ASSESSING DEPRESCRIBING TOOLS FOR IMPLEMENTATION IN CARE HOMES: A QUALITATIVE STUDY OF THE VIEWS OF CARE HOME STAFF

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Abstract

Background: Care home residents often experience polypharmacy (defined as taking five or more regular medicines). Therefore, we need to ensure that residents only take the medications that are appropriate or provide value (also known as medicines optimisation). To achieve this, deprescribing, or the reduction or stopping of prescription medicines that may no longer be providing benefit, can help manage polypharmacy and improve outcomes. Various tools, guides, and approaches have been developed to help support health professionals to deprescribe in regular practice. Little evaluation of these tools has been conducted and no work has been done in the care home setting.

Objective: This qualitative study aimed to assess distinct types of deprescribing tools for acceptability, feasibility, and suitability for the care home setting.

Methods: Cognitive (think-aloud) interviews with care home staff in England were conducted (from December 2021 to June 2022) to assess five different deprescribing tools. The tools included a general deprescribing guidance, a generic (non-drug specific) deprescribing framework, a drug-specific deprescribing guideline/guide, a tool for identifying potentially inappropriate medications, and an electronic clinical decision support tool. Participants were recruited via their participation in another deprescribing study. The Consolidated Framework for Implementation Research informed the data collection and analysis.

Results: Eight care home staff from 7 different care homes were interviewed. The five deprescribing tools were reviewed and assessed as not acceptable, feasible, or suitable for the care home setting. All would require significant modifications for use in the care home setting (e.g., language, design, and its function or use with different stakeholders).

Conclusions: As none of the tools were deemed acceptable, feasible, and suitable, future work is warranted to develop and tailor deprescribing tools for the care home setting, considering its specific context and users. Deprescribing implemented safely and successfully in care homes can benefit residents and the wider health economy.

Keywords: Polypharmacy, Medicine optimisation, Implementation science, Qualitative Study, Older adults, Long-term care

Introduction

Older people living in care homes often have multiple long-term conditions and experience polypharmacy (defined as receiving five or more concurrent medicines a day or taking more medicines that may not be clinically required).[1, 2] The 2021 National Overprescribing Review found that more than half of people over the age of 80 take eight or more medicines a day and older people at greater risk from polypharmacy.[3] In UK care homes, the prevalence of polypharmacy is widespread with over 60% of residents experiencing polypharmacy[4] and this increases over time.[5] For some older adults, polypharmacy can be beneficial, but others are prescribed multiple medicines when they are unlikely to improve clinical outcomes or may lead to harm.[6-9] They can experience a substantial medication burden potentially leading to adverse drug reactions.[10, 11] Overprescribing and medicine-related harm are leading causes of injury and avoidable harm in healthcare systems across the world.[12]

Reducing or stopping prescription medicines which may no longer be providing benefit, known as deprescribing,[13] can mitigate these harms, help manage polypharmacy and optimise their medicines. Many tools, guides, and approaches have been developed to aid health professionals to deprescribe in regular practice. National Institute for Health and Care Excellence (NICE) recommends deprescribing in some situations, especially for a person living with multiple long-term conditions.[14-16] With the recommendations encouraging deprescribing, there have been a number of tools, guides, and approaches developed to support deprescribing (going forward, referred to as deprescribing tools). These tools can be broadly described as those that aid in the overall process and those that assist with a specific part of the process, such as identifying potentially inappropriate medicines and decision support.[17] There are many tools available and they vary significantly in form and function,

with some being general and others focusing on specific medications.[17] There is significant variation in the methods of development of the tools (if reported), and few have undergone evaluation in clinical practice.[17, 18] Their appropriateness and how they are used in practice could determine their impact and effectiveness. Therefore, a better understanding of how these tools could be implemented in practice is needed, especially where polypharmacy is common and deprescribing recommended (i.e., care homes).

There is a need to translate knowledge of what factors help and hinder deprescribing into strategies and tools that can impact practice and lead to practical and sustained deprescribing.[19] Previous studies have not examined views about specific deprescribing tools and/or compared them, especially considering their implementation in practice. Little evaluation of these tools has been conducted and even less has been done considering their use in the care home setting. This study will address this gap by evaluating the perceptions of care home staff of existing deprescribing tools. This qualitative study aims to investigate the perceived acceptability, feasibility, and suitability of existing deprescribing tools for implementation in the care home setting.

Methods

This paper reports the findings of the second work package of the STOPPING project. The original protocol was published,[20] but the methods were changed to allow for remote data collection due to the COVID-19 pandemic. Qualitative interviews were conducted with all participants via telephone or videoconferencing from December 2021 to June 2022. Participants were a subsample of care home staff (n=8) who had taken part in the STOPPING project. The eligibility criteria was currently working directly with older adults with polypharmacy in the care home setting and ability to converse in English without an interpreter or professional assistance. Participants were invited after taking part in an interview concerning their perceptions, problems, and experiences regarding multiple

medicines and deprescribing. They were associated with seven different care homes in Southwest England. Demographic data were collected from all participants following the interview with a brief questionnaire, and care home information were collected as part of the STOPPING study, which was analysed using descriptive statistics. See Table 1 for participant details and Table 2 for the associated care home details.

The Consolidated Framework for Implementation Research (CFIR) was used as an overarching framework (2009 version) for this study. By using this framework, key determinants of implementation were central to data collection and analysis. CFIR is a well-established, theoretically based implementation science framework, comprised of 39 constructs divided into five domains.[21] CFIR focuses on identifying and understanding constructs that can shape the implementation and the routinisation of health services,[22] making it appropriate for use.

Before the interviews, all participants were emailed copies or links to the online tools of the five tools: MedStopper.com[23], STOPP/START toolkit [24], PrescQIPP Ensuring appropriate polypharmacy: A practical guide to deprescribing[25], NSW Therapeutic Advisory Group Inc. Deprescribing tools[26], and 5-step patient-centred deprescribing process.[27] These five tools were selected as they represented distinct tool types that have been categorised in a recent review.[17] These categories included a general deprescribing guidance, a generic (non-drug specific) deprescribing framework, a drug-specific deprescribing guideline/guide, a tool for identifying potentially inappropriate medications, and an electronic clinical decision support tool. Three tools were developed based on input from experts or clinicians panels, such as Delphi methods,[23, 24, 26] and one was developed from a review of previous research.[27] Two had originally been developed for use in acute hospital settings,[24, 26] one for primary care,[25] and two did not specify the setting.[27] Three tools were designed for older patients.[24, 26,

126 [27] They also varied in format (online and print). Descriptions of the tools are provided in
127 Table 3.

128 Explicit feedback and rich data were gathered about the existing deprescribing tools
129 using a cognitive interview approach. Cognitive interviewing is a widely used method for
130 developing and evaluating questionnaires; it identifies the thought processes behind
131 decisions.[28] It uses two techniques: the 'think aloud interview' where participant thought
132 processes are described and 'verbal probing' where the investigator asks the participant direct
133 questions, followed by questions to explore participant motivations and understanding.[28] See
134 Supplementary files for the interview guide. It has not been used in the evaluation of
135 deprescribing approaches and may generate fresh insight. The same female researcher (XX)
136 interviewed all participants to elicit their views and thoughts. Interviews were audio-recorded
137 and transcribed verbatim for analysis.

138 The analysis began with the first cycle of evaluative coding, assigning a judgement
139 about the merit or significance of the tool.[29] The presence or absence of an attribute was
140 noted and how positively or negatively the tool was evaluated. Second-cycle coding extended
141 the mapping of variance across the dataset, enabled by within-case and cross-case analysis.[29]
142 Findings determined the limitations and suitability of the five deprescribing tools and
143 suggestions from the participants for further development. The initial codes and themes were
144 then mapped onto CFIR and compared with its constructs and domains using a modified
145 codebook developed for the STOPPING project. Analysis was undertaken by the same
146 researcher (XX) who interviewed the participants. Findings were discussed with the other
147 authors and presented to a patient and public involvement group for sense-checking.

Ethical approval to conduct the study was given by XXXXX(XXX). Informed consent was obtained to ensure that all participants have received proper information about the study and agreed to participate.

Results

Perceptions of existing deprescribing tools were explored in eight individual cognitive interviews. Approximately 8 hours of interview data were recorded and transcribed. Overall, participants deemed the tools as not acceptable, practicable or suitable for the care home setting and needing significant modification for possible use in a care home setting. Moreover, participants reported never seeing them before or any similar tools. Two major themes concerned the *tool characteristics* and *function and use of a tool*. See Table 3 for a description of the themes, related CFIR constructs, and supporting quotes.

Tool characteristics

All participants recognised that the approaches/tools were not designed for care homes and their staff.

> *...completely inappropriate for working within the care home staffing team, because it is just far too medically-driven.* (Care home G, Registered manager)

Participants discussed several aspects of each tool that they did or did not like (e.g., layout, language, and content).

> *So I think probably this one more for GP surgery, or hospital maybe. It might not be - we wouldn't need something maybe as in-depth...* (Care home F, Deputy manager)

For example, they stated how the language and content were often perceived as inappropriate or impractical. Specifically, the clinical language or wording used was not commonplace in the care home (e.g., medication classification instead of medication names).

171 *There's a lot of more complicated vocabulary in there that I'm used to using, or my*
172 *colleagues will be used to using. We can look it up and we could check it out and see*
173 *what it means, but I wouldn't use all this…* (Care home A, Deputy manager)

174 This reflects how most care home staff are not clinically trained or have the qualification to
175 prescribe; a fact that most participants discussed. They saw the potential of using such tools
176 to aid with deprescribing in care homes. For example, when reviewing the tools they
177 suggested that the more general guides could be informative for new or untrained staff who
178 may not be familiar with medicines or deprescribing.

179 Participants considered how each tool would need to be modified significantly to be
180 suitable for use in a care home. They made several recommendations often based on what
181 they liked about other tools (e.g., links to further information or tailoring to each resident).
182 See Table 5 for a list of recommendations. Desired characteristics included lay language and
183 content, access to essential information (such as side-effects, benefits, and reason for use or
184 prescribing), online and printable formats, visually appealing, and easy and quick to use.
185 They expressed how any tool would have to inform or improve their practice and not result in
186 extra reporting without review or action. They suggested linking with residents' care plans,
187 inclusion in electronic health records, or enabling sharing with existing systems.

188 **Function and use of a tool**

189 Participants expressed how the tools were not fit-for-purpose for use in a care home
190 setting. The tools were critiqued relating to the potential use with varying stakeholders (e.g.,
191 general practitioners, residents, and family members). The main function discussed was how
192 the tools could facilitate communications with general practitioners, pharmacists, or other
193 prescribers.

I think it would be sat down with a GP; I don't think it's something that we would use on our own. (Care home G, Registered manager)

Some of the tools provided access to information about medications (e.g., therapeutic use, side-effects, interactions, and observations) that a care home would not normally have or rely on the prescriber or internet searches to provide them. Participants reported how knowing more about the medicines could empower them to question or raise concerns and support review and monitoring.

Another function that participants discussed was a tool that could be used to support and explain deprescribing with residents and family members.

I would then take it to the resident's room, even maybe the day before, and show them what we were going to do and what it was all about…Especially if their families and that wanted to come in and understand it a bit more as well; I would bring it in and show them as a little group meeting. (Care home D, Deputy manager)

Again, the approaches/tools reviewed in this study would require major revising to be appropriate for this distinct purpose. Participants suggested a tool for this purpose could describe and justify deprescribing to residents and families, highlighting potential benefits with the success stories and addressing any concerns. This would aid shared decision-making and engagement in deprescribing conversations.

Discussion

There are many different tools and approaches to aid deprescribing. They vary in their structure and function. Few have undergone any assessment or evaluation in practice, especially in the context of care homes. This qualitative study aimed to investigate the perceived acceptability, feasibility, and suitability of several existing deprescribing tools and approaches for use in the care home setting. Care home staff evaluated five existing

218 deprescribing tools and viewed them as not acceptable, feasible, or suitable for the care home
219 setting. Participants described how they needed significant modification for use and made
220 suggestions for future development.

221 Deprescribing is encouraged to manage polypharmacy and reduce its potential harm,
222 particularly for older people living with multiple long-term conditions.[14-16] Based on the
223 present study's findings, existing tools were not perceived as implementable in care homes or
224 helpful to care home staff. These findings support previous reviews which have found such
225 tools to be of limited use and poor quality.[17, 18] It must be acknowledged that most tools
226 targeted prescribers and were not designed for care homes specifically. The findings highlight
227 that these tools must be designed with the end users and the specific function of the tool in
228 mind. The involvement of stakeholders in developing these tools/approaches is important for
229 acceptability and feasibility.[30] How the existing tools were developed is often not described
230 well in the previous literature and they are not developed to the highest standard.[17] For use in
231 the care home setting, the participants described how deprescribing tools could be developed
232 to initiate and support conversations and medicine reviews with doctors or pharmacists and to
233 facilitate explanations of deprescribing to residents and families. Developing tools for these
234 functions should consider the suggestions for tool characteristics made by care home staff
235 (including the use of accessible language, access to vital information, availability in multiple
236 formats, and efficiency and visually appealing).

237 Based on the study findings, the role that deprescribing tools could play for use by
238 staff in care homes relates to facilitating communication and conversations about
239 deprescribing. Future studies are needed to explore and develop practical guidance for
240 initiating discussions in routine care along with establishing and implementing
241 communication tools addressing communication barriers.[19] Care home staff in this study
242 suggested opportunities for involvement in deprescribing conversations with prescribers (e.g.,

during regular reviews or re-ordering with GPs or pharmacists), reporting observations and discussing the impact of medication changes which could be facilitated by a tool. Furthermore, they discuss how a deprescribing communication tool could also support explaining deprescribing with care home residents and their families. Few communication tools have been developed for pharmacists to share recommendations with prescribers[31] and an educational brochure for patients was tested in pharmacist-physician communication.[32] Therefore, communication aids could be designed specifically for these conversations relevant to care staff in the care home setting. Resources are needed to help people working and living in care homes, their families, and healthcare providers so better deprescribing practice occurs. Studies could examine how such tools would be used in practice to improve communication and the shared decision-making process needed to deprescribe medications.

Care homes are a setting in which a deprescribing tool could be particularly beneficial. Residents often have multiple long-term conditions and experience polypharmacy[1, 2, 4] so regular review and deprescribing are recommended.[14-16] Additionally, care home staff have less knowledge and access to information about medicines than clinicians and other healthcare professionals. Despite this, recent findings found that care home staff reported having mostly positive views and experiences of deprescribing and its benefits to resident health, quality of life, costs, time, and safety.[33] A deprescribing tool could increase care home staff, residents and families confidence and self-efficacy as well as reduce fears; consequently, engagement in shared decision-making could improve [34-36]. This would be a shift in culture around medicines from compliance to informed advocacy, with staff being the resident's advocate or facilitator in initiating conversations around shared decision-making for medicines. This need has been recognised in other countries. Guides about decision-making and identifying people for medication assessment or review are being produced for Canadian long-term care facilities.[37] Future research could evaluate whether

these resources and tools are acceptable, suitable and adaptable for UK care homes. If not then more work is necessary to codesign a tool with stakeholders for use in the UK care home setting.

Strengths and limitations

A strength of this work is the new insights provided by using cognitive interviewing. This approach allowed participants to think through explicitly how they would use and implement the different tools in the care home setting and their practice. Key components that are missing, inappropriate or crucial for care homes were identified. This understanding provided crucial information about acceptability, feasibility, and suitability. Participants conceived modifications and envisaged suggestions for tool development. Another strength is the use of a comprehensive, well-recognised implementation science framework, CFIR, to investigate how to implement deprescribing tools in real-world settings,[38, 39] specifically in care homes.[40] The project demonstrates how CFIR can be used to address the limitations of translating deprescribing into practice.[41, 42]

Due to the COVID-19 pandemic, recruitment was impacted as there were restrictions on visiting care homes and staff experiencing high levels of stress and increased workload.[43] Interviews were therefore conducted remotely instead of in person, as originally planned.[20] Although every effort was made to support the participants to access and use the tools, some difficulties were experienced. This study collected perceptions of these existing tools and not actual use. A feasibility trial or pilot study using tools with residents and healthcare professionals could be conducted. Another limitation is that the study interviewed care home staff, not healthcare professionals or prescribers outside the care home. These individuals may have different experiences and perspectives on using the tools for care homes, limiting the transferability of study findings to these professions. Future work could explore these perspectives and how they differ from the present study findings.

Conclusions

With an increasing focus on polypharmacy and deprescribing, there is a need to undertake research that builds on existing knowledge, addresses known gaps, and advances the field. This study found that existing tools and approaches evaluated in the study were deemed as not appropriate or feasible so future work is warranted to develop and tailor deprescribing tools for the care home setting. This work will need to consider the specific challenges to deprescribing in this context. Deprescribing implemented safely and successfully in care homes benefits residents and the wider health economy.

Abbreviations

NICE: National Institute for Health and Care Excellence

STOPPING: Understanding stakeholders' perspectives on implementing deprescribing in care homes

CFIR: Consolidated Framework for Implementation Research

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Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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The views expressed in this publication are those of the authors and not necessarily those of the NHS, NIHR, or the Department of Health and Social Care.

Ethics approval

Ethical approval to conduct the study was given by Social Care Research Ethics Committee (19/IEC08/0058). Participants were required to sign a consent form to indicate their willingness to participate. Voluntary participation and the right to ask any questions and to decline participation at any time will be emphasised during the data collection.

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335 **Table 1.** Participant characteristics (n= 8)

	n (%)	**M (SD)**
Age		53.13 (9.54)
Gender		
Female	6 (75.00)	
Male	2 (25.00)	
Ethnic group		
White	7 (87.50)	
Asian	1 (12.50)	
Time in post (in months)		50.63 (70.05)
Job title		
Deputy manager	5 (62.50)	
Clinical nurse manager	1 (12.50)	
Registered manager	1 (12.50)	
Director	1 (12.50)	
Hours worked per week		
25-32 hours	1 (12.50)	
More than 32 hours	7 (87.50)	

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337 **Table 2**. Care home characteristics

	Number of beds	**Occupancy (%)**	**Total number staff**	**Dementia speciality**	**Onsite nursing care**
Care home A	60	88	85	Yes	No
Care home B	55	100	75	Yes	Yes
Care home C	34	75	36	No	No
Care home D	54	81	57	No	No
Care home E	44	68	36	Yes	No
Care home F	17	100	25	Yes	No
Care home G	19	100	26	Yes	No

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Table 3. Description of deprescribing tools, themes and related CFIR constructs and domains

Tool/Approach	Description	Subthemes	Supporting quotes	CFIR constructs	CFIR domains	Overarching theme
STOPP/START toolkit [24]	Booklet reference tool to identify potentially inappropriate medications during medication review for elderly patients	Format of tool	‘’I can see how the booklet would work, but then when you open it, it doesn't… One side is upside down, when I printed it. Well, not upside down, but I'd have to - instead of turning it like you would a booked, I've had to turn it the other way.’’ (Care home C, Deputy manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Visual presentation	‘’I did like the colour coding, and I did like the traffic light system.’’ (Care home D, Deputy manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Language and wording	‘’ There's a lot of more complicated vocabulary in there that I'm used to using, or my colleagues will be used to using. We can look it up and we could check it out and see what it means, but I wouldn't use all this…’’ (Care home A, Deputy manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Not fit for care home	‘’ completely inappropriate for working within the care home staffing team, because it is just far too medically driven.’’ (Care home G, Registered manager)	Compatibility	Inner setting	Function and use of a tool/approach
		Medicines in care home	‘’I've never seen any of those, really, in here…They're most of them, we're using is like, yeah,	Compatibility	Inner setting	Function and use of a tool/approach

			betablockers, antihypertensives, thyroid, those kinds of things is mainly.'' (Care home B, Clinical nurse manager)			
		Holistic or person centred	'' It's difficult to look into individual systems and think, but sometimes people maybe need something to stop… So it's sort of like in a care home setting they'll say, what's best for the person?'' (Care home B, Clinical nurse manager)	Adaptability	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
MedStopper.com [23]	Online tool to help make decisions about reducing or stopping medications by entering the list of medications a patient is receiving	Format of tool	''But I did quite like this, because it gave an instant - it was a quick and easy process, and you could see it on the screen. Yeah, I liked it. I liked the fact it was online; I liked that.'' (Care home A, Deputy manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Visual presentation	''Whereas the Medstopper, and it's visual and there's things happening, and you can click on things, and you can move to a different place, when we can get it going!'' (Care home A, Deputy manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Simplicity and ease of use	'' So that was quite good, it was quite easy. I liked the FRAIL scale and the calculator. I thought this is really good, and it's quite useful, and it was very well set out, just simple and straightforward. So I had a little mess around with that one. So I liked that, and I just thought it was simple with different	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics

			stages'' (Care home A, Deputy manager)			
		Language and wording	'' I think, obviously, it would be good for us to use as and when we have any new medication that comes in, that we've never heard of before, just so that we've got more of an insight of what it is, and what to look out for and stuff, because this one is nice and simple. It says sleepy! You speak to a doctor and he just will give us big words, and only a limited amount of information. (Care home E, Deputy manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Individualised to resident	'' So, again, this one, because it's individualised, it can be put away, so we know where it's to. So that's got its own benefit as well.'' (Care home E, Deputy manager)	Adaptability	Characteristics of deprescribing tool (intervention	Tool/approach characteristics
		Knowing more about medication	''We can look things up, and we can google things. It would be lovely to have a tool online that we can refer to about stopping.'' (Care home A, Deputy manager)	Access to knowledge and information	Inner setting	Function and use of a tool/approach
		Engaging or explanation for family carers and residents	''I would then take it to the resident's room, even maybe the day before, and show them what we were going to do and what it was all about…Especially if their families and that wanted to come in and understand it a bit more as well; I would bring it in and show them as a little group meeting.'' (Care home D, Deputy manager)	Compatibility Engaging innovation participants	Inner setting Process	Function and use of a tool/approach

		Support review and monitoring	‘’It's interesting, because we've got a meds review with our community pharmacist tomorrow, for all the residents, and it's the sort of thing that we could do in advance of that. And then this is the homework we've done sort of thing, and it's come out with this, and then sit down and talk that through with the community pharmacist, and I think that'd be really useful.’’ (Care home G, Registered manager)	Reflect and evaluation Compatibility	Process Inner setting	Function and use of a tool/approach
		Communication and sharing information with external change agents	‘’ and if the doctor had the same information that he could get to, then I think with him working alongside everything, you know?... With him working alongside all of us, as well, and I think that that would be… Well, I think it would be a really good tool.’’ (Care home F, Deputy manager)	Cosmopolitanism Engaging external change agents	Outer setting Process	Function and use of a tool/approach
PrescQIPP Ensuring appropriate polypharmacy: A practical guide to deprescribing [25]	General guide about appropriate polypharmacy and deprescribing	Language and wording	‘’ Yeah, language that - I suppose this one is not as bad as a lot of… I'm not saying they're bad, but not as clinically written as the other ones. But I still think - I just don't know where, from a care home point of view, it fits, really?’’ (Care home G, Registered manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Visual presentation	‘’ You see this one is very much like it's a newsletter…It's very wordy. Yeah, it's just there's not - it's good, because it gives you information, but, like I said, it looks like a newsletter, so it doesn't… It's	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics

			not like it's something that you would use to have a look at any medication information that you wanted… Yeah, it's you get kind of bored halfway through.'' (Care home E, Deputy manager)			
		Simplicity and ease of use	'' Yeah, from a practical point of view, to sit down and sort of think about every resident, and go through this as a tool with every resident, would be a very time-consuming process.'' (Care home G, Registered manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Not designed for care home	''they are sort of written in a way that is more designed to… Well, is to more designed for medical professionals, rather than… With respect to, for example, myself, I manage a care home, I don't manage a nursing home'' (Care home G, Registered manager)	Compatibility	Inner setting	Function and use of a tool/approach
		Medicines in care homes	''But I think a weakness, in that it doesn't specifically talk about some of the factors, in terms of addressing issues in care homes for people with often taking many medicines'' (Care home F, Director)	Compatibility	Inner setting	Function and use of a tool/approach
		Communication and sharing information with external change agents	''I think it would be sat down with a GP; I don't think it's something that we would use on our own. (Care home G, Registered manager)	Cosmopolitanism Engaging external change agents	Outer setting Process	Function and use of a tool/approach
		Knowing more about medication	''I think it would be useful, if we would - well, the knowledge or the process here would be useful for	Access to knowledge and information	Inner setting	Function and use of a tool/approach

			our senior team, for the guys that administer medication. Obviously, we rely on a lot of feedback from the care team that are more one-to-one with the residents, the senior team and myself included, although, I don't do it as much.'' (Care home C, Deputy manager)			
		Evidence quality	'' I mean, it's been produced in 2017, which I always - it's one of the first things I'll always look at, like how old is this guide?'' (Care home F, Director)	Evidence quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
NSW Therapeutic Advisory Group Inc. Deprescribing tools [26]	Online resource for drug-specific deprescribing guides and leaflets	Format of tool	'' No, I think being online is - yeah, it just makes it accessible, doesn't it?'' (Care home C, Deputy manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Language and wording	'' this would be quite nice to have back to us, because it's actually quite a nice language and layout for us to be able to understand why those decisions have been made.'' (Care home C, Deputy manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Evidence quality	'' Yeah, I like being able to go online, but obviously going online can always be a bit… You don't always have the right - you don't know what you're reading is right either. So you've just got to be careful what you're looking at online.'' (Care home E, Deputy manager)	Evidence quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Not designed for care home	''So I think probably this one more for GP surgery, or hospital maybe. It might not be - we wouldn't need	Compatibility	Inner setting	Function and use of a tool/approach

			something maybe as in depth'' (Care home F, Deputy manager)			
		Medicines in care home	'' They could say, oh, that medication and so on and so on, that medication. So people can recognise it, oh, this medication has been prescribed for that person, so we can look into it. Otherwise, they may not necessarily see which one comes under what?'' (Care home B, Clinical nurse manager)	Compatibility	Inner setting	Function and use of a tool/approach
		Communication and sharing information with external change agents	''Because I've had to have a qualified person to go through it with me, because I wouldn't understand. But then you'd have the whole team helping you, so the doctors and the nurses would fill us in on the bits that we didn't understand.'' (Care home D, Deputy manager)	Cosmopolitanism Engaging external change agents	Outer setting Process	Function and use of a tool/approach
5-step patient-centred deprescribing process [27]	Generic (non-drug-specific) deprescribing framework that provides evidence-based practical steps	Simplicity and ease of use	'' Oh, yeah, very straightforward. Just, yeah, easy to read, and you were able to just, well, literally read it step-by-step, and you knew where you needed to go, and what your aims were for each step, basically.'' (Care home C, Deputy manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Visual presentation	'' Just something to catch the eye. I know I go on about the visual things, but it's really important.'' (Care home A, Deputy manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Format of tool	'' Yes, I liked the format, because it's a simple format. You know what I mean? Again, not lengthy	Design quality	Characteristics of deprescribing	Tool/approach characteristics

			documents, easy to - it is easy to read. Whether you understand what you're reading is something else, but it is easy to read. Yes, I like a step-by-step process like that, so there's some positives there, most definitely.'' (Care home G, Registered manager)		tool (intervention)	
		Language and wording	'' Again, some of that, as a language, I don't understand what that means. I know it says on the bottom what ADRs are, adverse drug reactions, but how would … I don't know what those are, so I couldn't use this. Nobody in our care home would be able to use this, and understand it.'' (Care home G, Registered manager)	Design quality	Characteristics of deprescribing tool (intervention)	Tool/approach characteristics
		Support review and monitoring	''So, yeah, it's just - it depends what type of medication is that we're trying to stop, and what type of monitoring they needed, so it can be a bit more complex'' (Care home E, Deputy manager)	Complexity Reflect and evaluation Compatibility	Characteristics of deprescribing tool (intervention) Process Inner setting	Function and use of a tool/approach
		Knowing more about medication	'' Yeah, this one, it's good, but it doesn't give you much information, though. It's very - yeah, this one, if we used this one, we would be left asking lots and lots and lots of questions, because there's not much…'' (Care home E, Deputy manager)	Access to knowledge and information	Inner setting	Function and use of a tool/approach
		Communication and sharing information	''And we're always seeing different doctors, so even though on paper this looks wonderful, and I do	Cosmopolitanism	Outer setting Process	Function and use of a tool/approach

		with external change agents	believe it would work, I think that we couldn't do it if it wasn't one particular doctor overseeing this'' (Care home F, Deputy manager)	Engaging external change agents		
		Engaging or explanation for family carers and residents	'' Like, the relatives would look at it, but they would come back to the care home and they would say, what do you think? What do you think? And they would be asking us, or they would be saying, oh, let's talk to the doctor. So I think they would read it, but they would probably come back to us to find out what it actually means'' (Care home A, Deputy manager)	Compatibility Engaging innovation participants	Inner setting Process	Function and use of a tool/approach

Table 5. Recommendations for deprescribing tools for care home settings and their related CFIR constructs and domains

Overarching theme	**Subtheme**	**Supporting quotes**	**CFIR constructs**	**CFIR domains**
Tool/approach characteristics	Language and wording	‘’we should be saying to them this is not about stopping medicines, it's about making sure that we're noticing when people need them, and when people don't need them and the consequences. (Care home F, Director)	Design quality	Characteristics of deprescribing tool (intervention)
	Format of tool	‘’ it's lovely to have that information in a booklet or at the touch of a button. But when it comes to cascading it to the older generation of people, some… We always get the exception, and some people will use a computer, or everyone's different, and everyone's unique.’’ (Care home A, Deputy manager)	Design quality	Characteristics of deprescribing tool (intervention)
	Visual presentation Simplicity and ease of use	‘’I think that producing an infographic that draws the eye of a carer, there's something about medication that is colourful, easy language, a font easy to understand’’ (Care home F, Director)	Design quality	Characteristics of deprescribing tool (intervention)
	Holistic or person centred	‘’ we actually want to help, and listen to us and talk to us about why it's been prescribed and how we can help, and let us try and help in other ways as well. Can it be - can their diet be changed? Can it help that way? More exercise, more stimulation,	Adaptability	Characteristics of deprescribing tool (intervention)

		whatever.'' (Care home E, Deputy manager)		
Function and use of a tool/approach	Communication and sharing information with external change agents	''a standardised tool that care homes could feed into for their residents, that GPs can then be able to look at, be able to make more informed decisions.'' (Care home C, Deputy manager)	Cosmopolitanism	Outer setting
	Connected records or sharing with existing systems	''I just think we all need to be able to monitor, to get into this to access this system, and so that when we talk, or if a doctor was to talk to us about it, we would understand and vice-versa, and other healthcare professionals.'' (Care home F, Deputy manager)	Access to knowledge and information Cosmopolitanism	Inner setting Outer setting
	Knowing more about medication	'' Because we're giving out this medication to them every day, we want to understand so that we can… Yeah, we want to understand so we know what it's doing for them, and that way we can help monitor and explain to the GP, or the pharmacists, or the nurse, if it is… How beneficial it is, or isn't for them, because they don't get to see them every day, and they just see them as and when we ask them to.'' (Care home E, Deputy manager)	Access to knowledge and information	Inner setting
	Include in care plan	''we use PCS, person-centred software, for our care planning, which is an electronic tool. So, I mean, if it linked with that, that would be very helpful as well.'' (Care home G, Registered manager)	Network and communication	Inner setting

	Engaging or explanation for family carers and residents	‘’I suppose there should be a place for maybe the power of attorney, especially with dementia patients. So I'll look at that, because there might be somewhere for maybe there'd be a separate section for the family member to be involved.’’ (Care home D, Deputy manager) ‘’ But for the resident, just the booklet describing it, describing the process and just telling them about the success stories, which I think is what it's all about and how it would benefit them, and how successful things have been with trials.’’ (Care home A, Deputy manager)	Compatibility Engaging innovation participants	Inner setting Process
	Confidence to question or raising concerns	‘’That would be really nice and, I mean, we're in a position to ask, but it would be nice if they were able to just send something through with that information on.’’ (Care home C, Deputy manager)	Self-efficacy	Individual characteristics

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