

Central Lancashire Online Knowledge (CLoK)

Title	Non-medical prescribing in primary care in the United Kingdom: an overview of the current literature
Type	Article
URL	https://clock.uclan.ac.uk/id/eprint/39155/
DOI	10.12968/jprp.2021.3.9.352
Date	2021
Citation	Armstrong, Amanda, Manfrin, Andrea and Gibson, Josephine (2021) Non-medical prescribing in primary care in the United Kingdom: an overview of the current literature. <i>Journal of Prescribing Practice</i> , 3 (9). ISSN 2631-8385
Creators	Armstrong, Amanda, Manfrin, Andrea and Gibson, Josephine

It is advisable to refer to the publisher's version if you intend to cite from the work.
10.12968/jprp.2021.3.9.352

For information about Research at UCLan please go to <http://www.uclan.ac.uk/research/>

All outputs in CLoK are protected by Intellectual Property Rights law, including Copyright law. Copyright, IPR and Moral Rights for the works on this site are retained by the individual authors and/or other copyright owners. Terms and conditions for use of this material are defined in the <http://clock.uclan.ac.uk/policies/>

Journal of Prescribing Practice

Non-Medical Prescribing in Primary Care in the United Kingdom: An overview of the current literature

--Manuscript Draft--

Manuscript Number:	jprp.2021.0014
Full Title:	Non-Medical Prescribing in Primary Care in the United Kingdom: An overview of the current literature
Short Title:	
Article Type:	Review
Keywords:	Non-medical prescribing, primary care, nurse prescribers, perceptions
Corresponding Author:	Amanda Armstrong Creffield Medical Group Colchester, UNITED KINGDOM
Corresponding Author Secondary Information:	
Corresponding Author's Institution:	University of Central Lancashire UCLan
Corresponding Author's Secondary Institution:	
First Author:	Amanda Armstrong
First Author Secondary Information:	
Order of Authors:	Amanda Armstrong, Professor Andrea Manfrin and Dr Josephine Gibson
Order of Authors Secondary Information:	University of Central Lancashire UCLan
Abstract:	<p>Background: Non-medical prescribers are perceived as a complement to busy general practice in primary care.</p> <p>Aim: To conduct an overview of the literature available on the role and impact of NMP on primary care patients.</p> <p>Method: The search was conducted using multiple databases to find articles published between January 2015-January 2021. Inclusion criteria: NMP in primary care in the United Kingdom, written in English language. Exclusion criteria: research conducted in secondary care or outside the UK.</p> <p>Findings: 285 studies were identified; 15 were eligible for critical appraisal. Key themes were: NMP's positive perceptions were autonomy, job satisfaction and colleague support; negative perceptions included risk, lack of continuous professional development (CPD), organisational support.</p>

	Conclusion: By reviewing the perceptions of NMP in primary care, organisations can ensure when employing new NMPs that the adequate CPD and support is in place. Thereby reducing NMPs concerns about the ligation risk of prescribing.
Additional Information:	
Question	Response
Please enter the word count of your manuscript excluding references and tables	2580

Powered by Editorial Manager® and ProduXion Manager® from Aries Systems Corporation

Non-Medical Prescribing in Primary Care in the United Kingdom An overview of the current literature

Background: Non-medical prescribers (NMPs) are perceived as a complement to busy [general](#) practice in primary care.

Aim: To conduct an overview of the literature available on the role and impact of NMP on primary care patients.

Method: The search was conducted using multiple databases to find articles published between January 2015-January 2021. Inclusion criteria: NMP in primary care in the United Kingdom, written in English language. Exclusion criteria: research conducted in secondary care or outside the UK.

Findings: 285 studies were identified;15 were eligible for critical appraisal. Key themes were: NMP's positive perceptions were autonomy, job satisfaction and colleague support; negative perceptions included risk, lack of continuous professional development (CPD), organisational support.

Conclusion: By reviewing the perceptions of NMP in primary care, organisations can ensure when employing new NMPs that the adequate CPD and support is in place. Thereby reducing NMPs concerns about the ligation risk of prescribing.

Keywords

Non-medical prescribing, primary care, nurse prescribers, perceptions

Commented [AM<oP&BS1]: Word limit: 150 Word count:149

Abstract

Anonymous manuscript [Click here to view linked References](#)

✚

Abstract

Background: Non-medical prescribers (NMPs) are perceived as a complement to busy general practice in primary care.

Aim: To conduct an overview of the literature available on the role and impact of NMP on primary care patients.

Method: The search was conducted using multiple databases to find articles published between January 2015-January 2021. Inclusion criteria: NMP in primary care in the United Kingdom, written in English language. Exclusion criteria: research conducted in secondary care or outside the UK.

Findings: 285 studies were identified; 15 were eligible for critical appraisal. Key themes were: NMP's positive perceptions were autonomy, job satisfaction and colleague support; negative perceptions included risk, lack of continuous professional development (CPD), organisational support.

Conclusion: By reviewing the perceptions of NMP in primary care, organisations can ensure when employing new NMPs that the adequate CPD and support is in place. Thereby reducing NMPs concerns about the litigation risk of prescribing.

Keywords

Non-medical prescribing, primary care, nurse prescribers, perceptions

History of Nurse prescribing in the UK

After nurses had lobbied parliament for years to be legally allowed to prescribe, which eventually happened; slowly nurses earned more and more prescribing rights until April 2006, when they were given the same prescribing rights as doctors (Pearce, 2016). This exceeds any other non-medical prescribing rights anywhere in the world and has caused great concern in the medical profession initially (Avery and Pringle, 2005; British Medical Association [BMA] 2005; Day, 2006). However, now non-medical prescribing (NMP) is seen to complement busy general practitioners in primary care (Courtenay et al 2017). NMPs are registered prescribers who are not doctors (physicians) such as nurses, pharmacists, physiotherapists, radiographers, podiatrist and recently paramedics.

Background

The primary focus of the research in NMP to date has been on its impact on patients, practitioners and organisations (Courtenay et al. 2018; Carey et al. 2019). Other studies have identified motivators, such as job satisfaction and the opportunity to improve patient care, linked to increased prescribing activity (Bailey and Taylor 2017). Barriers identified to NMP have been the lack of access to training and support from colleagues and the risk of litigation (Armstrong, 2015; Nelson et al. 2019; Holden et al. 2019). There is a wide range of influences on NMP, including the trust of other members of the team (Weiss et al., 2016), the prescriber's confidence (Courtenay et al., 2018), their experience (Maddox et al., 2016), the expectations of others and the organisation (Hindi et al., 2019).

Introduction

The new NHS Long Term Plan (Winter, 2019) proposed an additional 20,000 NMP roles for primary care. Inadequacies within traditional doctor-led care systems mean that new approaches are urgently required to maintain patient access to prescription medicines. Allied health professions, e.g. therapeutic radiographers, have been identified as having an integral part in the required transformational change (Chief Allied Health Professional Officers' Team, 2017). The reduction of the number of General Practitioners (GP) and the new ways of working in primary care are prompting the need for NMPs to fill these gaps (Winter, 2019).

Background - Present situation in the United Kingdom

NMP is increasingly being recognised as an essential health care practice, with at least 18 countries adopting non-medical prescribing across Europe, the Americas and Australasia (Courtenay et al. 2017). The drive behind NMP in the United Kingdom is the need to deliver high-quality healthcare to patients where and when they require it, within a limited financial resource (NHS England 2015; NHS England 2017). Innovative patient-centred care pathways have been developed using the most appropriate healthcare professionals, such as clinical pharmacists in general practice and prescribing physiotherapists streamlining musculoskeletal pathways (Carey, 2019). The reduction in the number of GPs is also causing for concern regarding patients getting access to timely medical intervention (Winter, 2019).

In the United Kingdom, it is estimated that there are currently over 90,000 registered NMPs including nurses, midwives, pharmacists and allied healthcare professionals (e.g. optometrists, physiotherapists, podiatrists and radiographers) (Courtenay et al 2017). Independent prescribing by advanced paramedics has now come into force from 2018, but this excluded prescribing controlled drugs (NHS England, 2018). The evolution of NMP is presented in Table 1.

Primary Health Care Networks (PCNs)

Since the NHS was created in 1948, the population has grown, and people are living longer (Winter, 2019). Many people live with long-term conditions such as diabetes and heart disease or suffering from mental health issues and may need to access their local health services more often. To meet these needs, practices have begun working together and with community, mental health, social care, pharmacy, hospital and voluntary services in their local area in primary care networks (The Kings Fund, 2019). Around 7,000 practices across England – more than 99% - have come together to form more than 1,300 Primary Care Networks (PCNs). PCNs are based on GP registered lists typically serving natural communities of around 30,000 to 50,000 (The King's Fund, 2018; NHS England and NHS improvement 2018).

Aim: To conduct an overview of the contemporary literature available on the role and impact of non-medical prescribers on primary care patients.

The key research questions are:

- I. How do non-medical prescribers perceive themselves?
- II. How do patients perceive non-medical prescribers?
- III. How do other staff perceive non-medical prescribers?

Method

A systematic process was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Figure 1). This utilises a transparent, structured process to review the literature and this approach is equally important when reviewing qualitative literature as it requires the identification of clear criteria to support credibility, transferability, dependability and confirmability (Bearman and Dawson, 2013). The quality of the studies was evaluated using two validated tools, Consolidated Criteria for Reporting Qualitative Studies (COREQ; Tong et al., 2007) for interviews and focus groups and the Quality Assessment Tool for Studies with Diverse Designs (QATSDD; Sirriyeh et al., 2011) All articles were scored and graded against the two checklists and then presented as percentages so they could be compared in Table 4 (Graham-Clarke et al., 2019). QSR NVivo version 12 was the software used for conducting thematic analysis.

Literature Search

The literature search was undertaken in January 2021 using a range of databases from the University of Central Lancashire (UCLan) and resources selected because of their relevance to the subject (Table 2). To gather an insight into the factors that could impact on the NMP, the search included qualitative, quantitative and mixed-methods studies. Table 3 shows the search strategy of Nurs*, Non-medical, Primary care, and prescrib*.

Inclusion criteria

Articles published in English language from January 2015 to January 2021 were reviewed in line with aims. This short timeframe was selected to give an overview of contemporary literature in this fast-moving field.

Exclusion criteria

Articles were ineligible for inclusion if they were published only in abstract form, opinion paper, narrative reviews, related only to secondary care or not in the UK, and not published in English. The latter is due to a lack of resources for translation.

Ethics approval

Ethics approval was not required

Summary of Results

Two hundred and eighty-five records were identified during the literature search; 15 were included in the analysis (Table 1). The summary of the databases and website resources included in the research is presented in Table 2, the search strategy in Table 3, the characteristics and details of each paper in Table 4 and the summary with the total number of participants in the selected studies in Table 5. . Most prescribers being nurses 75% (n=483), followed by pharmacists 11% (n=72), physiotherapist accounting for 4% (n=21) participants and finally four podiatrists (1%). In Holden et al (2019) study, 1646 physiotherapists responded to a questionnaire regarding non-medical prescribing for osteoarthritis; however, only 1% (9) were prescribers.

All papers showed how participants were selected and the sampling method and gave sample size (Table 4). Across all papers, the details of the reflexivity of interviewer, the relationship with the participant and whether any bias existed was covered. However, there were no details of non-participants and only 3 papers included interview guides (Maddox et al 2016; Williams et al. 2018; Nelson et al. 2019). No one repeated the interview, and only one paper mentioned the duration of the interview and the interview transcription to be checked by the participant (Maddox et al. 2016). Within the data analysis, no data coders or description of the coding tree were given most papers did show deviations of themes and the software used.

This study highlighted the negative and positive perceptions of NMP by prescribers as well as from their colleagues and from the patient's perception. It gives a wider perception of the whole impact of NMP in primary care. (Tables 6, 7).

Positive perspective

The prescribers' perceptions of their role are mainly positive, especially about their ability to prescribe as it is generally seen as making a positive contribution to patient care including speedier access to medication (Armstrong, 2015; Heklots et al. 2015; Carey et al. 2019; Heklots et al. 2015; Courtenay et al. 2019). Autonomy increased job satisfaction and being able to make better use of skills/knowledge are also acknowledged as being positive by NMPs (Armstrong 2015; Taylor & Bailey, 2017; Hindi et al 2019).

Negative perceptions

Negative perceptions were identified, including challenges such as non-medical prescribers having to adopt to new roles, manage extra responsibility and integrate with their practice settings in a way that supports cohesive teamwork between doctors, independent prescribers and other colleagues (Armstrong, 2015; Maddox et al. 2016; Nelson et al. 2019). The risk of potential legal consequences due to the additional responsibility of prescribing was raised as a concern (Holden et al. 2019) and deterred many practitioners from training to be an NMP (Holden et al. 2019; Holden et al.; Carey 2019). Lack of support from management and from colleagues was also identified as a barrier (Maddox et al. 2016). Lack of CPD, lack of guidance and increased workloads were identified as well (Armstrong 2015; Courtenay et al. 2017a; Maddox et al. 2016; Taylor and Bailey 2017). Independent prescribing presents novel challenges to both independent prescribers and those working in a setting where they practice (Weglicki et al., 2015; Weiss et al., 2016).

Patient's perception

The patient's perception of NMP was very positive, reporting positive experience and high satisfaction with accessibility and consultation length (Carey et al. 2019; Hindi et al. 2019). Doctors also perceive benefits from working alongside independent prescribers, such as having more time for complex cases (Heklots et al. 2015; Weiss et al. 2016).

Organisation Support

The results of this review are showing that the implementation of NMP is strongly influenced by organisational support (e.g. local policies, workload, funding and availability of medical resources and additional skills) (Courtenay et al 2018; Hindi et al 2019; Taylor and Bailey 2017). For it to be successful, the whole organisation has to ensure adequate

preparation for not only the NMPs, but the whole team, so that the NMPs can be supported and reach their full potential

Discussion

Employing NMPs within healthcare services has the potential to make savings across a range of health specialities, providing more holistic patient care within an individual profession's scope of practice (Carey et al., 2019). There is the need to increase the acceptance of NMPs among healthcare managers, clinical care quality and safety agencies, and the general public. It has been suggested that NMPs' activities are patient-centred, improving the quality and safety of patient care, while simultaneously reducing costs and improving the efficiency of treatment and patient- outcomes (Courtenay et al 2018).

Multiple studies have a focus on new roles and appropriate skill mix for general practice, not least because of the on-going shortage of GPs but also because of the growing number of different issues and tasks that general practices have to tackle (Maddox et al. 2016; Nelson et al. 2019; Carey et al. 2019).

National policies have identified that "GPs will recruit multi-disciplinary teams, including pharmacists, physiotherapists, paramedics, physician associates and social prescribing support workers, freeing up family doctors to focus on the sickest patients" NHS Long Term Plan (2019).

The studies conducted by Weglicki et al. (2015) and Weiss et al. (2016) highlighted the importance of organisational features such as role collaboration and teamwork. They suggested that in the organisations they observed where the different social identities were respected and supported, a positive organisational identity in terms of multi-disciplinary working may also be more likely to provide better patient care than those practices where traditional hierarchies and rigid professional boundaries predominated.

Conclusion

With the increased demand for general practice services and the decrease of medical practitioners, it will be necessary for GP surgeries to develop a multi-disciplinary approach to primary health care provision. To enable the population to have adequate access to medicines, it will be key that NMPs are better utilised, and their expertise and competencies are adequately resourced. The studies identified in our search and included in the literature review have shown that outcomes and patient satisfaction are the same, if not higher, than doctors. Organisations will need to develop robust continuous professional development for NMPs along with clear professional and organisational guidelines on prescribing. To ensure that non-medical professionals are willing to undertake the prescribing training, they will need adequate financial incentives and career structure and good clinical support and supervision. GP services will have to ensure that they have systems to recruit, train, retain and promote non-medical prescribers to enhance primary care.

The key to making the new roles work will be to understand their place in the core general practice team or broader team and build the relationship between professionals so that patients do not face multiple handoffs or get confused about access care. In choosing what additional roles to add to the team, practices must have a deep understanding of the needs of

the population they serve and employ/train the right professionals with the right skills, supported by appropriate governance structure, to provide that care (Primary Care workforce commission 2015). More research needs to be done in this area to ensure the good integration of NMP into primary care.

Limitations

To the best of our knowledge, there were no studies carried out in Northern Ireland, and many studies included participants from secondary care and therefore excluded from this paper. No studies were looking particularly at the impact of NMP in primary care on minor illnesses. Therefore, more research needs to be carried out in this area. The literature reviewed is only from the last five years to ensure that it is contemporary, but it does not show past trends or practices in Northern Ireland.

Implications to Practice

Since 1992 with the development of NMP, patients and other practitioners have come to accept that prescribing can be safely performed by another member of staff and medical practitioners. To ensure that practitioners wishing to enhance their skills can undertake the appropriate training with suitable practice mentors in place in the clinical practice. Organisational policies and procedures need to be in place to support NMPs with a clear level of responsibilities and scope of practice. Continued professional development must strengthen and support NMPs and ensure that they are up to date and confident to prescribe within the scope of practice.

Key points

1. Non-medical prescribing in primary care is on the increase with more professions being able to prescribe.
2. Positive perceptions of NMP are job autonomy, satisfaction and quicker access to medication.
3. Negative perceptions of NMP are litigation risk, increase workload and lack of support.
4. To successfully implement NMP the whole organisation must be ready to work with NMPs and support them.

Reflective questions

1. What are the perceived benefits of having NMPs in primary care?
2. What are the perceived challenges for NMPs in primary care?
3. If you were a manager, what would you do to support NMPs in primary care?
4. How would you minimise the risks of NMPs in primary care?

References

Armstrong, A. (2015). Staff and patient views on nurse prescribing in the urgent care setting. *Nurse prescribing*. 13 (12): 614-9. <https://doi.org/10.12968/npre.2015.13.12.614>

Bearman M and Dawson P, (2013) Qualitative synthesis and systematic review in health professions education. *Medical Education* 47 (30), 252-60. <https://doi.org/10.1111/medu.12092>.

Courtenay, M. (2018). An overview of developments in nurse prescribing in the UK. *Nursing Standard (Royal College of Nursing (Great Britain))*, 33(1), 40–44. <https://doi.org/10.7748/ns.2018.e11078>

Courtenay, M., Rowbotham, S., Lim, R., Deslandes, R., Hodson, K., MacLure, K., Peters, S., & Stewart, D. (2017a). Antibiotics for acute respiratory tract infections: a mixed-methods study of patient experiences of non-medical prescriber management. *BMJ Open*, 7(3), e013515. <https://doi.org/10.1136/bmjopen-2016-013515>

Courtenay, M. (2017b). Nurses can influence prescribing antibiotics: Making sensitivity to medication -- via the nursing management of respiratory tract infections -- a global priority in primary care. *Primary Health Care*, 27(6), 14. <https://doi.org/10.7748/phc.27.6.14.s19>

Courtenay, M., Khanfer, R., Harries-Huntly, G., Deslandes, R., Gillespie, D., Hodson, K., Morris, G., Pritchard, A., & Williams, E. (2017c). Overview of the uptake and implementation of non-medical prescribing in Wales: a national survey. *BMJ Open*, 7(9), e015313. <https://doi.org/10.1136/bmjopen-2016-015313>

Courtenay, M. (2015). The benefits of nurse prescribers in primary care diabetes services. *Journal of Diabetes Nursing*, 19(10), 386–387.

Day, M. (2005). UK doctors protest at extension to nurses' prescribing powers. *British Medical Journal*, 331 (4256), 1159.

Department of Health (DH) (1989). Report of the Advisory Group on Nurse Prescribing. London: DH.

Department of Health (DH) (1998). Nurse Prescribing a Guide for Implementation. London:

Department of Health (DH) (1999). Review of Prescribing, Supply and Administration of Medicine: Final report (Crown Report) London

Graham-Clarke, E., Rushton, A., Noblet, T., and Marriott, T. (2018). Facilitators and barriers to non-medical prescribing – A systematic review and thematic synthesis. *PLOS one* 13(4) e0196471. <https://doi.org/10.1371/journal.pone.0196471>

Hindi, A.M., Seaston, E.M., Bell, D., Willis, S., & Schafheutle, E. I. (2019). Independent prescribing in primary care: A survey of patients', prescribers' and colleagues' prescription and experiences. *Health & Social Care in the community*, 27(4), e459–e470. <https://doi.org/10.1111/hsc.12746>

Laurant, M., Reeves, D., Hermens, R., Braspenning, J., Grol, R., & Sibbald, B. (2005). Substitution of doctors by nurses in primary care. In *Cochrane Database of Systematic Reviews* (Vol. 2005, Issue 2). John Wiley and Sons Ltd. <https://doi.org/10.1002/14651858.CD001271.pub2>

Maier, C. B. (2019). Nurse prescribing of medicines in 13 European countries. *Human Resources for Health*, 17(1). <https://doi.org/10.1186/s12960-019-0429-6>

NHS Health Education North West. (2015). Non-Medical Prescribing (NMP); An Economic Evaluation.

NHS England (2018). Prescribing by paramedics. <https://www.england.nhs.uk/ahp/med-project/paramedics/>

Nelson, P.A., Bradley, F., Martindale, A-M., McBride, A., & Hodgson, D. (2019) Six-Mix change in general practice: a qualitative comparison of three ‘new’ non-medical roles in English primary care. *British Journal of General Practice*, 69 (685), e489-e497. <https://doi.org/10.3399/bjgp19X704117>

Maddox, C., Halsall, D., Hall, J., & Tully, M. P. (2016). Factors influencing nurse and pharmacist willingness to take or not take responsibility for non-medical prescribing. *Research in Social & Administrative Pharmacy : RSAP*, 12(1), 41–55. <https://doi.org/10.1016/j.sapharm.2015.04.001>

Maier, C.B., Koppen, J., Busse, R. (2018). Task shifting between physicians and nurses in acute care hospitals: cross-sectional study in nine countries. *Human Resource health* 16:24. <https://doi.org/10.1186/s12960-018-0285-9>

Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(7): e1000097. <https://doi:10.1371/journal.pmed1000097> Pearce, L (2016) The Long road to full prescribing powers. *Nursing Standard*, 30 (33) 18-19.

Reeve, J., Britten, N., Byng, R., Fleming, J., Heaton, J., & Krska, J. (2018). Identifying enablers and barriers to individually tailored prescribing: a survey of healthcare professionals in the UK. *BMC Family Practice*, 19(1), 17. <https://doi.org/10.1186/s12875-017-0705-2>

Sirriyeh, R., Lawton, R., Gardner, P., & Armitage, G. (2012). Reviewing studies with diverse designs: the development and evaluation of a new tool. *Journal of Evaluation in Clinical Practice*, 18(4), 746–752. <https://doi.org/10.1111/j.1365-2753.2011.01662.x>

Taylor, C., & Bailey, V. (2017). Nurse prescribing: An essential requirement or an expensive luxury for school nurses? *British Journal of School Nursing*, 12(7), 346–352. <https://doi.org/10.12968/bjsn.2017.12.7.346>

The Royal Pharmaceutical Society (2016). A Competency Framework for all prescribers. www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Professional%20standards/Prescribing%20competency%20framework/prescribing-competency-framework.pdf.

Tong, A, Sinasbury, P., Craig, J. Consolidated criteria for reporting qualitative research (COREQ) A 32-item checklist for interviews and focus groups. *International journal for quality in Health Care* (2007) 19 (6) 349-357. DOI: [10.1093/intqhc/mzm042](https://doi.org/10.1093/intqhc/mzm042)

Weeks, G., George, J., Maclure, K., & Stewart, D. (2016). Non-medical prescribing versus medical prescribing for acute and chronic disease management in primary and secondary care. *The Cochrane Database of Systematic Reviews*, 11, CD011227.

Weiss, M. C., Platt, J., Riley, R., Chewning, B., Taylor, G., Horrocks, S., & Taylor, A. (2015). Medication decision making and patient outcomes in GP, nurse and pharmacist prescriber consultations. *Primary Health Care Research & Development*, 16(5), 513–527. <https://doi.org/10.1017/S146342361400053X>

Weglicki, R. S., Reynolds, J., & Rivers, P. H. (2015). Continuing professional development needs of nursing and allied health professionals with responsibility for prescribing. *Nurse Education Today*, 35(1), 227–231. <https://doi.org/10.1016/j.nedt.2014.08.009>

Williams, S.J., Halls, A.V., Tonkins-Crine, S., Moore, M.V., Latter, S.E., Little, P., Eyles, C., Postle, K., & Leydon, G.M. (2018) General practitioner and nurse prescriber experience of prescribing antibiotics for respiratory tract infections in UK primary care out-of-hours services (the UNITE study). *Journal of Antimicrobial Chemotherapy* 73, 795-803. <https://academic.oup.com/jac/article/73/3/795/4669682>

Figure

(i.e. diagram, illustration, photo) [Click here to access/download;Figure \(i.e. diagram, illustration, photo\); Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses \(PRISMA\)](#)

[PRISMA Flow chart docx.docx](#)



Figure 1 - PRISMA 2009 Flow Diagram



Records identified through database searching
(n = 280)

Additional records identified through other sources – citations and recommendations (n =5)

285 Records after 22 duplicates removed (n =263)



Records screened (n = 263)

Records excluded (n =221) Setting 166 Incomplete 55



Review studies excluded (n=18)

Full-text articles excluded, as narratives, opinions and editorials (n =9)

Full-text articles assessed for eligibility
(n = 39)



Studies included in qualitative research

(n = 15)

Included Eligibility

Screening Identification

Table 1

[Click here to access/download;Table;Table 1 NMP timeline .docx](#)

Table 1 – Evolution of non-medical prescribing in the United Kingdom

1992 Legislation passed to allow limited formulary for HVs and DNs
1999 HV and DN own formulary

2002. 2002 Extended formulary prescribing for nurses
2003. 2003 Supplementary prescribing for nurses and pharmacists

2008 Independent prescribing for optometrists
2012 Independent prescribing for physiotherapists and podiatrists

2018 Independent prescribing for paramedics apart from controlled drugs

HV = Health Visitors, DN= District Nurse, WIC = Walk-in-Centre, ED= Emergency Department

✦

2000|Extended independent nurse prescribers trained for WIC, ED and primary care

2006	Independent prescribing for nurses and pharmacists Supplementary prescribing for therapeutic and diagnostic radiographers, physiotherapists, and podiatrists.
------	---

2016	Independent prescribing for therapeutic radiographers Supplementary prescribing for dieticians
------	---

Table 2

[Click here to access/download;Table;Table 2.summary of databases used docx.docx](#)

Table 2 – Summary of databases and website resources included in the search.



Databases and websites

AMED - Allied and complementary medicine database CINAHL

EMBASE

ERIC – the Education Resource Information Centre Google Scholar

HMIC – Health Management Information Consortium MEDLINE/OVID MEDLINE

Academic PROQUEST HEALTH & MEDICAL

PUBMED

Total

Number of articles

None 10

2 None 31 None 36 113 88 280

Table 3

[Click here to access/download;Table;Table 3. search strategies and terms docx.docx](#)

✱

Table 3 – Search Strategy and Terms

	Search Terms	Search Terms
Years 2015-2021	Written in English	Research setting in UK
P (Population)	Nurse/Nurses/Non-medical prescriber/pharmacist/physiotherapist/podiatrist	Nurs*
	Non-Medical	Primary Care
I (Issue)	Prescriber/Perscribers/ Prescribing	Prescrib*
E (Effect/Method)	Any	

Table 4 [Click here to access/download;Table;Table 4 Characteristics and details of the research papers.docx](#)

Table 4 Characteristics and details of the research papers

✱

Author(s)	Location	Study Design	Participant(s)	Findings	COREQ or QATSDD
1. Armstrong (2015)	Urgent care setting in England	SSI Questionnaire	Total number of participants: 25 Senior Nurses 1 Doctor 1 NPs 2 PP 1 Patients 20	Benefits of autonomous working identified by staff and patients. Concern over increase workload for NP. Enhanced staff experience. Seen as a natural progression for advance nurses and continuity of care for patients.	COREQ 50%
2. Carey et al (2019)	Primary Care in England	Quasi-experimental, post-test group design	Total number of participants: 329 4 P. physio and 3 podiatrists compared to 4 Non-P physio and 3 podiatrists 315 patients.	Patients were asked for feedback on their consultations with their clinicians and then compared with prescriber and non-prescribers. Patients overall satisfied with care, professional care ease of access to care and satisfied with informations on medicines.	COREQ 31%
3. Courtenay et al (2018)	All settings in Wales	e-Delphi survey	Total number of participants: 34 NP 28	21 statements were generated and 9 factors that promoted the implementation of NMP – Positive organisational recognition, colleague support and CPD.5 A	QATSDD 76.2%
			PP 3 Physio 2 Radiographer 1	ctions were required for NMP, clinical supervision, CPD, and that NMP were valued by patients, colleagues and the organisation.	
4. Courtenay et al (2017a)	All settings in Wales	Questionnaire	Total number of participants: 376 NP 321 PP 46 ANP 9	NMP reported that they prescribed across a broad range of therapeutic areas. Infections for nurse, pain for pharmacist and MSK for physiotherapists. Lack of funding was the barriers to prescribing .	QATSDD 59.6%
5. Courtenay	Scotland, Wales and England	SSI And questionnaires	Total number of participants: 137 Patient	Focus on prescribing for respiratory tract infection. 96% of the patient population was satisfied or very satisfied due to a	COREQ 53%

et al (2017b)			questionnaires and follow up 120 SSI with 22 of those patients SSI – 16 NP SSI - 1 PP	patient- centred approach. Patients reported being listened to and being taken seriously by NMPs. NMP addressed patient expectations and concerns.	
6. Courtenay et al (2015)	England	Case study	Total number of participants: 226 12 case study sites in the UK IP (n=6) Nurse (n=6) Patients (n=214)	Data was compared from patients with diabetes who had been treated by diabetic specialist nurse who could prescribe compared to diabetic nurses who could not prescribe. No statistical significant differences were founds in the management of clinical outcomes such as diabetic control defined by levels of HbA1c. Increased satisfaction with all nurses but more so with nurse prescribers.	COREQ 31%
7. Herklots et al (2015)	CC two PCTs in England	SSI	Total number of participants: 7 NP 7	NMP enhanced their role and knowledge from the prescribing course was beneficial for their whole practice. Support included CPD was variable with difficult being able to access formal CPD, however GP were very supportive. Being able to prescribed allowed speedier access to medicine for patients was also noted.	COREQ 50%
8. Hindi et al (2019)	PC in England	Questionnaires	Total number of participants: 84 IP 20 Colleagues 26 Patients 38	Patient strongly agreed that IP improved the quality of care for the patient. Key barriers: IP's knowledge, competence and organisational factors such as workload, effective teamwork and support from colleagues.	COREQ 50%
9. Holden et al (2019)	PC in England	Questionnaires and SSI	Total number of participants: 1646 Physiotherapist s (physios) 1637 Physio Prescribers 9	One per cent of physios approaching OA were prescribers. However, they were not keen on extra responsibility despite acknowledging the GP burden. Did identify patient convenience as a benefit for prescribing. Lack of support to prescribe, burden of extensive training, and potential legal consequences.	COREQ 50%
10. Maddox et al (2016)	PC and CC – in NW England	SSI or Focus group x3	Total number of participants: 30 PP 5 NP 25	NMPs cautious when prescribing; confidence improved with good support. NMP required improved access to CPD, clinical support and cohesive team culture.	COREQ 63%
11. Nelson et al (2019)	PC England	SSI and focus groups	Total number of participants:38 SL 9 AP 8 PA 4 PP 6 GP 5 PM 6	Themes analysis captured:- purpose and place of new roles in general practice, such as physician associates as well as advanced practitioners. Findings: -unclear role definitions and tension at professional boundaries. The need for training to ensure feasibility of skill mix.	COREQ 53%
12. Taylor & Bailey (2017)	CC England	Questionnaire	Total number of participants: 20 School Nurses 20	Identified benefits such as improved medicine management and earlier interventions. Job satisfaction and credibility as being able to prescribe. Barriers: lack of need and lack of organisational support and CPD.	QATSDD 64.3%
13. Weglicki et al (2015)	England	SSI and focus groups	Total number of participants:15 PP 1 NP 11 Physio 3	Personal anxiety undermining confidence to prescribe, external barriers and other factors that exacerbate anxiety. Need for support identified through coping strategies, preferred mode or style of learning.	COREQ 56%

14. Weiss et al (2016)	PC England	SSI	Total number of participants: 21 GP 7 NP 7 PP 7	Looked at how prescribers identify themselves “The doctors are king” NP unsure who to align to, either nurses or GPs as now prescribers. PP did not feel part of the surgery as a secondary role. Organisational barriers identified.	COREQ 53%
15. Williams et al (2018)	Out of Hours (OOH)	SSI	Total number of participants: 30 GP 15	Examined GPs and NPs prescribing antibiotics for respiratory tract infections in OOH in PC. Found that NP reported perceptions of greater accountability for their	COREQ 67%
service in PC	NP 15	prescribing compared to GPs. Participants agreed more complex cases should be seen by GPs.			

PC = Primary Care; CC= Community Care; CPD=continuing professional development;
MSK = Musculoskeletal; NP=Nurse Prescribers; OA = Osteo arthritis; OOH = Out of Hours
service; PP = pharmacist prescriber; SSI = Semi-Structured interviews; AP = Advanced
practitioner; PA = Physician associate; PM= Practice manager; SL = Service Lead.

Table 5

[Click here to access/download;Table;Table 5 Number of participants .docx](#)

Results

Table 5 – Summary of the different participants enrolled in the studies

Paper Number	Total Participants	Nurse Prescribers	Pharmacist Prescribers	Physio Prescribers	Podiatrist Prescribers	Other NMP	Other staff	GP	Patients
-----------------	-----------------------	----------------------	---------------------------	-----------------------	---------------------------	--------------	----------------	----	----------

1. 25 2 1 2.329

3. 34 28 5
4. 374 321 46
5. 137 16 1
6. 226 6
7. 7 7
8. 84 20
9. 1646
10. 30 25 5
11. 38 5 6
12. 20 20
13. 15 11 1
14. 21 7 7

1 1 20 437315

1 4 1 2

120 6 214

26 38 9 1637



1

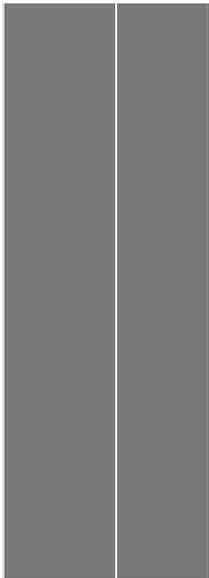
3

6 15 5

7

15. 30 15 15

Total 3,016 483 72 21 4 35 1,666 28 707



Responsibility Increase Risk

Prefer to see GP

Lack of support

Lack of support	Lack of confidence in non-medical prescriber	Lack of guidance and restricted formulary
Increased Workload		Lack of Continuous Professional Development
Lack of Continuous Professional Development		

Negative