	Nurses
How many hours worked as a supplementary prescriber? *	N	168	84
	Mean (SD)	5.92 (5.75)	15.31 (13.83)
	Median (IQ Range)	4.00 (2.00-8.00)	10.00 (2.00-29.75)
	Min	0	0
	Max	30	40
	Sig.	p<0.001	p<0.001
How long do you spend reviewing your supplementary prescribing practice per session? *	N	107	54
	Mean (SD)	16.95 (17.39)	9.48 (13.76)
	Median (IQ Range)	15.00 (1.00-30.00)	1.00 (1.00-19.00)
	Min	0	0
	Max	90	45
	Sig.	p=0.002	p=0.002
On average how many patients do you prescribe for on a recurring basis?	N	156	80
	Mean (SD)	53.94 (202.18)	170.92 (910.20)
	Median (IQ Range)	15 (4-50)	20 (3-50)
	Min	0	0
	Max	2400	8000
	Sig	p=0.993	p=0.993
On average how many prescriptions do you issue per week? *	N	175	99
	Mean (SD)	11.69 (54.29)	13.78 (19.57)
	Median (IQ Range)	4 (2-10)	6 (3-20)
	Min	0	0
	Max	700	150
	Sig.	p<0.001	p<0.001
On average how long do you spend with each patient for whom you are a supplementary prescriber? (minutes)	N	179	94
	Mean (SD)	17.56 (8.26)	21.15 (13.67)
	Median (IQ Range)	18 (15-20)	20 15-30)
	Min	0	1
	Max	45	60
	Sig.	p=0.113	p=0.113

* statistically significant difference between means

The predominant chapter in which pharmacists were prescribing was cardiovascular, followed by gastro-intestinal (table 6.6). The majority of pharmacists prescribed in fewer than five BNF chapters, with 34.2% (n=66) prescribing in one chapter only. In contrast, almost 40% of nurses were prescribing in more than five chapters, with 22.6% (n=26) prescribing in one chapter only. Nurse prescribing was more evenly split between the top four chapters than pharmacist prescribing.

Table 6-6 BNF sections

Variable		Nurse		Pharmacist	
Sections in which most frequently prescribed		Infections	51 (46.4%)	Cardiovascular	115 (59.9%)
		Respiratory	47 (43.0%)	Gastro-intestinal	50 (26.0%)
		Skin	45 (40.9%)	Respiratory	42 (21.9%)
		Minor ailments	41 (37.3%)	Central Nervous System	39 (20.3%
Number of sections prescribed in	1	26 (22.6%)		61 (61.0%)	
	<5	66 (34.2%)		130 (90.9%)	

6.9 Costs

Costs associated with supplementary prescribing were calculated for the time spent with patients and for reviewing supplementary prescribing practice based upon nurses' and pharmacists' self-reports of practice (Table 6.5) and standard salary data (Curtis 2007) and these are presented in Table 6.7.

Table 6-7 Costs associated with supplementary prescribing

		Pharmacist	Nurse
Cost of reviewing supplementary prescribing practice per session.*	Mean (SD)	£6.65 (£7.34)	£2.87 (£4.31)
	Median (IQ Range)	5.00 (0.48-9.75)	0.38 (0.26-3.75)
	Min	0	0
	Max	34	16
	Sig.	P<0.001	p<0.001
Cost of time spent with each supplementary prescribing patient.	Mean (SD)	£7.02 (£3.71)	£6.50 (£4.68)
	Median (IQ Range)	£6.33 (£0.48-£8.33)	£5.75 (£2.92-£9.50)
	Min	£0.00	£0.28
	Max	£18.75	£20.67
	Sig.	P=0.170	p=0.170

* statistically significant difference between means

There were statistically significant differences in the costs of reviewing supplementary prescribing practice per session (mean £6.65 for pharmacists and £2.87 for nurses; median £5.00 for pharmacists and £0.38 for nurses) reflecting the differences in the time spent reviewing with nurses reporting much shorter reviewing times on average than pharmacists. Finally the average cost of time spent with each patient was found to be broadly similar between the two professions (mean £7.02 for pharmacists and £6.50 for nurses; median £6.33 for pharmacists and £5.75 for nurses) and these differences were not found to be statistically significant (p=0.170).

6.10 Colleagues and Relationships

Table 6.8 compares nurses and pharmacists in terms of their views about independent (medical prescribers). There were no significant differences between the two professional groups.

Table 6-8 Views on independent (medical) prescribing

Variable	Categories	Nurse	Pharmacist
Patients receive better care from supplementary prescribers	Agree	29 (27.9%)	58 (32.2%)
Patients have longer consultation times with supplementary prescribers	Agree	56 (53.8%)	138 (76.2%)
Supplementary prescribing is *instead* of an independent (medical) prescriber	Agree	31 (37.9%)	60 (33.5%)

Pharmacists perceived supplementary prescribing to have improved relationships with others generally, but this was particularly so with respect to doctors, who appeared to be pharmacists' key reference group. This had resulted in more *'respect'* and increased their *'profile and status'* amongst doctors. Improved relationships and *'much more respect'* were reported in relation to their pharmacist peers, too, although several pharmacists reported no changes or a worsening of peer relationships. For these pharmacists, supplementary prescribing appeared to have resulted in a sense of difference - a *'slight alienation'* - and jealously between them and non-prescribing pharmacists. Several pharmacists also perceived nurse resentment at pharmacists' prescribing role, and that there was *'competition from nurses', 'professional jealousy',* and '*some tension [and] demarcation issues.'*

Nurses' open responses revealed a perception of enhanced respect for some following prescribing. Positive relationships with doctors were reported but some nurses reported worsening of relationships with other nurses after becoming prescribers - being '*resented*' the object of *'immense professional jealousy.'* Several nurses reported no relationship changes.

6.11 Confidence and competence

As Table 6.9 indicates, pharmacists and nurses felt confident in their roles as supplementary prescribers and there were no significant differences between nurses and pharmacists.

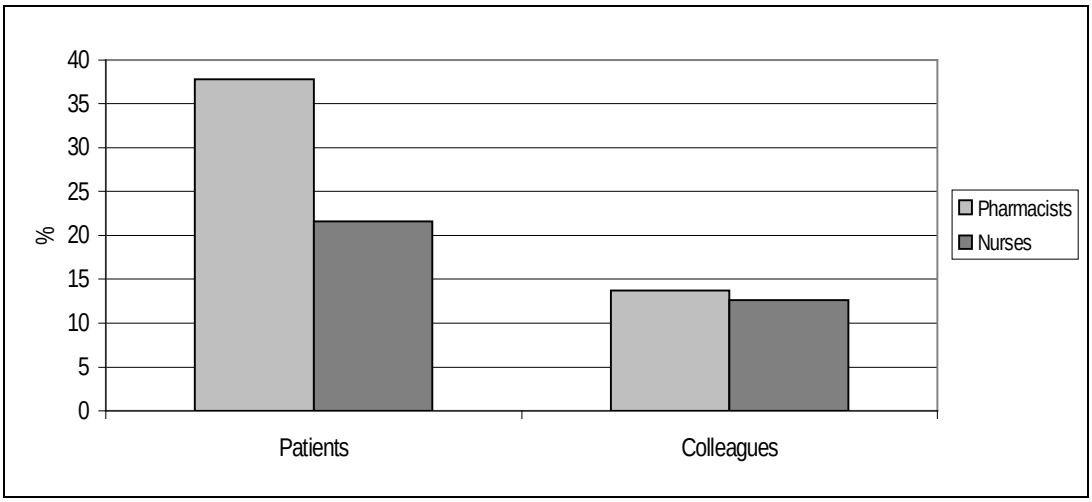
Table 6-9 Confidence in supplementary prescribing practice

Variable	Categories	Nurse	Pharmacist
Confident to prescribe the appropriate treatment	Agree	107 (98.1%)	184 (100%)
Confident to prescribe the correct dosage	Agree	107 (98.1%)	183 (99.5%)
Confident to identify drug related problems	Agree	104 (95.4%)	182 (98.9%)
Confident to identify drug interactions	Agree	100 (92.6%)	181 (99.5%)
Confident to prescribe for patients with co-morbidities	Agree	71 (67.0%)	160 (87.5%)

6.12 Safety

Pharmacists reported that they had sufficient knowledge of pharmacology and therapeutics to prescribe safely (n=183, 100%). With reference to prescribing for patients with co-morbidities, 34 (18.7%) had concerns. A smaller percentage of 89.8% of nurses (n=97) agreed that they had sufficient knowledge of pharmacology and therapeutics to prescribe safely. Thirty-one nurses (30.4%) had concerns about prescribing for patients with co-morbidities.

Figure 6-4 Requests to prescribe outside area of competence



As Figure 6.4 highlights, a number of nurses and pharmacists were asked to prescribe in areas that they perceived to be outside their competence by patients and colleagues. Pharmacists were more likely to be asked to prescribe outside their area of competence by patients than nurses ($\chi^2 = 8.103$, d.f. =1, p=0.004). However, only 2.2% (n=4) of pharmacists and 2.9% of nurses (n=3) agreed that they had concerns that *they* were prescribing outside their area of competence.

6.13 Safety climate

Pharmacists and nurses reported that they were generally positive about the safety climate in which they worked. Therefore it was decided to look at only negative and neutral responses to questions to examine perceptions of the safety climate in which they worked. In the case of pharmacists, the highest level of disagreement was around whether staff received appropriate feedback about their performance (29.8%, n=54 were neutral and 23.7%, n=43 disagreed). This was followed by whether levels of staffing in their area of the organisation were sufficient to handle the number of patients (17.7%, n=32 disagreed, 21.1%, n=38 neutral). The questions to which there was least disagreement were whether pharmacists knew the proper channels to which they should direct questions regarding patient safety (2.8%, n=5 neutral and 0.6%, n=1 disagreed). In the case of nurse supplementary prescribers, the strongest disagreement was around whether their organisation was doing more for patient safety than it

was doing one year ago (50.0%, n=52 neutral and 11.5%, n=12 disagreed). This was followed by whether levels of staffing were sufficient to handle the number of patients (21.2%, n=22 neutral and 36.5%, n=38 disagreed). The question with the least disagreement was whether nurses knew the proper channels to direct questions regarding patient safety (4.8%, n=5 neutral, 2.9%, n=3 disagreed).

6.14 Impact of supplementary prescribing

Table 6.10 compares nurses and pharmacists views on the impact and benefits of becoming a supplementary prescriber. For both professions, improved job satisfaction was cited by a large percentage, alongside greater autonomy. However, less than a third of nurses and pharmacists felt they had a higher status as a result of their prescribing role. There were no significant associations between profession and benefits of supplementary prescribing.

Table 6-10 Perceived benefits of supplementary prescribing

Variable	Categories	Nurse	Pharmacist
Greater autonomy	Agree	78 (91.6%)	135 (73.8%)
Higher status	Agree	27 (25.2%)	59 (32.4%)
Improved job satisfaction	Agree	95 (88.8%)	159 (86.9%)

Open responses reinforced this, with several positive aspects relating to becoming supplementary prescribers emerging, especially in terms of personal benefits: increased job satisfaction and a sense of acceptance were reported by some, along with more independence and control over their work. By contrast, others felt supplementary prescribing provided security and *'clear boundaries'* due to the doctors' initial diagnosis, with the CMP acting as a *'safeguard.'* In relation to others, several pharmacists commented that doctors would have lower workloads, and that patients were given more information and advice about medicines and treatments. These, and also improved clinical outcomes, were attributed by some pharmacists to their pharmacological expertise and longer consultation times compared to doctors.

Negative aspects of supplementary prescribing practice included CMP problems, procedural difficulties in setting-up adequate patient referrals to supplementary prescribers, problems accessing patients' notes, delays in obtaining prescription pads and logistical issues running clinics. The CMP in particular was singled out for criticism, being variously described as *'restrictive', 'cumbersome'* and *'time-consuming.'* Obtaining the doctor's approval for a CMP was often difficult, pharmacists noted, and others reported being frustrated due to not being able to prescribe simple medicines not included in CMPs. Some pharmacists reported reverting back to simply asking doctors to sign prescriptions for them, to save time and patient inconvenience. CMPs were also considered unsuitable in settings such as paperless GP practices, and on acute hospital wards. Problems with inadequate information technology and especially computer prescribing software were frequently mentioned, leading to either hand-written prescriptions or unsigned prescriptions for doctors to sign. Some medical resistance and

antipathy to pharmacist prescribing and a lack of understanding of supplementary prescribing were also reported. Pharmacists reported *'doctors' resistance to accept changing roles'* and a perception that prescribing was *'still seen as [the] domain of doctors.'* Temporal problems emerged in terms of prescribing delays due to CMPs, lack of time to practice supplementary prescribing due to other work commitments and delays obtaining prescription pads.

Nurses open responses revealed positive and negative aspects of supplementary prescribing. Positive aspects included time benefits, enhanced autonomy and improved relationships, increased continuity of care and less work for doctors. Nurses reported, like pharmacists, not only perceived time savings and quicker access to medicines and services for patients but also having more time to spend with them - beneficial '*continuity of care'* was frequently mentioned. Unlike pharmacists, nurses seldom cited professional acceptance or improved relationships.

Nurses identified a number of negative issues that were also raised by pharmacists: use of CMPs, lack of support and understanding and inadequate remuneration, doctors, resistance and various logistical and practical issues. There was a perception amongst some nurses that supplementary prescribing was not only less practical than independent prescribing but also inferior. CMP criticism arose in terms of difficulties and delays in completing them and finding doctors to agree to and sign them. Such problems led some nurses to argue that the CMP meant that supplementary prescribing was used less than independent prescribing. Several nurses commented that CMPs were not being used in practice, Doctors were frequently identified in relation to negative aspects of supplementary prescribing and were criticised not only for their lack of understanding of supplementary prescribing and reluctance to sign and complete CMPs but also in terms of their resistance overall to nurse prescribing - nurses perceived that *'some feel you are after their job.'* Some nurses commented that doctors and other staff had made active attempts to prevent supplementary prescribing being implemented. Like pharmacists, several nurses commented on significant - from three months to one year - delays in obtaining prescription pads, and information technology problems involving poor patient record access and an inability to print prescriptions. However, several nurses did not consider there to be *any* negative aspects of supplementary prescribing.

6.15 Patients

Table 6-11 Patients and supplementary prescribing

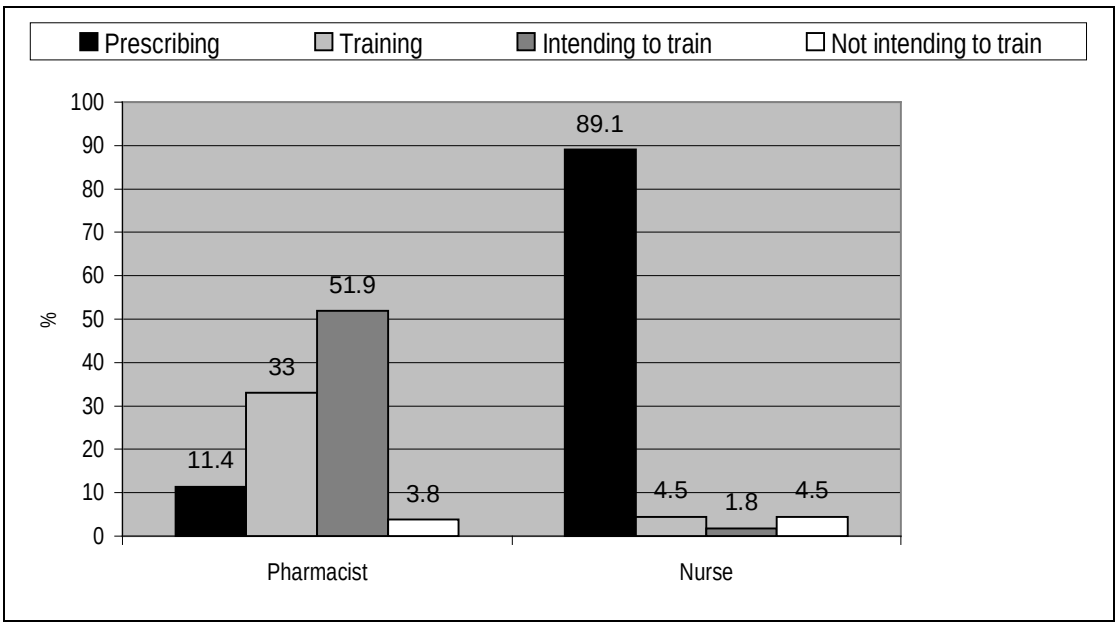
Variable	Categories	Nurse	Pharmacist
Patients are aware of what supplementary prescribing entails	Agree	43 (42.2%)	87 (47.8%)
Patients are provided with information about supplementary prescribing	Agree	99 (67.0%)	138 (75.8%)
Supplementary prescribing has improved relationships with patients	Agree	74 (70.5%)	148 (81.4%)
Supplementary prescribing has improved patients compliance	Agree	64 (61.0%)	117 (65.0%)
Patients are included in prescribing decisions	Agree	104 (99.0%)	165 (90.7%)

Patient awareness of supplementary prescribing was perceived to be low, but both nurses and pharmacists reported that they included patients in prescribing decisions and the majority provided them with information (Table 6.11).

6.16 Independent Prescribing

A much higher percentage of nurse supplementary prescribers were prescribing independently compared with pharmacists, almost only a small minority of pharmacists did not intend to become independent prescribers (figure 7.5). Many pharmacists compared supplementary prescribing to independent prescribing and there was a strong belief that supplementary prescribing represented a *'stepping stone'* or introductory prescribing model, prior to becoming an independent prescriber. It was apparent that pharmacists viewed supplementary prescribing positively in this sense, as a useful *'first step'*, as further training towards eventual independent prescribing and as *'a safety net'*, allowing pharmacists to gain confidence, experience, competence and clinical skills. Other pharmacists expressed distain for supplementary prescribing in comparison to independent prescribing, with supplementary prescribing being described as a *'bureaucratic hindrance'* and *'a half way house between nothing at all and full independent prescribing i.e. a compromise.'* Critics of supplementary prescribing also argued that independent prescribing would allow greater flexibility, encourage other pharmacists to become prescribers, allow pharmacists to perform their prescribing role in *'a much more efficient and satisfactory way'* and was ''*the only practical option long-term'* according to one pharmacist.

Figure 6-5 Independent Prescribing



Two different opinions emerged amongst nurses in relation to independent and supplementary prescribing from the open response questions. Firstly, several nurses commented that supplementary

prescribing had been beneficial for their practice and supplementary prescribing was viewed as being *'valuable',* had resulted in *'greater knowledge and confidence',* and *'allowed a much higher standard of care.'* By contrast, whilst some nurses merely commented that independent prescribing and not supplementary prescribing was being used in practice, others held strong opinions and variously noted that independent prescribing had *'been more useful'* than supplementary prescribing, that independent prescribing had *'superseded'* supplementary prescribing and that supplementary prescribing was, in comparison, '*inappropriate'* in some settings*, 'unnecessarily restrictive and time consuming.'* This led several nurses to question why a survey of supplementary prescribing was necessary.

6.17 Limitations

Survey limitations exist in terms of the representativeness of the samples of both pharmacists and nurses, since information about non-responders was not available. For pharmacists, this was due to time constraints but for nurses was due mainly to difficulties in obtaining overall response rates from HEIs who distributed questionnaires to nurses. Furthermore, some nurse responses involved details of prescribing that would be expected from an independent prescriber, as part of a diagnostic role, such as antibiotics, for example. This raises the possibility that nurses, in particular, may have completed parts of the questionnaire based in part upon their experiences of independent prescribing. However, it is also possible that this prescribing may have been incorporated in a CMP in, for example, a patient with asthma having antibiotics for a potential chest infection included following agreement with a doctor.

6.18 Summary

A large majority of trained nurses were using independent, not supplementary prescribing.

Just over half of pharmacists were using supplementary prescribing, but the majority were currently prescribing, undertaking training in or intended to use independent prescribing.

Nurses reported longer consultation times than pharmacists (21mins and 18mins respectively).

The cost of supplementary prescribing consultations was similar (£7.02 for pharmacists and £6.50 for nurses) but nurses' costs for reviewing their supplementary prescribing were less than for pharmacists (£2.87 and £6.65 per session respectively).

Nurses and pharmacists were positive about the safety climate and culture where they worked in relation to prescribing but reported being asked by patients and colleagues to prescribe beyond their clinical competence, although few reported acceding to such requests.

Supplementary prescribing qualified nurses were evenly represented in hospitals, GP practices and community but pharmacists were significantly underrepresented in the community.

Both professions were positive overall about prescribing training and favoured combined independent and supplementary courses. Training allowed their prior practice to be formalised.

Prescribing constituted a small proportion of nurses' and pharmacists' roles.

Majority of pharmacists were prescribing cardiovascular medicines, issuing five or fewer prescriptions per week and had appointment times that ranged from 1 to 45 minutes

The majority of nurses were prescribing in the infections chapter, issuing four or fewer prescriptions a week (as supplementary prescribers). Appointment times range: 1-60 minutes.

Confidence and perceived competence were high in both professions, with least confidence being expressed about prescribing for patients with co-morbidities

Supplementary prescribing led to increased autonomy and job satisfaction, more than pay or status

7 Results - Case Studies

A series of 10 case studies (6 pharmacists and 4 nurses) were undertaken in order to explore in depth key issues relating to the prescribing practices of supplementary prescribing nurses and pharmacists. The case studies facilitated an exploration of how supplementary prescribing was working in practice and also elicited data on the safety of supplementary prescribing, the costs of supplementary prescribing (in conjunction with questionnaire data), styles of consultation and the views and experiences of supplementary prescribers, doctors and patients. Full details of the method and analysis are included in Chapter Two. The results of the case studies are arranged into sections on the characteristics of participants, safety of supplementary prescribing, costs of supplementary prescribing, an analysis of consultations, an analysis of CMPs, views of supplementary prescribers, views of doctors and views of patients (interviews and questionnaires)

7.1 Case study characteristics

Table 7.1 provides an overview of the case study participants, presented so as to protect their anonymity. More details about the data collected in each of the case studies is included in Appendix D. Pseudonyms are used throughout the chapter.

Table 7-1 Overview of case study participants

Variable	Categories	Number
Gender	Male	2
	Female	8
Profession	Nurse	4
	Pharmacist	6
Location of work	Primary Care	6
	Secondary Care	4
Clinical area (These represent main clinical areas. Some prescribers, classified as general, also reported other clinical competencies e.g. chronic obstructive pulmonary disease and osteoporosis)	General	1
	Cardiovascular disease	3
	Endocrine (thyroid disease)	1
	Oncology	1
	Dermatology	1
	Substance misuse	2
	ADHD	1

7.2 Safety of supplementary prescribing

Across the 77 consultations observed, 71 prescribed medicines were used for an assessment of the safety of prescribing by nurse and pharmacists in relation to errors and appropriateness. These data were collated from nine of the ten case studies (in one case study it was not possible to collect detailed prescribing information - see Appendix D). The volume of prescribing varied considerably according to the case study site and was most frequent in the primary care settings. Methadone was the most

frequently prescribed medicine (n=16), reflecting the inclusion of two substance misuse case studies, whilst two sites involving hypertension and cardiovascular medicine in GP surgeries led to the prescribing of 15 and 14 items respectively over two days' observations.

As described in Chapter Two, in order to assess errors and appropriateness, four assessors used an assessment tool developed from the literature and subsequent group discussion (see Appendix D). No errors were identified across the 71 prescribed medicines assessed, although there were three prescriptions which were assessed as being inappropriate overall (based upon the majority view of the assessors). Two of these involved prescribing of branded rather than generic medicines by nurses and the other by a pharmacist involving the prescribing of a medicine considered more expensive than others in its class. In addition, 11 prescriptions were assessed as being inappropriate by two of the four assessors, with the use of branded rather than generic medicines being the most commonly identified indicator of inappropriateness (although in one case study, the brand was cheaper than the generic).[4]

It was also noted in two of the secondary care hospital case studies and the two substance misuse sites that information about other prescribed medicines that the patient might be taking were either not recorded or were hard to access in paper-based patient notes. Furthermore, in several case studies it was observed that the supplementary prescriber made no attempt to ask about other current medication use or did not attempt to refer to the patient's notes. In one site, there was an assumption that the independent prescribing consultant would have done this in their initial consultation but no attempt was made to check this or update medicine use.

7.3 Set-up and additional costs of supplementary prescribing

This component of the study considered additional costs associated with supplementary prescribing in relation to initial set-up, salary and indemnity insurance, and complements the costs associated with consultations and reviews for nurses and pharmacists based upon the survey and reported in chapter 6.

Table 7-2 Supplementary prescribing set-up costs

	Nurse: n=4 Mean (SD)	Pharmacist: n=6 Mean (SD)
Time taken to develop initial CMPs (minutes)	230 (329)	90 (60)
Cost of developing CMP for all patients (£)	93 (131)	55 (38)
Time taken to develop CMP for each patient (minutes)	35 (57)	4 (2)
Cost of developing CMP for each patient (£)	20 (28)	2 (1)
Cost of supplementary prescribing training course (£)	1300 (0)	1300 (0)
TOTAL (£)	1408 (127)	1339 (41)

[4] Confirmed with reference to the Drug Tariff and the manufacturer of the medicine in the UK

The initial set-up costs incorporate the costs required to provide the relevant training and to set up the CMP for patients for whom supplementary prescribers are prescribing. Table 8.2 indicates that the average set up costs of supplementary prescribing were slightly higher for nurses at £1408 compared to £1339 for Pharmacists. Interviews with supplementary prescribers were also used to estimate whether they had received any increase in salary as a result of becoming a supplementary prescriber. However none of the individuals indicated that they had received any increase in salary as a consequence of taking on this role. Some of the individuals (n=6) indicated that they had to meet the costs of levies incurred as a result of registering as a supplementary prescriber and these levies varied within a range from a minimum of £25 to a maximum of £76 respectively.

7.4 Analysis of consultations

An in-depth analysis was undertaken on 30 consultations between supplementary prescribers and patients (3 per case study) looking at the length of consultations and the questions asked. An additional analysis was undertaken to identify emergent and common themes within the consultations.

In all but one of the case studies, the supplementary prescriber did not have their own room in which to undertake the consultations. This varied from prescribers who were able to use the same room for an entire clinic session to those who changed rooms between consultations. In five of the consultations observed there were additional people present: parents of young children (3 consultations), an adult child of an older parent (1 consultation), a spouse (1 consultation) and a doctor (1 consultation).

There was no significant difference between nurses and pharmacists in the length of consultations; however the mean length of consultation for nurses was 14.3 minutes (standard deviation 9.68 minutes) with a range of 7.5 to 44 minutes. The mean length of consultation for pharmacists was 18.1 minutes (standard deviation 8.42 minutes) with a range of 7-43 minutes.

The number of questions asked by supplementary prescribers and by patients was assessed. Clearly, the length of the consultation might influence the number of questions that could be potentially asked by both the prescriber and the patient. The number of prescriber questions varied from 55 (in a 44 minute consultation by a pharmacist) to 5 (in a seven minute consultation, also by a pharmacist). The number of patient questions varied from 28 (in the same 44 minute consultation) to 0 (four consultations, all with children). There were only three consultations in which the patient asked more questions that the prescriber. In the four consultations where there were no questions asked by the patient, the patient was either a teenager or a child. In three of these cases, the parent of the child was also present and asked questions about the child's treatment and medication.

7.5 Observation of consultations

The nature of the introduction to the consultation depended upon whether the supplementary prescriber had assessed the patient previously. It was evident from a number of sites that the prescriber had an existing relationship with the patient; in contrast some patients were consulting the supplementary prescriber for the first time. Description of their role was often described in relation to a doctor:

> "*I'm working with [doctor S] in the clinic*"
> "*I'm Kim, I'm a pharmacist that works alongside the doctors and nurses here at the surgery and I've been trained to allow me to prescribe for patients with high blood pressure".*

There were no examples of patients questioning the authority of the supplementary prescriber. There was only one site where the supplementary prescriber referred to the clinical management plan. In this site the prescriber also told the patient that they could return to see the doctor instead if they preferred. Physical examinations played a role in the majority of the consultations analysed. These varied from blood pressure and pulse readings, to examination of injection sites and examination of feet. Whilst most of the examinations were undertaken in the consultation room, in one case the nurse took patient height and weight measurements in an adjacent room and in another, weight and blood pressure measurements were undertaken by a healthcare assistant. In one consultation, a blood sample was taken from a patient.

The format in which the patient received their prescription varied. In five cases, the supplementary prescriber printed out the prescription and signed it themselves. In one case the prescription was printed out and the patient was asked to take their prescription to reception in order for a doctor to sign it, as the computer software would not permit non medical prescribing. In one case study it was observed that the prescriber could not access prescription printing and patient test results on the same computer. Therefore in one observed session the prescriber hand-wrote prescriptions in order to access test results, whereas in a different session, prescriptions were electronically printed. In five cases, prescriptions were handwritten and signed by the supplementary prescriber. There were also examples in two case study sites of supplementary prescribers printing out repeat prescriptions for patients to take to the reception to get the doctor to sign. In two cases, prescribing for the patients was undertaken by their GP through a hospital repeat prescription service, so the supplementary prescribing consultation was to review this prescribing and one site involved changes to medication doses (for hypertension following blood pressure monitoring) that led to changes to the patients' records and subsequent repeat prescription. One pharmacist described their prescription:

> "*That prescription is just like any doctors prescription although I've signed it*".

Medicines were described in a number of different ways by both patients and supplementary prescribers. Most were described as the name of the drug, but there were examples of medicines being described more colloquially: *"the sickness pill" or "the green capsules" or "the water tablet"* by both supplementary prescribers and patients. There were numerous examples of advice being given on how

to take medicines e.g. statins and steroid inhalers that had been prescribed for patients by doctors. It was also apparent that, supplementary prescribers discussed wider health and social issues with patients during the consultations. There were examples of smoking cessation advice, dietary advice and vaccination information being given to patients, although written information was only given to patients in one site. There were also some examples of negotiation taking place in the consultations, particularly in the substance misuse sites, where patients had specific ideas of the medicine (and dose) that they wanted to take. Other examples of negotiations in the consultations include a patient being encouraged to wear a 24 hour blood pressure monitor when they were reluctant to do so.

Explicit references to doctors and their continued input into care were made during many of the consultations. These varied from supplementary prescribers asking a doctor to come and speak to the patient during the consultation, to a supplementary prescriber leaving the room to speak to a doctor who was on site (in both primary and secondary care settings) as well as cases where patients were referred back to the doctor. One referral back to the doctor was made by a supplementary prescriber who was also qualified as an independent prescriber: *"this is the stage where I would actually ask you to see one of the doctors"*. In one case, the supplementary prescriber was asked a question about a condition which they did not have knowledge of, and answered the question *"I'm not a doctor and I couldn't possibly tell you".*

7.6 Analysis of Clinical Management Plans (CMPs)

As part of the overall case study assessment, copies of CMPs were obtained to both explore how they were being used in practice and also to assist in the assessment of prescribing safety. Safety assessments were made by the expert assessors whereas more general observations were made by the researchers. It was evident that CMPs were being used differently and fell into 5 broad types, varying in terms of whether they were present or missing, paper based or electronic, generic or patient-specific, signed by doctors before or after prescribing had occurred, and used by supplementary prescribers only or those with independent and supplementary prescribing qualifications (Appendix D).

Considering the range of types in more detail, the first type was identified in two case study sites, where CMP documents were identified but were not used for individual patients or attached to patients' records. In one case, this was a single CMP which contained a large number of indications - which assessors in the safety and appropriateness study described as a *'generic CMP [that] provides no useful information'* with *'no details of dosing [or] follow-up'.* In the other case, four generic CMPs had been developed which corresponded to the four medicines that the nurse prescriber used, and these were supplemented with further documentation about the medicines (such as manufacturers product leaflets) and associated diagnostic tests and referral procedures. However, in both these sites, the prescriber was also qualified as an independent prescriber and therefore a CMP was not strictly legally

required for the prescribing. Of significance, however, was the observation that both prescribed medicines independently during the observations that were not included in CMPs.

The next two types of CMP identified in case studies were physical copies that the prescriber usually developed for the particular patient prior to the consultation and either printed out so that they could be signed and stored in the patients' paper notes (or electronic notes if scanned), or attached electronically and involving electronic signatures for patient, doctor and supplementary prescriber agreement. Two types of such CMPs were identified since some were not signed or agreed by the doctor until after prescribing had occurred, and this was observed in three case study sites for *some* of the CMPs. In one case study - where controlled drugs were prescribed - this was the standard practice and the prescriber noted that the doctor would usually sign them as a batch when time permitted.

A fourth type of CMP was identified in one site where controlled drugs were prescribed, and this involved a generic CMP being developed and attached to individual patients' electronic records, with an electronic record of the doctor's, prescriber's and patient's agreement being added, although the prescriber noted that not all doctors conformed to this system of attaching the generic CMP to patient's records prior to a supplementary prescribing consultation occurring.

The fifth type involved one observed instance of a CMP that was missing from a patients' record, although the prescriber believed one had originally been developed and believed a receptionists may have failed to update the patients' record despite being given the paper CMP initially.

In relation to the actual content of CMPs, there was also variation: in some sites, specific drugs were referred to, along with detailed referral criteria, but in others quite general references were made only to therapeutic classes of drugs. Assessors in the safety and appropriateness study noted that in the area of cardiovascular disease, a cholesterol lowering medicine or aspirin had been prescribed but these either were not specifically included in the CMP as permitted medicines, or they did appear but were not accounted for in terms of conditions to be treated (namely, either primary/secondary prevention of cardiovascular risk or hypercholesterolaemia).

Based on these above observations, the assessors identified transgressions in six case studies, namely where doctors' signatures were obtained following prescribing, where generic CMPs were used or where a CMP was missing.

7.7 Views of supplementary prescribers

Ten interviews were conducted with pharmacists and nurses participating in the case studies, although at one site it was not possible to conduct an interview with the pharmacist and, in another, a pharmacist

was interviewed but subsequently withdrew from the research (as they became an independent prescriber). The interviews revealed a similar range of themes to those identified in the two questionnaire surveys described in chapter seven, including experiences of training, views on CMPs, doctors, independent prescribing and positive and negative aspects. Overall, the interviews showed that supplementary prescribing had been a positive experience, with both pharmacists and nurses commenting that it had been rewarding, had increased job satisfaction and allowed them to utilise their clinical abilities and enabled them to be more involved in, and have more time to devote to, patients and their care:

> *"For me it's been a complete positive experience and a long time coming […]I absolutely love it, it's the highlight of my week. I would do it full-time. I mean I qualified a couple of years ago and I never had the chance to do it because, you know, for whatever reason, it wasn't set-up or was difficult for the trust to set-up […]"* (Nurse primary care, substance misuse)

Negative comments were few but included: isolated experiences of patients stating that they preferred to see a doctor; several nurses and pharmacists commenting upon the poor quality of the prescribing courses they undertook and problems with use of CMPs. Where training courses were criticised, this was based on a perception that they did not adequately prepare them for prescribing practice because they were either too general or because the training was considered of poor quality. CMPs were considered to be problematic in practice, due to them being time-consuming to set up and with attendant difficulties in some case study sites in having a doctor agree to them:

> *"like ridiculous situations where […] someone had said […] to see [the supplementary prescriber] at the next appointment and she will sort out your clinical management plan and then you haven't got anybody here to do one so you know you are overstepping the law aren't you, you are breaking the law by doing it but clearly the spirit of it is there."* (Nurse, substance misuse)

On the other hand, one nurse was more positive and considered the CMP to be important in defining her area of prescribing and used a generic CMP and associated medication literature at the same time as being independently qualified. One nurse prescriber remarked that becoming a prescriber had resulted in what she considered to be inappropriate requests to prescribe (from other nurse colleagues).

A number of examples of intra and inter-professional conflicts emerged, and these could be grouped into those between nurse prescribers and other nurses, and between pharmacist prescribers and nurses. The former involved a sense of rivalry within the nursing profession about those with a prescribing role and a perception that existing nursing roles were being neglected, whilst the latter seemed to reflect a form of boundary encroachment:

> *"The ones that I had the problem with were the basic nurses and I still have actually. I have got a lot of problem. They just don't think it is right that a pharmacist is taking over their role and feel quite vulnerable about it whereas the nurse practitioners see us as an add on to them so that we can do it together"* (Pharmacist, primary care)

Echoing a theme identified in doctors' interviews, several nurses and pharmacists commented upon the role of doctors in encouraging prescribing training and acting as DMPs. Several pharmacists

commented upon certain skills that they perceived pharmacists to have which nurses lacked which made them more suited for a prescribing role. These included a *'broader'* degree training, and greater expertise in medicines, pharmacology and concordance. Of note were several pharmacists' comments that, in their experience, nurse prescribers lacked confidence and linked this to an inability to take responsibility for their prescribing. A number of comparisons - as opposed to conflicts - were also reported between supplementary prescribers and doctors. Some centred on perceptions that doctors might resent the additional time that supplementary prescribers had for their consultations, although it was recognised that there was an associated need to justify this time by undertaking additional tasks depending upon the clinical area, such as education, health promotion, compliance advice, diagnostic checks, health assessments and medicines use reviews. Isolated comments included a perception of different standards, such as one nurse's belief that if a prescribing error occurred, she would be dealt with more severely than a doctor, and a pharmacists' conviction that poor time management by a doctor would be tolerated, but not for a pharmacist. Confirming the views of patients in interviews, nurses and pharmacists reflected that they might be less threatening to patients than doctors and hence more approachable.

Although the views and experiences of nurses and pharmacists were broadly similar, some differences were apparent. Firstly, supplementary prescribing appeared to be a consolidation of *existing* practices for three of the nurses, but was an innovation for most pharmacists and appeared to have transformed their roles. That the three nurses for whom supplementary prescribing consolidated existing practices worked in secondary care may also be relevant, but they described previously making prescribing decisions - often following their assessments or tests - and having a doctor write a prescription:

> *"I was doing the nurse led clinic and […] it was becoming logistically a nightmare in terms of medication because in the nature of the condition, things change - I need to change doses, I need to change drugs completely if they have put weight on and it took me so much time to do a consultation and then me say 'well I think you need to change medication so what I am going to do now is send you home, find a doctor, tell them what to write, get a prescription and post it out to you and I can only do that second class so you might get it in a week's time' and they're tearing their hair out now and so I decided to do it [the prescribing course] because it would change my practice"* Nurse, secondary care

For pharmacists, there appeared to be more of a change to working practices - in the primary care setting, for example, several pharmacists described an explicit change from previous PCT practice support or '*surveillance'* roles to that of prescriber directly involved in patients' care. Secondly, pharmacists appeared to validate or demonstrate their clinical and prescribing acumen in interviews through the use of (often extremely detailed) examples of prescribing decisions that had been significant for patients. A third difference concerned pharmacists' attitudes towards independent prescribing, which was identified as an imperative. Such pharmacists shared, however, the same views as nurses who currently used supplementary prescribing, with independent prescribing being considered to offer pragmatic benefits in relation to more flexible practice and an end to mandatory CMPs.

All interviewees shared a pragmatic and developmental approach to role enhancement in relation to prescribing. For example, substance misuse nurses eagerly awaited proposed legislative changes to allow simplified controlled drug prescribing independently. In addition, several nurses and pharmacists discussed expanding into different clinical areas, although these were usually still niche areas and linked to existing clinical competencies. As well as expansion in other clinical areas, there was a desire amongst those who were not using prescribing full-time to expand prescribing in terms of more patients and increase their workload, reflecting their awareness of the limited scale of their present prescribing.

7.8 Views of independent prescribers

All the independent prescribers who were interviewed were either GPs or consultants and had direct experience of supplementary prescribing, either in relation to developing or signing CMPs, acting as a DMP or through referring patients to supplementary prescribers. Overall, their impression of supplementary prescribing was very positive, with few negative aspects reported. It was also apparent that many doctors lacked a full understanding of supplementary prescribing conceptually and procedurally, with many using the term 'protocol' rather than CMP, together with ignorance about the need for patients' and doctors' agreement to patient specific individual plans before prescribing, for example. Positively, doctors perceived supplementary prescribing to have benefits for patients, doctors and also the supplementary prescriber. For patients, doctors variously cited increased safety, improved quality of service, longer consultation times, enhanced disease control, greater continuity of care and reduced delays. Doctors' workloads were frequently cited, with several arguing that they had decreased. Others, however, noted that the scale of supplementary prescribing was too small for any changes to be noticed, whilst some also commented that because more patients were being seen as a result of supplementary prescribing, this inevitably resulted in eventual presentations to doctors at some stage. Several doctors also commented that supplementary prescribing - especially from pharmacists in primary care - had led them to reflect more on their clinical knowledge and prescribing patterns. Supplementary prescribing also appeared to contribute positively to meeting targets and QOF and was considered 'cost effective' by several.

Few negative aspects emerged, with occasional comments about isolated patient concerns about being referred to a non-medical prescriber, the administrative problems of signing CMPs, losing contact with patients and being referred more difficult and complex patients. There were comments by some doctors that supplementary prescribers enjoyed *'the luxury'* of longer consultations.

Doctors were asked to describe their experiences of supplementary prescribing, in terms of their on-going involvement and also setting-up, and also non-medical prescribing more generally. Most doctors knew the nurse or pharmacist prior to their supplementary prescribing role, and hence supplementary prescribing represented part of an on-going relationship, although one doctor commented that

supplementary prescribing had changed his perception of pharmacists. It was apparent that many had experienced non-medical prescribing in the form of independent nurse prescribing in primary care prior to supplementary prescribing, although the former was often cited negatively, as being often problematic, leading to increased workloads, safety concerns and issues around nurse competency and responsibility. As noted, supplementary prescribing elicited few negative responses in comparison but an emergent theme was doctors' perception of supplementary prescribing as being *'protocol'* prescribing in a *'narrow'* clinical area, and, normatively, a lesser task than other medical activities, such as diagnosis in particular. Doctors variously referred to prescribing as being a '*bread and butter'* activity that involved merely the *'start, stop, increase and decrease'* of medicines and one reflected:

> *"[The supplementary prescriber] prescribes well known drugs…a few well known drugs, according to protocol and she can increase or decrease it and start it or stop it. So it's almost not like de novo prescribing, it's continuing prescribing […]."* Dermatology registrar

Doctors also referred to some tasks associated with supplementary prescribing, such as titrating medicines doses in clinical areas such a substance misuse and hypertension or responding to cholesterol tests, as tasks that wasted doctors' time. A key distinction was made in this respect between supplementary prescribing and the overall work of doctors, especially in relation to diagnosis, which was argued to be a more skilled, uncertain and difficult task. Supplementary prescribing was not considered by any of the doctors interviewed to be a threat to their own professional work, although several questioned the viability of a full diagnostic role (as in IP) and how doctors' roles would then be any different from an independent nurse or pharmacist prescriber. Other doctors, however, believed that a diagnostic role was possible and was part of taking full responsibility for patients, although a recurrent theme was that this might only work in specific clinical areas where nurses and pharmacists had particular expertise. A key contrast was made between doctors' broad range of experience and knowledge of many conditions and the more limited understanding of nurses and pharmacists. Indeed, the indeterminate and extensive nature of doctors' training and experience appeared to be important in defending some doctors' roles and contributed to a perception that medical authority was being maintained. Other aspects of interviews also supported medical authority included the distinction that prescribing *per se* was a lesser task than '*de novo'* diagnosis and doctors' accounts of becoming involved in non-medical prescribing. For example, several commented that they would only act as DMPs for nurses or pharmacists that they trusted and had refused to assist those not known to them. Furthermore, several examples were provided of doctors being able to control prescribing activities - especially in the case of nurse practitioners in primary care - in terms of stopping prescribing or not encouraging training:

> *"I am completely confident that the right people will be selected because ultimately we are selecting them […] and if we thought it was generally pointless and we didn't see any value to the practice then we would say' no'."* Jack, GP, thirties.

There was a perception that in the secondary care setting, however, this may be more difficult to influence.

Another group of issues to emerge involved perceptions about occupational attributes and comparisons, amongst supplementary prescribers and doctors. A key one, in addition to the distinction mentioned above about broader clinical knowledge, concerned issues of doctors' unique training and experience, and also intellectual ability, especially in comparison to nurses. The latter were reported by several doctors to be - by inference - intellectually inferior, non-degree educated and even perceived to be more influenced by pharmaceutical companies. Pharmacists were not viewed as critically and several doctors commented upon pharmacists' superior knowledge of pharmacology, evidence-based medicine and drug costs. However, it was apparent that doctors considered nurses and pharmacists to be well suited to roles such as supplementary prescribing, because of their record and time-keeping skills, and tendency to follow guidelines and protocols (as compared to doctors). Several doctors believed pharmacists rather than nurses to be more suited to a prescriber role, based upon their knowledge, although it was recognised that nurses had important clinical skills which pharmacists lacked. This led one doctor to argue that a teamwork approach was best, to allow the respective skills of all professions to contribute to the well-being of patients, although other doctors recognised inherent differences between doctors and supplementary prescribers:

> *"I think with a supplementary prescriber, there is a temptation to feel able to over-rule a decision whereas with another doctor, you at least have to negotiate."* (GP, thirties)

One GP distinguished between his experience of pharmacists *qua* prescribers and those in the community, who were viewed as being *'separate'* and less appropriate for the necessary *'team approach'* of prescribing and managing many conditions.

Doctors also identified several attributes that they believed contributed to a good prescriber, such as taking responsibility and being confident but more importantly, having insights into their clinical limitations - *'knowing what they don't know'* - and also asking for help. Asking for help was typified in terms of a repeated comment that supplementary prescribers should be able to 'knock on the door' of the doctor, and appeared not to be resented as an intrusion or a conflict with the need for professional responsibility. Indeed, there was a sense that several doctors encouraged such advice seeking:

> *"Our plan was to give him relatively straightforward people with hypertension but he is expanding his role into looking at other aspects of cardiovascular medicine so he is not scared to knock on the door and say, you know, "this is where I am with this person, what do I do next?" and I would worry that the danger would be sometimes that people would muddle on without you know feeling that they could offload and share with the doctor who was attached to them."* (GP, fifties)

However, a theme identified amongst several doctors was that of self-deprecation and insights into their own professions' variable standards, where 'arrogance' amongst colleagues was claimed to possibly hamper non-medical prescribing initiatives, together with poor clinical and prescribing standards amongst some doctors.

Doctors were also asked about their broader understanding of why supplementary prescribing and other non medical prescribing initiatives had been introduced and they perceived a range of factors to be

relevant, but frequently considered themselves somewhat '*cynical*". They identified financial saving in relation to nurses and pharmacists being cheaper, some PCTs offering supplementary prescribing services at no cost to GP surgeries, increasing workload and patients, a shortage of doctors and especially GPs, the need to meet target and general comments about governmental policy. Indeed, the latter was frequently viewed not only cynically but also as inevitable and, in contrast to the theme of doctors' continued medical authority identified above.

7.9 Views of patients

Twenty-eight patients were interviewed, the majority of whom were recruited from primary care settings and interviews lasted from 5 to 30 minutes overall. Interviews with patients revealed positive experiences in relation supplementary prescribing, and insights relating to patients' attitudes towards doctors, nurses and pharmacists, patients' understanding of illnesses and treatment, non-medical prescribing generally and the reasons for its introduction. Some patients had experienced supplementary prescribing on a number of occasions, whilst for others, the case study observation was their first experience. Patients identified a range of positive aspects, including a perception that they had more time during consultations with the supplementary prescriber compared to normal care and a concomitant sense of not being '*rushed'* or *'kept waiting'*; supplementary prescribers were often praised for being more approachable (than their experience of normal care) and one patient noted that having another person involved in their care provided extra re-assurance. Being approachable was often contrasted with patients' perception of doctors and although none of the patients interviewed felt there was a marked difference in the style of the respective consultations, doctors were perceived as being more intimidating and hurried:

> *"I wouldn't say that she [the supplementary prescriber] is lesser, it is just that a doctor is a little bit of a higher person and I feel a bit small around them if you know what I mean whereas if it was a nurse I suppose you are more or less on the same level if you know what I mean."* (Male substance misuse patient, twenties)

Patients did not spontaneously mention any negative aspects of supplementary prescribing and only in very occasional asides did anything amounting to criticism of supplementary prescribing emerge: one patient was inconvenienced by their pharmacist prescriber not being able to sign prescriptions (they left consultations with a computer-printed prescription that the doctor still needed to sign – leading to delays in receiving their medication); another patient felt too much information about their medication was provided by a supplementary prescribing pharmacist, whilst another patient felt too little had been given by a supplementary prescribing nurse regarding side effects.

First experiences of supplementary prescribing varied in terms of how patients were referred (although not surprisingly it was almost always the doctor who initiated the referral). Indeed, doctors appeared to be involved in some form of legitimation of the supplementary prescriber's role for the patient:

> *"Doctor S sent me to the pharmacist and I went with his confidence really and I had no reason to doubt he was wrong you know. I don't think he was wrong and if he sent me*

> *to the nurse I would have the same confidence but I wouldn't have the confidence to select my own nurse."* (hypertensive patient, seventies, primary care)

However, there appeared to be some degree of uncertainty as to whom the patient would actually be seeing, with some doctors not mentioning the type of professional the patient would be seeing. This led to patient assumptions or confusion about the supplementary prescriber, with some falsely believing they were seeing a doctor, whilst others thought pharmacists were actually nurses (two patients' observed however that the supplementary prescribers' inability to sign prescriptions challenged their assumption of a medical encounter) and one thought the nurse would *'only take blood'*. These first encounters were also revealing in that they were often associated with a certain *'suspicion'*, *'concern'* or *'apprehension'* about whom they would be seeing, although patients reported that these concerns were allayed following their meeting with the supplementary prescriber:

> *"I was a little bit apprehensive I suppose because I thought I would be seeing a proper doctor you know but when I met him [the supplementary prescriber] he was very pleasant "* (Hypertensive patient, sixties, primary care)

Patients were asked about their knowledge of supplementary and other forms of non-medical prescribing and asked to comment on why they perceived these initiatives to have been introduced. Two sets of accounts emerged: the first centred around those who appeared to be informed of health care policy generally and who reported having a knowledge of pharmacist and particularly nurse prescribing, the other set of accounts was comprised of those who were less aware and for whom the supplementary prescribing consultations were their first experience of non-medical prescribing. What both groups had in common was a perception that such prescribing had been introduced to reduce the workload of doctors, who were perceived to be subject to the pressures of seeing increasing numbers of patients in a limited time. Cost savings were also cited, with nurses in particular being regarded as '*cheaper'* than doctors, although one patient argued that this led to reduced expectations.

Many patients were also candid about their own illnesses and perceived their long-term conditions to be almost a burden for doctors and the NHS more generally. Patients' knowledge of supplementary prescribing also appeared to be grounded in an understanding that this occurred in the narrow clinical specialty of the nurse or pharmacist and many patients drew a clear distinction between this and the more general clinical knowledge and work of doctors, especially in the primary care setting. However, this understanding of a clinical niche for supplementary prescribing appeared to be a positive and several patients perceived such prescribers to have superior knowledge to GPs and these clinical niches provided patients with confidence about the competency of the prescriber. Linked to patients' insights into their illnesses was also a common distinction between their present chronic condition (such as hypertension in many of the primary care case studies) and more acute illness, where it was clearly stated that the doctor would still be consulted. Indeed, several examples were provided where patients either had asked the nurse or pharmacist about an acute illness or had been referred to their doctor, or where patients had made separate appointments. The referral mechanism back to their doctor was a

frequently cited one and was argued to be a necessary attribute of the supplementary prescriber, although several patients commented that they rarely saw their doctor and the supplementary prescribing encounter was their only current experience:

> *"The doctor more or less said because he was so busy that in future I would be seeing this person but she was well qualified but if I wasn't happy at all that I could go back to him [...] I am not afraid of [the supplementary prescriber] like I am the doctor. In awe really - not afraid - in awe."* (Hypertensive patients, seventies, primary care)

Patients also provided further comments on the attributes of nurse and pharmacist prescribers and, related to referrals, noted that understanding the limits of their own clinical competency was important, together with the ability to communicate and be up-to-date about their clinical area.

Another theme concerned comparisons between doctors and nurse and pharmacist supplementary prescribers and several have already been considered, such as their respective approachability, clinical knowledge and sense of urgency and workload. Doctors' greater length and breadth of training and experience were apparent for many, and there was a perception that supplementary prescribing was a recent initiative and hence nurses and pharmacists had been more recently trained than compared to doctors. For some patients, a distinct hierarchy was present, with the doctor being considered ultimately the best person to prescribe, as the previous quotation indicated, and as another patient noted:

> *" Well, you know, it's your health, isn't it? You want the best you can get kind of thing, you know what I mean, and then they start putting you down to a labourer… you know you need a word. You know what I mean? I'm not degrading him you know what I mean, and then you think well I'd rather see the specialist kind of thing, the doctor"* (Male hypertensive patients, forties, primary care).

For other patients, however, doctors were viewed as being fallible like nurses and pharmacists as were viewed more as providers of information, from which the patient could then make an autonomous choice. This also represented the final emergent theme, namely patients who appeared to be active and those who were more passive. For the former, the supplementary prescriber was no different from the doctor and could be challenged –although one patient conceded they might be slightly less likely to challenge a doctor – and they felt they were in control of their treatment and indeed felt a certain pressure in such autonomy. For other patients, however, there was a more passive approach, of *'giving things a go'* and a presumption that all NHS changes were for the good and should be accepted. One patient appeared to be passive in being disappointed by the advice given by the supplementary prescriber, yet did not feel she could demand to see the doctor again.

7.10 Patient questionnaires

Questionnaires were returned from nine of the ten case study sites. A total of 44 questionnaires were returned. Fewer questionnaires were returned by patients prescribed for by nurses (n=11) as compared to pharmacists (n=33). Also fewer questionnaires were returned from patients prescribed for by hospital supplementary prescribers (n=5) as opposed to primary care supplementary prescribers (n=39).

Therefore the dataset cannot be analysed in sub groups. Tables which summarise questionnaire responses can be found in Appendix D.

Patients were generally very positive about being prescribed for by supplementary prescribers with 40 agreeing that they had confidence in their supplementary prescriber and 41 that they had a good relationship with their supplementary prescriber. Higher levels of disagreement were found around CMPs, as Table 7.3 indicates. Over half of the patients responding to the questionnaire disagreed or were not aware that they had a CMP, although 14 patients said that they had signed their CMP, which links in with the findings of the interviews and observation.

Table 7-3 Patient views about the CMP and information

Variable	Agree	Disagree	Don't know
I have been given written information about having a supplementary prescriber	22	14	4
I have a written plan for my treatment by the supplementary prescriber	15	15	6
I was involved in designing my written plan for my treatment by the supplementary prescriber	14	18	2
I understand my written plan for my treatment by the supplementary prescriber	16	14	4
I signed my written plan for my treatment by the supplementary prescriber	14	15	6

Use of the MARS scale showed that the patients of supplementary prescribers did not engage in non adherent behaviour, with only a very small number of patients answering that they often (1 response) or sometimes (8 responses) engaged in behaviour which was non adherent. With reference to the SIMS scale, patients were assessed on their satisfaction about receiving information related to their medicines use. Within this group there were high levels of satisfaction with information received, with patients who answered "about right" being the most frequently chosen group for each statement.

Qualitative responses to the question "What do you consider is the best thing about having a pharmacist supplementary prescriber" resulted in responses from 33 patients. The comments that they made were in line with the findings presented in section XXXX. Patients viewed supplementary prescribers as knowing more about medication and having more time to spend with patients. Positive comments related to ease of getting an appointment with a supplementary prescriber, confidence in the supplementary prescriber, a more informal level of conversation and being easier to talk to. Other benefits that they identified included freeing up of doctors time to deal with acute conditions. Patients also commented that they received excellent care from both supplementary prescribers and doctors.

7.11 Summary

No prescribing errors and three assessments of inappropriate prescribing (including two for use of a branded rather than generic medicine) were identified from 71 supplementary prescribed medicines; CMP transgressions were identified in six case studies, all based on the majority view of a panel of assessors.

Costs for setting-up supplementary prescribing slightly higher per nurse (£1408) than per pharmacist (£1339); no salary increases identified but often increased insurance costs.

Analysis of CMPs revealed five different types in use, varying in terms of whether they were paper or electronic, used by supplementary prescribers only or those with an independent prescribing qualification, generic or patient-specific and signed before, during or after prescribing had occurred; some variation and ambiguity identified in terms of CMP content.

Patients' experiences of supplementary prescribing were positive, with longer consultation times valued, nurses and pharmacists considered easier to talk to and perceived as experts in their clinical areas; perceiving time/workload saving for doctors also recognised.

Several patients were initially apprehensive of supplementary prescribing, although doctors' roles in initially referring patients legitimised supplementary prescribing.

Doctors still considered accessible by patients and ultimately responsible for their care, despite supplementary prescribing; several patients ideally wanted to see a doctor for all consultations.

Although some patients were aware of non-medical prescribing generally, most lacked any detailed understanding of supplementary prescribing and clinical management plans.

Doctors appeared to lack understanding of supplementary prescribing both conceptually and practically often referring to 'protocol' prescribing and displaying some ignorance or confusion over the use of CMPs and medical and patient agreement.

Doctors identified benefits for patients and themselves from supplementary prescribing, in terms of lesser workloads, increased reflection on their own prescribing and meeting targets.

Doctors favoured nurse and pharmacist prescribing using 'protocol's in specific clinical areas and considered a general diagnostic role best suited to doctors.

Doctors expected supplementary prescribers to recognise their clinical limitations and seek doctors' help, together with taking responsibility for prescribing and clinical decisions.

Supplementary prescribing consultations varied in length and complexity. Supplementary prescribers who had not met patients before introduced themselves. There were frequent references to doctors, including prescribers seeking doctors' help during consultations and referring patients on to doctors.

8 Discussion

The aim in this chapter is to reflect upon key results from various aspects of the evaluation and discuss these in the light of published literatures.

8.1 Training issues for supplementary prescribers

This study identified several issues in relation to training for supplementary prescribers. Common to many problems identified with the training is a fundamental difference in previous training and existing competencies and skills that means offering a single prescribing course risks not addressing the learning needs of each profession. Benefits of increased understanding of different professions and improved communication and collaboration are all aims of inter-professional learning. These could have benefits not only in training but also in subsequent practice, reflecting a more fundamental socialization process that can occur in healthcare training (Elston 2004). However, the need to provide each profession with potentially differing sets of knowledge and skills may be difficult to accommodate in practice. This is no more evident than in the case of pharmacological knowledge, where a clear theme emerged in this study whereby pharmacists considered themselves to be already competent in this respect, echoing previous research (Dawoud *et al* 2004), whereas nurses reported the pharmacology content of courses to be helpful and required. The use of approved, or accreditation of prior learning may be relevant in this respect. Furthermore, this research only collected data relating to pharmacists self-reports and perceptions of pharmacological competency and further empirical research may be needed to explore this, as has occurred within the nursing profession (Banning 2004, Bradley et al 2006, Offredy et al 2007). A further issue concerns the integration of prescribing training into the undergraduate curriculum, as has been proposed (RPSGB 2003) and this study raises questions about such a proposal. In particular, how will undergraduate students' lack of clinical experience affect the success of such courses and will it be possible to incorporate the period of learning in practice and time with a DMP that pharmacists so valued into an undergraduate course? Such concerns have emerged in other research (Warchal et al 2006) but further research will be needed to assess these developments.

8.2 Supplementary prescribing practices & implementation issues

The analysis of PACT data (see Section 2.2) revealed relatively modest levels of prescribing by both nurses and pharmacists. This was subsequently confirmed both in our surveys of practice, and most clearly in the case studies. As can be seen from the survey, prescribing volumes were generally of the order of between 2-10 items per week, for both of the professions. The difficulties that were experienced recruiting case study sites resulted from the low reported level of prescription items dispensed (typically below 10 items per week). Therefore, triangulating across the various data sources, it was clear that nurses or pharmacists were undertaking relatively modest levels of supplementary prescribing.

Again, triangulating across the data sources, it was apparent that nurses and pharmacists were experiencing a number of implementation difficulties in relation to the practice of supplementary prescribing. Several factors appeared to be pertinent here. Firstly, several case study sites were using prescribing software which could not generate printed prescriptions with the required information in order to enable the pharmacist to physically sign the prescription. In one case, this resulted in the pharmacist prescriber signing no actual prescriptions at all but issuing unsigned prescriptions for doctors to sign. In two others, this resulted in lengthy delays as prescriptions were hand-written. Whilst similar implementation problems have emerged in previous research (Courtenay *et al* 2007, George *et al* 2007, Weiss *et al* 2006), this research confirms that such information technology issues have not been entirely overcome. Secondly, it was clear from our observational work that policies encouraging primary care prescribing were observed in several of the secondary care hospital settings. In such examples, prescribing by the patient's GP was encouraged wherever possible, necessarily limiting the scope for supplementary prescribing. Thirdly, it was observed that in one site changes to medication doses (for hypertension following blood pressure monitoring) led to changes to the patients' notes and *subsequent* medication, but did not result in supplementary prescribing. Hence, the prescribing opportunities for nurses and pharmacists did not necessarily lead to actual prescribing and were more representative of changes in clinical autonomy. These factors are likely to have an impact on actual levels of supplementary prescribing.

It was also apparent from the survey data that supplementary prescribing by pharmacists was very limited in the community setting (7.3% of survey respondents) despite this being the largest area of practice for pharmacists in England - around 70% of pharmacists in the UK overall reported active employment in the community setting (Hassell et al 2006). Weiss et al (2006) commented upon potential problems relating to the use of supplementary prescribing in the community and cited poor access to patient records, lack of funding and distant relationships between community pharmacists and doctors. Other research also suggests that it is not just community pharmacists' separation from doctors but potentially also patients and customers too (Cooper et al *In Press*) that may be a concern in this setting. To such barriers may also be added a perception that community pharmacists are still regarded as 'shopkeepers' (Hughes and McCann 2003) rather than health care professionals. Such barriers and perceptions are unfortunate given the advantages in accessibility offered by community pharmacists and the opportunities they offer in promoting supplementary prescribing.

8.3 Clinical Management Plans

There were a number of implementation issues arising from the use of CMPs by nurse and pharmacist supplementary prescribers identified in this study. Firstly, the case studies and survey responses indicated that CMPs were not always being used according to existing guidelines (Department of Health 2005). For example, in some sites prescribers had both supplementary and independent prescribing qualifications. In two sites which involved controlled drugs and three sites that involved supplementary (but not independent) prescribers, observed practices did not conform to official guidance. Whilst this

use of CMPs was assessed as a transgression (since they appear to involve a form of intentional rule-breaking, Parker and Lawton 2006), it is not clear whether these can be considered as 'workarounds' in response to difficult operating conditions and situations or as situational violations which might impinge upon overall safety (Reason 1990, 2000). In some cases, it was clear that the supplementary prescriber was *accommodating* CMPs within a demanding work environment, where both they and doctors were busy and the logistics of getting a doctor to sign or agree to a patient specific CMP prior to that patients' consultation, was problematic. However, in other sites, CMP use appeared to be congruent with existing guidelines. Having said this, there was considerable variation in case study sites which makes comparisons difficult, such as different computer software, leading to some sites being able to attach electronic signatures to CMPs, for example. One final, but significant point, concerned those prescribers with both a supplementary and an independent prescribing qualification, who stated that they used supplementary prescribing in their work. In such examples – two occurred in this research – generic CMPs had been developed but were *not* made patient specific or attached to patients' notes. Of note in these two cases were, firstly, that the prescriber still considered themselves to be using supplementary prescribing, and secondly, that the CMP (in one case in particular) appeared to provide a level of *reassurance* and guidance for that individuals prescribing practice (a point actually reiterated by several nurses in their interviews). This observation may help inform an apparent difference between the reported use of supplementary prescribing by nurses in the questionnaire survey in this research and that reported elsewhere in the literature (Courtenay and Carey 2008). One possibility is that nurses may, like the two cases identified in this research, consider themselves to be still using supplementary prescribing, when in fact they could be only using *aspects* of supplementary prescribing such as a generic CMP, if they were also qualified as independent prescribers. These observations could also enlighten other research findings, such as for example, a reported inability in accessing a CMP in over half the records of mental health patients who had received nurse supplementary prescribing (Norman *et al* 2008). Clearly, however, there was some evidence that CMPs were being used in different ways across the study sites.

8.4 Patients' views and experiences of supplementary prescribing

There seemed little doubt from this study that patients were generally accepting of a prescribing role by nurses and pharmacists. Very few objectives to nurses and pharmacists reviewing and changing medication were spontaneously reported in the observational element of the study and similarly very few were reported in the qualitative interviews with patients. There appeared to be no difference in this finding across primary and secondary care, although further research may be required to reinforce this finding. Having said this, patients appeared to recognise that ultimate authority for patient care – and therefore medication - remained with the doctor and it may be that there will a greater range of objections relating to independent prescribing by nurse and pharmacists. It is interesting that patients did not identify particular problems regarding prescribing, given that patient objections have been

identified as a problem in other 'extended role' studies involving community pharmacists (Salter et al 2007; Bissell et al 2008).

On the other hand, patients did not appear to know very much about supplementary prescribing (for example, about the roles and responsibilities of doctors, nurses and pharmacists) and this may become a problem in the future. As with Weiss *et al*'s (2006) study of supplementary prescribing by pharmacists, it may be that work needs to be done with patient groups to explain in more detail the developing role of nurses and pharmacists in prescribing.

8.5 Inter- professional relationships

Although some literature suggests that non-medical prescribing might be viewed as a possible challenge to the medical profession *vis-à-vis* the exercise of clinical autonomy (Britten 2001), this research does not confirm such a view. This was highlighted particularly in the case studies and interviews with doctors, where examples were reported (especially in the primary care setting) of doctors continuing to be able to support or deny (particularly nurses), an opportunity to become prescribers. However, as well as these examples of doctors maintaining control over access to prescribing training, an overriding theme emerged from interviews with doctors that non-medical prescribing should be of a 'protocol' type – with this phrase being specifically used. Although several doctors commented on the need for those prescribing to have full responsibility in relation to prescribing - and one doctor championed a fully independent diagnostic nurse/pharmacist prescribing role - doctors considered that supplementary prescribing devolved only a limited degree of clinical autonomy to nurses and pharmacists, within the remit of the specific 'protocol' to prescribe. Doctors' desire for supplementary prescribers to be aware of their own clinical limitations, coupled with an acceptance of a 'knock on the door' policy - whereby nurse and pharmacist supplementary prescribers were encouraged to seek medical approval - all suggested that medical surveillance was being maintained. This was also echoed by several comments from GPs that supplementary prescribing was viewed as another government initiative that could be used by doctors in a positive manner to reduce costs and meet targets such as reduced waiting lists and times and quality and outcomes framework measures. Furthermore, several doctors commented that prescribing had become somewhat routinised as a task (with the increasing use of guidelines and protocols such as local formularies and NICE guidelines) and they clearly distinguished this from the more indeterminate and skilled task of diagnosis. This reflected continued medical surveillance since doctors argued that only they had the necessary unique and broad training, experiences and associated skills to undertake this work.

A possible tension was apparent, however, in that whilst doctors appeared to champion 'protocol' prescribing in niche clinical areas, supplementary prescribers - and pharmacists in particular - were keen to become independent prescribers, at least in part because this eliminated the need to use CMPs. Whilst these may appear fundamental differences of opinion, two factors suggest that future

nurse and pharmacist independent prescribing may not be incompatible with doctors' preference for protocol prescribing. Firstly, when discussing their future plans, nurses and pharmacists said they would work in specific clinical areas, in which they had expertise, rather than prescribing generally. This supports doctors' views about limiting prescribing to a specific clinical area according to a protocol. Secondly, as noted above, several case studies revealed CMPs still being used - albeit in a generic, non-patient specific form – by independent prescribers and this suggests that some form of protocol may be helpful to independent prescribing, in documenting prescribing guidelines at practice/trust level.

8.6 Future prescribing by nurses and pharmacists

Nurses' and pharmacists' plans for future prescribing varied. Several of the participants - particularly pharmacists - reflected on independent prescribing offering an opportunity to stop using the CMP due to its time consuming nature. However, such pharmacists still intended to work to protocols such as CMPs as they represented positive examples of evidence -based practice (e.g. NICE guidelines). This mirrors the observations in one nurse secondary care site, where despite having an independent prescribing qualification, a generic CMP for prescribed medicines was still in use. Independent prescribing was a key feature of many prescribers' future plans but although the survey results suggested that pharmacists saw independent prescribing as the next step in their practice- with supplementary prescribing being merely a *'stepping stone'* - pharmacists in the case studies commented that independent prescribing would not lead to major changes to prescribing practice but instead to easier practice without CMPs. The experiences of the case studies also reflected pharmacists' independent prescribing intentions from the survey, in that two pharmacists gained their independent prescribing qualification during the period of the research. In one case, this meant an immediate change to practice, which meant they could no longer participate. Some nurses and pharmacists did not intend to expand their clinical practice into new areas or to diagnose for patients using independent prescribing.

8.7 Costs of supplementary prescribing

Several issues emerge from the analysis of costs associated with supplementary prescribing. Firstly, it was evident that the costs of supplementary prescribing consultations per patient were not markedly different between nurses and pharmacists (mean of £7.02 for pharmacists and £6.50 for nurses, without review costs added). In part, this may have resulted from the different consultation lengths identified in the surveys - 21 minutes for nurses and 18 minutes for pharmacists - despite pharmacists reporting higher salaries on average than nurses. Pharmacists reported longer prescribing review times than nurses, making pharmacists more costly than nurses in this respect. Data from the Personal Social Services Research Unit Database (Curtis 2007) indicates that GP consultations last 11.7 minutes on average and cost £34. Hence, overall nurse and pharmacist supplementary prescribing consultations are significantly cheaper than the GP consultations, reflecting the considerably higher salaries of doctors. However, whilst this suggests that supplementary prescribing is cost effective, it is also in the

case of nurses, almost twice as time-consuming *per* patient, which may have an impact upon overall patient waiting lists, for example. However, as was reported in the case studies, both nurses and pharmacists used consultations as opportunities to undertake examinations, conduct health checks, measure blood pressure, take blood samples and conduct medicine use reviews, making direct comparisons with GPs and doctors more generally somewhat difficult. Exact cost and time comparisons are difficult, however, since the costs reported in this research related to *all* areas of supplementary prescribing and not just that in primary care, as per GPs.

A further cost issue is that doctors' roles as DMPs during the period of learning in practice are not remunerated at present, in contrast to the training they offer to medical students, for example. Whilst in one respect, this could be viewed as a cost saving in relation to supplementary prescribing, it may also argued that it does not provide any incentive for doctors to help in non-medical prescribing training. This may impact upon whether more doctors consider becoming DMPs and may need to be addressed if supplementary and other forms of prescribing increase and hence lead to demand for more DMPs.

Finally, the survey and case study results indicated that supplementary prescribing did not lead to salary increases and whilst this may again be viewed as being a cost effective aspect of such prescribing, it may also act as a disincentive for nurses, pharmacists and AHPs to become prescribers.

8.8 Safety

No prescribing errors were identified in the case studies of supplementary prescribing. Whilst we would argue that there is a strong case for additional research to explore the safety and appropriateness of non-medical prescribing, this finding may provide reassurance to those who posed questions about this aspect of non-medical prescribing. Certainly, this finding helps to inform the broader debate about the safety of non-medical prescribing, by providing empirical evidence that has been argued to be lacking to date (Avery and Pringle 2005). These findings complement other research which provided evidence of the quality and safety of nurse independent prescribing in terms of competencies and standards (Latter *et al* 2007). The assessment of appropriate prescribing for most medicines is also a positive finding and where inappropriateness was observed, this may have been due more to the validity of the instrument since the indicator tool appeared to penalise the use of branded products irrespective of their cost.

However, as noted in the review of the literature, criticism of non-medical prescribing may be directed more at those which involve diagnosis and the findings of this study may not provide all the empirical evidence needed to inform debates about all forms of non-medical prescribing. We would argue that further research is needed in this area to confirm this finding.

Finally, the observation that current and authoritative details of patients' medication were not available for supplementary prescribers in some case studies raises concerns in relation to prescribing safety. However, it should be noted that this was not unique to the supplementary prescribing and from observations and discussions with the supplementary prescribers and independent medical prescribers, it was apparent that this was the situation for doctors too.

9 Glossary

Allied Health Professional (AHP) Member of an ancillary healthcare profession other than medicine, nursing, dentistry or pharmacy. AHPs include radiographers, chiropodists, podiatrists, physiotherapists and occupational therapists. Regulation is by the Health Professions Council.

Approved Prior Learning (APL) Mechanism for recognising existing skills or training for students, which may be used to exempt students from some aspects of courses or assessments.

British National Formulary (BNF) Publication that lists, according to therapeutic area, the complete range of medicines and products which are available to be prescribed in the UK. Considered authoritative, contains information about licensed indications, doses, side effects and issued biannually.

Clinical management plan (CMP) A written or electronic record of the agreed management of a specific patient. Following diagnosis and the agreement of the patient, a CMP allows a supplementary prescriber to prescribe medicines appropriate to the patient's conditions included on the CMP. CMPs may be developed from generic templates for recognised conditions or may be bespoke.

Designated medical practitioner (DMP) A registered medical practitioner with three or more recent years of clinical experience, who acts as an unremunerated mentor to a supplementary prescribing trainee during their training. Presently 12 days of supervised learning in practice with a DMP needed.

General Practitioner (GP) A personal doctor who provided comprehensive and continuing care for patients in the primary care setting (rather than hospital).

Higher Education Institution (HEI) Institutions such as universities and colleges offering tertiary education, often in the form of degrees, whether at undergraduate or postgraduate level.

Nurse Independent/Supplementary prescriber Qualification now obtained by all nurses who undertake prescribing courses, leading to the recording of a V300 prescribing status on the NMC register. Permits those qualified to undertake both types of prescribing, where they are competent.

Independent Prescriber Independent prescriber has two meanings: in relation to supplementary prescribing, it is the medical or dental practitioner who made the initial patient diagnosis and who is involved with the care of the patient and in the development of the CMP. It also refers to, more broadly, a healthcare professional who has a professional responsibility for independent prescribing.

Independent Prescribing (IP) The Department of Health's working definition of independent prescribing is *"prescribing by a practitioner (e.g. doctor, dentist, nurse, pharmacist) responsible and accountable for the assessment of patients with undiagnosed or diagnosed conditions and for decisions about the clinical management required, including prescribing."*(Department of Health 2006)

Multi-centre Research Ethics Committee (MREC) Committee which considers and approves ethical issues relating to research conducted at different sites.

Nursing and Midwifery Council (NMC) Governing professional body, responsible for regulation and registration of nurses, midwives and specialist community public health nurses in the UK.

National Health Service (NHS) Organisation responsible for the provision of health care in the UK since 1948, offering healthcare largely free at the point of delivery and paid for from direct taxation.

Nurse Practitioner Specialist nurse, usually working in primary care setting, usually employed by medical practice. Involved in roles such as triage, screening, health assessments, reviews.

Prescribing Analysis and Cost Data (PACT) Data available in relation to prescribing in primary care, at the level of individual medical prescribers, practice and PCT. Provides information on actual medicines prescribed and costs. Intended to influence prescribing practice and allow comparisons with other prescribers but can be distorted due to patient demographics and medical presentations.

Prescribing Appropriateness Index (PAI) Validated measure of the appropriateness of prescribing developed by Cantrill *et al* (1998). Similar to the Medication Appropriateness Indicator (MAI) developed by Hanlon *et al* (1990) but considered particularly relevant to long-term medication and used in UK healthcare setting. Includes measures of generic prescribing, recognition of standard doses, interactions, indications and duration of treatments (see BNF).

Primary care trust (PCT) Responsible for the health of local populations and involved in the securing of health care services for patients and public. Recent restructure saw dramatic decrease in numbers of PCTs in England.

Prescription Pricing Division (PPD) Formerly Prescription Pricing Authority (PPA). A section of the NHS Business Services Authority, responsible for the processing and payment of prescriptions dispensed in England. The PPD also provides remuneration for pharmacists & dispensing doctors, produces reports on prescribing at various levels (see PACT) and detecting fraud related to dispensing.

Primary Care Area of healthcare associated with general practitioners and the care given to their patients and includes other health care professionals.

Royal College of Nursing (RCN) Governing professional body for nursing in the UK.

Royal Pharmaceutical Society of Great Britain (RPSGB) Governing professional body for pharmacy in the UK. Currently has regulatory and disciplinary functions, although both are soon to be devolved.

Secondary Care Specialised health care provided usually in a hospital setting.

Statistical Package for the Social Sciences (SPSS) Software program designed for the quantitative analysis (both descriptive and inferential) of data generated in research, often in the social sciences (e.g. survey, attitudinal data).

Supplementary prescriber An appropriately trained and registered healthcare professional who undertakes supplementary prescribing. Currently the following professionals may train and practice as supplementary prescribers: nurses, pharmacists, optometrists, physiotherapists, podiatrists and radiographers.

Supplementary prescribing (SP) Defined by the Department of Health as: "*a voluntary prescribing partnership between an independent prescriber and a supplementary prescriber, to implement an agreed patient-specific clinical management plan with the patient's agreement".*

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11 Appendices

11.1 Appendix A –Literature Review

Empirical pharmacy supplementary (or relevant other) prescribing studies (SP=supplementary prescribing)

AUTHOR(S)	STUDY AIMS/RESULTS	METHOD/SAMPLE
Candlish *et al* (2005)	SP pharmacist and barriers survey. 50% of pharmacists practicing SP. Community a problem due to prescription pad delays and IT issues. Most wanted to train and practice IP. Hospital argued to be more conducive to SP due to existing relationships, access to medical records and pads.	54 pharmacists who had completed SP training at one university returned postal questionnaire from sample of 107 (50%).
Cassidy *et al* (2004)	Pilot study of pharmacists' and mentors' experiences of SP: relationships, responsibilities and professional progression were all emergent issues	3 focus groups with total of 17 hospital pharmacists and semi-structured interviews with 11 mentors.
Child *et al* (1998)	Few doctors or nurses had experienced pharmacist prescribing but positive if training, communication skills, resources and liability issues addressed.	Questionnaire using convenience sample of hospital doctors, pharmacists and nurses in 5 UK hospitals.
Child and Cantrill (1999)	Doctors' perceived barriers to pharmacist prescribing: communication, pharmacists' clinical/patient knowledge, doctors' initial prescription-writing and mechanisms for treatment review.	Questionnaire using convenience sample of hospital doctors in 5 UK hospitals
Child (2001)	Nurses' perceived pharmacist prescribing positively if training, communication skills, resources and liability issues addressed.	115 hospital nurses from 5 UK hospital completed questionnaire about pharmacist prescribing
Dawoud *et al* (2004)	Pharmacists' views after SP training courses: less pharmacology and more examination, consultation training needed. 88% perceived themselves already competent. 82% foresaw SP problems in co-morbidity, 51% CMP difficulties, and 48% thought pharmacists and not nurses most appropriate to prescribe.	35 self-response questionnaires returned from sample of 41(85%) first cohort pharmacists from 2 universities
George *et al*(2006)	SP pharmacists reported benefits as patient management, job satisfaction and self-confidence but challenges due to lack of: funding, IT support, awareness by others.	401 questionnaire responses from postal survey of all 488 (allowing for 30 pilot) UK SP pharmacists (82.2%)
George *et al* (2007)	Early experiences of SP pharmacists: only half trained SP pharmacists actually practicing,	401 questionnaire responses from postal survey of all 518 (less 30 pilot) UK SP pharmacists (82.2%)
Hobson and Sewell (2006)	Implementation of SP in UK: more barriers to SP in primary care SP, whereas secondary care SP formalising existing practices.	Postal survey of pharmacists in PCTs responsible for implementing SP (97 secondary, 187 primary care responses)
Hughes and McCann (2003)	Perceived barriers between pharmacist and GPs: doctors' shopkeeper perception of pharmacists and issues of access, hierarchies and lack of SP awareness were all inter-professional barriers	6 focus groups involving 22 GPs and 31 pharmacists from three areas of Northern Ireland
Jackson (2003)	Baseline survey of implementation of SP in PCTs revealed perceived training issues, greater nurse SP due to existing infrastructure and pragmatic uptake.	192 postal questionnaire returned from sample of all 302 UK PCTs (63.5%)
Jones *et al* (2004)	Pharmacist stakeholders' views on SP. Positive view of SP emerged, but training and GP relationships an issue.	semi-structured interviews with 14 stakeholders: SP trainee pharmacists, education providers, policy makers

Lloyd and Hughes (2007)	Pharmacists' and mentors' views of SP: broadly welcomed by both but issues of deskilling, IP threat, boundary encroachment identified. Some pharmacists cautious about competency & necessary relationships.	9 focus groups involving SP pharmacists and 35 semi-structured interviews with medical mentors
Lloyd, McNally and Hughes (2005)	Nurses saw pharmacists as most knowledgeable about medicines but not best for prescribing. Pharmacist SP not a threat to nursing but might de-skill doctors	Questionnaires completed by 205 from sample of 820 randomly selected nurses in 11 UK hospitals
Lloyd, McHenry and Hughes (2005)	Doctors had good relationships with pharmacists, agreed that SP could reduce their workload and errors but were unaware of SP and felt doctors best prescribers	Questionnaire sent to all 516 junior and senior house officers in 11 UK hospitals. 115 responses.
Shulman and Jani (2005)	SP pharmacists more likely than and doctors to comply with guideline drug dosing for haemofiltration	Retrospective analysis of medication details of 145 ICU patients requiring haemofiltration
Smalley (2006)	Patients' experiences of pharmacist-led SP included: better understanding of their condition, better care and involvement in their treatment.	Convenience sample of patients from one UK SP hypertension clinic: 111/127 returned questionnaire.
Warchal *et al* (2006)	Pharmacists skills, challenge, patient and profession benefits all reasons for taking SP course but access to records a barrier. IP an eventual aim and a threat to SP	38 pharmacists who had completed SP training given postal questionnaire and interviewed.
Weiss *et al* (2006)	Pharmacists positive about SP as challenge and benefit for patient but communication issues, clinical examination skills, doctors' and patients' lack of awareness of SP and delays in prescribing all concerns	23 semi-structured pharmacist SP interviews and 5 case studies involving interviews with 7 doctors, 5 pharmacists, 3 nurses, 10 patients and other staff
While *et al* (2004)	Community pharmacists' views on SP positive in increasing knowledge, job satisfaction, patient benefits but time and medical record access concerns.	127/238 (53.4%) pharmacists from 5 PCT areas responded to self-report postal questionnaire Postal questionnaire survey

Empirical nurse supplementary (and relevant other) prescribing studies

AUTHOR(S)	STUDY DESCRIPTION/RESULTS	METHOD
Avery *et al* (*2004)*	Doctors' views on supervision of nurse prescribers: positive impressions but concerns about time/remuneration emerged. pre-existing nurse/doctor relationships helped.	Structured telephone interviews with 6 hospital doctors and 6 GPs
Bradley *et al (2006)*	Lecturers' experiences of teaching nurse prescribing. Concerns raised about selection criteria, pharmacology knowledge and integrating SP to course. Student/lecturer feedback needed	Qualitative semi-structured interviews with 8 lecturers from 4 HEI institutions
Berry *et al* (2006)	Attitudes and informational needs of public in relation to nurse SP. Public had confidence of nurse SP but wanted medicines information, esp. side effects.	Questionnaires completed by convenience sample of 74 members of UK public (with no previous experience of nurse prescribing).
Courtenay *et al* (2006)	Preparing nurse prescribers to prescribe for dermatological conditions: only 36.7% of nurses practicing SP and specialist training considered advantageous	868/1187 (73%) postal questionnaire responses from convenience sample of IESP nurses.
Courtenay *et al* (2007)	Nurse prescribers confident in mentoring prescribing students. Sample mostly primary care IP nurses with degrees and >10 years experience, but few doing SP.	868/1187 (73%) postal questionnaire responses from convenience sample of IESP nurses.
Courtenay *et al* (2007)	Nurse prescribers practices and factors influencing & inhibiting prescribing: IT access, CMP problems and lack of access to continuing professional development	868/1187 (73%) postal questionnaire responses from convenience sample of IESP nurses.
Gray *et a l* (2005)	Directors positive about nurse SP but questioned training and readiness of mentors.	Postal questionnaire involving 45 NHS trust directors of nursing in

	Perceived medical acceptance.	England, focusing upon SP in psychiatric setting
Hay *et al* (2004)	All broadly supportive of nurse SP but confused over roles, implementation and disruption to team functioning. Perception Sp formalises existing hospital practices.	5 Focus groups with 46 clinical teams members: 22 nurses, 8 doctors, 8 occupational therapists, 6 psychologists and 2 social workers
Hemingway (2005)	Perceptions and demographic details of mental health nurses considering SP training	Opportunistic sampling of 89 nurses (from a UK conference and from universities providing SP training)
Hobson and Sewell (2006)	Implementation of SP. Nurse SP slower in secondary care but many involved in primary care. No national strategy	Postal questionnaire of chief pharmacists in 186 primary and 97 secondary care settings.
James (2004)	SP for hospital diabetic patients led to reduced waiting times, less variability in healthcare professional seen by patient. No errors were reported for 51 prescriptions	Convenience sample of 42 inpatients over 6 months on one ward. 9 patient, 19 staff questionnaires returned and some clinical glycaemic outcome measures recorded
Jones (2006)	Potential reform of hospital psychiatric care using nurse SP: nurses and psychiatrists positive about SP but new partnerships and organisational change needed	6 focus groups involving 19 nurses and 7 psychiatrists from one psychiatric hospital unit
Jones [2006)	SP Nurse and psychiatrist relationships: new one needed, based on mutual respect and task delegation. Paradoxical nurse policing but medical control perceived with SP.	6 focus groups involving 19 nurses and 7 psychiatrists from one psychiatric hospital unit
Jones *et al* (2005)	Service users thought nurses listened, gave medicines' info and allowed focus on collaboration; psychiatrics felt less pressure and thought teams more knowledgeable.	Unspecified interviews to elicit experiences of 11 mental health service users, 12 psychiatrists and 11 nurse prescribers regarding SP
Skingsley *et al* (2006)	Training mental health nurse prescribers about neuropharmacology led to increased understanding and confidence but that prescribing generally needed existing skills such as communication and empathy	Undisclosed method collected feedback from undisclosed number of nurses completing prescribing course

Empirical nurse and pharmacist supplementary (and relevant other) prescribing studies

AUTHOR(S)	STUDY AIMS/RESULTS	METHOD
Buckley *et al* (2006)	Hospital stakeholders' perspectives on nurse and pharmacist prescribing: all broadly supportive but nurses lacking pharmacology skills, pharmacists' diagnostic skills/patient knowledge.	Qualitative semi-structured interviews with 15 stakeholders – doctors, nurses, pharmacists, managers, directors - in one NHS trust in the secondary care, hospital setting
Hobson and Sewell (2006)	Pharmacists' perceived risks and concerns about SP included training needs, competencies, responsibilities and positive implementation approach.	Postal questionnaire of chief pharmacists in primary and secondary care settings about nurse and pharmacist SP
Department of Health (2007) research conducted by National Prescribing Centre.	CMPs should refer to protocols/guidelines and have to be simple & quick else SP not worth the effort. Remote relationships hard and need access to electronic records.SP may not work for patients with multiple carer/disease	Scoping study with undisclosed numbers of pharmacists, nurses and doctors given hypothetical cases to develop CMPs

11.2 Appendix B – Stakeholder interviews.

Sample (n=43)

Nurse Supplementary Prescribers: Primary Care (surgery/community) Secondary Care (hospital)	 5 3
Pharmacist Supplementary Prescribers: Primary Care (doctors' surgery) Secondary Care (hospital)	 5 3
Strategic health authority prescribing lead Strategic health authority non-medical prescribing lead PCT non-medical prescribing leads Clinical lead (NB two of these stakeholders were former roles)	1 1 2 1
Representative of Professional Indemnity Insurance Provider	1
Patients' Group Representative	1
Representative of Consumer Organisation	1
Academics (involved in SP research)	2
Higher Education Institution (university) prescribing course: Lecturers Course leaders	 4 4
Representatives of nursing organisations	2
Involved in policy: Policy stakeholders varied in terms of their role and seniority and although specific details cannot be given (to protect anonymity), they included a national clinical director, the chair of a professional executive committee (involved in primary care policy), the chair of a primary care group, a representative from the National Prescribing Centre and a regional programs manager. Three were also general medical practitioners and one had been involved as a designated medical practitioner for nurses prescribing training.	7

Stakeholder interview questions examples

- What do you see as the key issues for SP in nursing and pharmacy and non-medical prescribing more generally?
- What is your overall view of how SP has been implemented?
- What is your view on the appropriateness of SP training and on-going support?
- How do you think SP has developed over time?
- How do you see SP developing in the future?
- Do you think SP raises particular issues in relation to safety and if so, what are these?
- Do you think SP raises particular issues in relation to multi-disciplinary working and if so, what are these?
- What impact do you think that SP is going to have or already has had upon prescribing costs?
- Do you think that SP might raise issues about professional rivalry or boundary encroachment?
- What is your view about the development and use of CMPs?
- How might CMPs be improved?

11.3 Appendix C – Survey of Nurse and Pharmacist Supplementary Prescribers

Example of Survey Questionnaire
(Spacing changed for brevity compared to that sent. Nurse questionnaire varied only in replacement of 'pharmacist' for 'nurse' throughout.)

The University Of Sheffield.	National Survey of Pharmacist Supplementary Prescribers	The University of Nottingham

Please read the following three boxes and respond accordingly.

If you are willing to complete the questionnaire

Please answer all of the questions to the best of your knowledge.
If there are any questions that you are unsure of, please leave them blank.

If you are not willing to complete the questionnaire

Please return the questionnaire in the enclosed FREEPOST envelope uncompleted

If you are registered as a supplementary prescriber but are not prescribing
I am a registered supplementary prescriber but am not currently prescribing

Reasons why you are not prescribing
……

Please also complete Section One and Section Two

Section One: About you

Firstly, we would like to ask you some questions about you, your background, your job and your prescribing.

1. Are you:	Male	•			Female	•
2. How old are you?	20-29	•	40-49	•	60-65	•
	30-39	•	50-59	•	66+	•

3. In what year did you register as a pharmacist?

4. Which of the following qualifications do you have? Please tick all that apply.	BPharm	•	PG Diploma/ Masters Degree	•
	MPharm	•	Doctoral Degree	•
	Bachelors Degree	•	Other	•
	Other, please specify			

5. What is your job title(s)?

6. Where do you prescribe? Please tick all that apply.	Hospital	•	Walk in centre	•
	GP practice	•	Care homes	•
	Community Pharmacy	•	Prison	•
	Other, please specify			

7. Please indicate your total income.	Less than £20,000	•	£41,000-£50,000	•
	£21,000-£30,000	•	£51,000-£60,000	•
	£31,000-£40,000	•	More than £60,000	•

8. How many hours do you work per week?

9. Are you prescribing as a supplementary prescriber?	Yes	•	No	•

10. When did you register as a supplementary prescriber?	Month	Year

11. When did you start supplementary prescribing?	Month	Year

12. How many hours do you spend per week as a supplementary prescriber?

13. In relation to independent prescribing, please tick the box that best applies to you.	I am prescribing as an independent prescriber	•
	I am training as an independent prescriber	•
	I am intending to train as an independent prescriber	•
	I am not intending to train as an independent prescriber	•

Section Two: Training

We would like to ask you some questions about the training you received in order to become a supplementary prescriber.

14. For each statement below, please tick the box that best matches your current views:

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
My supplementary prescriber training was useful					
My supplementary prescriber training provided the knowledge I needed in order to prescribe appropriately					
My supplementary prescriber training provided the skills I needed in order to prescribe appropriately					
My Designated Medical Practitioner (DMP) fulfilled the role expected of them					
Independent and supplementary prescribers should be taught separately					

15. What were the most useful elements of your supplementary prescriber training?

16. What were the least useful elements of your supplementary prescriber training?

17. What areas would you have liked to cover in your supplementary prescriber training?

Section Three: Support

We would like to ask you some questions about the support you receive in your supplementary prescribing role.

18. For each statement below, please tick the box that best matches your current views:

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

I am satisfied with the advice and support I receive regarding my prescribing decisions					
I am satisfied with the overall level of support I receive from my organisation in my prescribing role					
My supplementary prescribing decisions are regularly monitored					

19. How often do you have a session to review your supplementary prescribing practice with an independent prescriber?	Once a week	•
	Once a fortnight	•
	Once a month	•
	Once every three months	•
	Once every six months	•
	Once a year	•
	Never	•

20. How long do you spend reviewing your supplementary prescribing practice (per session)?

21. Can you describe how your supplementary prescribing practice is reviewed?

22. Overall, can you provide us with your views about the support you receive as a supplementary prescriber?

Section Four: Your supplementary prescribing role

We would now like to ask you about your supplementary prescribing role, in terms of what you do, your opinions about supplementary prescribing and what works well and what works less well for you as a supplementary prescriber.

23. Which patient group(s) do you prescribe for?

24. In which BNF section(s) do you prescribe?

Gastro-intestinal system	•	Nutrition and blood	•
Cardiovascular system	•	Central nervous system	•
Anaesthesia	•	Eye	•
Respiratory system	•	Ear, nose, and oropharynx	•
Infections	•	Skin	•
Endocrine system	•	Musculoskeletal and joint diseases	•
Obs, gynaecology and urinary-tract	•	Malignant disease and immunosuppression	•
Minor ailments	•	Wound management products	•
Immunological products and vaccines	•	Other	•

If required, please give further details about the BNF sections in which you prescribe.

25. Please list the three (drug and non drug) items that you most frequently prescribe.

1…… 2…… 3……

26. Do you have access to patients' medical records when you prescribe for them?	Yes	•	No	•
If you do not have access to patients' medical records, please explain the impact?				

27. When you prescribe, do you use a Clinical Management Plan?	Yes	• No •

28. When you prescribe, are Clinical Management Plans used for? Please tick all that apply.	All patients	•
	Some patients	•
	No patients	•

29. Are the Clinical Management Plans you use developed for? Please tick all that apply.	Individual patients	•
	Groups of patients	•
	Specific conditions	•
Other, please specify		

30. Are the Clinical Management Plans that you prescribe from? Please tick all that apply	Drug specific	•
	Guideline specific	•
	Protocol specific	•
	Other, please specify……	

31. On average how many patients do you prescribe for on a recurring basis?

32. On average how many prescriptions do you issue per week?

33. On average how long do you spend with each patient for whom you are a supplementary prescriber?

34. How many independent prescribers do you work with?

35. How many other supplementary prescribers operate in your work setting?

36. Do you prescribe instead of, or in addition to the independent prescriber for the same group of patients?	Instead of	•	In addition to	•

37. As a result of your supplementary prescribing practice, do you think that doctors are prescribing …	Less	•	The same amount	•	More	•

38. Do you undertake independent prescribing for any patient groups?	Yes	•	No	•
If yes, which groups				

39. For each statement below, please tick the box that best matches your current views:

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I am confident to prescribe the appropriate treatment for patients					
I am confident to prescribe the correct dosage for patients					
I am confident to identify drug related problems for patients					

Clinical management plans are a useful aid to my decision making about supplementary prescribing					

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I am confident to identify drug interactions for patients					
I have sufficient knowledge of pharmacology and therapeutics to prescribe safely					
I am confident to prescribe for patients with co-morbidities					
Being a supplementary prescriber formalises the practice I was undertaking before I trained					
I have greater autonomy now I am a supplementary prescriber					
My pay has not increased as a result of being a supplementary prescriber					
As a supplementary prescriber I have higher status in my organisation					
Being a supplementary prescriber makes my job more satisfying					
I do not have the clinical examination skills to be a safe supplementary prescriber					

40. What do you think works well in terms of your supplementary prescribing?

41. What difficulties have you experienced in supplementary prescribing?

42. Please comment on the influence that supplementary prescribing has had on your relationships with colleagues?

Section Five: Supplementary prescribing and safety

The following questions look at the safety of supplementary prescribing and the safety of the wider environment in which you work. They include elements of the Safety Climate Questionnaire.

43. For each statement below, please tick the box that best matches your current views about the area in which you work.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

The independent prescriber is available to discuss patients needs when required					
Clinical management plans are inappropriate for patients with short term conditions					
I have concerns about prescribing for patients who have co-morbidities					
I am asked by *colleagues* to prescribe in an area outside my competence					
I am asked by *patients* to prescribe in an area outside my competence					
I have concerns that I am prescribing outside my area of competence					
The levels of staffing in this area of the organisation are sufficient to handle the number of patients.					
I would feel safe being treated as a patient in this service.					
I am encouraged by my colleagues to report any patient safety concerns I may have.					
Staff frequently disregard rules or guidelines that are established for this area of the organisation.					
The culture in this area of the organisation makes it easy to learn from the errors of others.					
I receive appropriate feedback about my performance.					
Medical errors are handled appropriately here.					
I know the proper channels to which I should direct questions regarding patient safety.					
In this area of the organisation, it is difficult to discuss errors.					
Management does not knowingly compromise the safety of patients.					
This organisation is doing more for patient safety now than it did one year ago.					
Leadership is driving us to be a safety-centred organisation.					
My suggestions about safety would be acted upon if I expressed them to management.					

Section Six: The impact of supplementary prescribing in your organisation

44. For each statement below, please tick the box that best matches your current views:

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Patients are aware of what supplementary prescribing entails					

I provide my patients with information about supplementary prescribing					
Patients are not involved in designing their own Clinical Management Plans					
I am satisfied that patients give their informed consent to being treated by a supplementary prescriber					
Patients have longer consultation times with supplementary prescribers as compared to independent prescribers					
Patients receive better quality care from supplementary prescribers as compared to independent prescribers					
Supplementary prescribing has improved my relationships with patients					
Supplementary prescribing has improved patients compliance with treatment					
I involve patients in prescribing decisions					
Patients are not aware of who is ultimately responsible for their care					
Patients are not aware of who is ultimately responsible for their prescribing					
Supplementary prescribing has led to patient care becoming fragmented					
Supplementary prescribing increases prescribing costs					
Supplementary prescribing increases non prescribing costs					
My organisation has been supportive of the supplementary prescribing role in general					
My organisation has facilitated the supplementary prescribing role in practice					

45. Do you have any other opinions about supplementary prescribing

Case Studies of Pharmacist Supplementary Prescribers

Following on from this national survey of supplementary prescribers in pharmacy, in depth case studies of supplementary prescribers will be undertaken. These will involve interviews and/or surveys with staff and patients and observation of supplementary prescribing consultations.
If you are interested in taking part in an in depth case study, then please supply your contact details below. A member of the research team will contact you to discuss what participation will involve. If you supply your contact details this does not mean that you have to take part. You can withdraw from the study at any time.

I am interested in taking part in a case study
Name ……..Email, Telephone number……..

Please return the questionnaire in the enclosed FREEPOST envelope

Distribution of nurse surveys

Institution	Number distributed	Number returned	Response rate
A	132	60	45%
B	282	138	49%
C	170	44	26%
D	77	54	70%
E	70	18	26%
F	100	36	36%
G	150	3	2%
H	87	23	26%
I	45	10	22%
J	58	15	26%
K	60	29	47%
L	125	42	34%
M	147	38	26%

11.4 Appendix D – Case Studies of Supplementary Prescribers

Example of information sheets - to patients in case studies

The University Of Sheffield.

The University of Nottingham

An evaluation of supplementary prescribing in nursing and pharmacy
Information Sheet II – Patients – Observation and questionnaire
Version 2 – 15.05.07

Please read the following information carefully. It gives details on the overall evaluation of supplementary prescribing as well as the case studies which we are inviting you to participate in. If you have any questions then please contact Dr. Richard Cooper 0114 2220683. In this information sheet we are providing information regarding observation of appointments.

What is the purpose of the study?

The Department of Health have commissioned a team of researchers at the University of Sheffield and the University of Nottingham to undertake an evaluation of supplementary prescribing in nursing and pharmacy. The purpose is to examine the impact of supplementary prescribing on patients, health care professionals and the wider NHS. The study started in February 2006 and will last for two years.

How is the study being undertaken?

The study has three stages
Stage One - An analysis of key literature in the area and a small number of interviews to look at some key issues in the development of supplementary prescribing.
Stage Two - A national survey of nurse and pharmacist supplementary prescribers.
Stage Three - In-depth case-studies of nurse and pharmacist supplementary prescribers.

What is involved in the case studies?
We are undertaking 12 case studies of supplementary prescribers. These will involve observation, questionnaires and interviews. They will involve both nurse and pharmacist supplementary prescribers who prescribe for patients with different conditions.

How will data be collected?
We are using a number of different methods to collect data from both patients and NHS staff. We are observing the consultations between patients and supplementary prescribers and analysing the clinical management plans for these consultations. We are also asking patients to complete a questionnaire and asking some patients to be interviewed. In addition, we are interviewing the supplementary prescriber and the doctor that drew up the clinical management plan with the supplementary prescriber

What will participation involve if I decide to take part?
We would like to be present during your next appointment with the supplementary prescriber. We are interested in looking at how the supplementary prescriber works. We would like to tape record the appointment and make notes. We would not get involved in the appointment in any way. Following the appointment we would like to have a look at the clinical management plan that the supplementary prescriber uses during your appointment.

We would ensure that none of the data that we collect could identify you as an individual. The data that we are collecting is about the supplementary prescriber only.

Are there any other stages that you would like me to participate in?
We would also like you to complete a short questionnaire about your views, experiences and satisfaction with supplementary prescribing. We would ensure that none of the data that we collect could identify you as an individual. The data that we are collecting is about the supplementary prescriber only.

Will participation in this study be confidential?
All information about participation in this study will be kept confidential. Personal information will not be recorded as part of the observation. If your name is on the clinical management plan then this will be concealed. The procedures for handling, processing, storage and destruction of all data will comply with the Data Protection Act 1998. All data that could identify participants will be coded and used for this research study only. Access will be limited to trained researchers who are part of the research team.

Who is organising and funding the research?
The research is being funded by the Department of Health and is being carried out by researchers from the University of Sheffield and the University of Nottingham.

What will happen to the results of the research study?
The findings of this research will be written up and submitted to the Department of Health. The results may also be published in academic and professional journal articles. You will not be identified in any report/publication.

Who has reviewed the study?
This study was given a favourable ethical opinion for conduct in the NHS by Leeds Multi-Research Ethics Committee and has received local trust governance approval.

What if there is a problem?
If you have a concern about any aspect of this study, you should speak with the study leader (Dr Paul Bissell 0114 2220831). If you remain unhappy and wish to complain formally, you can do this through the NHS Complaints Procedure.

What do I have to do?

If you are willing for the researcher to be present during your next appointment, please could you complete the attached details form and return it in the freepost envelope enclosed. When you attend your appointment you will be asked to sign a consent form to say that you are happy to have the researcher present. If you are not able to let us know that you agree to the researcher being present beforehand, please turn up to your appointment as planned. The researcher will not sit in on the appointment unless you agree to it.

If you are willing for the researcher to be present at the appointment then we will give you a short questionnaire and if you are willing to take part then please complete the questionnaire and return it to us in the enclosed FREEPOST envelope. You do not require a stamp. If you are not willing to take part then this will not affect your medical care or legal rights.

Thank you for your consideration of our study and for your time in reading this information sheet. If you have any additional questions then please do not hesitate to contact us,

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Example letter of invitation - to patients for case study

Dear [insert name of patient]

We are writing to you to ask you whether you would be willing to participate in a research study. The research study is looking at the role of supplementary nurse/ pharmacist prescribers and we are undertaking a case study with [insert name of supplementary prescriber]. This study is being funded by the Department of Health who have asked researchers from the University of Sheffield and the University of Nottingham to evaluate supplementary prescribers like [insert name of supplementary prescriber].

We have asked [insert name of supplementary prescriber] to pass on this letter to you to ask whether you would be willing to have a researcher sit in on your next appointment with [insert name of supplementary prescriber]. The researcher would not be involved in the appointment. They would be observing the appointment, making notes and recording the conversation during the appointment. Also, we would like to have a look at the Clinical Management Plan which records the treatment and care that you receive from [insert name of supplementary prescriber]. Once you have attended your appointment we will give you a questionnaire about your views, experiences and satisfaction with the supplementary prescribing service. It is up to you whether you complete this or not. We will then be inviting some of the patients who have completed the questionnaire to be interviewed about supplementary prescribing. Please find included an information sheet which gives some additional details about the study. We would like to emphasise that it is up to you whether you take part and if you do then this will be confidential.
If you are willing for the researcher to be present during your next appointment, please could you complete the attached details form and return it in the freepost envelope enclosed. When you attend your appointment you will be asked to sign a consent form to say that you are happy to have the researcher present. If you are not able to let us know that you agree to the researcher being present beforehand, please turn up to your appointment as planned. The researcher will not sit in on the appointment unless you agree to it.

Please take time to read the information sheet to decide whether you would be prepared to have the researcher sit in on your next appointment. Please contact either the researcher or [insert name of supplementary prescriber] if you have any questions.

Yours sincerely

Paul Bissell
Principal Investigator on behalf of the Research Team

Interview Schedule for Patients

- What do you understand by the term supplementary prescribing?
- What is your impression of nurse/pharmacist supplementary prescribing?
- What have been the positive or most beneficial aspects?
- What have been the negative aspects?
- Were you given the opportunity to consent to having a nurse/pharmacist provide supplementary prescribing?
- How does supplementary prescribing compare with your previous or usual medical encounters?
- Has your experience of supplementary prescribing had an effect upon how you take your medicines? If so, how?
- With supplementary prescribing, is it now easier to access medical care?
- Has supplementary prescribing had an effect upon your relationship with a) your doctor, b) your pharmacist/nurse c) anyone else?
- Why do you think supplementary prescribing has been introduced?
- What do you understand by the term 'clinical management plan'?
- Has supplementary prescribing had an effect on how long your consultations lasted or how long it took to obtain an appointment? Is so, how?
- What are your views on nurses/pharmacists having access to your medical record?
- What are your views on the safety of supplementary prescribing by nurses or pharmacists?
- What changes or improvements could be made to supplementary prescribing to make it better?

Interview Schedule for Independent prescribers

- What do you understand by the term supplementary prescribing?
- What have been your experiences overall of supplementary prescribing?
- What have been the positive or most beneficial aspects?
- What have been the negative aspects?
- Has supplementary prescribing changed your relationships with either the pharmacist/nurse or patient? If so, how?
- In terms of your workload, has supplementary prescribing had any effect? Approximately how long do you spend in consultations and feedback sessions with the supplementary prescriber
- What changes or improvements could be made to supplementary prescribing to make it better?
- What are your experiences of the clinical management plan?
- Are there any safety issues in relation to supplementary prescribing?
- Why do you think supplementary prescribing has been introduced?
- Does supplementary prescribing interfere with any other area of your work?
- Is supplementary prescribing a threat to medical practice? If so, how?
- Where do you think supplementary prescribing consultations should be held and why? Are there situations/places where it would be inappropriate (such as community pharmacies)?
- Do you consider either nurses or pharmacists to be better suited to a supplementary prescribing role? Is so, why?
- How important are financial considerations in terms of doctor's participation in supplementary prescribing?
- What are your views on nurses/pharmacists having access to patients' medical record?

Interview Schedule for Supplementary prescribers

- Check basic information that was included in the questionnaire (Their job title, caseload of patients, approximate number of prescriptions per week, length of time in post, length of time supplementary prescribing and history of their supplementary prescribing, involvement in independent prescribing
- Estimates of length of time spent in consultations and feedback sessions
- Why did you decide to become a supplementary prescriber?
- How did you find the training to become a supplementary prescriber – most and least useful aspects?

- What are your CPD requirements in relation to supplementary prescribing?
- What have been your experiences overall of supplementary prescribing?
- What have been the positive or most beneficial aspects?
- What have been the negative aspects?
- Has supplementary prescribing changed your relationships with independent prescribers?
- Has supplementary prescribing changed your relationships with supplementary prescribers?
- In terms of your workload, has supplementary prescribing had any effect? Approximately how long do you spend in consultations and feedback sessions with the independent prescriber
- What changes or improvements could be made to supplementary prescribing to make it better?
- What are your experiences of the clinical management plan?
- Do you have any problems accessing patient's medical records?
- Are there any safety issues in relation to supplementary prescribing?
- Why do you think supplementary prescribing has been introduced?
- Does supplementary prescribing interfere with any other area of your work?
- Is supplementary prescribing a threat to medical practice? If so, how?
- Where do you think supplementary prescribing consultations should be held and why? Are there situations/places where it would be inappropriate (such as community pharmacies)?
- Do you consider either nurses or pharmacists to be better suited to a supplementary prescribing role? If so, why?

Nurses and pharmacists contacted but unable to participate in a case study

Profession	Pseudonym	Reason
Nurse	Jayne	Independent Prescriber only
Nurse	Gloria	Independent Prescriber only
Nurse	Doris	Independent Prescriber only
Nurse	Martha	Independent Prescriber only
Nurse	Simon	Did not respond to invitation to participate
Nurse	Sally	Did not respond to invitation to participate
Nurse	Janice	Independent Prescriber only
Nurse	Tina	Independent Prescriber only
Nurse	Vanessa	Independent Prescriber only
Nurse	Derek	Did not respond to invitation to participate
Nurse	Carly	Independent Prescriber only
Nurse	Janet	Independent Prescriber only
Nurse	Sandra	Independent Prescriber only
Nurse	Chris	Independent Prescriber only
Nurse	Arthur	Working in mental health
Nurse	Lois	Governance obtained but withdrew due to work demands
Pharmacist	Carolyn	Independent Prescriber only
Pharmacist	Phillipa	Independent Prescriber only
Pharmacist	Jack	PCT did not give permission for him to take part in the research
Pharmacist	Carmel	Governance obtained but withdrew as now independent prescriber

Case Study by data collected

Case Study	Prescriptions	Items	Consultations	Patient questionnaire	Patient interviews	Doctor interviews
Mark	3	4	7	5	3	0
John	9	15	5	13	5	2
Debbie	14	8	10	4	0	1
Jane	1	1	7	2	0	0
Natalie	0	0	4	1	0	1
Anita	9	8	9	3	1	2
Grace	10	10	10	5	3	1
Sam	7	8	7	3	1	1
Lara	3	3	6	0	5	2
Kim	9	14	12	8	10	1
Totals	65	71	77	44	28	11

Case study descriptions

Mark worked in a busy town in the North of England and was employed by, and worked full-time in, a medical practice in the town centre, along with a nurse prescriber. The pharmacist was qualified as a supplementary and independent prescriber, but considered the prescribing he undertook for patients with a number of clinical conditions to be supplementary. However, he used only one generic CMP that briefly listed a wide range of conditions (ranging from hypertension, cardiovascular disease, COPD to smoking cessation). This pharmacist also did not sign any prescriptions but, instead, initiated or changed medication, but then printed the prescription, which was given to the patient to hand to the receptionist for one of the doctors to sign. The pharmacist had his own permanent consultation room which was highly personalised, with qualification certificates, pictures and reference books.

John worked across three surgeries in rural locations in the North of England as a practice support pharmacist. He was employed by the PCT. He qualified as a supplementary prescriber in 2004 and intended to train as an independent prescriber. Before becoming a prescriber, he was already known to all three surgeries as a PCT employed practice support pharmacist. He specialised in cardio-vascular disease, hypertension and chronic obstructive airways disease using an individualised CMP. He signed prescriptions for patients for conditions within his clinical competencies and he also printed repeat prescriptions for patients of medicines prescribed by doctors, which then had to be signed by the GP. He did not have a specific consultation room in either location and was observed using the office of the senior medical partner and the generic nurses' examination room. At both locations, he would go out into the waiting area and call patients in. it was apparent that the prescriber had developed long-term relationships with many of the patients whom he saw over the two days.

Debbie worked across three surgeries in town and village locations in the North of England as a pharmacist supplementary prescriber and medicines management pharmacist. She was employed by the PCT. She qualified as a supplementary prescriber in 2004 and was, at the time of the consultation, undertaking her independent prescriber training. She had previously worked in some of the practices where she was a supplementary prescriber undertaking medicines review. Debbie specialised in cardiovascular conditions, but also undertook prescribing for osteoporosis and anti-depressant medication. She used a condition specific CMP which was personalised with patient details and an electronic copy was appended to patients' records. She was able to print out and sign prescriptions in the surgery in which she was based for the case study, although much of the observed practice was altering medication records and ordering repeat prescriptions. She did not have a specific consultation room in the practice in which she was observed and was using the room of a doctor. She would collect patients from the waiting area.

Jane, a pharmacist was based in a metabolic medicine department in a hospital in the North of England

She provided a 2.5hr session one day a week, working alongside a full-time independent prescribing nurse. The pharmacist qualified as a supplementary prescriber in 2005, and was intending to train as an independent prescriber. All the pharmacists' patient referrals came originally from the consultant. The pharmacist noted that it was trust policy encourage primary care rather than secondary care prescribing, thus of seven consultations observed, only one resulted in an act of prescribing. The pharmacist had developed one generic CMP which was used for all patients. These were usually only signed by the pharmacist and the consultant *after* the pharmacist-patient consultation and after any prescribing. The pharmacist was a lead clinical pharmacist and spent the remainder of their time as a manager in the pharmacy department and had previously provided supplementary prescribing in another therapeutic area, although the need for this service stopped some time ago. For almost all the observed consultations, the pharmacist and patient had not met before. The pharmacist used a generic examination room, which had computer access to diagnostic records but A4 paper based patient notes were used - the CMP was added to this. In the waiting area a sign alerted patients that they might not be prescribed for by the consultant.

Kim worked in the primary care setting in a town centre surgery in the Midlands. The surgery had four GPs and a practice nurse, but no other non medical prescribers. She was a pharmacist, who qualified as a supplementary prescriber in 2005. She had recently completed the independent prescribing course and was awaiting accreditation and intended to use independent rather than supplementary prescribing in subsequent practice. She was employed by the PCT and had previously worked at the surgery as a practice support pharmacist. She was observed undertaking hypertension clinics. A sign in the reception area noted the names of the doctors and the nurse and whether they were present or not, but the name of the pharmacist prescriber was absent. The pharmacist used a generic examination room, which was located on an upper floor in the practice. The room had computer and medical records access. Most patients were known to the prescriber and vice versa. CMPs were produced for one generic hypertension template prior to the pharmacist consultation and uploaded subsequently onto the patient's electronic notes. Specific sensitivities were added at this stage and electronic signatures were used for the pharmacist and doctor. She printed out prescriptions using the computer in the consultation room, however this set up did not allow her to access the computer for ordering tests etc, so on one observed occasion she set up the computer to access test information and hand wrote her prescriptions.

Anita was a nurse working in a hospital dermatology department, located in the Midlands. She was qualified as a supplementary and independent prescriber, but chose to work with a clinical management plan and defined herself as a supplementary prescriber. She undertook a weekly morning prescribing outpatient clinic, for which patients were booked in a month in advance. The remainder of her time was divided between ward managerial duties and clinical work and during the prescribing consultations, she was asked to assist with work related to dressings. Clinics were undertaken within the dermatology departments in a consultation room. She had a laminated sign which was placed on the door of the room in which she was consulting. Four separate CMPs had been prepared and kept on file in relation to the 4 medicines that the nurses prescribed. However, patient-specific CMPs were not made and no copies were added to patients' notes or signed by doctors. She issued prescriptions for dispensing at the hospital pharmacy which were handwritten.

Sam was a nurse working in the primary care setting, in a substance misuse centre in a city in the North of England. She undertook a weekly afternoon prescribing session and the remainder of her full-time work was managerial in nature. She was qualified as an independent and supplementary prescriber, but due to the fact she was prescribing a controlled drug, she prescribed using a clinical management plan. The clinic the nurse undertook was mainly to oversee the titration and detoxification of substance misusers, following an initial diagnosis and consultation with the doctor, usually the week prior to the nurse's first contact with the patient/client. One standard CMP had been developed some months ago by the nurse in conjunction with one of the doctors, who worked full-time at the centre. At the start of a consultation with a new patient/client, the nurse discussed the CMP and both she and the patient/client signed it. It was subsequently signed by the doctor and added to the patient's paper records. Sam printed out controlled drug prescriptions which were checked and then returned to her for signing.

Grace was based in the primary care setting, and worked as a nurse substance misuse specialist, who had worked for many years in this area of practice, but who had begun a prescribing role in the last two years. She was employed full-time in a busy clinic located in a deprived area just outside the centre of a large city in the Midlands. Within the clinic, no member of staff had a permanent room in which they worked. There were no other nurse prescribers working at the clinic but several doctors- often GPs - who undertook sessional work. Other nurses performed wound management services at the site. She was qualified as an independent and supplementary prescriber, but due to the fact she was prescribing a controlled drug, she prescribed using a clinical management plan. Two generic CMPs had been developed - for buprenorphine and methadone -which were stored electronically and the patient's records annotated to reflect a doctor's agreement to let the patient be seen by a supplementary prescribing nurse. The nurse also prescribed independently, using antibiotics when running wound clinics and also when prescribing, although rarely, naltrexone. Patients were usually known to the nurse and either involved referrals from another doctor, or were initial consultations - therefore without an initial medical diagnosis. Prescriptions for controlled drugs were printed out in the room in which she worked and signed by her.

Natalie worked in a hospital in the South of England as a consultant pharmacist. She qualified as a supplementary prescriber in 2004 and an independent prescriber in 2007. Her role is mostly managerial, but at the time of the case study she prescribed as a supplementary prescriber in once clinic per week and as an independent prescriber in another clinic. In the supplementary prescribing clinic observed, she had made a decision to prescribe in accordance with a clinical management plan due to the nature of the drug being prescribed. Within this clinic, there is a consultant, who prescribes for patients and a nurse who does not prescribe. Patients are not usually allocated to the pharmacist in advance of the clinic but allocation of patients is undertaken when the patient arrives. None of the staff who work within the clinic have a designated room in which they see patients. Clinical management plans are personalised for patients and a paper copy added to patients notes. During the consultation, Natalie makes notes in the medical records. Prescribing for patients is undertaken prospectively, therefore in the observed consultations; Natalie was ensuring that the patient could receive the medication that they had been prescribed in their previous consultation and prescribing for their next consultation.
Prescribing is done electronically and patients collect their prescription from the hospital pharmacy.

Lara is a Nurse Specialist, working in a hospital in a city in the North of England. She is part of a team of who run a specialist service for children with neuro-developmental conditions. She is qualified as an independent and supplementary prescriber in 2005, but prescribes according to a clinical management plan as she prescribes controlled drugs. She prescribes within three clinics a week, alongside the consultant clinics and was running these clinics, without prescribing, before she became qualified. She specialises in prescribing for a small number of conditions with a small number of drugs available. She uses a CMP which is signed by the consultant and is kept in the patients records. A copy is also kept for audit purposes. The majority of patients are prescribed for by their GP practice, rather than by the hospital, but for any changes in medication or initiation of new medicines, Lara issues handwritten controlled drug prescriptions.

Data from patient questionnaires

Variable	Supplementary Prescriber	Doctor	Don't know
I can get an appointment quicker with the …	17	5	16
I have longer appointments with the …	24	5	8
I receive better quality care from the …	13	3	16
I receive safer care from the …	9	3	18
I am monitored better by the …	18	4	12
I am better informed about my treatment by the	23	3	10
My overall care is the responsibility of …	7	24	3

Variable	Agree	Disagree	Don't know
It was explained to me what having a supplementary prescriber would involve	34	4	3
I am involved in decisions about the treatment I receive from my supplementary prescriber	37	2	0
I have been given written information about having a supplementary prescriber	22	14	4
I have a written plan for my treatment by the supplementary prescriber	15	15	6
I was involved in designing my written plan for my treatment by the supplementary prescriber	14	18	2
I understand my written plan for my treatment by the supplementary prescriber	16	14	4
I signed my written plan for my treatment by the supplementary prescriber	14	15	6
I gave my consent to being treated by a supplementary prescriber	37	2	2
I have a good relationship with my supplementary prescriber	41	1	0
I have confidence in my supplementary prescriber	40	1	0

MARS	Always	Often	Sometimes	Rarely	Never
I forget to take them	0	0	4	11	27
I alter the dose	0	0	1	0	41
I stop taking them for a while	0	1	1	1	39
I decide to miss out a dose	0	0	2	1	39
I take less than instructed	0	0	0	1	41

MARS_5 RH2_022 Medication Adherence Report Scale _5 ©R Horne University of Brighton, 1999

Information about your medicines	Too much	About right	Too little	None received	None needed
What your medicine is called	1	25	0	0	7
What your medicine is for	0	30	0	0	4
What it does	0	31	0	0	4
How it works	0	26	4	0	4
How long it will take to act	0	22	2	1	8
How you can tell if it is working	0	19	2	2	8
How long you will need to be on your medicine	0	21	3	1	5
How to use your medicine	0	25	0	0	7
How to get a further supply	0	25	0	0	7
Whether the medicine has any unwanted effects (side effects)	0	22	3	2	5
What are the risks of you getting side effects	0	23	4	2	3
What you should do if you experience unwanted side effects	0	22	4	0	6
Whether you can drink alcohol whilst taking this medicine	0	15	3	5	8
Whether the medicine interferes with other medicines	0	19	3	4	5
Whether the medication will make you feel drowsy	0	20	1	4	5
Whether the medication will affect your sex life	0	13	2	4	11
What you should do if you forget to take a dose	0	20	2	4	5

Types of CMPs Identified in Case Studies

CMP types/scenarios identified in case studies (Yes or No)		Used for named patient?	Used by SP?	Used by SP, IP?	Used for controlled drugs?	Patient agreement confirmed in CMP?	Case Study Site, Qualifications of Prescriber and Controlled Drug Prescribing									
							1 Mark SP IP	2 John SP	3 Anita SP IP	4 Jane SP	5 Sarah SP IP CD	6 Grace SP IP CD	7 Kim* SP IP	8 Lara SP IP CD	9 Natalie SP IP	10 Debbie SP
1	Generic, non-patient specific paper copy	No	No	Yes	No	No	Yes		Yes							
2	Patient specific paper copy signed or agreed by doctor & prescriber prior to, or during consultation ^	Yes	Yes	No	Yes	Yes		Yes		Yes	Yes		Yes	Yes	Yes	Yes
3	Patient specific physical paper copy signed by doctor & prescriber after consultation	Yes	Yes	No	No	Yes		Yes		Yes	Yes					
4	Generic electronic form agreed ^ by doctor and prescriber	No but linked to patient record	No	Yes	Yes	Yes						Yes				
5	CMP lost or not attached to electronic patient record							Yes								

	Not assessed as transgression in accordance with Department of Health guidelines (Department of Health 2005 paragraphs 55-60)
	Assessed as transgression in accordance Department of Health guidelines (Department of Health 2005 paragraphs 55-60)
*	Qualified as an independent prescriber after case studies
^	Some CMPs were physically signed, whilst others permitted electronic signature agreement and were attached to electronic notes
SP	Qualified as supplementary prescriber
IP	Qualified as independent prescriber
CD	Controlled drugs prescribed

Prescribing assessment form

REVIEWER INITIALS……. DATE ……. PRESCRIPTION REFERENCE……..

APPROPRIATENESS

The indication for the drug is recorded and upheld in the BNF	Yes •	No •	Not Applicable •
The reason for prescribing a drug of limited value is recorded and valid	Yes •	No •	Not Applicable •
Compared with alternative treatments in the same therapeutic class, which are just as safe and effective, the drug prescribed is either one of the cheapest or a valid reason is given for using an alternative	Yes •	No •	Not Applicable •
A generic product is prescribed if one is available	Yes •	No •	Not Applicable •
If a potentially hazardous drug-drug combination is prescribed, the prescriber shows knowledge of the hazard	Yes •	No •	Not Applicable •
If the total daily dose is outside the range stated in the BNF, the prescriber gives a valid reason	Yes •	No •	Not Applicable •
If the dosing frequency is outside the range stated in the BNF, the prescriber gives a valid reason	Yes •	No •	Not Applicable •
If the duration of treatment is outside the ranges stated in the BNF, the prescriber gives a valid reason	Yes •	No •	Not Applicable •

PRESCRIBING ERROR

Using the following definition, do you believe a prescribing error occurred for this prescribed medicine? Yes • No •

"A clinically meaningful prescribing error occurs when, as a result of a prescribing decision or prescription writing process, there is an unintentional significant (1) reduction in the probability of treatment being timely and effective or (2) increase in the risk of harm when compared with generally accepted practice".

SUPPLEMENTARY PRESCRIBING VIOLATIONS

Is there a valid clinical management plan (CMP) for this patient……Yes • No •

Is the medicine prescribed and the dose/duration used included in the CMP……Yes • No •

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Patient questionnaire

The University Of Sheffield.	Survey for patients about pharmacist supplementary prescribing	The University of Nottingham

Please answer as many of the questions as possible and return the questionnaire in the FREEPOST envelope. More information, including definitions to help you answer the questionnaire is on the study information sheet.

	Agree	Disagree	Don't know
It was explained to me what having a pharmacist supplementary prescriber would involve	c	c	c
I am involved in decisions about the treatment I receive from my pharmacist supplementary prescriber	c	c	c
I have been given written information about having a pharmacist supplementary prescriber	c	c	c
I have a written plan for my treatment by the pharmacist supplementary prescriber	c	c	c
I was involved in designing my written plan for my treatment by the pharmacist supplementary prescriber	c	c	c
I understand my written plan for my treatment by the pharmacist supplementary prescriber	c	c	c
I signed my written plan for my treatment by the pharmacist supplementary prescriber	c	c	c
I gave my consent to being treated by a pharmacist supplementary prescriber	c	c	c
I have a good relationship with my pharmacist supplementary prescriber	c	c	c
I have confidence in my pharmacist supplementary prescriber	c	c	c

	Pharmacist	Doctor
I can get an appointment quicker with the …	c	c
I have longer appointments with the …	c	c
I receive better quality care from the …	c	c
I receive safer care from the …	c	c
I am monitored better by the …	c	c
I am better informed about my treatment by the …	c	c
My overall care is the responsibility of …	c	c
My prescriptions are written by …	c	c

Thinking about the appointment that we observed today, please answer the following

Did you receive a prescription? Yes	No
c	c

	Yes	No
Did you want this prescription?	c	c
Was any advice given to you about the prescription?	c	c
Was any other advice given to you?	c	c

	Yes	No
Did you want a prescription?	c	c
Was any information given to you?	c	c
Was any advice given to you?	c	c

	Yes	No	Don't know	Not applicable
Did you receive all of the information that you required	c	c	c	c
Did you receive all of the reassurance/support you required	c	c	c	c
Did you feel that the pharmacist understood you	c	c	c	c
If you received a prescription today, will you have it dispensed?	c	c	c	c
If the pharmacist gave you any advice, will you act on this advice?	c	c	c	c
Have you reported any problems with this medication to the pharmacist?	c	c	c	c

Questions about using your medicines

Many people find a way of using their medicines that suits them. This may differ from the instructions on the label or from what their prescriber has said. We would like to ask you a few questions about how you use your medicines. Here are some ways in which people have said that they use their medicines. For each of the statements, please tick the box which best applies to you

	Always	Often	Sometimes	Rarely	Never
I forget to take them	c	c	c	c	c
I alter the dose	c	c	c	c	c
I stop taking them for a while	c	c	c	c	c
I decide to miss out a dose	c	c	c	c	c
I take less than instructed	c	c	c	c	c

MARS_5 RH2_022 Medication Adherence Report Scale _5 ©R Horne University of Brighton, 1999

Now, we would like to ask you about the information you have received about your medicines. Please rate the information you have received about each of the following aspects of your medicines. If you use more than one medicine, please give your overall feeling about information you have received about all your medicines

Information about your medicines	Too much	About right	Too little	None received	None needed
What your medicine is called	c	c	c	c	c
What your medicine is for	c	c	c	c	c
What it does	c	c	c	c	c
How it works	c	c	c	c	c
How long it will take to act	c	c	c	c	c
How you can tell if it is working	c	c	c	c	c
How long you will need to be on your	c	c	c	c	c

medicine					
How to use your medicine	c	c	c	c	c
How to get a further supply	c	c	c	c	c
Whether the medicine has any unwanted effects (side effects)	c	c	c	c	c
What are the risks of you getting side effects	c	c	c	c	c
What you should do if you experience unwanted side effects	c	c	c	c	c
Whether you can drink alcohol whilst taking this medicine	c	c	c	c	c
Whether the medicine interferes with other medicines	c	c	c	c	c
Whether the medication will make you feel drowsy	c	c	c	c	c
Whether the medication will affect your sex life	c	c	c	c	c
What you should do if you forget to take a dose	c	c	c	c	c

Satisfaction with Information About Medicines Scale (SIMS) (Horne 2001)

What do you consider is the best thing about having a supplementary prescriber?
……
……

Telephone Interviews

We are hoping to undertake some telephone interviews with patients about their experience of supplementary prescribing. If you are interested in taking part in an interview then please supply your contact details below. A member of the research team will telephone you to discuss what participation will involve. If you supply your contact details this does not mean that you have to take part. You can withdraw from the study at any time.

Name ……

Telephone number……