**Introduction**

The NHS has undergone many reforms to meet the ever-increasing demands placed upon the service since its formation in 1948. Subsequently; the role of many healthcare professionals has expanded well beyond their conventional responsibilities (Stuttle 2010). One such example is the introduction of prescribing rights for nurses, midwives and other allied health professionals (AHPs), a role previously restricted to doctors and dentists (Creedon et al 2009). Whilst many healthcare professionals now have prescriptive authority, this review focusses specifically on nurse independent prescribers (NIPs) based within the primary care setting as this is directly related to the authors own clinical background and area of interest.

**Background**

The course of nursing practice in England, and subsequently the rest of the UK, was irrevocably altered following the publication of the Cumberlege Report (1986) and the Crown Report (1989). The findings decreed that prescribing rights should be extended to include not just doctors and dentists, but community nurses as well (Department of Health and Social Security 1986, Department of Health (DH) 1989). In 1992, the Medicinal Products: Prescription by Nurses etc. Act was passed and provided a legal framework for the inception of nurse prescribing (DH 1992). This was finally piloted in 8 demonstration sites across England in 1994, with community nurses that held a district nursing (DN) or health visitor (HV) qualification independently prescribing a limited range of medicinal products specified in the Nurse Prescribers’ Formulary (NPF) following completion of a 3-day training package (Gumber, Khoosal and Gajebasia 2012). The pilot proved to be successful and in 1998, the process of expanding these rights to all community nurses with a specialist DN or HV qualification began with the roll out of the V100 nurse prescribing training programme (Ward and Armstrong 2015).

A second Crown Report was published in 1999, advocating the further extension of prescribing rights to other nurses (DH 1999). The NPF was reviewed and expanded, giving rise to the Nurse Prescribers’ Extended Formulary (NPEF). This covered 4 areas of clinical practice, (minor illness, minor injury, health promotion and palliative care), and included all general sales list, licenced pharmacy and 140 prescription-only medicines (Ward and Armstrong 2015). To ensure that nurses were adequately prepared to prescribe from the NPEF a more rigorous training programme (V200) was rolled out in 2002 to all first level registered nurses with a minimum 3 years’ experience working within specialist areas such as GP surgeries, emergency departments and walk-in centres (Radcliffe 2008).

In 2003, the V200 was extended to incorporate supplementary prescribing (SP). This differed from extended nurse prescribing in that it was a formal agreement between a medical independent prescriber (IP) (doctor/dentist), nurse supplementary prescriber and the patient. This took the form of a patient-specific clinical management plan (CMP) following an initial diagnosis made by the IP (DH 2003). The CMP included details of the condition(s) to be treated, the medications to be prescribed and when to refer on to the IP. (Smith et al 2014). In some respects, SP provided nurses with a wider range of prescribing powers as they could prescribe any medication, including controlled drugs or off-license medications if specified on the CMP. Whilst useful in the management of long term conditions, SP is not suited to episodes of one-off prescribing as is likely in areas such as out of hours services or walk-in centres where patients are not regular attenders (Radcliffe 2008).

Following an extensive consultation process, the government announced plans to further expand the prescribing rights for nurses, allowing them to prescribe any licensed drug excluding controlled drugs (CDs) from the British National Formulary (BNF), thus discontinuing the NPEF (DH 2006). When plans for the proposed expansion of rights were unveiled in 2005, it was met with some opposition from medical colleagues. The British Medical Association (BMA) stipulated that they felt nurses lacked the required assessment and diagnostic skills that would facilitate safe and effective prescribing practice (Day 2005). Nevertheless, this move went ahead, and in 2006, the V200 programme was superseded by the more comprehensive V300 Nurse Independent/Supplementary Prescriber programme. To coincide with this development, the Nursing and Midwifery Council (NMC) developed the Standards of Proficiency for Nurse and Midwife prescribers which specified the educational and professional standards that are required in order to ensure that nurses are adequately prepared to become safe and effective prescribers (NMC 2006).

The development of nurse prescribing progressed quickly from this date, and in 2007, it was decided that all community nurses and not just those with a specialist practice qualification, would be able to prescribe from the NPF following completion of the V150 programme, following identification of an area of clinical need within their practice where this would enhance care provision (Ward and Armstrong 2015). In 2009, the prescribing of unlicensed medications was introduced for NIPs, providing it was within their scope of practice and followed the principles as directed by the NMC (2006) (Bourne et al 2016). Finally, in 2012 amendments to the Misuse of Drugs Act 1971 meant that NIPs were granted the same rights as doctors and allowed to prescribe any CD from schedules 2-5 in the BNF except for diamorphine, cocaine and dipipanone for treatment of addiction (Home Office 2012, Royal College of Nursing (RCN) 2014).

Overall, the introduction of independent and supplementary prescribing rights for nurses was viewed as a positive step in improving patient care and is now an integral part of the healthcare system in the UK (Gielen et al 2014). The nature of prescribing is complex and NIPs must demonstrate proficient knowledge and skills in relation to principles of prescribing, prescribing in practice, accountability and responsibility (NMC 2006). For example, this includes but is not limited to understanding of legislation, frameworks and policies, pharmacology, assessment and diagnostic skills, communication and documentation skills (NMC 2006).

To support this process and assess the implications for practice and service development, an intricate knowledge of the decision-making process and the underpinning influences is crucial.

**Aim**

The aim of this review was to discover and understand the factors which influence the prescribing decisions of NIPs in primary care. Secondary to this, the impact upon current practice and continuing professional development (CPD) was assessed and areas for future research determined.

This review was underpinned by the theoretical paradigm of interpretivism. This shapes the research process and is congruent to the overall aim of the study. Interpretivists strive to not only understand the ‘what’ but also the ‘why’. For example, this review seeks to determine what factors influence NIPs prescribing decisions, and more importantly, why do they? From the initial understanding of the experience, the researcher can delve further and develop a new interpretation of the true meaning of these experiences (Levers 2013).

**Method**

A search of relevant databases and websites (Box 1), was undertaken between May and July 2016, in addition to hand searching of reference lists of the retrieved articles and content lists of key journals. Search terms (Table 1) were combined with Boolean operators, wildcards, truncation, and relevant database index terms to conduct the search and results were screened using inclusion/exclusion criteria (Table 2).

Box 1 – Database and websites searched

AMED, HBE, BNI, CINAHL, EMBASE, HMIC, Medline, PsycINFO, PubMed, Ovid Nursing Database, Scopus, TRIP, EthOS, Web of Science, Open Grey, Grey Literature Report, Department of Health, Health and Social Care Information Centre and NICE Evidence

|  |
| --- |
| Table 1: Search terms and synonyms |
| Prescrib\*,  | Decid\* | "Advanced nurse practitioner"  | “Primary care” |
| "Prescribing Behaviour", | Decision\*, | "Community Nurse" | “Community” |
| “Prescrib\* decision\*”, | Factors | 'Non-medical' | “General Practice” |
| "Prescribing practice" | Impact | Nurs\* |  |
|  | Influenc\*, | "Nurse Independent" |  |
|  | Information | "Nurse Practitioner" |  |
|  | Judge\*, |  |  |
|  | Pressure |  |  |
|  | Sources |  |  |

|  |
| --- |
| Table 2: Inclusion and Exclusion criteria |
| Inclusion Criteria | Exclusion Criteria | Rational |
| Nurse Independent Prescribers | Non-medical prescribers from other professional backgrounds or where the profession cannot be defined, supplementary prescribers, use of patient group directions | NIPs are the authors area of interest and other prescribers and types of prescribing may follow differing processes i.e. prescribing options in supplementary prescribing are limited to the CMP |
| Prescribing decision-making | Other aspects of prescribing not including the decision-making process | Relevance to research question |
| Primary care (or studies that include data from primary care that can be clearly defined and analysed) | Acute setting | Relevance to research question and authors area of interest |
| Qualitative or mixed methods where qualitative data can be clearly separated and analysed | Purely quantitative research | Relevance to research question – the review seeks to understand the lived experience which is congruent to a qualitative approach |
| Studies undertaken from 1994 onwards | Studies undertaken prior to 1994 | The earliest date of conception of nurse prescribing in the UK. This will also highlight the potential change in trends as prescribing became more established |
| Peer-reviewed primary research including published and unpublished studies  | Secondary research, opinions, letters and editorials | Relevance to research question which is to review primary research rather than collate |
| Papers in the English Language  | Non-English language studies | Relevance to research question – this review focusses on UK research so unlikely to introduce a language bias. Also, consideration of cost if translation of papers is required  |
| UK studies | Non-UK studies | Implementation of NIP differs between countries and may skew results |

The included studies were critically appraised using the Qualitative Assessment and Review Instrument (QARI) (Joanna Briggs Institute (JBI) 2014). This tool is recommended by the Cochrane Qualitative and Implementation Methods Group (Noyes et al 2011) and a study by Hannes et al (2010) that found that it was more comprehensible when assessing the validity of a study compared to the Critical Appraisal Skills Programme (CASP) or the Evaluation Tool for Qualitative Studies (ETQS).

The interpretative methodology of meta-ethnography (Box 2) was used to underpin the process of data synthesis along with the comparative method of thematic analysis to evaluate the data and develop a new insight into the theoretical understanding of the phenomena under review, and its relation to clinical practice (Cherry et al 2014, Booth 2016). The Confidence in the Qualitative synthesised finding tool (ConQual) was then applied to the findings to assess the overall quality of evidence and determine the level of reliability placed upon the findings (The Joanna Briggs Institute Levels of Evidence and Grades of Recommendation Working Party 2016).

Box 2: The seven steps of meta-ethnography (from Noblit & Hare 1988)

1. Getting started (the search)

2. Confirming initial interest (literature screening)

3. Reading studies and extracting data

4. Determining how studies are related (identifying common themes and concepts)

5. Translating studies (checking first and/or second order concepts and themes against each other)

6. Synthesising translations (attempting to create new third order constructs – thematic analysis)

7. Expressing the synthesis.

Ethical approval was not required for this review as it critically appraises previously conducted empirical research that has already been subject to a rigorous ethical review process. However appropriate ethical and professional standards were considered and maintained during the review process (NMC 2015).

**Findings**

The search yielded a total of 10 articles (Table 3) which met the inclusion criteria (Luker et al 1998, Lewis-Evans and Jester 2004, Hall 2006, Offredy et al 2008, Daughtry and Hayter 2010, Downer and Shepherd 2010, Philp and Winfield 2010, Maddox 2011, Rowbotham et al 2012, Herklots et al 2015). A summary of the study selection process can be seen in Figure 1. It is worth noting that although the study by Luker et al (1998) used both qualitative and quantitative methods for data evaluation, the data regarding prescribing decision-making was purely qualitative and therefore relevant to this review and Offredy et al (2008) also included some NIPs from the acute setting, however, the data was separated sufficiently to allow analysis of the findings from primary care NIPs only.

Findings and their supportive illustrations were extracted from the results section of the studies. The illustrations consisted of verbatim quotes from the study participants and are known as first order constructs. Second order constructs (findings) are the original researchers’ interpretations of the data. The findings of the studies were then analysed multiple times and cross-compared to determine common themes or categories (third order constructs) (Noblit and Hare 1988). A total of 14 common descriptive themes were identified across the articles included in the review. These key themes were further analysed to decipher the underpinning connotations and similarities giving rise to three interpretive themes: perception of competence, perception of risk and impact upon the patient (Table 4).

|  |
| --- |
| Table 4: Development of Themes |
| ANALYTICAL Theme | *Perception of Competence* | *Perception of Risk* | *Impact on the Patient* |
| dESCRPTIVE THEME | Knowledge and skills | Responsibility and accountability | Clinical need |
| Prescribing experience | Role | Patient adherence |
| Education, training and support | Pressure from colleagues | Financial implications |
| Advice from colleagues | Pressure from patients |  |
| Guidelines, protocols, policies and evidence based-practice | Demographics of patient |  |
|  | Access to medical records is vital |  |

**Discussion**

There is a distinct paucity of research investigating the decision-making process of NIPs in primary care in the UK. Much of the research available investigates GP prescribing practices or focuses on the overall prescribing experience (Maddox 2011). This is corroborated by McIntosh et al (2014) who conducted a systematic review investigating the social and cognitive factors affecting the prescribing decisions of non-medical and supplementary prescribers in the UK. They only retrieved 3 primary studies, which is far less than this review, but demonstrates the noticeable lack of primary research available in this area.

Despite the limited number, the studies retrieved for this review were found to be conceptually rich and provided a valuable insight into the phenomena of interest. Consequently, one would assume that as the role of NIPs has evolved over the years, the studies undertaken when nurse prescribing was in its infancy would demonstrate a differing view of decision-making compared to the more recent studies. However, on analysis of the findings, it became evident that there were many common themes across all studies. For example, NIPs in the studies by both Luker et al (1998) and Herklots et al (2015) cited advice from GP colleagues as having a significant impact upon their decision to prescribe a specific medication when faced with several options. The insight offered by reviewing studies that cover the progression of NIP is pivotal in thoroughly understanding what impacts upon NIPs prescribing decisions.

*Perception of Competence*

The concept of competence is integral not only to the role of prescribing, but in nursing and healthcare practice in general (Banning 2012). Competence is defined as a person’s capacity to undertake a specific role or task successfully because of possessing the required knowledge, skills or experience (Pijl-Zieber et al 2014). Each specific trait is a single competency, and by improving these qualities a practitioner becomes more competent, confident and ultimately, safer (Royal Pharmaceutical Society (RPS) 2016)

To make an appropriate prescribing decision, NIPs must be proficient to perform this task (Herklots et al 2015). Although the NMC (2006, 2015) stipulate that NIPs must demonstrate a range of knowledge and skills which underpin the 4 key principles of prescribing practice, Lewis-Evans and Jester (2004), Hall (2006), Offredy et al (2008), Maddox (2011) and Herklots et al (2015) found that the concept of clinical and pharmaceutical knowledge and physical assessment skills are pivotal to NIPs own perception of competence. This is supported by Courtenay and Gordon (2009) who surveyed nurse prescribers in the UK and found that 75.2% of respondents felt they required more pharmacology training and 52.8% required more training on assessment and diagnostic skills to improve their prescribing competence. A lack of knowledge and skills promotes feelings of trepidation and makes prescribers less likely to take responsibility for issuing a prescription (Offredy et al 2008). This can be overcome by ensuring that NIPs have access to relevant education, training and support (Downer and Shepherd 2010).

Peer support and advice from colleagues appears to be the most common form of CPD discussed in the studies, and is particularly important when faced with difficult prescribing decisions (Luker et al 1998, Lewis-Evans and Jester 2004, Hall 2006, Offredy et al 2008, Downer and Shepherd 2010, Maddox 2011). This is also supported by evidence from the literature, as studies by Latter et al (2007) and Weglicki et al (2015) found that the majority of NIPs they interviewed felt that advice from colleagues and peer support had a positive impact on their prescribing practice. Although some employers do provide formal CPD, many NIPs have difficulty accessing it (Herklots et al 2015). A response echoed by Latter et al (2007) and Cubby and Bowler (2010). Controversially, a study undertaken on behalf of the DH between May 2008 and May 2010 found that the NIPs they surveyed had no issues accessing appropriate CPD and that this had helped to improve their competence and confidence when making prescribing decisions. Although, they did report that only half of the Trusts surveyed had a specific plan for the development of non-medical prescribing and that training needed to focus more on improving assessment and diagnostic skills (Latter et al 2011). This is supported by Weglicki et al (2015) who found that there appeared to be a lack of structure in the approach to CPD across the country.

The use of guidelines and formularies help to structure the decision-making process and provide an evidence-based rationale for prescribing choices (Maddox 2011). Fundamentally, this is not unique to NIPs as studies have found that GPs also rely upon these same guidelines to inform their prescribing practice, especially when considering the use of antibiotics (Prosser and Walley 2007, Wood et al 2007). It is thought that in view of the increasing resistance to antibiotics, guidelines provide the most up-to-date evidence-based information on the most appropriate treatment options (Wood et al 2007). Consequently, Wood et al (2007) found that GPs would occasionally deviate from these guidelines if they felt that issues such as adherence or other clinical factors contraindicated them. This echoes the findings of Philp and Winfield (2010) who determined that on occasion NIPs would digress from guidelines for similar reason. Hall (2006) inferred that the NIPs who deviated from the guidelines were likely more experienced and therefore more competent and confident in their prescribing decisions. This links in with the seminal work by Benner (1984) who ascribed to the fact that those nurses who had more experience in their field of practice became ‘experts’ as they developed their knowledge and skills, thus increasing their competence. Previous prescribing experience can also influence current prescribing decisions (Downer and Shepherd 2010, Maddox 2011). It is thought that a previous positive experience with a medication garners familiarity and trust in its ability so a NIP is more likely to prescribe it again. Whereas a perceived negative experience will deter the NIP from prescribing that specific drug (Ness et al 2016).

*Perception of Risk*

The overarching perception of risk promotes anxiety and cautiousness in the NIP when considering a prescribing decision. This is not only related to the choice of medication, but also to whether the prescriber will take responsibility for that prescribing decision (Maddox 2011). The NMC (2015) recognises the risks involved with prescribing and stipulates standards that must be obeyed to preserve safety. It is essential that NIPs practice within their scope of competence and must take full responsibility and accountability for any prescribing decisions they make (NMC 2015). Independent prescribing has expanded the nursing role significantly, and with it comes increased feelings of responsibility and accountability (Herklots et al 2015). Offredy et al (2008), Downer and Shepherd (2010) and Herklots et al (2015) found that a significant proportion of the NIPs in their studies perceived the connotations associated with responsibility and accountability in a negative light as it instilled in them an innate fear of making a mistake. There was an overall perception that if this happened, NIPs would not receive the same support as GPs (Rowbotham et al 2012). Latter et al (2011) inferred that this was likely related to the NIPs perception of their own level of competence, especially when new to prescribing. In contrast to this, research by Watterson et al (2009) found that some NIPs felt that the increased sense of responsibility and accountability garnered an increased sense of respect for the profession and validated a role that they had already been undertaking albeit informally. This is consistent with the findings of this review and was highlighted in the study by Lewis-Evans and Jester (2004).

NIPs are reluctant to prescribe if it is deemed to be outside of their role (Daughtry and Hayter 2010). The role is defined by the employer and the NIPs personal perceptions of their scope of practice (Hall 2006). When there is uncertainty surrounding the congruency of these two definitions, NIPs are less likely to take responsibility for prescribing decisions as the potential ramifications of prescribing in uncertain circumstances outweighs the potential benefits to the patient (Bowskill et al 2013). There is a fear that they may not be covered by their employer or a mistake could lead to legal ramifications for the NIP (Hall 2006, Maddox 2011, Rowbotham et al 2012).

Linked to this concept of role, is the perception of risk stemming from specific patient demographics (Offredy et al 2008). This review found that NIPs were reluctant to prescribe for patients with complex medical problems or polypharmacy issues as they were deemed to be high risk patients (Offredy et al 2008, Rowbotham et al 2012). For some NIPs, patients at either end of the age spectrum were also considered high risk (Hall 2006). Courtenay et al (2007) found that this perception of risk links to the NIPs perceived level of competence when dealing with these patients. If they do not have sufficient knowledge and skills to underpin their prescribing decisions for these patients, then they are more likely to refer to the GP or seek advice and guidance. They also stipulated that in cases such as these, it may be more prudent to adopt the approach of supplementary prescribing instead. These so called ‘high risk’ patients also affect the prescribing decisions of GPs, and they will often turn to peers or formal guidance for support in these matters (Tobin et al 2008). Consequently, several studies in this review have demonstrated the importance of access to patient’s medical records prior to making a prescribing decision (Luker et al 1998, Hall 2006, Maddox 2011). This enables the prescriber to weigh up the balance of risk against the perceived benefits for issuing a prescription (Watterson et al 2009).

Pressure to prescribe was deemed to be a negative influence on NIPs decision-making process (Luker et al 1998, Daughtry and Hayter 2010). Several studies in this review determined that this pressure is exerted by both patients and colleagues and makes NIPs uncomfortable (Philp and Winfield 2010, Rowbotham et al 2012, Herklots et al 2015). It is thought that they are put at risk as they feel forced to issue a prescription which they perceive to be inappropriate or outside of their competence (Lewis-Evans and Jester 2004, Maddox 2011). Some NIPs admitted to having issued prescriptions even if they felt they were not necessary or for products that they did not feel were the most appropriate due to the pressure and expectations from patients (Luker et al 1998, Hall 2006, Maddox 2011, Herklots et al 2015). This issue is reflected in a study by Pan et al (2016) who focussed on the prescribing practice of GPs in relation to patient pressures. They did find that as a compensatory measure where the GP succumbed to the prescribing pressure, they often recommended a delayed prescription. A sentiment echoed by some of the NIPs in the study by Philp and Winfield (2010).

*Impact on the Patient*

The patient is the most pertinent factor to consider during the prescribing process; since their safety and well-being is paramount. An accurate diagnosis is required to determine the actual clinical need for the prescription, and as discussed previously, NIPs must therefore be proficient in physical assessment and diagnostic skills (Courtenay and Gordon 2009, Daughtry and Hayter 2010). Some participants in the reviewed studies indicated that they would not prescribe if it was not warranted (Rowbotham et al 2012), however, this is at odds with the findings of Luker et al (1998), Herklots et al (2015) and Pan et al (2016) who discovered that both NIPs and GPs have succumbed to patient pressure and prescribed inappropriately.

The cost to the patient is also a major consideration. The decision to issue a prescription or advise patients to purchase a suitable alternative over-the-counter (OTC) is based upon which option is likely to incur the lowest charge. For example, if a patient is eligible for free prescriptions then the NIP is more likely to issue a prescription even if that item can be purchased OTC (Luker et al 1998, Maddox 2011). A study by Tobin et al (2008) determined that GPs also face similar issues when considering prescribing decisions, however, issues of clinical need and patient expectations took precedence.

Patients display a variety of health beliefs, and these beliefs impact upon their willingness to take medication. Subsequently, it is important for NIPs to consider patient adherence when making prescribing decisions (Maddox 2011). This review found that the NIPs surveyed recognised the implications of this and perception of adherence was quoted as being the most common reason for deviating from the prescribing guidelines (Hall 2006). The literature demonstrates that patient adherence also influences GP prescribing decisions, although it was found that when this issue was raised, GPs provided an alternate prescription but did not fully explore or discuss the reasons for non-adherence (Stevenson et al 2004). A study by Latter et al (2007) determined that communication with the patient is integral to establishing adherence, and it is vital that the prescriber adequately addresses the patient’s health beliefs and provides them with all necessary information about their prescription.

**Limitations**

The author conducted this review singlehandedly and ideally a minimum of 2 reviewers should undertake a systematic review to reduce the risk of bias and improve transparency (Centre for Reviews and Dissemination (CRD) 2009). To provide quality control measures and maintain transparency, an independent reviewer aided in evaluating the study selection and critical appraisal process. A similar procedure was used in the study by Anderson et al (2014). Robust inclusion/exclusion criteria were developed and piloted to aid in study selection. Search results were then imported into EPPI-Reviewer 4 software and codes representing the selection criteria were manually applied to the articles. The software then analysed the manual codes, automatically applying them to the articles giving a rating of likely or least likely to include (EPPI-Centre 2016). The use of ConQual criteria also aided in substantiating the review process. The data extraction process was performed twice, with the extractions being undertaken one week apart to allow for cross-checking of errors and inconsistencies (Fleeman and Dundar 2014). The studies included in this review were read multiple times so the reviewer became immersed in the data, as per the meta-ethnographic process adopted. This allowed for cross-checking of the analysed data, so it is unlikely that key themes were missed.

**Conclusion**

The aim of this review was to ascertain the factors influencing prescribing decisions of NIPs in primary care. It is evident from this review that a wide range of influencing factors have been identified. However, it is the underlying elements of competence, risk and impact upon the patient, that ultimately guide the prescribing decision-making process. The wider evidence has demonstrated that these factors are by no means limited to NIPs, with GPs frequently citing similar viewpoints. It is essential that NIPs are adequately supported and the implementation of NIP within the healthcare setting is reviewed frequently. By building on and improving NIPs levels of competence we can negate some of the risks of prescribing. Ultimately, this will safeguard against potential negative impacts on the patient, whether that be them receiving inappropriate treatment or being denied treatment because the NIP is not able or not willing to take responsibility for the prescribing decision.

**Recommendations for Future Research**

* Investigation of the prescribing practice and CPD needs of Advanced Nurse Practitioner independent prescribers within unscheduled primary care areas such as walk-in centres and out of hours services would provide a much-needed insight into this phenomenon and the subsequent impact upon provision of health care services within this setting. Much of the current research focusses on the prescribing practice of district and practice nurses, with no studies focussing specifically on the unscheduled primary care setting which can differ greatly and can potentially be a minefield when it comes to issues of prescribing.
* A study comparing the prescribing practices and views of GPs, AHPs and NIPs in the unscheduled care setting is also recommended as this will build upon the previous study and will improve education, patient care and service provision.

**Implications for Practice**

* There is an overwhelming need for a comprehensive, structured and ultimately, accessible programme of CPD for NIPs in primary care. This should be provided by individual employers or departments to ensure that the programme is tailored to meet the needs of the individuals. Appropriate education and training is pivotal in improving prescriber competence and thus reducing possibility of risk and preventing harm to the patient.
* Employers have a duty of care to safeguard the NIPs working for them against potential risks. They can provide clarification to their colleagues about their role and the expectations placed upon them to adhere to prescribing regulations. Patient information leaflets can be displayed to provide patients with a better understanding of the role of the NMP within the service.

No conflict of interest to declare

**References**

* Anderson K, Stowasser D, Freeman C et al (2014) Prescriber barriers and enablers to minimising potentially inappropriate medications in adults: a systematic review and thematic synthesis. BMJ Open. 4, 12, e006544.
* Banning M (2012) Educating for capability in NMP education and training. Nurse Prescribing. 10, 3, 148-153.
* Benner P (1984). From novice to expert: Excellence and power in clinical nursing practice. Addison-Wesley Publishing Company, Menlo Park (California).
* Booth A, Noyes J, Flemming K (2016) Guidance on choosing qualitative evidence synthesis methods for use in health technology assessments of complex interventions. Integrate HTA. http://www.integrate-hta.eu/downloads/

(Last accessed: 31 August 2017)

* Bourne RS, Baqir W, Onatade R (2016) Pharmacist independent prescribing in secondary care: opportunities and challenges. International Journal of Clinical Pharmacy. 38, 1, 1-6.
* Bowskill D, Timmons S, James V (2013) How do nurse prescribers integrate prescribing in practice: case studies in primary and secondary care. Journal of Clinical Nursing. 22, 13/14, 2077-2086.
* Centre for Reviews and Dissemination (2009) Systematic Reviews: CRD’s guidance for undertaking reviews in health care. Third edition. CRD: University of York, York.
* Cherry MG, Perkins E, Dickson R et al (2014). 8: Reviewing Qualitative Evidence. In: Boland A, Cherry MG, Dickson R (Eds.) Doing a Systematic Review: A Student's Guide. SAGE Publications Ltd, London. 17-33.
* Courtenay M, Carey, N, Burke J (2007) Independent extended and supplementary nurse prescribing practice in the UK: A national questionnaire survey. International Journal of Nursing Studies. 44,7, 1093-1101.
* Courtenay M, Gordon J (2009) A survey of therapy areas in which nurses prescribe and CPD needs. Nurse Prescribing. 7, 6, 255-262.
* Creedon R, O'Connell E, McCarthy et al (2009) An evaluation of nurse prescribing. Part 1: a literature review. British Journal of Nursing. 18, 21, 1322-1327.
* Cubby A, Bowler M (2010) Community matrons and long-term conditions: an inside view. British Journal of Community Nursing. 15, 2, 71-76.
* Daughtry J, Hayter M (2010) A qualitative study of practice nurses' prescribing experience. Practice Nursing. 21, 6, 310-314.
* Day, M (2005) UK doctors protest at extension to nurses' prescribing powers. British Medical Journal. 331, 7526, 1159.
* Department of Health (1989) Report of the Advisory Group on Nurse Prescribing (Crown Report). HMSO, London.
* Department of Health (1992) Medicinal Products. Prescription by nurses etc act. HMSO, London.
* Department of Health (1999) Review of Prescribing, Supply and Administration of Medicines: Final report (Crown II). HMSO, London.
* Department of Health (2003) Supplementary Prescribing by Nurses and Pharmacists within the NHS in England. A Guide for Implementation. The Stationery Office, London.
* Department of Health (2006) Improving Patients' Access to Medicines: A Guide to Implementing Nurse and Pharmacist Independent Prescribing within the NHS in England. DH, London.
* Department of Health and Social Security (1986) Neighbourhood Nursing: A Focus for Care (Cumberlege Report). HMSO, London.
* Downer F, Shepherd CK (2010) District nurses prescribing as nurse independent prescribers. British Journal of Community Nursing. 15, 7, 348-352.
* EPPI-Centre (2016). EPPI-Reviewer 4.5 Software for research synthesis: User Manual. EPPI-Centre. https://eppi.ioe.ac.uk/cms/Portals/35/Manuals/ER4.5.0%20user%20manuala.pdf?ver=2015-10-12-122019-620

(Last Accessed: 09 October 2017)

* Fleeman N, Dundar Y (2014) 5: Data Extraction: Where Do I Begin? In Boland A, Cherry G, Dickson R (Eds) Doing a Systematic Review: A Student's Guide. SAGE Publications Ltd, London. 85-97.
* Gielen SC, Dekker J, Francke AL et al (2014) The effects of nurse prescribing: A systematic review. International Journal of Nursing Studies. 51, 7, 1048.
* Gumber R, Khoosal D, Gajebasia N (2012) Non‐medical prescribing: audit, practice and views. Journal of Psychiatric and Mental Health Nursing. 19, 6, 475-481.
* Hall J (2006) Influences on Community Nurse Prescribing. PhD. University of Manchester, Manchester. http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.502236

(Last accessed: 31 August 2017)

* Hannes K, Lockwood C, Pearson A (2010). A Comparative Analysis of Three Online Appraisal Instruments’ Ability to Assess Validity in Qualitative Research. Qualitative Health Research. 20, 12, 1736-1743.
* Herklots A, Baileff A, Latter S (2015) Community matrons' experience as independent prescribers. British Journal of Community Nursing. 20, 5, 217-223.
* Home Office (2012) Misuse of Drugs (Amendment No.2) (England, Wales and Scotland) Regulations 2012. The Stationary Office, London.
* Joanna Briggs Institute (2014) Joanna Briggs Institute Reviewers’ Manual. The University of Adelaide, South Australia.
* Latter S, Maben J, Myall M et al (2007) Perceptions and practice of concordance in nurses’ prescribing consultations: Findings from a national questionnaire survey and case studies of practice in England. International Journal of Nursing Studies. 44, 1, 9-18.
* Latter S, Blenkinsopp A, Smith A et al (2011) Evaluation of nurse and pharmacist independent prescribing. Department of Health, London.
* Levers, M-JD (2013). Philosophical Paradigms, Grounded Theory, and Perspectives on Emergence. SAGE Open. 3, 4, 1-6.
* Lewis-Evans A, Jester R (2004) Nurse prescribers' experiences of prescribing. Journal of Clinical Nursing. 13, 7, 796-805.
* Luker KA, Hogg C, Austin L et al (1998). Decision making: the context of nurse prescribing. Journal of Advanced Nursing. 27, 3, 657-665.
* Maddox C (2011) Influences on Non-Medical Prescribing: Nurse and Pharmacist Prescribers in Primary and Community Care. PhD. University of Manchester, Manchester. https://www.escholar.manchester.ac.uk/uk-ac-man-scw:134208

(Last accessed: 31 August 2017)

* McIntosh T, Stewart D, Forbes-McKay K et al (2014). Poster Abstracts: A systematic review of the social and cognitive influences on non-medical prescribing decision-making. International Journal of Pharmacy Practice. 22, Supplement 1, 45-46.
* Moher D, Liberati A, Tetzlaff J et al (2009) Preferred Reporting Items for Systematic Reviews and Meta- Analyses: The PRISMA Statement. Physical Therapy. 89, 9, 873-880.
* Ness V, Price L, Currie K et al (2016) Influences on independent nurse prescribers' antimicrobial prescribing behaviour: a systematic review. Journal of Clinical Nursing. 25, 9/10, 1206-1217.
* Noblit GW, Hare RD (1988). Meta-ethnography: Synthesizing qualitative studies. Sage, Newbury Park (California).
* Noyes J, Popay J, Pearson A et al (2011). Chapter 20: Qualitative research and Cochrane reviews. In Higgins JPT, Green S (Eds). Cochrane Handbook for Systematic Reviews of Interventions, Version 5.1.0, The Cochrane Collaboration.

http://handbook-5-1.cochrane.org/

(Last accessed: 09 October 2017)

* Nursing and Midwifery Council (2006) Standards of Proficiency for Nurse and Midwife Prescribers. NMC, London.
* Nursing and Midwifery Council (2015) The code: professional standards of practice and behaviour for nurses and midwives. NMC, London.
* Offredy M, Kendall S, Goodman C (2008) The use of cognitive continuum theory and patient scenarios to explore nurse prescribers' pharmacological knowledge and decision-making. International Journal of Nursing Studies. 45, 6, 855-868.
* Pan X, Slater M, Beacco A et al (2016) The Responses of Medical General Practitioners to Unreasonable Patient Demand for Antibiotics – A Study of Medical Ethics Using Immersive Virtual Reality. PLoS ONE. 11, 2, e0146837. https://doi.org/10.1371/journal.pone.0146837

(Last accessed: 31 August 2017)

* Philp A, Winfield L (2010) Why prescribe antibiotics for otitis media in children? Nurse Prescribing. 8, 1, 14-19.
* Prosser H, Walley T (2007) Perceptions of the impact of primary care organizations on GP prescribing; The iron fist in the velvet glove? Journal of Health Organization and Management. 21, 1, 5-26.
* Radcliffe V (2008) 6: Non-medical prescribing. In Neno R, Price D (Eds) The Handbook for Advanced Primary Care Nurses. Open University Press, Maidenhead. 78-88.
* Rowbotham S, Chisholm A, Moschogianis S et al (2012). Challenges to nurse prescribers of no-antibiotic prescribing strategy for managing self-limiting respiratory tract infections. Journal of Advanced Nursing. 68, 12, 2622-2632.
* Royal College of Nursing (2014) RCN Fact Sheet: Nurse Prescribing in the UK. RCN, London.
* Royal Pharmaceutical Society (2016). A Competency Framework for all Prescribers. The Royal Pharmaceutical Society, London.
* Smith A, Latter S, Blenkinsopp A (2014) Safety and quality of nurse independent prescribing: a national study of experiences of education, continuing professional development clinical governance. Journal of Advanced Nursing. 70, 11, 2506-2517.
* Stevenson FA, Cox K, Britten N et al (2004) A systematic review of the research on communication between patients and health care professionals about medicines: the consequences for concordance. Health Expectations. 7, 3, 235-245
* Stuttle B (2010) Non-medical prescribing in a multidisciplinary team context. In Courtenay M, Griffiths M (Eds) Independent and Supplementary Prescribing: An Essential Guide. Second edition. Cambridge, Cambridge University Press. 7-14.
* The Joanna Briggs Institute Levels of Evidence and Grades of Recommendation Working Party (2016) Summary of Findings Tables for Joanna Briggs Institute Systematic Reviews. Version 3. The Joanna Briggs Institute. https://joannabriggs.org/assets/docs/sumari/Summary\_of\_Findings\_Tables\_for\_Joanna\_Briggs\_Institute\_Systematic\_Reviews-V3.pdf

(Last accessed: 31 August 2017)

* Tobin L, de Almedia Neto AC, Wutzke S et al (2008) Influences on the prescribing of new drugs. Australian Family Physician. 37, 1/2, 78-80.
* Ward H, Armstrong A (2015) Chapter 7: Non-medical prescribing. In Barton TD, Allan D (Eds) Advanced Nursing Practice: Changing Healthcare in a Changing World. PALGRAVE, London. 168-189.
* Watterson A, Turner F, Cool A et al (2009) An Evaluation of the Expansion of Nurse Prescribing in Scotland. Health and Community Care, Scottish Government Social Research.

http://www.scotland.gov.uk/Publications/2009/09/24131739/0

(Last accessed: 31 August 2017)

* Weglicki RS, Reynolds J, Rivers PH (2015) Continuing professional development needs of nursing and allied health professionals with responsibility for prescribing. Nurse Education Today. 35, 1, 227-331.
* Wood F, Simpson S, Butler C (2007). Socially responsible antibiotic choices in primary care: a qualitative study of GPs’ decisions to prescribe broad-spectrum and fluroquinolone antibiotics. Family Practice. 24, 5, 427-434.