

## Research Paper

# Development and feasibility testing of an evidence-based training programme for pharmacist independent prescribers responsible for the medicines-related activities within care homes

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## Abstract

**Introduction** The UK pharmacists with independent prescribing rights (pharmacist independent prescribers [PIPs]) are authorised to prescribe within their areas of competence. To enable PIPs to provide pharmaceutical care to residents in care homes and assume responsibility for medicines management, a process for development and assessment of competence is required. The aim of this research was to develop a training and accreditation process (training programme) to enable PIPs to operate safely and effectively within care homes.

**Methods** Located in England, Scotland and Northern Ireland across four sites and based on a systematic review, it consisted of four phases: (1) initial stakeholder engagement, (2) uni-professional focus groups and interviews, (3) expert panel consensus and (4) feasibility testing. Four PIPs were trained each to provide pharmaceutical care to 10 care home residents. An expert panel synthesised the evidence at each stage to develop each iteration of the training programme. Content analysis was used throughout.

**Results** Differences in baseline knowledge of PIPs required inclusion of a Personal Development Framework and the provision of a mentor. Face-to-face training focussed on managing medicines for a complex older person, minimising prescribing costs and supporting people without capacity. Provision of time to understand local context and develop relationships with care homes and general practitioners was identified as a central requirement. PIPs were assessed for competency

via viva. Feasibility testing demonstrated that the derived training programme was acceptable, practical and effective.

**Discussion** The model seemed to work, but due to small numbers, larger-scale testing of the training programme is now required.

**Keywords:** care home; training; Personal Development Framework; pharmacist; prescriber

## Introduction

Care homes, with or without nursing support, provide personal and/or nursing care for individuals who are no longer able to live independently in their own home. Whereas the proportion of people over the age of 65 living within care homes has either stabilised or reduced in Europe and North America, the number of residents continues to increase as populations age.<sup>[1]</sup> With a wide range and number of co-morbidities, medicines are a central element of residents' care, with the average number of regular medicines/resident reported to be between 7 and 10.<sup>[2-4]</sup>

The prevalence of medicines-related errors in care homes is reported to be high. One large observational study, in 2009, found that almost 70% of care home residents experienced at least one medication error on any given day.<sup>[2]</sup> A systematic review of interventions to improve medication use within care homes reported the most common medicines-related errors included unnecessary prolongation of therapy, drug–drug interactions, sub-therapeutic doses and inadequate monitoring of therapy.<sup>[5]</sup>

The most commonly reported intervention to improve pharmaceutical care within care homes is pharmacist-led medication review.<sup>[5]</sup> The pharmacist role can also include care home staff training,<sup>[6]</sup> working in a multidisciplinary manner with the resident's doctor<sup>[7]</sup> and assuming responsibility for all elements of medicines-related care.<sup>[8]</sup> The current evidence base for such interventions suggests that none of these models are optimal.<sup>[5, 9]</sup>

Although improvements in medication appropriateness have been demonstrated, the impact on clinical outcomes is mixed.<sup>[5, 9]</sup> One recent systematic review based on studies reporting secondary outcomes suggested that pharmacist interventions could potentially reduce falls,<sup>[10]</sup> with a more recent research review contradicting this,<sup>[7]</sup> and concluding that better models of care are required.

Legislative changes in the UK in 2006 enabled accredited pharmacists to independently prescribe<sup>[11]</sup> and enabled pharmacists to assume responsibility for pharmaceutical care in care homes, implementing their own interventions without secondary authorisation. Evidence is now emerging regarding the effectiveness of pharmacist prescribers in the provision of patient care.<sup>[12, 13]</sup>

Pharmacist independent prescribers (PIPs) in the UK are required to demonstrate competency against a national generic prescribing framework<sup>[14]</sup> and then practise only within their defined area of competence. Consequently, to be able to provide pharmaceutical care within the care home environment and prescribe for such residents, they would be expected to be competent to do so.

In 2012, the UK National Institute for Health Research (NIHR), funded a programme of work, the Care Home Independent Prescribing Pharmacist Study (CHIPPS), whereby pharmacists with prescribing rights were to be located within care homes and assume responsibility for providing pharmaceutical care. This was to be achieved largely through the development of pharmaceutical care plans and optimising prescribing through monthly authorisation of repeat medication, implementing prescription changes as needed,

while also providing oversight for drug storage, ordering, management and dispensing within the care home by their staff.<sup>[15]</sup>

The CHIPPS programme of research comprised six work packages one of which was to develop a training programme to support the enhancement of intervention fidelity within the trial and enable PIPs to operate within UK legislation. Early work identified the need for a formal accreditation process within this to reassure care homes and their associated medical practitioners of the safety of the proposal.<sup>[16]</sup>

Using Eraut's definition of knowledge required for workplace learning,<sup>[17]</sup> we have previously reported a systematic review with narrative synthesis to identify the knowledge requirements for pharmacists operating within the care home environment. This was categorised as codified knowledge (written down), practical knowledge (required to perform tasks) and cultural knowledge (how things are done around here).<sup>[18]</sup> We acknowledged that publication bias was likely to limit the capture of more mundane roles. Furthermore, due to the limited consideration of the specific training needs for pharmacists to operate in care homes within the literature, we identified the need for further qualitative work with all stakeholders to obtain a more complete picture to inform our training programme.

The aim of the work package was therefore to develop, and feasibility test a training programme to enable PIPs to provide pharmaceutical care safely and effectively within the care home environment.

## Method

CHIPPS was located in Aberdeen (Scotland), Belfast (Northern Ireland), Leeds (Northern England) and Norwich (South East England) and consisted of four phases: (1) initial stakeholder engagement, (2) uni-professional focus groups and interviews, (3) expert panel consensus and (4) feasibility testing.

An Expert Advisory Panel (EAP), constituted from the research team, consisting of four pharmacists, three of whom had significant previous care home experience, a medical public health consultant, two geriatricians, a senior research nurse, a senior care home manager and two patient and public involvement representatives, oversaw the process. Recognising *a priori* that participating PIPs were likely to vary in their care home knowledge and experience, it was agreed that the training programme should include a Personal Development Framework to structure learning and enable the PIP to address any knowledge or skill gaps. The mode of assessment was to be determined. Competencies identified as necessary, but already demonstrated to achieve prescribing status,<sup>[19]</sup> were excluded.

### Phase 1: Initial stakeholder engagement

As part of the main programme of CHIPPS work, focus groups and interviews were undertaken primarily to define the PIP service specification while operating within the care homes.<sup>[16]</sup> The topic guides included a question regarding pharmacist-training needs for the content of the PIP training programme. These elements were extracted from the verbatim transcripts and content analysis used to group

them into codified, practical or cultural knowledge, or for consideration within the training programme design.

The elements from the content analysis were combined with elements from the previously reported literature review,<sup>[18]</sup> individually numbered and categorised into: an expected behaviour (practical and cultural knowledge-based); a described activity to be undertaken in preparation for the role (to address identified cultural and practical knowledge needs. Expected behaviours were then combined by N.N. and D.J.W. into competencies, and these were then ordered into domains within the Personal Development Framework (Supplementary Appendix S1).

The first draft of the training programme with the proposed Personal Development Framework was presented to the EAP to review and amend to create Draft 2. This was then used within training-specific focus groups and interviews as described below.

## Phase 2: Uni-professional focus groups and interviews

Focus groups with different healthcare professional groups were organised and located across four sites as follows:

- Primary care pharmacists (Leeds)
- General practitioners (Aberdeen)
- Community pharmacists (Belfast)
- Care home staff (Norwich)

Additionally, within each site, an appropriate healthcare professional (local adviser) with significant local care home experience regarding medicines management was identified and recruited for participation in an interview to enable identification of local environmental and contextual factors (local cultural knowledge) which might require consideration.

All focus group and interview participants were identified purposively by local principal investigators. Before each focus group and interview, Draft 2 of the training programme including the Personal Development Framework was provided to participants. Focus groups and interviews were chaired or led by N.N. and moderated by D.J.W. The topic guide consisted of the following:

- Initial views on the draft training programme
- Therapeutic and clinical areas to be included
- Care home-specific processes which pharmacists would need to be aware of
- Knowledge required to be effective
- Interprofessional-related knowledge
- Any advice participants could provide relating to preparing pharmacists

Focus groups/interviews were recorded digitally, transcribed verbatim and content analysed by D.J.W. and validated by N.N.

Where possible, consensus on any amendments and enhancements to the training programme and framework was identified, with a final decision sought from the EAP if needed.

## Phase 3: Expert consensus

A consensus day was held at each study site primarily to develop the CHIPPS service specification but also to obtain feedback on the draft training programme. Participants included a primary care pharmacist (preferably a PIP), general practitioner (GP), community pharmacist, care home manager, care home staff member, resident

and/or relative, plus any other relevant local stakeholder, for example, local primary care organisation Medicines Management Lead. The panel was asked to provide feedback on:

- Their initial views on the draft training programme
- Whether all competencies should be assessed or just those which had been agreed with the mentor as requiring development
- The mode of assessment to be used
- Points of dissonance identified within the stakeholder focus groups and interviews

Detailed notes were taken from the consensus panels and used by N.N. and D.J.W. to create a final draft training programme for feasibility testing.

## Phase 4: Feasibility testing

Four PIPs, GPs and care homes, each with 10 consented residents, were recruited, through local networks, to the feasibility phase of the study.<sup>[20]</sup> The training programme was implemented before the PIPs providing the service over a 3-month period. At the end of the feasibility phase, a focus group with the PIPs was convened to obtain feedback on the effectiveness and acceptability of the training programme. The topic guide consisted of questions regarding:

- Personal development planning and support process
- Personal Development Framework (Personal Development Framework)
- Assessment process
- Impact of the training
- Elements which worked well and those which worked less well

The focus group was recorded, transcribed verbatim and content analysed to refine the draft training programme for use within the main trial.

## Results

### Phase 1: Initial stakeholder engagement

Thirteen interviews and 13 focus groups with 72 participants were undertaken.<sup>[16]</sup> Figure 1 shows the different types of knowledge identified as important for inclusion in the training.

The following training activities, in addition to face-to-face training, were included to develop identified cultural knowledge requirements, to support relationship development and enable identification of care home staff training needs:

- Shadowing care staff and observing medicines' administration
- Shadowing a GP and agreeing responsibilities and boundaries
- Time within care home and medical practice to learn how to use Information Technology systems

The practical knowledge identified as important was how to provide pharmaceutical care for older people with frailty. Supplementary Appendix S1 provides a copy of the first draft of the training programme.

The EAP identified the need for 'context' to be included as a domain within the Personal Development Framework and to change the 'chronic disease management' domain to 'managing complexity in late life'. Supplementary Appendix S2 provides Draft 2 of the training programme.

**Codified Knowledge**

Frailty  
 Harmful drugs in older people  
 Capacity and how to support residents without it  
 End of life care  
 Role and boundaries of self and others  
 Management of geriatric conditions  
 Medicines regulations in care homes  
 Importance of involving residents and relatives in decision making

**Practical knowledge**

Know limitations and to work within them  
 How to integrate into team  
 Good communication with team, with residents and relatives  
 Need for use of IT systems in home and medical practice

**Cultural knowledge**

Develop relationships with everyone involved in team  
 How medical practice servicing the home operates  
 Care home culture with respect to medicines  
 Impact of medicines within the care home  
 Medicines ordering and supply processes to enable effective access to medicines

**Training delivery design**

To support integration into team  
 Ensure includes effective communication of PIP role to home and wider team members  
 Mentoring and/or shadowing as part of training. Doctors and care workers  
 PIPs to communicate to staff the importance of managing medicines effectively  
 PIPs to understand and support good medicines administration practises

**Figure 1** Summary of knowledge requirements and recommendations for training delivery design derived from Phase 1.

**Phase 2: Uni-professional expert focus groups and interviews**

Six primary care pharmacists, six GPs, five community pharmacists, six care home staff participated in four focus groups and local advisers (three pharmacists and one doctor) participated in interviews. Recommended changes to the overall training programme and Personal Development Framework are provided in Box 1. A copy of the revised training programme resulting from this is provided in [Supplementary Appendix S3](#).

**Phase 3: Expert consensus**

Four consensus panels were held between 2 February 2016 and 2 December 2016 with 53 attendees (Aberdeen,  $n = 12$ ; Yorkshire and Humber,  $n = 12$ ; Norwich,  $n = 15$ ; Belfast,  $n = 14$ ). Across the consensus panels, there were 13 GPs, 3 care home managers, 7 care home staff, 4 care home resident/relatives, 13 primary care pharmacists, 10 community pharmacists, 1 individual responsible for medicines standards in care homes, 1 senior medicines management technician and 1 GP federation chair. Box 2 provides a summary of what was agreed within Phase 3. The underpinning knowledge identified as being required by PIPs is provided within [Figure 2](#).

Draft 4 of the training programme, which was used in Phase 4, is provided in [Figure 3](#).

**Phase 4: Feasibility testing**

The four PIPs were all female, all had previously worked as pharmacists within the care home environment and two of them already had a working relationship within the recruited medical practice. None had worked previously with the recruited care homes.

The training was viewed positively by all four PIPs, reported to be motivational and enhanced their confidence to operate within the role.

It's had a really positive impact, the fact that it has made you more motivated and certainly more clued in and more confident in going in and making changes to a patient's medications. (PIP 4)

The mentor was seen as a valuable support as well as an experienced advisor for the PIPs. It was thought that a face-to-face meeting with the independent evaluator would have been preferable but overall, the combination of mentor and GP assessor was considered helpful, and it generated ideas and confidence.

The process of working on the personal development plans was reported as being effective in consolidating existing knowledge as well as revealing knowledge gaps. It was considered to be valid, relevant, necessary and aided reflection. However, the process of collecting evidence against the Personal Development Framework could have been less time-consuming if there had been better guidance on expectations regarding this from the outset.

### Box 1. Phase 2: Recommended changes to the training programme

#### Overall training programme

- PIPs identify support available for the home from other health-care professionals and how to refer residents to them
- Include 'identification of red flags', 'management of antidepressants' and 'anticholinergic burden' in face-to-face training
- PIPs visit a care home with partner GP to undertake medication reviews together to identify expectations and boundaries
- Include an induction period to meet: community pharmacist, community matron, Care Quality Commission lead, consultant geriatrician, district nurse, local safety expert, care home pharmacists, as appropriate to local setting

#### Personal Development Framework

Include the following competency:

- Responds appropriately to medicines-related errors and critical incidents

Include the following behaviours (those things which underpin the related competencies):

- Ensures that resident nutritional needs are regularly reviewed and related prescribing is in line with local policy and guidance
- Ensures patient rights under Mental Capacity Act, for example, covert administration, right of refusal
- Supports effective transfer of medicines-related information when residents are hospitalised
- Ensures that medicines-related information transferred from hospital to the care home is accurate and complete
- Ensures that prescribing and monitoring practices relating to high-risk therapy, for example, anti-platelet and anticoagulant therapy, are appropriate
- Reviews and rationalises therapy in light of risk and benefits in a complex older person

Reword the following:

- The focus regarding pain management to remove the need for PIPs to undertake formal pain assessment for each resident
- Change 'palliative care' to 'terminal care' in the Framework as the latter better describes the point at which the PIPs would not be deemed competent to assume responsibility for prescribing

While all elements were viewed positively, the elements of the face-to-face training that were perceived as particularly effective were the case studies surrounding the management of complexity, legal issues and covert administration and the session on the management of psychotropic medication.

The most useful ones were certainly the case studies that were discussed with the geriatrician, so that was really good to work things through and discuss things as well, because I guess you just learn more from real life cases and commonly used drugs that you would see in elderly patients, particularly in relation to things like dementia. And also the antipsychotic training was excellent as well. The standard of training was all very good but those are ones that sort of like really stand out above. (PIP 4)

Following Phase 4, no major changes were made to the training programme.

## Discussion

This systematic and iterative development and testing of a training programme for pharmacists with prescribing rights to provide pharmaceutical care for care home residents resulted in a product that was relevant and equipped participants for their care home role. The model of using a Personal Development Framework, mentor and assessor, supported with an underpinning knowledge pack and specific face-to-face training, was shown to be acceptable and practical. Implementation resulted in PIPs who were motivated to undertake the role and confident to do so.

The process of data collection was robust, encompassing the full range of stakeholders. Development of the training programme was systematic, iterative and guided by an EAP. Although the literature review identified much of the codified and practical knowledge required by the PIPs, it was the qualitative data collection undertaken here, which identified the cultural knowledge requirements.

The training programme was only tested on four PIPs who could be seen as early adopters who may not fully represent the range of abilities and experiences of other pharmacist prescribers wishing

to develop competence within care homes. Consequently, without implementation and testing in a wider population, its practicability and acceptability need to be further established. We used the same mentor and medical assessor for all four PIPs and again, if the role were to expand, training for the mentors would be required to ensure consistency with respect to both support and assessment.

The feasibility stage lasted for only 3 months and its appropriateness for delivery long term is also unknown. Testing in over 20 PIPs undertaking this role over 6 months will occur within the main trial.<sup>[21]</sup>

A key area of agreement through our findings was the recognised need for the PIP to develop relationships with the care home staff, medical practice and community pharmacist. Activities to be undertaken when spending time with each were identified to ensure that the PIPs developed an understanding of local cultures, communication preferences and the expected boundaries for their prescribing practice. Consequently, training time was allocated for this purpose within the training programme. Interestingly, the four PIPs at the feasibility stage did not refer explicitly to time spent undertaking preparatory activities and we did not formally monitor adherence to this requirement. We therefore have limited insight into its effectiveness or appropriateness. As 'early adopters', they may represent more confident and outgoing individuals for whom relationship development occurs more readily. Within the planned definitive trial, there will be over 20 PIPs and at this stage, we will need to monitor and evaluate the effectiveness of providing time to develop relationships, integrate into local teams and understand local cultures.

The model of using Personal Development Frameworks to enable individuals to identify their learning needs is commonplace within the healthcare professional literature.<sup>[22-24]</sup> Mentors are seen as necessary as they can support the learning need identification process, identify experiential opportunities to develop the required knowledge and help with collation of evidence.<sup>[25, 26]</sup> Mentors are also frequently used to both support and sign-off trainees as competent within their role,<sup>[27]</sup> however, the appropriateness of this model has been questioned due to the mentor developing a relationship with the mentee and recognition that this may adversely affect their judgement.<sup>[28]</sup> Consequently, we used an independent assessor in addition to the mentor.

#### Conditions

- Parkinson's disease
- Cognitive impairment and behavioural disturbances

#### Symptoms

- Delirium
- Common skin conditions seen in care homes
- Dysphagia

#### Non-pharmacological therapy

- Wound management & catheter prescribing guidelines\*
- Nutrition guidelines\*
- Pain
- Dose optimisation based on renal function

#### Pharmacological therapy

- Cardiovascular (Hypertension, Secondary prevention, Heart failure)
- Asthma & Chronic Obstructive Pulmonary Disease
- Anti-coagulant
- Anticholinergics & burden
- Antipsychotic
- Sedatives
- Antidepressants
- Gastro intestinal (Laxatives, Proton Pump Inhibitors)
- Diabetes

#### Legislation

- Mental Capacity Act or local equivalent and gaining consent
- Covert administration
- Controlled drugs

\*Locally derived

**Figure 2** Underpinning knowledge required for safe practice within care homes.

### Box 2. Phase 3: Agreed changes to the training programme

#### Face-to-face training

- Delivered by a geriatrician and experienced pharmacist
- Use case studies regarding
  - complexity in older person's medicines in care homes
  - common legal and ethical issues
  - assessment of capacity
  - use of care plans and record-keeping
- Underpinning knowledge pack
- Large number of areas of knowledge identified as required to underpin competency resulted in the development of a knowledge pack consisting of links to current papers, websites, reports and guidelines.

#### Preparation for role

- Significant amount of time to be allocated to the development of relationships and that training care staff was an important element within this.

#### Personal Development Framework

- Include 'Trains others' under communication skills domain

- 'Delivers effective small group teaching sessions' and 'Provides feedback on performance sensitively and constructively' as behaviours to underpin 'Trains others'.
- Wound management not to be included as a competency.
- Medicines' discontinuation included within the 'Safe and effective medicines' alteration' competency.

#### Development process

- PIPs to use the Personal Development Framework initially for self-assessment with support from a mentor (senior pharmacist with care home expertise)
- Mentor support to continue through the development process

#### Assessment/accreditation process

- Assessment only of those competencies identified as 'requiring development' within personal development plan
- Oral viva with both mentor and independent evaluator (medical practitioner with an expertise in care homes) sign-off.
- PIP to be graded as either 'competent', 'safe but still requiring further development in some areas', 'not competent'.

The training programme consisted of:

- Two training days (Study design & project delivery, preparation for role)
- Development of underpinning knowledge (Figure 2)
- Self-assessment against Personal Development Framework (provided below) and agreement of personal development plan with mentor
- Relationship building and competency development through protected time
- Sign off for role through competency panel consisting of doctor and pharmacist

Developing relationships with GPs, medical practice, staff, care home manager(s), care home staff, community pharmacist by undertaking the following relevant activities

- Discusses and agrees prescribing boundaries and methods of working
- Identifies efficient approaches to manage urgent medicine requests from home
- Agrees frequency and preferred modes of communication
- Identifies support available for the home from other healthcare professionals and how to refer residents to them
- Develops list of useful contacts

Additionally, within the medical practice

- Learns how to use IT system and agrees content of records
- Obtains access to prescription pad
- Meets lead prescriber and local primary care pharmacist responsible for prescribing within medical practice to obtain local medicines-related problems and policies
- Visits care home with GP when undertaking a routine visit and jointly perform medication review on non-study residents
- Meets lead prescriber and local primary care pharmacist responsible for prescribing within medical practice to obtain local medicines-related problems and policies

Additionally, within the care home:

- Understands recording systems including MAR charts
- Observe medication administration rounds for recruited residents to identify how best to support staff
- Identify senior members of team, roles and medicines-related culture
- Provides care home staff training depending on identified needs

Arrange to meet the following if available and deemed useful:

- Local safety expert i.e. person responsible for safety from medical practice perspective
- Care home pharmacist specialist
- Consultant geriatrician working in primary care
- Community matron with responsibilities for care homes
- Local CQC or national equivalent inspector
- District nurse (Dressings, catheter, barrier cream policies)

**Figure 3** Final training programme (Supplementary Appendix S4).

Formal assessment of competence is unusual as PIPs in the UK are allowed to self-certify competence. The requirement for independent external assessment resulted from medical practitioner concerns regarding the safety of this model. With no safety net for the pharmacist who is now making final prescribing decisions for a population who are likely to be frail and have complex conditions, it was believed necessary to attach this extra layer of quality assurance. It is also appropriate to assess for competency in a trial where interventions to enhance fidelity are required<sup>[29]</sup> and assessment can be

used to ensure that those who deliver the main trial intervention do operate at the expected level. Within the four PIPs in the feasibility stage, the inclusion of assessment was seen as positive and effective at enhancing individual confidence. Whether it would be included in any future commissioned service would need to be decided, but evidence suggests that while it is likely to add to expense, additional benefits would be derived from this.

Due to cost and recognition that PIPs will all have different learning needs, face-to-face training was limited to those topics

## Training day content

### Day 1: Study design and project delivery

- Trial rationale, design & outcomes (RH) 2 hours
- Training and development plan (DW) 2 hours
  - Personal development planning and sign off
  - Provision of guidelines to support underpinning knowledge
  - Relationship building and logistics sessions
- Effective communication and record keeping (include care planning) 1 hour
- Service initiation & implementation (Develop protocol) (DW) 2 hours

### Day 2: Preparation for role

- Managing the frail elderly complex person (Consultant geriatrician) 5 hours
  - Case studies (show STOPP/START)
  - Identifying boundaries i.e. red flags which require referral
  - Anticholinergic burden, antipsychotic de-prescribing
  - Assessing capacity and gaining consent (covert administration, family involvement)
- Medicines management (Error management, efficient prescribing) 2 hours

Figure 3 Continued.

deemed to be most important for patient safety and PIP effectiveness. Understanding of managing complexity and frailty was seen as core knowledge for pharmacists in care homes and consequently, we chose to deliver training on this element via case studies with a geriatrician and a pharmacist with expertise in managing medicines in older people leading the session jointly. This element of the training was appreciated by the PIPs and was seen to enhance their confidence. The experience of Covid-19 may promote training to be undertaken virtually, rather than face-to-face, thereby reducing travel and accommodation costs experienced within this programme of research. The identification of knowledge required by PIPs to undertake their role and underpin their competencies created some concern for the team anticipating the time required to develop the materials. However, recognition that such materials were already available and in the public domain enabled us to rapidly produce a document consisting of web links to relevant guidelines, pages and documents. A model of this nature is also relatively easy to regularly update.

The overall model we have developed here, is very similar to that which was subsequently used to underpin a concurrent national initiative to integrate pharmacists into care homes for medicines optimisation purposes. Face-to-face training, support materials, competency framework and mentoring were similarly provided.<sup>[30]</sup> Consequently, demonstrating the potential feasibility of our training programme for preparing pharmacists to undertake the central medicines management role within care homes.

Although pharmacist prescribing is still limited to a minority of countries, the opportunity for direct transferability of these results is small. However, with the training programme underpinned by extensive international literature regarding pharmacist activities within care homes, we believe that it could transfer across countries and to pharmacists without prescribing rights. With all frameworks of this nature, they are, however, more likely to be effective if adapted to the context and target audience. Furthermore, to enhance ownership of, and engagement with, any training programme of this nature it is always best to involve the users in its design.

## Conclusion

This novel and extensive approach has produced a comprehensive training programme to enable PIPs to provide pharmaceutical care within care homes. Comprehensive engagement with key stakeholders within the process should engender greater buy-in when the intervention is delivered.

The feasibility of the training programme was demonstrated with PIPs feeling confident and competent to perform their role. Larger scale testing of our package is now required before broader dissemination.

## Funding

Supplementary Appendix S1: Creation of and Draft 1 of CHIPPS training programme.

Supplementary Appendix S2: Draft 2 CHIPPS training programme.

Supplementary Appendix S3: Draft 3 CHIPPS training programme.

Supplementary Appendix S4: Draft 4 CHIPPS training programme.

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## Author Contributions

Wright DJ, Holland RC and Norris N conceived the original idea. Blyth A, Maskrey V, Wright DJ, Norris N were all involved in data collection and analysis. All authors contributed to the management and delivery of the project and review of each draft of the paper.



## Conflicts of Interest

D.J.W. regularly undertakes consultancy work and receives research funding from Desitin pharma.

## Ethical Approval

NHS National Research Ethics Service approval for Phase 1 was received on 10 April 2015 (REC Ref. No. 15/YH/0172). Approval for Phase 2 of the programme of research was obtained from the four local University Ethical Committees and local Research and Development departments. Approval for Phase 3 was received from the East of England – Essex Research Ethics Committee on 9 May 2016 (REC Ref. No. 16/EE/0284) and Scotland A REC on 9 August 2016 (REC Ref. No. 206970) with subsequent approval from the Health Research Authority/NHS Research and Development.

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