

The role of pharmacists in general practice: a realist review

Claire Anderson, Kevin Zhan, Matthew Boyd, Claire Mann

Division of Pharmacy Practice and Policy, School of Pharmacy, University of Nottingham, Nottingham NG72RD UK

claire.anderson@nottingham.ac.uk

Abstract

Background

The review was carried out prior to evaluating and to inform our research on the clinical pharmacists in general practices pilot, a world leading initiative to improve health care delivery in England. Around 500 pharmacists are already working in general practice as part of the pilot, launched in July 2015

Objectives

The review attempts to explain the how “clinical pharmacists in general practices” is being implemented, what works well, what does not work so well and everything in-between.

Methods

This realist review was conducted to the RAMESES standards. Studies were identified by searching three databases, Medline, Embase and Scopus. Additional papers were gathered from reference lists, Google searches and via the find similar citations feature.

Results

A total of 83 papers and articles were initially identified from Medline (19), Embase (31) and Scopus (32). With close reading, the final review consisted of 43 papers relating to 38 studies. Most of the research was undertaken in the field of pharmacy practice and over half of the studies investigated the perspectives of different stakeholders using questionnaires or qualitative methods.

Conclusion

The pharmacist in general practices initiative is still at an early stage of implementation, further research and more in-depth findings are still required. However, from this small number of studies, the common barriers and facilitators to the implementation can be identified. The review also lists mechanisms that will be needed to ensure the effective implementation of this initiative.

Background

The General Practice Forward View¹ recognises some of the key issues in efficiently and effectively managing the frontline demand and supply of health care in the United Kingdom (UK). The ageing population and the rise in long term health conditions has impact on an increasing demand for Primary Care. General Practitioner (GP) consultations increased between 1996 and 2008 by an estimated 11%, and nurse consultations by 150%². At the same time government spending on healthcare, and in particular in General Practice in Great Britain has declined. Furthermore, there are significant reductions in the numbers entering general practice as a career, and a high rate of turnover of those working in the profession. In 2013 the Royal Pharmaceutical Society (RPS) 'Now or Never' report³ highlighted a number of new models of care through which pharmacy is delivered and advocated moving away from dispensing and supply, towards using the professional expertise of pharmacists. The Royal College of General Practice (RCGP) agreed and suggested that primary care requires a more diverse skill mix and community pharmacy is a 'significant unexploited potential'⁴. In 2014 the RPS English Pharmacy Board called for GPs to embrace the potential that pharmacists can bring to the care of their patients; local commissioners to include pharmacist expertise in all care pathways that use medicines including the formal involvement of community pharmacists in local care pathways and NHS England to support the spread of good practice and the dissemination of evidence which shows the benefits of pharmacist input in GP surgeries⁵. At Clinical Commissioning Group (CCG) level, commissioners were encouraged to think of new, innovative and creative ways to solve this pressing problem and meet the increasing levels of demand with diminishing modes of supply^{6,7}.

The introduction of clinical pharmacists working in general practices was initiated by National Health Service England (NHSE) as a pilot scheme in 2015 and operationalized in 2016-7. This pilot employs around 500 clinical pharmacists across about 90 general practices. Due to huge response from the GP practices, the funding for this scheme was doubled from £15m to £31m⁸. Further investment was announced in 2016 as NHS England plans to invest further £100m to support an additional 1,500 pharmacists by 2020/21⁹. This whole scheme is part of the larger initiative to expand the primary care workforce, documented in the General Practice Forward View¹. The GP workforce 10-point plan¹⁰

acknowledged that to address the supply-demand imbalances GP practices will be encouraged to recruit pharmacists; the report laid out plans for a national pilot launching in 2015 with the first pharmacists working in General Practice on the pilot scheme by 2016. This initiative promotes a largely new role for pharmacists about which little was already known. The review was carried out prior to evaluating the NHSE pilot study so was used to inform and frame the pilot study. It will be useful for policy makers, pharmacists and primary care in other countries who are watching the NHSE pilot with great interest. The initiative should in theory should reduce GP workload, improve patient care; and expand the primary care workforce. With these factors in mind, it was important to address whether such complex interventions work, if so, why do they work and what does not work. This realist review^{11,12} therefore explores the international research and policy on introducing pharmacists into general practice using a realist review perspective, in a process which identifies and analyses the context, mechanisms and outcomes.

Aims

To identify what works for whom in what circumstances in relation to the role of pharmacists in general practice.

Objective

Strategic objectives

The review attempts to explain the outcomes of how pharmacists in GP practices is being implemented, what works well, what does not work so well and everything in-between.

Operational objectives

- Identify studies of pharmacists working in general practice.
- Identify additional relevant publications, for example, policy documents, reports that contribute to theory building about what works for whom in what circumstances.
- Gain familiarity with dataset by close reading.
- Produce a descriptive summary of the data to summarize what kinds of research question have been asked, how these questions have been addressed and what the key findings are to date.

- Develop a realist analysis consisting of candidate theories linking context, mechanism and outcome.
- Undertake systematic data extraction to test and refine these candidate theories.
- Summaries the theories for which there is strong evidence of what works for whom in what circumstances.
- Clarify gaps in the knowledge base and make recommendations for further research.

Methods

Study design

A descriptive realist review which was conducted to the RAMESES standards¹¹.

Realist review

Pawson et al.¹² described realist review as “What works, for whom, in what circumstances and why” Health care interventions are complex and often have outcomes that are dependent on context. When complex health care interventions fail to achieve their desired outcomes, the explanation frequently provided is because they are both complex and context dependent. Realist reviews can help make sense of these types of interventions or programmes. Realist approaches are theory driven and the primary data comes from primary research but also from so called grey literature documents (e.g. studies, policy documents and so on) and so it is a form of secondary research. Realist review is a relatively new strategy for synthesising research and it has an explanatory rather than judgemental focus. A realist review seeks to unravel the links between context, mechanism and outcome. The realist research question is often summarized as ‘what works for whom under what circumstances, to what extent, how and why’¹¹. Unlike other literature review methods, realist reviews explore the complex links between how an intervention alters the context, then via what mechanisms it produces certain outcomes. It aims to explain the success, failures and everything in-between through using middle range theories’ which are theories that require some abstract thinking but do not differ too much from the observed data and thus can be used for empirical testing. This review is conducted to the RAMESES quality standards published by an international Delphi panel¹¹.

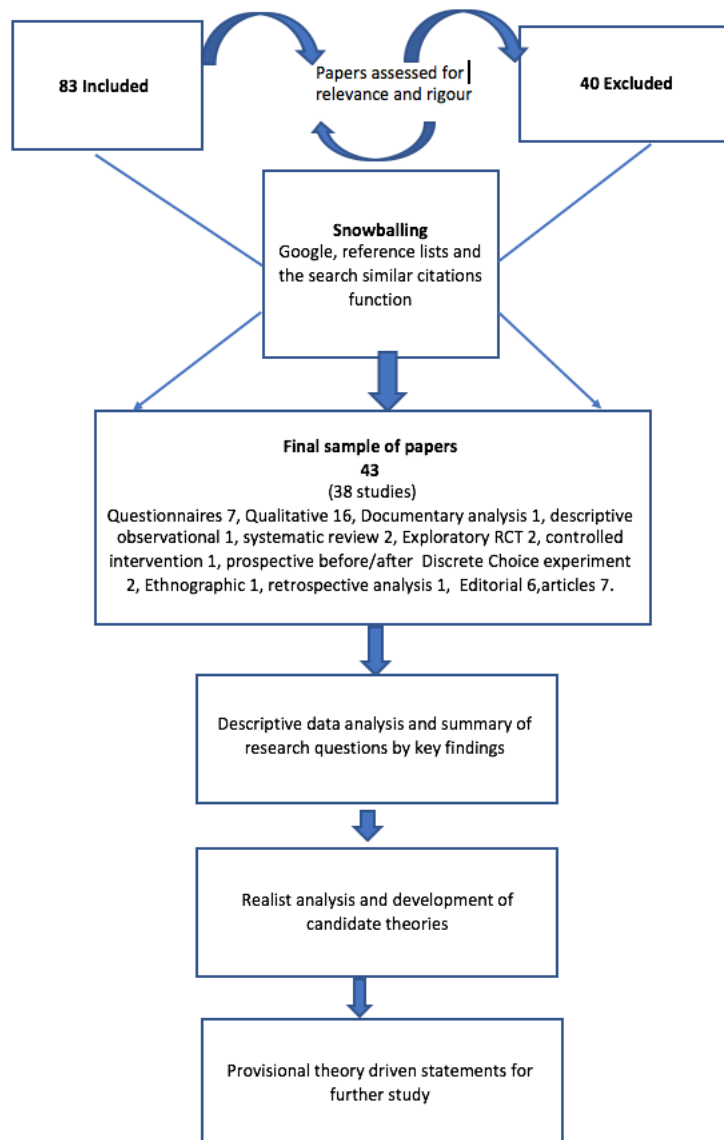


Figure 1 Study Flow Chart

Research Questions

As is usual in a realist review, the main question of what works for whom in what circumstances in relation to the role of pharmacists in general practice was further broken down into six, sub questions and one higher-order realist question, as we carried out the review:

Descriptive questions

1. What is the patient perspective on pharmacists working in GP practices?
2. What is the general practitioner perspective on pharmacists working in GP practices?
3. What is the pharmacist perspective on pharmacists working in GP practices?
4. What is the impact of pharmacists on patient's health outcomes?
5. What are the barriers preventing the successful implementation of this role?
6. What are the facilitators ensuring the successful implementation of this role?

Realist question

How do the key mechanisms of patient trust, GP confidence and pharmacist capability interact with contextual influences and the model of delivery interact with one another to explain the successes and failures of pharmacists working in general practice?

Sample

The studies were gathered via systematically searching through three databases (Medline, Embase and Scopus). A snowballing technique was used to gather further papers using Google searches, reference lists and the search similar citations function. Though at first glance it seemed that there were some relevant papers related to the questions asked, many were deemed unrelated when the titles and abstracts were read. Of the 83 papers, 40 were irrelevant, had significant flaws or were so small and parochial that their generalizability was doubted. Afterwards close reading was undertaken. Some papers were not necessarily empirical studies but were editorials or articles that related and helped to build the foundation and structure of this review. The papers were then analyzed and interpreted using the 6 descriptive questions. Over half of the studies used questionnaires or qualitative methodology (semi structured interviews, focus groups, documentary/discourse analysis or observation) to seek to attain the perspectives from the key groups such as patients, GPs, practice managers and pharmacists. The 43 papers we included were from 38 different studies. We could find no relevant policy papers apart from the ones referred to in the introduction which were written before the pilot study took place. The research questions were developed, as we read the studies and the answers to those questions are embedded throughout most of the studies.

Descriptive analysis

To ensure rigour, all the papers were read at least twice, by two authors, before being entered into an excel spreadsheet. The papers were then categorized by what database they were obtained from. The spreadsheet aided the differentiation of which descriptive question/s perspectives listed above each paper explores. We included editorials and articles from the UK Pharmaceutical Journal, for example.

Realist analysis

Initially it was thought that more data on the mechanisms of the interventions, the health consequences and the impact the interventions have produced would be found. As we gathered more literature, it was clear that this data for this intervention is not yet widely available and published. although there is some outcome data for similar interventions in primary care settings in other countries or situations. However, there was little detail in any of the papers of the mechanisms of embedding pharmacists in general practice apart from those of patient trust, GP confidence and pharmacist capability. The papers did not include theory and were largely descriptive. Though the data was minimal as of writing, the papers gathered have influenced and changed the objectives of this review. Over half of the studies were either questionnaires or qualitative and largely focused on the perspectives of stakeholders on this intervention, the review focuses more on perspectives, barriers and facilitators for implementation of the role. This, due to the flexibility of a realist review is a major theme of this review.

Results

A total of 83 papers and articles were initially identified from Medline (19), Embase (31) and Scopus (32). With close reading, the final review consisted of of 43 papers relating to 38 studies (See figure 1 study flow chart) . Most of the research was undertaken in the field of pharmacy practice and over half of the studies investigated the perspectives of different stakeholders using questionnaires or qualitative methods. The results are presented as answers to the 6 descriptive questions and then the realist question.

Descriptive findings

Questions 1: What is the patient perspective on pharmacists working in GP practices?

Petty et al.¹³ conducted extensive research looking into the views of patients on pharmacists conducting medication reviews in a GP setting. They concluded that not all patients will benefit from medication reviews as most patients already have these reviews with their GPs. They found that some patients welcomed the more detailed and longer review but some were disappointed by the services as the pharmacists did not meet their unrealistic expectations of the clinic, such as hoping that the pharmacist would be able to stop long-term medication or cure their problem

Independent prescribing pharmacists are valued by patients as an alternative to GP prescribing in GP practices¹⁴. However, patients had a stronger preference for their own doctor than a prescribing pharmacist. In an Australian study¹⁵ patients still viewed pharmacists as suppliers of medicines, though they welcomed the integration of pharmacists into GP practice, they also wished for more dispensing, therapeutic drug monitoring and supply of over the counter medicines. Younger patients were more likely to welcome the extended roles of pharmacists¹⁶ they were more willing to have their pharmacist to have both prescribing and dispensing roles. An Australian study¹⁷ concluded that there were positive patient attitudes towards pharmacists in primary care and stated that patients were highly satisfied with pharmacist consultations. Green et al.¹⁸ interviewed seven patients in one London GP practice and they mostly found the pharmacist to be experienced and beneficial. The authors conclude that as better understanding of the pharmacist's role might improve patient uptake. The studies above were all conducted before the NHS England initiative was introduced, thus the perspectives of patients in UK might have changed as a result of the intervention.

Snell et al.¹⁹ investigated patient views about a pharmacist led patient-centred polypharmacy medication review service completed within 17 English GP practices with those ≥ 75 years of age and prescribed ≥ 15 medications, during 415 consultations. Of the 40% who returned the questionnaire, 83% found the service helpful. Medication-related

concerns of 94% were addressed, and 80% understood their medicines better after the review. Patients appreciated pharmacists' personal approach, advice and explanations.

Question 2: What is the general practitioner perspective on clinical pharmacists working in GP practices?

GPs are much more welcoming to the idea of a pharmacist working in their practice if the GP has worked with a pharmacist before²⁰. Both GPs and pharmacists think that patients would accept these new services, they also agree that the initial acceptance by GPs would be low but would increase with further exposure²¹. A recent Icelandic action research study²² where pharmacists provided medicines reviews in either patients' homes, or the GP practice, where they had access to patient records, showed that GPs' knowledge about pharmacist competencies as healthcare providers and their potential in patient care increased. GPs said they wanted to have access to a pharmacist on a daily basis.

Question 3: What is the pharmacist perspective on clinical pharmacists working in GP practices?

Butterworth et al.²³ indicated an enthusiasm for the role and called for a definition of the role, with examples of the knowledge, skills, and attributes required, to be made available to pharmacists, primary care teams, and the public. The authors conclude that training should include clinical skills teaching, set in context through exposure to general practice, and delivered motivationally by primary care practitioners. Consultations with a pharmacist regarding medicines, in a general practice setting in the UK, have previously been reported to be rich in content, acceptable to patients, and perceived by pharmacists to be a possible way to extend their role²⁴. A UK analysis of audio-recorded consultations about medications, between patients and pharmacists in general practice, concluded that pharmacists were patient centred, and responded positively and effectively to patients' emotional cues and concerns. The pharmacists in Butterworth's²³ study recognised the importance of a holistic, individualised approach to patientcare and they valued the communication skills training on this course.

Canadian pharmacists^{25,26} in the iMPACT study needed time to expand their knowledge and skills to address family practice needs. They felt their identity changed with time and that they became more holistic and less “black and white” in their approach. Pharmacists need to be prepared for the emotional challenges of becoming part of an interdisciplinary team and need to use integration strategies to work. Mentoring and guided integration activities were helpful to facilitate integration into family practice but pharmacists still experienced a variety of emotions in the early months²⁷.

In order to be successful in gaining patient referrals and feeling part of the team, pharmacists needed to be visible, communicate well and be flexible and innovative. Once they demonstrated their value, they felt that buy-in from doctors happened.

This quote²⁸ highlights the uniqueness of the role and the initial feelings

“I’m a pharmacist so I know how to be a pharmacist. I don’t know how to be a pharmacist in a Family Health team because nobody knows about that yet. I walked in and I did pharmacy things, but I didn’t know what that meant in relation to what the nurse does or what the dietitian does.”

Question 4: What is the impact of pharmacists in general practice on patients health outcomes?

A meta-analysis of randomised controlled studies found improved medication concordance and reduced potential medication-related problems in general practices with an integrated pharmacist²⁹. The first randomised controlled trial of pharmacist prescribing in the UK suggested that there may be a benefit for patients with chronic pain³⁰. Freeman’s Australian study³¹ shows that pharmacists improve the timeliness and the overall completion rate of medication reviews in general practice, the study also concludes that the time between referral and pharmacist consultation is reduced. The same applies to the time between the pharmacist consultation to GP follow-up consultation, furthermore more patients were getting reviewed overall. Pharmacist interventions greatly improve asthma control tests (ACT) and COPD assessment test (CAT) scores in asthma and Chronic Obstructive Pulmonary Disease (COPD) patients, they further reduced the utilization of healthcare services and significantly reduce drug cost³². Pharmacist consultations can be

highly effective in identifying and resolving medication related problems³³ the same study also concludes that the patients welcomed these consultations and improved medication adherence. For high-risk patients with type 2 diabetes mellitus, proactive case management by a pharmacist can reduce HbA_{1c} levels of 1.2% compared to control in a primary care clinic setting³⁴, this reduction in HbA_{1c} levels would result in an estimated 40% to 50% relative reduction in microvascular complications. Patients that are seen by a pharmacist have a higher chance of their medication being changed compared to a control group, although the cost of the drug increased in both groups, the intervention group was smaller than the control group. The intervention did not increase the workload of general practitioners but it did not prove to have decreased the workload either³⁵. Falls can be significantly reduced in elderly patients in care homes by clinical pharmacist medication reviews compared to usual GP care³⁶. Pharmacists are able to provide independent medication advice within a primary care setting making this role to be a simple extension to their cost saving role which they already undertake in the GP practice²⁴. Pharmacists also prove to be valuable in management of more niche conditions such as insomnia³⁷. In a small Icelandic study³⁸ with 100 patients the pharmacist identified two drug therapy problems per patient. The most frequent problem was related to noncompliance, next was adverse drug reaction and the third was unnecessary medicines. Almost all pharmacist interventions were accepted by the general practitioners.

Hazen et al's³⁹ systematic review investigated how the degree of integration of a non-dispensing pharmacist into a healthcare team impacts medication related health outcomes in primary care. Some pharmacists are fully integrated into the health care team, whereas others only temporarily provide a specific service. Common opinion is that integrated care for patients with chronic conditions may improve patient outcomes. Pharmacists have been shown to positively affect surrogate outcomes, such as blood pressure, glycaemic control and lipid goal attainment. Evidence of the effect of pharmacists on clinical endpoints, such as mortality, hospitalizations and health related quality of life, is less clear probably due to very heterogeneously defined pharmacy activities as well as strongly differing study settings. Most of the studies did not include prescribing pharmacists and the authors acknowledge that this might change health outcomes and needs further study. They also

acknowledge that pharmacists operating in isolation may negatively influence the quality of care and that studies highlight the importance of communication between pharmacists and GPs about the patients. The authors concluded that full integration adds value to patient-centred pharmacy services, but not to disease-specific clinical pharmacy services and that to obtain maximum benefits of pharmacy services for patients with multiple medications and comorbidities, full integration of pharmacists should be promoted.

Bush et al.⁴⁰ attempted to characterise the breadth and volume of activity conducted by clinical pharmacists in general practice in an English Clinical Commissioning Group (CCG), and to provide quantitative estimates of both the savings in general practitioner (GP) time and the financial savings. This descriptive, retrospective, observational study analysed data collected by the CCG concerning the activity of pharmacists in GP practices during 2015. This descriptive paper based on routine data collection and relies on self-reporting of activity. Over the 9-month period for which data were available, the 5.4 whole time equivalent pharmacists operating in GP practices identified 23,172 interventions. 95% per cent of interventions identified were completed within the study period saving the CCG in excess of £1 000 000. However, there was no attempt to validate these interventions using for example an expert clinical panel. During the 4 months for which resource allocation data were available, it was reported that the clinical pharmacists saved 628 GP appointments plus an additional 647 hours that GPs currently devote to medication review and the management of repeat prescribing. The authors conclude that the findings suggest that pharmacists in general practice in the CCG are able to deliver clinical interventions efficiently and in high volume, generating considerable financial returns on investment.

Question 5: What are the barriers preventing successful implementation of this role?

Funding is a very clear barrier to implementation. Depending on whom you ask, it seems that different stakeholders have different opinions on how to fund this initiative^{41, 20, 29, 37}. However, the initiative in the UK now has some clear funding models, while the sustainability of the models remains uncertain. Avery⁴² in a recent editorial suggested that while some general practices will be prepared to make a financial contribution unless a more generous approach is offered to general practices and the funding formula is changed the scheme may fail. He emphasised that although pharmacists may sometimes ease GP

workload the majority of the impact of practice-based pharmacists will be on quality and safety.

Freeman et al⁴¹ in their report of their Australian study have suggested a more 'flexible' model, to meet the needs of the community based on the individual skills or interests of GPs and pharmacists which in theory would allow customization of specific GP practices to match their population's needs. The authors state, for example, uncontrolled asthma may be particularly common in the local population and thus the role of the pharmacist should be targeted toward this. There must also be core services provided by the pharmacist which allow a degree of consistency and enable large-scale and longitudinal review of the model and its benefits. Uptake by patients poses as a common barrier in many studies reviewed^{18,3}, patients do not realise that the service is available and what kind of care might be expected. The perceptions of other health care professionals can also be a barrier, particularly that of GPs^{29,31,43,44,45}. Lack of infrastructure is also a common barrier, many general practices do not have a spare room to accommodate a pharmacist. Freeman⁴⁷ highlighted barriers to pharmacist integration such as medical culture (he implied that this was due to "turf wars" and the doctor's worrying about pharmacist taking over their roles) and remuneration.

Question 6: What are the facilitators ensuring successful implementation of this role?

More experienced pharmacists are considered to be more suited to the role³⁴. The authors highlight the importance of established relationships with doctors and patients stating that this would improve trust and allow for more inter-professional working. Cost saving is one of the reasons for the implementation, pharmacists have more time to evaluate medicine usage and reduce medicine wastage³². According to one editorial, independent prescribing pharmacists would benefit the GP practice more as the pharmacist can drastically reduce workload of GPs. However, this remains to be measured in future studies.⁴⁷ If the implementation of pharmacists in general practices has resulted in overall health improvement this would naturally serve as a facilitator^{17,32, 34,35,36,37}. GPs benefit in multiple ways from the pharmacist presence. Pharmacists' support and input are provided in a timely manner in instances when they may not have previously been sought, from clinical meetings

to incidental ('corridor') consultations. The practice pharmacist and GP relationship allows for advice tailored to the GP's preferred style and immediate needs and enables ongoing, long-term collaboration on more challenging cases. So, if they have a good relationship with GP the pharmacist will know how the GP or practice operates and be able to tailor their advice and consultations accordingly. Further, GPs are more likely to enact advice from a trusted and respected colleague than recommendations from an external 'contractor'.⁴¹

Freeman⁴⁶ highlighted facilitators to pharmacist integration such as remuneration and training, benefits of integration such as access to the patient's medical notes, and potential funding models.

Blondal et al.²² concluded that direct contact between the pharmacist and GPs is better when working in the same building and that pharmacist's access to medical records is necessary for optimal service. Pharmacists having other roles working in the practice (such as educating other health care providers), and the pharmaceutical care service needing to be well structured and streamlined to have benefits. However, the one thing the GPs interviewed in this Icelandic study mentioned most was the importance of the face-to-face communication.

If integration of pharmacists into general practice is to be successful pharmacists need to develop their roles based on individual general practice needs rather than just assuming the national role description. For continuing success there will be challenges to overcome, such as defining standards for these new roles, and acceptance of patient-facing pharmacists by existing primary care team members and by patients. It is likely that the professional identity of pharmacists may change and general practice teams will need to find a new equilibrium. If these transitions can be facilitated, a bridge can be made between the patient and their medicines, enabling more optimum patient use of medicines.

Realist analysis: what might work for whom?

In answer to the realist question, "how do the key mechanisms of patient trust, GP confidence and pharmacist capability interact with contextual influences and the model of

delivery interact with one another to explain the successes and failures of pharmacists working in general practice?" five possible mechanisms were identified that might ensure the success of the initiative and the long-term viability of this role. The five mechanisms are the patient, the general practitioner, the pharmacist, the funding and the model of delivery.

Mechanism 1: Patients

From the research reviewed above independent prescribers are particularly valued by patients. Patients who have a better understanding of pharmacist services and have received those services and know what pharmacists are clinically able to do are more likely to see a pharmacist. They also consider that a pharmacist is capable of meeting their medication-related concerns, solving medicine related problems, improve their understanding of their medicines and improving their medicines adherence.

Mechanism 2: General practitioners

Overall the studies show mixed reactions from GPs, some are supportive while some remain more reserved about the idea. The GPs who support the implementation of pharmacists in GP practices tend to have a better knowledge of pharmacists mostly through working closely with pharmacists in the past. This experience allows the GPs to build trust and thus further professional relationship with the pharmacist. Direct contact and communication between the pharmacist and GPs is better when working in the same physical space where the pharmacist has access to medical records and is necessary for optimal service.

Mechanism 3: Pharmacists

Pharmacists must be able to gain the trust from key stakeholders, as mentioned earlier, both the patients and GPs who know more about pharmacists and have worked closely with them in the past are more welcoming to the idea of pharmacists in GP practices.

Pharmacists taking on broader roles in the practice such as educating other health care providers also helps. Pharmacists needed to be visible, communicate well and be flexible and innovative. Mentoring and guided integration activities were helpful to facilitate integration practice but pharmacists might experience a variety of emotions while settling into the practice in the early months. Both the public and clinicians need to be educated on the abilities of pharmacists their training and capabilities. If there was increased awareness about pharmacists training and clinical expertise, then in theory it might increase the trust in pharmacists in general. Currently the NHS England initiative emphasises pharmacists to

be independent prescribing pharmacists or that they will be training to be independent prescribing pharmacists. This qualification further enhances the ability of pharmacists. Being an independent prescribing pharmacist might also increase trust as the pharmacist will be seen as more clinically capable.

Mechanism 4: Funding

Funding is probably the largest barrier to most public health policy implementation, this included. Currently the NHSE initiative has a clear path of funding for the first three years of implementation, but after three years, the general practice would have to fully fund the pharmacist.

Mechanism 5: Model of delivery

The model of delivery has to be flexible. Different general practices will have different populations and different focusses and needs. Therefore, they will require pharmacists to do different things. So pharmacists must be able to understand and adapt to the needs of the practice they are working in. This adaptability should not be the sole responsibility of the pharmacist. Although, the past experience of the pharmacist will heavily influence it. The GP practice should be able to provide the pharmacist with all the necessary induction, support, training and resources. The pharmacists must have a full presence in the practice and their roles must be clearly presented to patients.

Discussion

This study adds to the existing literature on pharmacists in GP practices by bringing it together and evaluating it in the form of a provisional realist analysis. Figure 2 portrays a provisional unifying model of the above five mechanisms and the contextual influences on them. Key findings from this analysis are firstly that patients value pharmacist independent prescribers and those patients whom have a better understanding of pharmacist services and what pharmacists are clinically able to do, are more likely to see a pharmacist. Secondly GPs are more likely to welcome pharmacists into the role if they have previous experience of working with them. Thirdly pharmacists must gain the trust of GPs and patients. Fourthly adequate funding is essential, the NHSE initiative has a clear path of funding for the first three years of implementation in England, but after three years, the general practice would have to fully fund the pharmacist. Finally, the model of delivery of pharmacists' roles in

general practice needs to be flexible and pharmacists need to adapt to the needs of individual practices and the practice should be able to provide the pharmacist with all the necessary induction, support, training and resources.

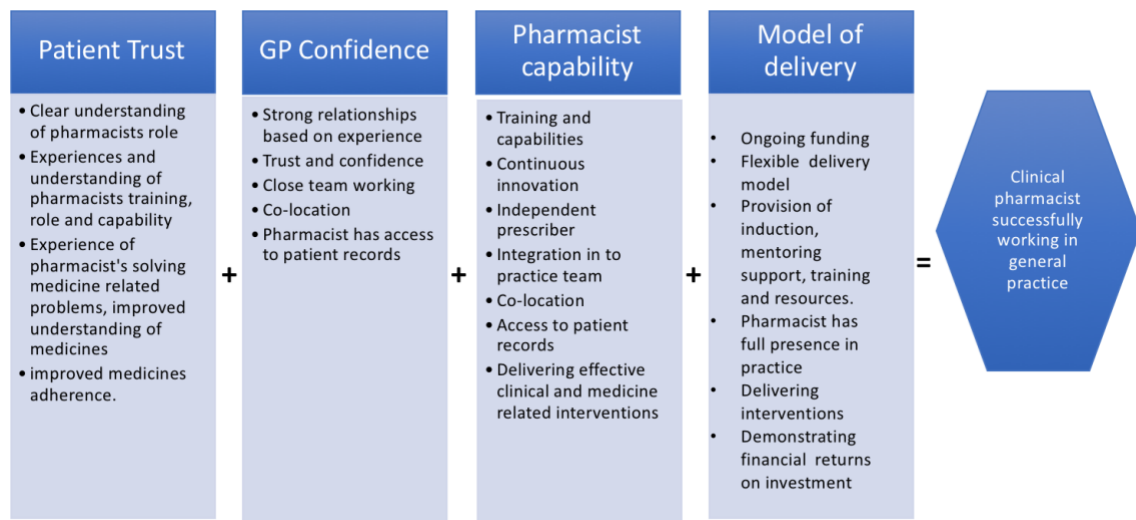


Figure 2 Provisional unifying model

Strength, limitations and future research design

This review followed the international RAMESES guidelines for realist synthesis.¹¹ Realist reviews consider what interventions will work well (and less well) for whom in which circumstances thus informing the development of future services and interventions in the future. This review included studies undertaken by different disciplinary teams with different goals and some of the studies were international, so although they inform the work in England, circumstances may have been different. We have begun to define and develop some the key ingredients for success for embedding pharmacists into GP practices. A limitation of this review is that the primary data were largely atheoretical and the majority of the studies used qualitative interview methodology or questionnaires to get perspectives from patients, GPs, practice managers and pharmacists. It may have helped us to begin to develop our preliminary theory if more of the studies were less descriptive and had used theoretical frameworks or developed theory.

While the majority of the studies focused on barriers and facilitators to the role of clinical

pharmacists in general practice most had very few details about the context of the role and if context had been included it would have better informed our realist review. In addition, further research is needed to assess the impact on patient outcomes, general practitioner workload, pharmacists' experiences of starting and embedding this new role in general practice including experiences of training, support and mentoring. There were no observational studies of how pharmacy work is conducted in practice. These limitations mean that the ideas proposed in our findings section are preliminary and should be subject to further testing as the role becomes more embedded.

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