

Assessing a Bespoke Training and Competency Framework for Pharmacist Independent Prescribers in UK Care Home Medicines Management

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Abstract

Granting independent prescribing authority to pharmacists in the United Kingdom (UK) allows them to issue prescriptions based on their expertise. This research assessed a rigorously developed educational initiative aimed at equipping Pharmacist Independent Prescribers (PIPs) to securely and efficiently manage pharmaceutical care for elderly individuals residing in UK care homes, as part of a randomised controlled trial. The educational and skill evaluation procedure featured two instructional sessions, individual advancement strategies aligned with a tailored skill framework, guidance from mentors, and an oral examination conducted by an unrelated General Practitioner (GP). Feedback on PIPs' views of the education was gathered via assessment sheets right after the sessions and via digital surveys and discussions following the completion of the 6-month service delivery. A combined quantitative-qualitative methodology analyzed each dataset independently before integration to offer a thorough appraisal of the approach. Interpretations followed Kaufman's Model of Learning Evaluation. Every one of the 25 PIPs who underwent the education submitted an assessment sheet (N = 25). Surveys after the service were returned by 16 PIPs, while 14 PIPs engaged in discussions. Participants indicated that the instructional sessions and guidance helped them build an individualized evidence collection demonstrating skills, ready for review in an oral exam with an unrelated GP. Interactions with mentors decreased as PIPs built assurance in their positions. PIPs incorporated their recently acquired knowledge during service provision, resulting in observed enhancements in residents' well-being and medication oversight. Some PIPs noted that assembling the skill evidence collection demanded considerable time, and additional instruction in management abilities would prove useful. The customized educational initiative proved suitable for its intended use. Guidance and skill evaluation demanded substantial resources yet remained suitable. A further advantage was that numerous PIPs experienced career advancement exceeding the study's demands.

Keywords: Pharmacist, Education, Independent prescribing, Care homes, Deprescribing, Professional skill

Introduction

Residential facilities for seniors offer assistance to those needing round-the-clock supervision, with or without nursing services. Dementia ranks as the primary cause for entry [1], though numerous occupants suffer from several health conditions and related treatments. Regular

prescriptions for occupants typically fall between 6 and 9 [2, 3]. UK investigations revealed that 70% of occupants faced a medication-associated mistake each day, prompting authorities to demand measures to lower this figure [2].

The primary strategy to enhance medication usage in residential facilities has involved deploying pharmacists who utilize their expertise in patient-focused history gathering, clinical judgment, and drug knowledge to examine treatments and advise on medication procedures [4]. Although this has decreased prescription quantities and boosted treatment suitability, existing approaches have not sufficiently shown gains in health results. Thus,

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suggestions have emerged for identifying superior care frameworks [4].

Study and training context

UK regulations granting prescribing privileges to pharmacists [5] permit them to prescribe and modify orders independently of physicians, thereby taking charge of medication enhancement efforts in residential facilities. The UK National Institute for Health Research (NIHR) supported the Care Homes Independent Pharmacist Prescriber Study (CHIPPS) to evaluate the efficacy and economic value of this novel care approach [6, 7]. The CHIPPS service featured a collaborative group of participants: a Pharmacist Independent Prescriber (PIP), General Practitioner (GP), and facility personnel from homes supplying occupants. All PIPs held an advanced degree in Independent Prescribing and handled medication oversight for involved occupants while providing broader assistance and education to the facilities. Initial consultations with involved parties highlighted demands for confirmation of pharmacist independent prescribers' suitability for this position with highly vulnerable seniors [8]. Rules for independent prescribing by non-physicians require limiting activity to areas of expertise [9]. As a result, preparatory education is standard before starting the position; this formed the goal of the CHIPPS pharmacist education.

A review of published works found scarce data on educational requirements for pharmacists in residential facilities, likely due to prior verification and approval of suggestions without prescribing authority [10]. In contrast, CHIPPS pharmacists operated independently, necessitating skill verification prior to beginning duties. Early collaboration with a wide multidisciplinary group, followed by feasibility work involving four pharmacist prescribers, informed the creation of a training package used in the main trial [11]. Delivery of the programme was undertaken by professionals from multiple primary care disciplines, including senior care home pharmacists, general practitioners, and consultant geriatricians. Each Pharmacist Independent Prescriber (PIP) participated in two full days of in-person instruction, primarily addressing prescribing oversight and deprescribing (the withdrawal of inappropriate medicines) for older adults with complex clinical profiles. Learning activities relied on authentic case examples, guided reflection, and facilitated peer discussion focused on difficult prescribing decisions.

After completion of the classroom-based component, PIPs were provided with four additional days to establish collaborative links with relevant care homes, GP practices, and community pharmacists involved in the intervention. Financial reimbursement for this period was provided either directly to the PIP or to their employing organisation. Each participant was paired with a pharmacist mentor who had substantial experience; together they applied the competency framework to construct an individual professional development plan. PIPs then assembled a structured portfolio demonstrating competence [11]. Final confirmation of prescribing competence within care homes was achieved through a viva assessment conducted by an independent GP.

As part of the CHIPPS study, PIPs implemented the intervention across a six-month period in accordance with a predefined service specification. Responsibilities included co-producing care plans with residents, care home staff, and the GP, alongside ongoing surveillance of medication use. Outcomes from the feasibility phase [12] revealed a need for clearer guidance on the application of pharmaceutical care plans (PCPs: personalised written medication plans specifying therapeutic aims). In response, this content was incorporated into the training curriculum. The two-day face-to-face programme also incorporated sessions addressing the research procedures underpinning the CHIPPS intervention.

This article presents an evaluation of an evidence-informed educational programme developed to equip Pharmacist Independent Prescribers (PIPs) with the skills required to independently manage pharmaceutical care for older people residing in UK care homes, examined within a randomised controlled trial framework.

Materials and Methods

Design

Data were obtained as part of the broader trial process evaluation [13]. Ethical approval for research conducted in England was granted by the East of England Cambridge Central Research Ethics Committee (17/EE/0360; 28.11.2017), with this approval extending to Northern Ireland. Separate ethical clearance for Scotland was secured from the Scotland A Research Ethics Committee (17/SS/0118; 07.12.2017).

Initial inductive analysis was followed by deductive application of Kaufman's Model of Learning Evaluation [14]. This framework examines training outcomes across

five levels from the learner's standpoint, enabling distinction between training inputs and delivery processes, as well as between micro-level outcomes (specific to PIPs) and macro-level outcomes (relating to GPs, care home staff, residents, and wider societal impact). The model was selected to explore PIPs' perceptions of training resources, instructional methods, learning acquisition, transfer of learning into practice during CHIPPS service delivery, and resulting outcomes for both PIPs and associated stakeholders.

Recruitment and sample

Pharmacist Independent Prescribers were recruited to the CHIPPS study [7], with 25 assigned to the intervention arm and receiving training for their role. All participants attended the two-day in-person programme and were allocated additional remunerated time to support competency development. These 25 PIPs constituted the sample for the present evaluation. To enhance triangulation, data from questionnaires and interviews completed by general practitioners and care home staff during the process evaluation were also incorporated [13].

Data collection and analysis

Post-training day evaluation questionnaires

Upon completion of the second training day, PIPs were invited to complete a structured evaluation questionnaire. Items assessed the perceived relevance of individual training components, along with the effectiveness and timing of delivery. Responses were recorded using a 5-point Likert scale ranging from "strongly disagree" to "strongly agree." Quantitative data were compiled and tabulated using Excel, followed by descriptive statistical analysis. Qualitative free-text responses were analysed in conjunction with interview material (see below).

Survey conducted after the intervention

Following the completion of the six-month service provision, PIPs, GPs, and care home administrators

received email invitations to fill out a digital survey regarding their general impressions [13]. The survey incorporated elements from the NoMAD instrument [15], intended to investigate the integration of novel abilities and expertise into routine practice. The surveys featured questions about tasks performed by the PIP, effects of the service on interprofessional connections, and overall value of the initiative. GPs received inquiries on whether the PIP demonstrated adequate preparation for the position. The edition for PIPs additionally covered aspects of their views on the educational component (adequacy and value of the preparatory sessions; value of guidance before competency approval; and value of guidance throughout service execution). Responses on Likert scales were recorded and organized in Excel. Basic statistical summaries were performed. Free-response comments were examined together with discussion data (detailed below).

Discussions after the intervention

Upon finishing the six-month service, participants in the active group—including PIPs, GPs, and care home personnel—were contacted via email to join a guided conversation, conducted face-to-face or via phone. The discussion outline for PIPs comprised eight items focused on educational and guidance elements. These explored participants' opinions on the applicability and benefits of the educational and skill verification procedure relative to their existing expertise and during actual service provision. Outlines for GPs and care home personnel included items on collaborations with the PIP and contentment with the provided service. With permission obtained, conversations were recorded audio-wise, transcribed, and organized using NVivo [15]. Analysis involved initial pattern-based thematic review, followed by targeted application of Kaufman's Model of Learning Evaluation [14] to frame PIPs' accounts within assessment categories. **Table 1** outlines the connections between the CHIPPS educational assessment data and Kaufman's Model.

Table 1. Connections between CHIPPS educational assessment information and Kaufman's Model of Learning Evaluation

CHIPPS training evaluation analysis questions	PIP data
Level 1a Input Were the delivered topics relevant and valuable?	Pre-training preparation 'Creating a case study to bring along on the day helped me reorganize my approach to cases and built my assurance in implementing changes.' Interview PIP17 'The contributions from geriatric specialists were extremely valuable, especially the discussions around real-world case examples and gradual dose reductions of

	different drugs.' PIP15 'The parts on managing dementia in Parkinson's disease and the psychiatrist's input on assessing and decreasing antipsychotic use were particularly helpful—I lacked that expertise before.' PIP 22 Areas to improve 'Mental health regulations in Scotland vary from England, so much of the discussion on capacity, certification, and paperwork felt slightly mismatched... perhaps make it more inclusive across UK regions regarding forms and procedures.' PIP15 'Some training on negotiation skills would be useful.' PIP22
Level 1b Process Were the training methods delivered effectively?	Usefulness of mentor 'The real value came from the mentor describing scenarios she had faced, suggesting possible actions and approaches—this was helpful because I hadn't thought about how to introduce myself initially; her advice on establishing relationships has certainly supported me.' PIP14 Time to prepare for assessment of competency 'A substantial amount of independent preparation was required, which felt excessive—some of this material could have been incorporated into the main sessions.' PIP13 Areas to improve 'Details on study processes were useful, though some repetition occurred.' PIP8
Level 2 Acquisition Did participants gain new knowledge?	Refreshing knowledge 'The programme definitely updated my existing knowledge and left me better prepared for conducting reviews in care homes.' PIP21 'Participating was beneficial because it prompted me to reconsider certain areas, although I was aware some refreshment was needed.' PIP2 Increasing competency 'Certain clinical topics addressed gaps in my skills, such as dementia management; the only occasion I contacted my mentor was to ask whether it was appropriate to taper a specific medication for a resident—through that I learned and became more assured.' PIP8 Areas to improve 'I wouldn't call the competency portfolio pointless—it was worthwhile—but I would streamline it considerably to make it more efficient.' PIP16
Level 3 Application Did participants put new knowledge into practice?	Making medication changes 'Many residents were on as-needed antipsychotics, a topic covered in the sessions; after educating carers on monitoring signs and updating the MAR chart to emphasise adherence to the PRN guidelines, numerous residents successfully discontinued these along with their sleep aids.' PIP19 'I had already handled covert administration, but the training encouraged me to reconsider timelines—we shouldn't leave reviews for a full year; medicines should be reassessed earlier and questioned whether they remain necessary, making me a more diligent prescriber and pharmacist.' PIP22 Increasing confidence 'We managed to deprescribe medications for several residents, especially antipsychotics—something I might have avoided previously—but the sessions, peer discussions, and heightened awareness made me feel much more at ease.' PIP14 'I now feel bolder in questioning consultants; the training has equipped me to pause and think whether certain prescriptions are truly needed.' PIP21
Level 4 Organisational results Were there effects on the service delivery and involved parties?	GP reactions 'The PIP demonstrated strong knowledge of prescribing in care homes, provided helpful alternative approaches for covert administration, and documented clear management plans following discussions with staff, residents, and relatives.' GP16 'The PIP discontinued unnecessary medicines; for a few residents with low blood pressure, identifying excess medication potentially lowered their fall risk.' GP8 Improved review 'Before a six-month review, I now check earlier—when was the last blood test or psychiatric correspondence? If I spot questionable drugs, I address them more quickly because the relevant knowledge feels more current.' PIP21 Benefit to resident 'Residents we withdrew from antipsychotics became noticeably more alert, cheerful, and engaged—that outcome was clearly positive.' PIP14
Level 5 Societal/customer consequences Were there broader organisational impacts?	Knowledge carried forward 'In my current role, I have adapted the approach developed through CHIPPS experience to create my own framework as a care home pharmacist.' PIP16 PIP sharing expert advice with GPs changed practice 'When prescribing topical creams for limited courses, I began adding instructions like "discard after one week" or "discard after two weeks".' GP19 'The resources and links shared during the training sessions proved highly practical; I circulated many of them in our team meetings, prompting valuable reflections and several follow-up discussions on managing frailty.' PIP22

Results and Discussion

Twenty-five PIPs participated in the educational sessions, and everyone submitted the immediate follow-up assessment forms. After the service phase, all 25 received invitations for the survey and discussion. 13 finished both the follow-up survey and discussion; three finished solely the survey; and one finished solely the

discussion, yielding information from 17 PIPs. Three PIPs ceased service provision prior to three months; they showed no response to survey recruitment or discussion invitations; an additional five PIPs failed to reply to invitation messages. Demographic profiles showed no significant variances between discussed and non-discussed PIPs. **Table 2** provides information on PIP profiles by data gathering approach.

Table 2. Profiles of PIPs by data gathering approach

Data collection method	Post-training evaluation form	Post-intervention questionnaire	Post-intervention interview
Number of PIPs	25	16	14
Mean time registered as pharmacist	19 years (5–40 years)	21 years (8–40 years)	20 years (10–36 years)
Mean time qualified as prescriber	52 months (4 years 3 months)	65 months (5 years 4 months)	58 months (4 years 8 months)
Previous care home experience	11 (44%)	6 (37.5%)	7 (50%)

Eight GPs and 2 care home personnel submitted follow-up surveys. Eight GPs and 15 care home personnel participated in discussions. Collaborative group identifiers and duration as an independent prescriber (IP) label example statements from PIPs; GP and care home personnel receive labels by collaborative group alone. Findings appear organized by the five categories of Kaufman's framework.

Category level 1a input—did educational materials prove adequate and fitting?

Immediate follow-up assessment responses regarding content in clinical portions revealed high consensus that every content area warranted inclusion, as depicted in **Figure 1**.

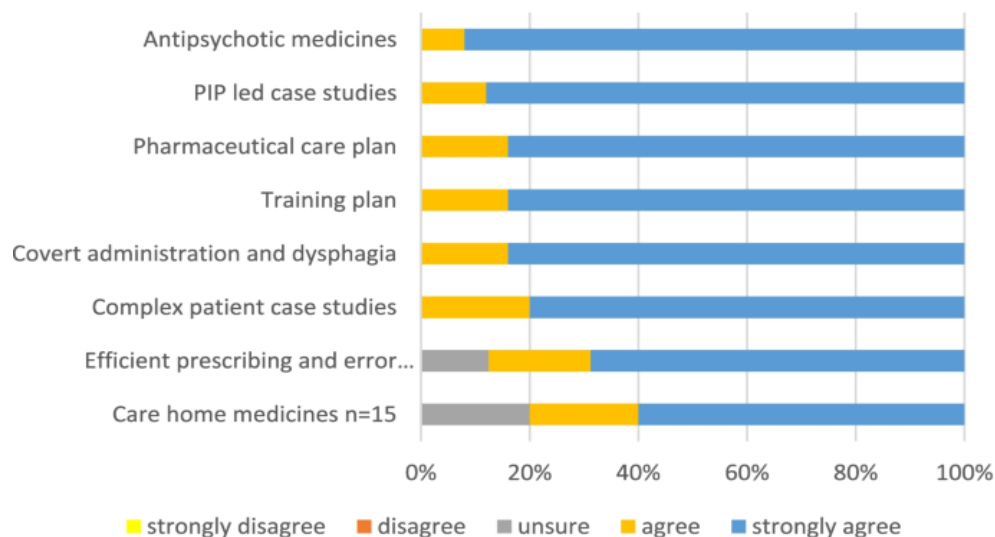


Figure 1. PIP Immediate educational assessment on content inclusion necessity (N = 25)

In the follow-up survey question, 'Did the preparation sessions before service start offer adequate readiness for the position: fully, partially, not at all?' 13 PIPs selected fully, 3 selected partially. In follow-up survey free-comment sections, PIPs mostly highlighted enjoyment of practical scenarios, deeming sessions by elderly care experts especially valuable, 'Peer examination of

practical scenarios proved valuable for gaining insights from peers and seasoned elderly care physicians' PIP4 IP1yr.

Views varied on the value of portions addressing research execution. In the immediate assessment item, 'Should sessions address Research matters & operational steps?' (5-point Likert), 21 PIPs indicated strong agreement and

4 indicated agreement. In the follow-up survey, free-comment sections on ‘Which training element proved least valuable?’ Four PIPs mentioned research steps; 2 deemed the presentation on finishing PCPs least valuable, one noted repetition in research steps instruction, and one remarked that research steps require coverage ‘Detailing every procedure and approval requirement may seem least advantageous in sessions yet remains essential.’ PIP15 IP6yrs. However, during discussions, certain PIPs proposed including greater specifics on finishing PCPs and adding content on interaction and collaboration development.

Domain level 1b: process – was the training well delivered?

Post-training feedback showed that most PIPs considered the sessions to be effective and the time allocated appropriate. During interviews, one participant suggested that a mid-intervention refresher could have been beneficial. Several PIPs travelled from Northern Ireland and Scotland to attend sessions in Norfolk (England). While in-person training was appreciated by all, the travel added personal demands; for instance, even though PIPs were paid for their attendance, some had to arrange domestic responsibilities to enable their absence from home.

Post-intervention questionnaire data indicated that mentor support before the competency assessment was valued: 6 PIPs rated it as very useful, 4 as useful, 5 as neutral, and 1 as not very useful. This aligned with interview feedback, in which participants reflected positively on mentorship, the competency framework, and the structured identification of areas for development:

‘I actually enjoyed completing the portfolio because going through it made me realise I knew more than I initially thought, and I learned quite a lot from the process’ (PIP11 IP3yrs).

The viva assessment with an independent GP, required before starting the intervention, was also positively received. Interviewees noted that the dedicated time to discuss their skills with another professional was valuable. PIPs reported that this assessment increased their confidence in clinical abilities:

‘I really liked being formally signed off... it made me feel like “okay, they believe I am ready to do this role”’ (PIP19 IP8yrs).

As the intervention progressed, the need for mentoring decreased. Post-intervention questionnaires indicated

that 4 PIPs rated mentoring during intervention delivery as very useful, 3 as useful, 6 as neutral, and 3 as not very useful. Despite this, the expertise of the mentor was acknowledged:

‘Having someone with extensive experience was really helpful... I thought I knew a lot, but the mentor challenged my thinking and pointed me in the right direction to refine a few points’ (PIP17 IP7yrs).

Domain level 2: acquisition – to what extent did PIPs acquire new knowledge and skills?

All PIPs successfully demonstrated competence in the viva within expected timeframes. Participants reported acquiring new knowledge even if they had considerable prior experience as independent prescribers or working in care homes:

‘I already conduct six-monthly reviews with care home staff and feel confident making decisions about some drugs. But there were certain medications, especially antipsychotics, I would have hesitated to adjust... after the training sessions, group discussions, and greater awareness, I felt more comfortable managing these’ (PIP14 IP20yrs).

Domain level 3: application – to what degree did PIPs use their learning in their role on the intervention?

Interviews suggested that the training enhanced confidence in prescribing and deprescribing within care homes. Participants noted that confidence increased over the initial weeks of the intervention:

‘At the start I was less confident, but over the first few months I developed more comfort and by the second three months I felt much more settled into the role’ (PIP8 IP1.5yrs). One participant explained that they now had ‘confidence to remove medications safely when appropriate’.

Domain level 4: organisational results – did the PIP training have an impact on the implementation of the intervention and triad stakeholders?

All 8 GPs responding to the post-intervention questionnaire confirmed that the PIP appeared adequately trained. Interview responses suggested high confidence in PIP knowledge:

‘Very knowledgeable... gave advice at the right level— alerting me to safety concerns directly, while providing options for other issues’ (GP6).

Both GPs and care home staff noted improvements in medication safety due to the PIP's activity. Deprescribing was reported to enhance resident quality of life:

'Reviewing residents' medications and deciding whether all were necessary... a few were prescribed Accrete (vitamin D and calcium) for high fall risk, which helped with fall analysis and was an improvement overall' (Care home14).

Domain level 5: societal consequences – how did the PIP training impact on society at large?

In some triads, PIPs continued with increased responsibilities after the intervention concluded. One described that their enhanced knowledge and confidence allowed them to challenge a hospital consultant's prescription when they recognised an incorrect dose for a resident. In addition, some PIPs maintained the role of liaison between GP practices and care homes, contributing to a sustained reduction in GP workload post-intervention.

The evaluation of this tailored training programme for pharmacist independent prescribers (PIPs) indicated that it adequately prepared them to manage medication review and overall pharmaceutical care for care home residents. The training fostered professional growth and confidence that extended beyond the CHIPPS intervention itself. By incorporating a personalised development plan, the programme acknowledged each pharmacist's prior knowledge and skill set. A unique feature of this research-focused training was the viva assessment with an independent GP experienced in managing older adults' medications before the intervention commenced. This step helped ensure smooth implementation of the CHIPPS intervention, as GPs and care home staff reported confidence in the pharmacists' clinical capabilities. The approach to training and competency evaluation could be adapted for other intervention studies where health professionals deliver medical care in unfamiliar contexts.

The programme aimed to equip pharmacists with the professional competence required for medicines management among older adults in care homes. While formal instruction on administering specific medications is common, this training emphasised the more complex tasks of prescribing and deprescribing for older individuals with multimorbidity—a relatively novel responsibility for pharmacists [16] that could influence other healthcare professionals' decisions. The process evaluation demonstrated that all PIPs engaged

extensively in medication-related activities across multiple therapeutic categories, indicating that new learning was applied. A critical component of the study was the Pharmaceutical Care Plan (PCP) created by the pharmacist for each resident. Beyond supporting professional accountability and audit, the PCP served as a research tool for analysing prescribing and deprescribing practices. Our findings showed that PIPs felt additional guidance on using the PCP was necessary, which aligns with Benson *et al.*, who identified care plan formulation, implementation, and documentation as key training needs for primary care pharmacists through a Delphi study [17].

Another purpose of the training was to familiarise pharmacists with the research process and their role within it. While pharmacists generally support research, many have limited personal experience with research procedures [18]. Immediately after the training, participants agreed that understanding research processes was important. However, reflections collected post-intervention suggested that PIPs valued most the elements related to prescribing and deprescribing for older adults and the dedicated time for self-directed professional development. Over the six-month intervention, research processes appeared to become embedded into routine practice, whereas the practical, transferable skills of medicines management and deprescribing retained significance for their professional practice. This aligns with Sargeant *et al.*, who argue that professional development grounded in routine clinical work and linked to patient benefit is most likely to enhance quality improvement [19]. Consequently, for future wider implementation, the research-specific elements of the training may not be necessary.

The interprofessional aspects of the programme—including sessions delivered by hospital geriatricians and GPs and competency assessment conducted by a GP—were particularly valued by PIPs and perceived to enhance clinical skill acquisition. This supports recommendations that interprofessional collaboration should be integrated into healthcare training programmes [20, 21]. PIPs identified potential improvements, primarily regarding accessibility of training and further guidance on building relationships, especially when prior experience with a GP was limited. While remote training could reduce travel demands, challenges remain with online delivery [22, 23]. A mid-intervention refresher, potentially delivered remotely, might provide additional reinforcement once group cohesion has been established.

Strengths and limitations

A key strength of this evaluation is that data were collected shortly after the intervention ended, minimising recall bias. However, this approach does not capture whether the observed benefits persist over the long term. Additional research would be required to assess sustained effects. Another limitation was that complete data were not obtained from all PIPs who participated in the intervention; nonetheless, the respondents were representative in terms of PIP characteristics, including experience as pharmacists and independent prescribers.

Conclusion

This interdisciplinary, evidence-based training programme effectively supported PIPs in developing clinical decision-making skills and the confidence necessary to take responsibility for prescribing and medicines management in care homes. Emphasis on complex deprescribing was new for several participants, yet the competency framework and assessment process ensured that all expressed confidence in delivering the intervention. Furthermore, professional growth appeared to extend beyond the study requirements.

Although training, mentorship, and competency evaluation require significant resources for a six-month intervention, many PIPs reported benefits that exceeded the study's immediate objectives. Future training models should consider not only enhancing clinical competence but also developing higher-level management skills to facilitate relationship building within new professional teams.

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References

1. Toot S, Swinson T, Devine M, Challis D, Orrell M. Causes of nursing home placement for older people with dementia: a systematic review and meta-analysis. *Int Psychogeriatr*. 2017;29(2):195–208.
2. Barber ND, Alldred DP, Raynor DK, Dickinson R, Garfield S, Jesson B, et al. Care homes' use of medicines study: prevalence, causes and potential harm of medication errors in care homes for older people. *Qual Saf Health Care*. 2009;18(5):341–6.
3. Gordon A, Franklin M, Bradshaw L, Logan P, Elliott R, Gladman JRF. Health status of UK care home residents: a cohort study. *Age Ageing*. 2014;43(1):6.
4. Alldred DP, Kennedy MC, Hughes C, Chen TF, Miller P. Interventions to optimise prescribing for older people in care homes. *Cochrane Database Syst Rev*. 2016;2(2):Cd009095.
5. Crown J. Review of prescribing, supply and administration of medicines (the Crown Report). 1999.
6. CHIPPS. The Care Homes Independent Pharmacist Prescribing Study. 2015. Available from: <https://www.uea.ac.uk/groups-and-centres/chipps>.
7. Bond CM, Holland R, Alldred DP, Arthur A, Barton G, Blyth A, et al. Protocol for a cluster randomised controlled trial to determine the effectiveness and cost-effectiveness of independent pharmacist prescribing in care homes: the CHIPPS study. *Trials*. 2020;21(1):103.
8. Lane K, Bond C, Wright D, Alldred DP, Desborough J, Holland R, et al. "Everyone needs to understand each other's systems": Stakeholder views on the acceptability and viability of a Pharmacist Independent Prescriber role in care homes for older people in the UK. *Health Soc Care Community*. 2020;28(5):1479–87.
9. Cope LC, Abuzour AS, Tully MP. Nonmedical prescribing: where are we now? *Ther Adv Drug Saf*. 2016;7(4):165–72.
10. Wright DJ, Maskrey V, Blyth A, Norris N, Alldred DP, Bond CM, et al. Systematic review and narrative synthesis of pharmacist provided medicines optimisation services in care homes for older people to inform the development of a generic training or accreditation process. *Int J Pharm Pract*. 2020;28(3):207–19.
11. Wright DJ, Blyth A, Maskrey V, Norris N, Bond CM, Hughes CM, et al. Development and feasibility testing of an evidence-based training programme for pharmacist independent prescribers responsible for the medicines-related activities within care homes. *Int J Pharm Pract*. 2021;29(4):376–84.
12. Inch J, Notman F, Bond CM, Alldred DP, Arthur A, Blyth A, et al. The Care Home Independent Prescribing Pharmacist Study (CHIPPS)—a non-randomised feasibility study of independent

- pharmacist prescribing in care homes. Pilot and Feasibility Studies. 2019;5(1):89.
13. Bond CM, Holland R, Alldred DP, Arthur A, Barton G, Birt L, et al. Protocol for the process evaluation of a cluster randomised controlled trial to determine the effectiveness and cost-effectiveness of independent pharmacist prescribing in care home: the CHIPPS study. *Trials*. 2020;21(1):439.
 14. Kaufman R, Keller JM. Levels of evaluation: Beyond Kirkpatrick. *Hum Resour Dev Q*. 1994;5(4):371–80.
 15. QSR International Pty Ltd. NVivo (released in March 2020). <https://www.qsrinternational.com/nvivoqualitative-data-analysis-software/home>.
 16. Bleidt BA. Deprescribing: an emerging role for pharmacists. *J Pharm Health Serv Res*. 2019;10(2):159–60.
 17. Benson H, Lucas C, Williams KA. Establishing consensus for general practice pharmacist education: A Delphi study. *Curr Pharm Teach Learn*. 2020;12(1):8–13.
 18. Stewart D, Madden M, Van Dongen A, Watson M, Morris S, Whittlesea C, et al. Process study within a pilot cluster randomised trial in community pharmacy: An exploration of pharmacist readiness for research. *Res Social Adm Pharm*. 2021;17(10):1750–7.
 19. Sargeant J, Wong BM, Campbell CM. CPD of the future: a partnership between quality improvement and competency-based education. *Med Educ*. 2018;52(1):125–35.
 20. Bajorek BV, Lemay KS, Magin PJ, Roberts C, Krass I, Armour CL. Preparing pharmacists to deliver a targeted service in hypertension management: evaluation of an interprofessional training program. *BMC Med Educ*. 2015;15(1):157.
 21. Sokhi J, Desborough J, Norris N, Wright DJ. Learning from community pharmacists' initial experiences of a workplace-based training program. *Curr Pharm Teach Learn*. 2020;12(8):932–9.
 22. O'Doherty D, Dromey M, Loughheed J, Hannigan A, Last J, McGrath D. Barriers and solutions to online learning in medical education – an integrative review. *BMC Med Educ*. 2018;18(1):130.
 23. Al-Balas M, Al-Balas HI, Jaber HM, Obeidat K, Al-Balas H, Aborajoo EA, et al. Distance learning in clinical medical education amid COVID-19 pandemic in Jordan: current situation, challenges, and perspectives. *BMC Med Educ*. 2020;20(1):341.