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Determinants of implementing deprescribing for older adults in English care homes: a qualitative interview study

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ABSTRACT

Objectives To explore the factors that may help or hinder deprescribing practice for older people within care homes.

Design Qualitative semistructured interviews using framework analysis informed by the Consolidated Framework for Implementation Research (CFIR).

Setting Participants were recruited from two care home provider organisations (a smaller independently owned organisation and a large organisation) in England.

Participants A sample of 23 care home staff, 8 residents, 4 family members and 1 general practitioner were associated with 15 care homes.

Results Participants discussed their experiences and perceptions of implementing deprescribing within care homes. Major themes of (1) deprescribing as a complex process and (2) internal and external contextual factors influencing deprescribing practice (such as beliefs, abilities and relationships) were interrelated and spanned several CFIR constructs and domains. The quality of local relationships with and support from healthcare professionals were considered more crucial factors than the type of care home management structure.

Conclusions Several influencing social and contextual factors need to be considered for implementing deprescribing for older adults in care homes. Additional training, tools, support and opportunities need to be made available to care home staff, so they can feel confident and able to question or raise concerns about medicines with prescribers. Further work is warranted to design and adopt a deprescribing approach which addresses these determinants to ensure successful implementation.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Data collection and analysis were informed by a comprehensive, well-recognised implementation science framework.
⇒ This research adopted a strong patient and public involvement and partnership approach.
⇒ The number of respondents who participated during the pandemic and the high demand for healthcare services should be acknowledged.
⇒ The majority of participants were care home staff, so the findings reflect mostly their perspectives and experiences.
⇒ Methods were modified from the original protocol due to the COVID-19 pandemic.

INTRODUCTION

Older people living in UK care homes often experience polypharmacy, which is commonly defined as receiving five or more concurrent medicines a day.[1] In England, the 2021 National Overprescribing Review found older people to be at greater risk from polypharmacy; over half of the people over the age of 80 take eight or more medicines a day,[2] many of whom live in care homes. Polypharmacy is widespread, with over 60% of residents taking five or more medicines,[3] and increasing with system-wide overprescribing.[2 4] Some older adults are prescribed multiple medicines that are unlikely to improve clinical outcomes, are clinically unnecessary or may lead to harm.[5–8] One-half of care home residents are exposed to potentially inappropriate medicines.[9] Care home staff, residents and family members stress the high prevalence, fears about the health and safety consequences and burden of polypharmacy in care homes.[10]

Reducing or stopping prescription medicines which may no longer be providing benefit or where the harms outweigh the benefits, known as deprescribing,[11] can mitigate these harms and be safe.[12–15] The National Institute for Health and Care Excellence (NICE) recommends deprescribing as part of the comprehensive medication review of a person with multiple long-term conditions.[16–18] While appropriate deprescribing is usually commended and may be cautiously undertaken to good effect,[15] there is a lack of information about how to implement it safely and appropriately.[19] Recommendations overlook the specific contextual factors and

various stakeholder views of care homes.[20] Deprescribing in this setting can be challenging due to the different concerns of residents, staff, clinicians and family members and differences in care home structures.

Previous deprescribing research explored generic views towards barriers and facilitators to deprescribing[21–27] and only focused on the perspectives of a single stakeholder group, such as patients[25 27] or general practitioners (GPs)[22–24], and rarely included crucial care home staff views.[28] Different stakeholder groups from long-term care facilities prioritise different factors.[29] There is a need for a better understanding of the factors influencing how deprescribing is implemented, considering different stakeholders.

A recent summary of the perceptions of deprescribing in long-term care facilities from nine different countries found social influences and environmental factors were perceived as the key barriers and enablers.[30] Considering these findings, the present study investigated the process of implementing deprescribing and these contextual factors in English care homes, including the roles and relationships of different stakeholders, which influence it. Furthermore, implementation activities of deprescribing in care homes are typically not well described and poorly understood.[19 31] A better understanding of how contextual factors facilitate or hinder deprescribing, informed by an implementation framework, is needed to support the translation of deprescribing recommendations into practice.[32 33]

The present study presents the findings of the first work package of the STOPPING project (for the original protocol, see Warmoth *et al*[34]). The overall aim was to investigate the factors which influence deprescribing for older adults in care homes. The specific objectives of the research were to:

1. Identify the factors which influence deprescribing for older adults in care homes.
2. Explore factors influencing deprescribing across a variety of stakeholders and care home provider organisations.
3. Use the Consolidated Framework for Implementation Research (CFIR) to help understand the possible determinants of implementing deprescribing for older adults in a care home setting.

METHODS

Design

We used qualitative methods and adopted a pragmatic approach. Originally, focus groups with care home staff and healthcare professionals and in-person observations of care homes were planned, but were no longer feasible due to the COVID-19 pandemic. The original methods were changed to allow for remote data collection. Individual or dyadic interviews were conducted with all participants via Microsoft Teams, Zoom or by telephone.

We gathered and compared perspectives from various stakeholders from two different types of care home provider organisations and used an implementation science framework to inform the data collection and analysis. The CFIR was used as an overarching framework to ensure that implementation was central to data collection and analysis.[35] CFIR (2009 version) is a well-established, theoretically based implementation science framework, comprised of 39 constructs divided into 5 domains.[35] CFIR focuses on identifying and understanding constructs that can shape the implementation and the routinisation of health services,[36] making it appropriate for care homes.

Setting

The two care home providers were selected for this research as they represent contrasting models of care home provision. That is, one is a smaller independently owned organisation consisting of two residential care home sites and a large organisation with more than 25 care homes in several locations across England. They were also selected as they mainly care for older adults (over 65 years old). Care home sites included in this study were selected in partnership between the research team and senior care home staff.

Participants

Recruitment and data collection occurred from December 2021 to May 2022. See table 1 for participant details and table 2 for the care home details. Care home and other healthcare staff were eligible for the study if they were currently working directly with older adults with polypharmacy and/or in the care home setting and could converse in English without an interpreter or professional assistance. Participants were purposefully recruited from distinct types of care home providers using established networks of care home organisations. Care home staff were selected and approached by the regional managers or directors of the care home organisations, who were known to the researchers.

Care home staff approached residents and their family members about taking part in the study. The eligibility criteria for care home residents taking part in the research were being a resident of the participating care home, aged 65 and over, taking multiple medications or having experience of polypharmacy, ability to converse in English without an interpreter or professional assistance, and having an absence of serious cognitive impairment, as identified by the care home staff or healthcare profession, and have capacity to consent to participation. Care home residents' family members or friends were eligible if their resident was taking multiple medications at the care home participating in the study and ability to converse in English without an interpreter or professional assistance. Residents with severe cognitive impairment which inhibits consent were excluded, but their family members and carers were included, as this group are particularly at risk of overall drug burden and often benefit from deprescribing interventions.

Table 1 Participant characteristics (n=36)

	n (%)	M (SD)
Care home staff and healthcare professionals (n=24)		
Age		44.65 (12.04)
Gender		
Female	21 (87.50)	
Male	3 (12.50)	
Ethnic group		
White	23 (95.80)	
Asian	1 (4.20)	
Education		
General certificate of education	3 (12.50)	
Undergraduate degree	5 (20.8 0)	
National vocational qualification	14 (58.30)	
Postgraduate degree	2 (8.30)	
Employment duration (in months)		47.83 (59.27)
Key responsibilities and duties		
Assistance with daily tasks in care home	14 (58.33)	
Administering medicines	17 (70.83)	
Providing company and assistance in leisure activities	5 (20.83)	
Developing care plans	20 (83.33)	
Planning/overseeing work of other staff members	21 (87.50)	
Prescribing and medicine review	16 (66.67)	
Other	14 (58.33)	
Hours worked per week		
Less than 32 hours	3 (12.50)	
More than 32 hours	21 (87.50)	
Family carers (n=4)		
Age		64.75 (1.26)
Gender		
Female	3 (75.00)	
Male	1 (25.00)	
Ethnic group—white	4 (100.00)	
Relationship to resident		
Son	1 (25.00)	
Daughter	2 (50.00)	
Sibling	1 (25.00)	
Residents (n=8)		
Age		88.75 (5.06)
Gender		
Female	6 (75.00)	
Male	2 (25.00)	
Ethnic group—white	8 (100.00)	
Perceived health status		3.50 (0.93)
Excellent	1 (12.50)	
Very good	0	
Good	3 (37.50)	
Fair	3 (37.50)	
Poor	1 (12.50)	
Number medicines daily		7.71 (3.99)
Number of conditions		6.40 (2.30)

One participant could not remember the number of medicines they took daily, so they were not included in the analysis for that item.

Data collection

Demographic data were collected from all participants following the interview with a brief survey. Semistructured interviews were conducted with residents, their family members, care home staff and healthcare professionals about their experiences and beliefs to identify the factors influencing deprescribing and the current deprescribing practice in different care home settings. Interview topic guides were informed by CFIR constructs identified in the previous literature.[21 25–27] See online supplemental file 1 for the interview guides. Interviews were conducted by a qualified female researcher with more than 10 years of experience (KW) and audio recorded and professionally transcribed verbatim for analysis. Reflective notes were taken to supplement the transcripts. NVivo V.12 was used to manage the data.

Qualitative data collection was conducted until data saturation occurred, meaning that no new ideas were being generated. The sample size was determined using previous literature on qualitative methods and using purposeful sampling. We estimated the minimum sample size of 24 was needed, based on work that found data saturation and variability to be present as early as 6 interviews.[37]

Data analysis

A framework analysis approach[38] was employed for data analysis. A CFIR-informed codebook was adapted to address the research question and to consider distinct levels of analysis (individual, organisational and community); see online supplemental file 2. Transcripts were deductively coded within the domains and constructs of CFIR by a single researcher (JR). Then, researchers (KW and JR) developed the major themes across the domains inductively. Discussions with patient and public involvement (PPI) representatives helped to refine the major themes and the implications of the research.

Patient and public involvement (PPI)

This research adopted a strong PPI and partnership approach with residents, staff and family carers. Before data collection, a PPI workshop was held with care home residents and staff at one care home. This workshop informed the production of study materials and ensured they were appropriate for and understandable by care home residents and staff. A pilot interview with an independent member of a local PPI group was conducted,

Table 2 Care home characteristics

	Participants, n	Beds, n	Occupancy (%)	Total number of staff	Dementia specialty	Nursing care
Large care home provider						
Care home 1	2 residents, 1 staff	60	88	85	Yes	No
Care home 2	2 family	90	89	140	Yes	Yes
Care home 3	2 staff, 1 family	55	100	75	Yes	Yes
Care home 4	2 staff	34	75	36	No	No
Care home 5	1 staff, 1 resident, 1 family	54	81	57	No	No
Care home 6	1 staff, 1 resident	50	76	32	Yes	No
Care home 7	1 staff	68	83	74	Yes	No
Care home 8	2 staff	46	85	62	Yes	No
Care home 9	1 staff	44	68	36	Yes	No
Care home 10	3 staff, 2 residents	37	91	54	Yes	No
Care home 11	1 staff, 1 resident	40	95	49	No	No
Care home 12	2 staff	38	60	42	No	No
Care home 13	1 staff	39	79	50	Yes	No
Small independent owned provider						
Care home 14	3 staff, 1 resident	17	100	25	Yes	No
Care home 15	2 staff	19	100	26	Yes	No

and as a result, opportunities for breaks were included and minor changes to the wording of the topic guides were made.

Researchers (JR and KW) and a PPI representative (AA) met regularly to discuss the analysis plan, review and refine the codebook, develop the themes and interpret the findings.

A final PPI workshop was held to discuss the findings and refine the dissemination strategy with a group of family carers and care home workers. Two researchers and the PPI representative presented the findings and facilitated group discussions about the interpretation of the findings and dissemination. Attendees stated how they shared similar experiences with participants and the varied procedures in care homes.

RESULTS

In total, 36 interviews were conducted with 23 care home staff, 8 residents, 4 family members and 1 GP who were associated with 15 care homes. Interviews lasted on average approximately 41 min (ranging from 16 to 94 min). Two major themes were developed: (1) deprescribing as a complex process and (2) internal and external contextual factors influencing deprescribing in care homes. These themes were interrelated and spanned several CFIR constructs and domains. See table 3 for the major themes, CFIR determinants and supporting quotes.

Deprescribing as a complex process

This theme related to the activities and strategies described to implement deprescribing in a care home setting, relating to the CFIR domain of process. Participants discussed deprescribing as a complex process with multiple steps. It included preparation and planning, involvement of multiple people with different roles and ongoing monitoring and evaluation.

Preparation and planning deprescribing

Conversations about deprescribing could be initiated by a regular medication review, an observed change in the resident or the resident's preference. Before stopping or reducing medications, care home residents and staff discussed that '*health checks*' and comprehensive medication reviews should be conducted. Care home staff and the GP expressed how, during a medicine review, there was a need to fully understand the resident's medications and the rationale for each one's use. If a decision was made to deprescribe then the care home needed to know how to do it (ie, tapering over time or stopping straight away). Care home staff discussed supporting resident involvement and its difficulties with some residents (eg, cognitive impairment). They considered that it was important to explain any changes and review how the resident was feeling on certain medications, before stopping or reducing medications.

Table 3 Summary of factors influencing the implementation of deprescribing in care homes from interviews with residents, family carers, care home staff and healthcare professionals

Major themes	CFIR domains	CFIR constructs	Definitions	Supporting quotes
Deprescribing as a process	Process	Planning	Degree to which tasks or behaviours for implementing deprescribing are developed in advance.	"I think there'd be a bit of a process involved. I think probably the family members and staff, the people that know the individuals well, or better than anybody else, they'd have to have an input for their opinion. And then the person that prescribes the medicines, would have to review it and decide what they think for the best." (Care home 14, care assistant)
	Engaging	External change agents	Individuals who are affiliated with organisations/services outside the care home who formally influence or facilitate deprescribing.	"The pharmacist poking his nose in may be good, or it may not be, I don't know." (Care home 14, resident)
		Key stakeholders	Care home staff roles that influence deprescribing.	"So I think they're essential for coordinating everyone, really, and actually they're better at doing that than the GP will ever be." (Care home 8, GP)
		Innovation participants—resident	Resident role in deprescribing (including how needs and preferences and included in decisions, and engagement and involvement examples/challenges).	"The resident themselves; they should have an input if they have capacity to do it, if they're able to retain the information about their medication." (Care home 12, deputy manager)
		Innovation participants—family carer	Family carer role in deprescribing (including how needs and preferences and included in decisions, and engagement and involvement examples/challenges).	"And if they lack capacity, even if they don't lack capacity, then their family, close family, next to kin, power of attorney, we would ask and consult them as well, for anything that changes with any of their care." (Care home 6, deputy manager and medication lead)
	Reflecting and evaluating		Feedback about the progress and quality of deprescribing and monitoring following deprescribing.	"Well, I suppose a final review, at some point, so that's predetermined and there should be a point where it's agreed that there should be a review of how it was effective, but whether it's worked, I suppose." (Care home 2, family carer)
Internal and external contextual factors	Individual characteristics	Knowledge and beliefs about deprescribing—resident	Resident attitudes and opinion towards deprescribing.	"I think I would have concerns, certainly, with some medication you have to be careful when you come off with the after-effects. And it has to be done in carefully? I wouldn't just accept everything, you have an understanding why." (Care home 1, resident)
		Knowledge and beliefs about deprescribing—care home staff	Care home staff attitudes and opinion towards deprescribing.	"And they don't necessarily need it, and they come up with it, and we've trialled them coming off of it and they're absolutely fine. And it's nicer for them not being pumped full of medication, rattling around daily. If it's not needed, and they've come here to live out the rest of their life, who really wants to be taking lots of medication every day?" (Care home 12, supervisor)
		Self-efficacy—resident	Resident belief in their own knowledge, capabilities and ability to action deprescribing.	"Well, if the medical professional thought it was all right, I would just take their word for it…I think we would take the advice of the doctor." (Care home 1, resident)
		Self-efficacy—care home staff	Care home staff belief in their own knowledge, capabilities and ability to action deprescribing.	"I think we're able to certainly speak up and challenge. I don't think we'd start questioning and going, they shouldn't be on this, but we would certainly raise concerns and making sure that people are having regular medication reviews, so that they're not on anything unnecessarily." (Care home 4, deputy manager)

Continued

Table 3 Continued

Major themes	CFIR domains	CFIR constructs	Definitions	Supporting quotes
	Outer setting	Cosmopolitanism	The degree to which the care home is networked with other external organisations.	"Of course, it's interdependent, because they depend on each other… it depends on the advice of the carer giving to the doctors about what's happening to a patient. And then the doctors summing it up and advising that they should have a certain medication specifically for that patient, or that resident." (Care home 6, resident)
	Inner setting	Access to knowledge and information	Ease of access to digestible information and knowledge about deprescribing and medicines and how to incorporate it into the way staff provide care for residents.	"We just get told, oh, they've had a blood test, they need to have this medication. And it's like, but what did the blood tests show? And it's like they don't always tell us, and it's just like, really? Give us more information, please!" (Care home 9, deputy manager)
		Available resources	The level of resources the care home dedicated for making changes to the way things are done and ongoing operations including physical space and time.	"I think the main thing we need, is time. If I think of the care home I look after, there's 65 residents, so I've got to find… If I want to do it properly, I'd have find at least 65 hours a year to do it regularly, and follow-ups. So it's really quite hard to manage…So time is the biggest problem, and also, and time for care home staff. I mean, they're as pressured as anyone else, for them to actually spend… Take an hour of their day out to talk about each one of their residents, again, is quite onerous on them." (Care home 8, GP)
		Networks and communication	The nature and quality of webs of social networks, and the nature and quality of formal and informal communications within the care home.	"Because, obviously, it's on the [Medicine Administration Record] sheet, it's crossed off on our [Medicine Administration Record] sheets, stopped by the GP. It's documented in their care plans. It's documented on our [Patient Centred Software). It's all well-documented, and like you do medication, you have to follow your [Medicine Administration Record] sheets, so it's always there so everyone can see what's stopped and why, and who stopped it and what date." (Care home 15, head of care)
		Tension for change	The degree to which the current situation as intolerable or needing change.	"So, yeah, I definitely think that they need to be reviewed regularly, because you don't want people taking medication that they no longer need, that they no longer require, if that makes sense?" (Care home 4, supervisor)
		Resident needs and resources	The extent to which the needs of care home residents, as well as barriers and facilitators to meet those needs, are accurately known and prioritised by the care home.	"So it comes about from us knowing our residents, and being able to make sure we pass that information clearly and accurately and timely onto the surgery, as I mentioned before." (Care home 4, deputy manager)
	Characteristics of deprescribing (intervention)	Evidence strength and quality	Perceptions of the quality and validity of evidence supporting the belief that deprescribing will have positive outcomes for residents or will do no harm (adverse outcomes).	"I'm aware there is some, but I can't quote anything offhand. We get sent it by our medicines management team quite often, about reviewing. So particularly with antipsychotics…But, yeah, so there is some, and there is our medicines management team at CCG who are really good about supporting us with evidence to things." (Care home 8, GP)
		Cost	Costs of deprescribing and costs associated with implementing deprescribing including investment, supply and opportunity costs.	"I don't think there's any direct cost involved to us, apart from our time. But it would be a nice cost to the resident, because, hopefully, we'd be able to spend more quality time with them, rather than being shove that down your throat, we've got another 40 more to do." (Care home 11, manager)

Continued

Table 3 Continued

Major themes	CFIR domains	CFIR constructs	Definitions	Supporting quotes
		Adaptability	The degree to which deprescribing can be adapted, tailored, refined or reinvented to meet needs at organisation/provider (care home) and individual (resident) level.	"Well, yeah, we're all slightly different. We think we're the same, but we're not and our bodies react differently. But what works - if I come back to this, all these tablets, to my knowledge, work for me." (Care home 14, resident)
		Complexity	Perceived difficulty of the deprescribing.	"It's looking for any changes. It's much easier to do this with people who've got capacity, who can tell you. With people with dementia whose communication is limited, you do have to be monitoring more, actually. What are they - are they normal for them?" (Care home 2, nurse supervisor)
		Relative advantage	Perception of the outcome deprescribing (ie, better, worse, no change) versus an alternative solution (ie, continuing medications).	"I don't want her to take things that don't do her - don't do anything." (Care home 2, family carer)
		Trialability	The ability to test deprescribing on a small scale in the care home, and to be able to reverse course (undo implementation) if warranted (ie, restart medications).	"Well, if it was clear to the medical people, if they wouldn't be, if it was clear to them, and they could go communicate to me, they would try and I'd give it a try, as long as I could go back if I wasn't happy." (Care home 1, resident)
	GP, general practitioner.			

Engaging multiple people

For deprescribing to happen, all participants discussed how it involved the engagement of various individuals, internal and external to the care homes. Each had a specific role and expertise, which was highlighted by participants. Care home staff, residents and their families expressed how care home staff are residents' advocates and/or intermediaries and often '*know them best*' (ie, the resident's individual needs and resources); whereas GPs made the ultimate decisions about if and how deprescribing should happen. A resident discussed the distinct roles and how they were '*interdependent because they depend on each other*'. The involvement of these different people and their respective knowledge and beliefs could help and hinder deprescribing. For example, family members were discussed by care home staff as either encouraging or objecting to the resident's medicines being deprescribed.

The role of a pharmacist in the deprescribing process was more ambiguous. Some residents and care home staff thought the role of a pharmacist was only dispensing medication and, hence, were not involved in any aspect of deprescribing or unsure how they could help. Conversely, if a care home had experienced additional support from pharmacists, such as leading medicine reviews or as a resource for questions about medicines, they were more likely to report how a pharmacist's input was valuable to deprescribing. Pharmacists were considered experts in medicines, but the ultimate decision is made by the GP unless the resident had secondary care where another clinician makes prescribing decisions. Despite the knowledge and expertise of care home staff about the resident and the pharmacist about medicines, all participants (especially, residents) expressed how deprescribing decisions would be done by the GP. Occasionally, other healthcare professionals (eg, the mental health team, geriatricians or specific condition nurses) were mentioned but they were often described as being consulted by the GP to make their decisions.

Monitoring and evaluation

Another key part of the deprescribing process that participants discussed was the monitoring and evaluation after medication changes. This was a consistent theme across all participant groups, but especially the care home staff as they were the ones observing residents following medication changes. Care home staff emphasised how important it was for them to know about medications to make relevant observations regarding any benefits or side effects. The types of observations required depend on which medications were changed (eg, blood pressure, behaviour, alertness and appetite). The timings and workload required for feedback also varied depending on the complexity of the resident's health and the types of medication changes. Care home staff and the GP discussed how the effects of stopping or reducing certain medications may take longer than others, thus impacting the monitoring, feedback and review process. This monitoring was described as actively ongoing to optimise medications

for residents and included the possibility of restarting medications.

Internal and external contextual factors

This theme concerns the contextual factors, including beliefs, abilities and relationships, reported to influence deprescribing in a care home setting. These CFIR determinants are related to the characteristics of staff and residents (views about deprescribing benefits, ability to question and contribute) as well as the relationships and communication between care homes and the healthcare community (eg, GPs, pharmacists and hospitals).

Views about deprescribing and its benefits

Most participants, especially care home staff, reported having mostly positive views and experiences of deprescribing. Often, staff and residents articulated that if medicines were not needed or did not improve the resident's well-being then they would be happy to support deprescribing. Some residents expressed a few concerns because some medicines were perceived as indispensable. Residents discussed concerns about the consequences if these were deprescribed and how some medicines were necessary or too important (eg, antipsychotics for schizophrenia). Care home staff reported the various potential benefits to resident health, quality of life, costs, time and safety. All participants thought that a deprescribing process should be individualised to the resident and, therefore, adaptable, pilotable and reversible. These beliefs and attitudes of individuals seem to instil a dynamic, tailored, responsive deprescribing culture in the care home.

Ability to question and contribute

A key characteristic discussed by care home staff and residents was the capacity and confidence to question or raise concerns about medicines with GPs or other prescribers. However, most care home staff and residents felt that they would default to GP advice. Care home staff stated how they did not have the training to question prescribing decisions, but they conveyed that questioning medicines was important to advocate for residents. For those staff who did feel confident to question or raise concerns, the expectation was that they would be listened to by the doctor. Care home staff recognised their knowledge about residents and wanted it to be valued in deprescribing conversations and decisions.

Relationships and communication

Care home staff discussed how mutual trust and respect between care homes and healthcare staff enabled collaboration and good working relationships. The collaboration between GPs and care homes was considered a crucial determinant for deprescribing, despite the support of other healthcare professionals (eg, pharmacists and other specialists). Supporting the deprescribing process and this collaboration was a good working relationship and information sharing between primary care and the care home. Care homes relied on professionals to review medications, deprescribe and provide information about monitoring following changes; while the GP relied on the feedback provided by the care home on resident health. The exchanges and information sharing between care home staff and GPs (and other healthcare professionals) determined the access to knowledge and evidence to facilitate deprescribing. This communication was considered an essential component of the deprescribing process. For example, care home staff, the GP and residents discussed how deprescribing could be hindered if medication changes were not communicated to the care home. Care home staff also discussed their role in keeping family members informed, which was described as more challenging when they were unable to visit homes during the pandemic.

Notably, the distinct types of care home providers (independently owned and part of a larger organisation) did not seem a crucial factor influencing deprescribing. More critical were the working relationships with GP practices and support at individual care homes (such as regular medication reviews or access to pharmacists). The local quality of the relationships and how they worked with healthcare professionals could vary greatly among the providers and individual care homes.

DISCUSSION

The overall aim of this qualitative study was to identify factors which influence deprescribing in English care home settings. The major themes found related to how deprescribing was a complex process, with multiple steps and the involvement of multiple people with distinct roles and internal and external contextual factors, concerning the characteristics of staff and residents and communication and relationships with the wider healthcare community. Local context and available support were found to be crucial factors across types of care home providers.

The findings add to previous deprescribing research, which described the barriers and enablers[21–27 29]; this study described in detail the process of deprescribing and the contextual factors which influence it in the English care home setting. It also considered the various roles and relationships of these different individuals involved in deprescribing. The present study found that how these different people worked together was an important determinant of deprescribing. Participants discussed and stressed how important collaboration and working relationships between care homes and healthcare providers (eg, GPs and other prescribers) more than the organisational structure of the care home provider. This finding suggests that these roles and relationships need to be addressed in any successful deprescribing approach in care homes.

It must be recognised that there are power differentials and a 'hierarchy' (with GPs holding the decision-making power) in these relationships, and the management of care home residents' medicines has to take into consideration who has decision-making power.[30] Hierarchies and

power differentials can affect whose voice is heard; it is well documented that when power differentials between health and social care settings are present healthcare priorities invariably dominate.[39] Fostering collective purpose and identity across sectors could ensure communication and collaboration are not negatively affected.[40] Care home residents, family members, care home staff and relevant healthcare professionals should be involved in the deprescribing process (if possible and appropriate) and their respective knowledge recognised and valued for shared decision-making. Additional training, tools, support and opportunities may need to be made available to care home staff so they can feel confident and able to question or raise concerns when they think that something is not quite right with the medication. Known enablers of psychological safety and patient safety culture in healthcare teams (such as, professional responsibility, open communication, peer support change-oriented leadership and learning orientation) could be implemented.[41 42] Future research could examine these separate roles and working relationships as well as resources to support them in greater detail to determine what activities and strategies encourage appropriate deprescribing.

Previous research has recommended nurse champions deprescribing in long-term care facilities,[30] but UK care homes do not always have access to qualified nurses. A recent trial introduced pharmacists to lead deprescribing in UK care homes,[43] but similar to this study's findings, the role of the pharmacist was not always understood by care home staff. Any initiative will need to educate not only those individuals selected to champion deprescribing but also the rest of those involved so there is a shared understanding of each other's role and contribution. The involvement of multiple individuals and organisations also raises issues related to legal concerns, higher workloads and duty of care.[21] Successful integrated working requires trust between health professionals and a clear understanding of responsibilities.[44] Further work may need to explore how these are established and negotiated in the care home-primary care working relationships.

The findings support previous work and policy promoting the involvement of multidisciplinary teams[30] and collaboration across care settings[45] to facilitate and implement deprescribing safely and efficiently. Recent policy changes in England set out standards for primary care services to support the delivery of the 'Enhanced Health in Care Homes' framework.[46] A major component of enhanced primary care support includes routine structured medication reviews. This mandated support from primary care is not only an impetus for medicine reviews and potential deprescribing in care homes but also provides regular opportunities for planning, decision-making and reflecting on their practice. But, evidence suggests that the adoption of the Enhanced Health in Care Homes Framework is not universal or uniform.[47] Accordingly, not all care homes will have access to the same support for deprescribing so approaches may need to be tailored to the availability of local resources and, as this study found, the resources and relationships for individual care homes were key factors influencing deprescribing. The findings contribute to the medicine optimisation national priority[18 48 49] and NICE recommendations for deprescribing in care homes.[17 18] With an increasing ageing population and greater demand for care in the community, medicine optimisation will continue to be a priority for healthcare services.

Strengths and limitations

A strength of this work is the use of a comprehensive, well-recognised implementation science framework, CFIR, to investigate how to implement deprescribing in real-world settings,[20 50] specifically in care homes.[51] The project demonstrates how CFIR can be used to identify the factors influencing deprescribing into practice.[32 33] The present study findings denoted several domains and constructs of CFIR and the relationships between these determinants. Using this framework can identify crucial determinants, address barriers to deprescribing and help ensure that interventions are effective and sustainable.[33 52] Another strength of the study was the number of respondents that participated in the context and conditions of the pandemic and the high demand for healthcare services where care staff have been so overwhelmed by pressures. Finally, this research adopted a strong PPI and partnership approach, which contributed greatly to the delivery and success of the study.

Some limitations of the study must be acknowledged. Due to the COVID-19 pandemic, care home observations and focus groups were not conducted, which had been originally planned[34]; this could have provided a better understanding of everyday practices and insight into experiences than interviews alone. Future work could adopt an ethnographic approach to explore the culture of deprescribing in care homes and observe deprescribing conversations and behaviours. By only conducting interviews, we had to exclude participants who are unable to converse in English and show signs of severe cognitive impairment. These individuals may have different experiences and perspectives. Interviews were with family and friends of these older adults to try to capture these experiences and views. Other limitations of the study were that two-thirds of the sample were care home staff (especially, those in senior positions) and most of the participants were female and white so the findings reflect mostly their perspectives and experiences. Moreover, there may be bias in the sample, as regional managers and directors were involved in the selection of participants. Participants were informed that their responses would be kept confidential, and their employment or care (or family member's care) would not be affected by their responses; they did provide both positive and negative experiences. There was only one prescriber interviewed, but as we were principally interested in how deprescribing would work in a care home setting, the recruitment of care home staff, residents and families were prioritised. Most

previous research has studied the views of prescribers[22–24] and rarely included the views of care home staff.

From the participants' responses in this study, a difference in views between provider types was not noted but it does not mean there one is not present. Further research could explore the views of more providers and care homes to explore possible differences. Involving care homes in research is challenging and there are several barriers to research participation.[53] The COVID-19 pandemic has shown how crucial care homes and their staff are in the care of the frailest and vulnerable. The skills, dedication, and compassion of care home staff not only shape care but can greatly contribute to research.

Conclusion

For deprescribing to be successfully undertaken in care homes, several influencing factors (such as individuals' beliefs and abilities, relationships and communication) need to be considered and the process itself of deprescribing (including preparation, engaging stakeholders and monitoring). Additional training, tools, support and opportunities need to be made available to care home staff, so they can feel confident and able to question or raise concerns about medicines with prescribers. Further work is warranted to design and implement a deprescribing approach for care homes that can be achieved within current structures and resources.

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Patient consent for publication Consent obtained directly from patient(s).

Ethics approval This study involves human participants. Ethical approval to conduct the study was given by the Social Care Research Ethics Committee (19/IEC08/0058). Participants were provided with an information sheet stating the goals of the study and 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. Participants gave informed consent to participate in the study before taking part.

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STOPPING

Understanding stakeholders' perspectives on implementing deprescribing in care homes (STOPPING)

TOPIC GUIDE WITH CARE HOME STAFF AND HEALTHCARE PROFESSONALS

Introduction

We are here today to talk about your experiences with and views of deprescribing (stopping a medication or reducing its dosage) in care homes. The purpose is to get your perceptions of how reducing or stopping some medicines would work in a care home setting so we can identify the key barriers, facilitators and contextual factors influencing it. I am not here to share information, or to give you my opinions. Your perceptions are what matter. There are no right or wrong or desirable or undesirable answers. You can disagree with each other, and you can change your mind. I would like you to feel comfortable saying what you really think and how you really feel.

As you know everything is confidential.

Topics

Knowledge & beliefs about the intervention

What do you think about reducing or stopping some medicines for people living in care homes?

Probes. Why do you think that? Do you have any concerns? Are there any benefits?

Do you think reducing or stopping some medicines will be beneficial in your care home?

Probes. Why or Why not? Do you have any concerns?

Relative advantage

Do you think are the advantages of reducing or stopping some medicines for people living in care homes compared to continuing their medicines?

Probes. Why? Is that your experience? Anything else?

Do you think are the disadvantages of reducing or stopping some medicines for people living in care homes compared to continuing their medicines?

Probes. Why? Is that your experience? Anything else?

Tension for change

Is there a strong need for reducing or stopping some medicines?

Probes. Why or why not? Do others see a need for it?

How essential is this reducing or stopping some medicines to meet the needs of the individuals served by your care home?

How do you feel about current programs/practices/process that are available?

Probes. What do they do well? To what extent do current programs fail to meet existing needs?

Complexity

How complicated is it to reduce or stop some medicines for care home residents?

Probes. Please consider the following aspects: duration, scope, intricacy and number of steps involved

STOPPING

Trialability

What do you think about trying to stop or reduce a medicine (or medicines) for a short period?

Probes. What would that be like? Would it be helpful? Harmful? Why or why not?

Evidence strength & quality

What kind of information or evidence are you aware of that shows whether or not the reducing or stopping some medicines will work in your care home?

Probes. What evidence have you heard about? Practice guidelines? Published literature? Co-workers? Other care homes? How does this knowledge affect your view?

What kind of supporting evidence or proof is needed about the effectiveness of reducing or stopping some medicines to get staff on board?

Probes. Co-workers? Administrative leaders?

Planning

What needs to be done beforehand so that reducing or stopping medicines can happen in care homes?

Probes. Why? Is that your experience? What steps should be included? Anything else? What is your role in the planning?

Engaging

What do you think the role of the care home and its staff should be in reducing and stopping some medicines?

Probes. How would that like look? To what extent?

What do you think the role of the GPs should be?

Probes. How would that like look? To what extent?

What do you think the role of the pharmacist should be?

Probes. How would that like look? To what extent?

Is there anyone else who should be involved?

Probes. How would that like look? To what extent?

Reflecting & Evaluating

What do you think should be the outcome of reducing or stopping some medicines for people living in care homes?

Probes. Why? Is that your experience? Anything else?

What should happen after reducing or stopping some medicines?

Probes. What information should be collected? How often? Feedback given?

Communication & Network

How do you know when there have been changes to the resident's medicines?

Probes. What gets in the way of knowing? Can this be improved? If so how?

STOPPING

Can you describe your working relationships with your colleagues?

Probes. With colleagues in your care home? With colleagues in other care homes? Can you tell me a story about a time you needed to work with others to solve a problem? Or to implement reducing to stopping a resident's medicines?

Do you understand why there have been changes to a resident's medicines?

Probes. Why? What would aid your understanding? What stops you from understanding? How could this be communicated better?

Cosmopolitanism

What kind of information sharing do you have with other professionals and organisations outside your care home, either related to the medicines, or more generally?

Probes. What professional or care home networking do you engage in? Listservs? Local or national conferences? Trainings?

Executing & Personal Attributes

Please tell me about any experiences that you may have with stopping or reducing some of the residents' medicines.

Probes. How did it go? What happened? When been done well? When has it not gone so well? What would help work better in the future? Why was that the case? Was anything done by the care home staff that helped this experience? Or impeded it? What problems or issues did you experience, if any?

Available resources

Do you expect to have sufficient resources to implement and administer reducing or stopping some medicines?

Probes. [If Yes] What resources are you counting on? Are there any other resources that you received, or would have liked to receive? What resources will be easy to procure?
[If no] What resources will not be available?

Cost

What are the costs associated with reducing or stopping a resident's medicines?

Probes. What costs will be incurred? What cost were considered when deciding to implement?

Patient needs & resources

How do the residents' needs and preferences get included in decisions to change their medicines?

Probes. Why were they included or not included? How 'in touch' were the people involved? Were they prioritised over other things? Has anything been altered or changed to meet the resident's needs? What would you like your input to be?

How would you feel about stopping or reducing some of the resident's medicines?

Probes. Is there anything that would prevent you? Why?

Self-efficacy

Do you think you can question the amount of medicines that residents are taking?

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Probes. How confident are you to do this? Would you do it? Have you? Why or Why not?

Closure

Is there any other information regarding your experiences or opinions that you think would be useful for me to know?

Thank you very much for meeting with me. Your time is very much appreciated and your comments have been very helpful.

STOPPING

Understanding stakeholders' perspectives on implementing deprescribing in care homes (STOPPING)

INTERVIEW TOPIC GUIDE WITH CARE HOME RESIDENT

Introduction

Good morning/afternoon. My name is Krystal Warmoth. I am going to ask you some questions about reducing or stopping some prescription medicines. For example, someone may need to stop taking a medicine that may no longer be providing benefit or has side effects (like falling) as they get older, or reducing the dose of a medication so that the person doesn't have to take as many tablets each day. We still don't really know how to make it work in real-life settings, like care homes. In this project, we aim to study how reducing or stopping some medicines can be best done in care homes, considering different views and settings.

We are not wanting to change your medicines, we are just wanting to chat with you to understand what happens at the moment, in terms of how your medicines may or may not be stopped or reduced. And discuss your thoughts on this happening, and how we could one day, make sure it's done well.

Again, I want to remind you that your responses will be kept confidential and you do not have to answer any question if you do not wish to. You can also stop the interview at any time.

Before we start, I want to check that you are happy to be interviewed and for the interview to be recorded.

Interview

1. *To start, I want to know what your opinions are about reducing or stopping some medicines. What do you think about the idea of reducing or stopping some medicines?* ***Knowledge & beliefs***

   Probes. Why do you think that? Do you have any concerns? Are there any benefits?

2. *Do you think there are the* advantages of reducing or stopping some medicines*?* ***Knowledge & beliefs & Relative advantage***

   Probe. Why or Why not? Do you think are the disadvantages? Why or Why not?

3. *What do you think about trying to stop or reduce a medicine (or medicines) for a short period of time?* ***Trialability***

   Probes. What would that be like? Who would lead it? Would it be helpful? Harmful? Why or why not?

4. *What things will need to happen when planning to reduce or stop some medicines?* ***Planning***

   Probes. Why? Is that your experience? What steps should be included? Anything else? What is your role in the planning?

[CHECK IF THEY ARE HAPPY TO CONTINUE OR WOULD LIKE TO TAKE A BREAK]

5. *Do you think different approaches to reducing or stopping some medicines would be needed for different people?* ***Adaptability***

   Probes. Why or why not? What kinds of changes do you think would need to be made? Do you think these changes are possible? Why or Why not?

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6. *What do you think the role of the care home and its staff should be in reducing and stopping some medicines?* ***Engaging***

   Probes. How would that like look? To what extent?

7. *What do you think the role of the GPs should be in reducing and stopping some medicines?* ***Engaging***

   Probes. How would that like look? To what extent?

8. *What do you think the role of the pharmacist should be in reducing and stopping some medicines?* ***Engaging***

   Probes. How would that like look? To what extent?

9. *Is there anyone else that needs to be involved in how to reduce or stop some medicines?* ***Engaging***

   Probes. Why? How would that like look? To what extent? What about family and friends?

[CHECK IF THEY ARE HAPPY TO CONTINUE OR WOULD LIKE TO TAKE A BREAK]

10. *What do you think should be the impact or end result of reducing or stopping some medicines for people living in care homes?* ***Reflecting & Evaluating***

    Probes. Why? Is that your experience? Anything else? What about quality of life? Side effects?

11. *Should anything else happen after someone's medicines have been reduced or stopped?* ***Reflecting & Evaluating***

    Probes. What information should be collected? How often? Feedback given?

12. *Did you know when there have been changes to your medicines?* ***Communication & Network***

    Probes. How did you know? What gets in the way of knowing?

13. *Did you understand why there were changes to your medicines?* ***Knowledge & beliefs***

    Probes. Why? What would aid your understanding? What stops you from understanding? How could this be communicated better?

[CHECK IF THEY ARE HAPPY TO CONTINUE OR WOULD LIKE TO TAKE A BREAK]

14. *Now, I would like to know about your own experiences with reducing or stopping some medicines. Please tell me about any experiences that you may have with stopping or reducing some of your medicines while you [they] have been living in the care home.* ***Executing & Personal Attributes***

    Probes. How did it go? What happened? When has it been done well? When has it not gone so well? What would help it work better in the future? Why was that the case? Was anything done by the care home staff that helped this experience? Or impeded it? What problems or issues did you experience, if any?

[IF CANNOT REMEMBER AN EXPERIENCE -> SKIP TO QUESTION 16]

[CHECK IF THEY ARE HAPPY TO CONTINUE OR WOULD LIKE TO TAKE A BREAK]

15. *Thinking back to your experience of medicines being stopped or reduced. How did your needs and preferences get included in decisions to change your medicines?* ***Patient needs & resources***

STOPPING

Probes. Why were they included or not included? How 'in touch' were the people involved? Were they prioritised over other things? Has anything been altered or changed to meet your needs? What would you like your input to be?

16. *Do you think you can question the amount of medicines that you are taking?* ***Self-efficacy***

    Probes. How confident are you to do this? Would you do it? How would you talk to about this? Have you? Why or Why not?

17. How would you feel about stopping or reducing some of your medicines? ***Patient needs & resources***

    Probes. Would you do it? Is there anything that would prevent you doing it? Why?

Closure

Is there any other information regarding your opinions or experiences that you think would be useful for me to know?

Again, I want to let you know that your medicines are not being changed based on what we have talked about. If you wish to change your medications as a result of this discussion, we will let the care home staff know so you can discuss this with your general practitioner and any other relevant people. Please do not change your medicines until you have talked with the appropriate healthcare professional.

Thank you very much for meeting with me. Your time is very much appreciated and your comments have been very helpful.

To finish, I am going to ask a few questions to get some basic information about you.

STOPPING

Understanding stakeholders' perspectives on implementing deprescribing in care homes (STOPPING)

INTERVIEW TOPIC GUIDE WITH FAMILY OR FRIEND

Introduction

Good morning/afternoon. My name is Krystal Warmoth. I am going to ask you some questions about reducing or stopping some prescription medicines. For example, someone may need to stop taking a medicine that may no longer be providing benefit or has side effects (like falling) as they get older, or reducing the dose of a medication so that the person doesn't have to take as many tablets each day. We still don't really know how to make it work in real-life settings, like care homes. In this project, we aim to study how reducing or stopping some medicines can be best done in care homes, considering different views and settings.

We are not wanting to change [INSERT RESIDENT'S NAME]'s medicines, we are just wanting to chat with you to understand what happens at the moment, in terms of how the [INSERT RESIDENT'S NAME]'s medicines may or may not be stopped or reduced. And discuss your thoughts on this happening, and how we could one day, make sure it's done well.

Again, I want to remind you that your responses will be kept confidential and you do not have to answer any question if you do not wish to. You can also stop the interview at any time.

Before we start, I want to check that you are happy to be interviewed and for the interview to be recorded.

Interview

18. *To start, I want to know what your opinions are about reducing or stopping some medicines. What do you think about the idea of reducing or stopping some medicines?* ***Knowledge & beliefs***

    Probes. Why do you think that? Do you have any concerns? Are there any benefits?

19. *Do you think there are the* advantages of reducing or stopping some medicines*?* ***Knowledge & beliefs & Relative advantage***

    Probe. Why or Why not? Do you think are the disadvantages? Why or Why not?

20. *What do you think about trying to stop or reduce a medicine (or medicines) for a short period of time?* ***Trialability***

    Probes. What would that be like? Who would lead it? Would it be helpful? Harmful? Why or why not?

21. *What things will need to happen when planning to reduce or stop some medicines?* ***Planning***

    Probes. Why? Is that your experience? What steps should be included? Anything else? What is your role in the planning?

[CHECK IF THEY ARE HAPPY TO CONTINUE OR WOULD LIKE TO TAKE A BREAK]

22. *Do you think different approaches to reducing or stopping some medicines would be needed for different people living in a care home?* ***Adaptability***

    Probes. Why or why not? What kinds of changes do you think would need to be made? Do you think these changes are possible? Why or Why not?

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23. *What do you think the role of the care home and its staff should be in reducing and stopping some medicines?* ***Engaging***

    Probes. How would that like look? To what extent?

24. *What do you think the role of the GPs should be in reducing and stopping some medicines?* ***Engaging***

    Probes. How would that like look? To what extent?

25. *What do you think the role of the pharmacist should be in reducing and stopping some medicines?* ***Engaging***

    Probes. How would that like look? To what extent?

26. *Is there anyone else that needs to be involved in how to reduce or stop some medicines?* ***Engaging***

    Probes. Why? How would that like look? To what extent? What about family and friends?

[CHECK IF THEY ARE HAPPY TO CONTINUE OR WOULD LIKE TO TAKE A BREAK]

27. *What do you think should be the impact or end result of reducing or stopping some medicines for people living in care homes?* ***Reflecting & Evaluating***

    Probes. Why? Is that your experience? Anything else? What about quality of life? Side effects?

28. *Should anything else happen after someone's medicines have been reduced or stopped?* ***Reflecting & Evaluating***

    Probes. What information should be collected? How often? Feedback given?

29. *Did you know when there have been changes to [INSERT RESIDENT'S NAME]'s medicines?* ***Communication & Network***

    Probes. How did you know? What gets in the way of knowing?

30. *Did you understand why there were changes to [INSERT RESIDENT'S NAME]'s medicines?* ***Knowledge & beliefs***

    Probes. Why? What would aid your understanding? What stops you from understanding? How could this be communicated better?

[CHECK IF THEY ARE HAPPY TO CONTINUE OR WOULD LIKE TO TAKE A BREAK]

31. *Now, I would like to know about your own experiences with reducing or stopping some medicines. Please tell me about any experiences that you may have with stopping or reducing some of [INSERT RESIDENT'S NAME]'s medicines while they have been living in the care home.* ***Executing & Personal Attributes***

    Probes. How did it go? What happened? When has it been done well? When has it not gone so well? What would help it work better in the future? Why was that the case? Was anything done by the care home staff that helped this experience? Or impeded it? What problems or issues did you experience, if any?

[IF CANNOT REMEMBER AN EXPERIENCE -> SKIP TO QUESTION 16]

[CHECK IF THEY ARE HAPPY TO CONTINUE OR WOULD LIKE TO TAKE A BREAK]

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32. *Thinking back to your experience of medicines being stopped or reduced. How did your needs and preferences get included in decisions to change [INSERT RESIDENT'S NAME]'s medicines?* ***Patient needs & resources***

    Probes. Why were they included or not included? How 'in touch' were the people involved? Were they prioritised over other things? Has anything been altered or changed to meet your [resident's] needs? What would you like your input to be?

33. *Do you think you can question the amount of medicines that [INSERT RESIDENT'S NAME] are taking?* ***Self-efficacy***

    Probes. How confident are you to do this? Would you do it? How would you talk to about this? Have you? Why or Why not?

34. How would you feel about stopping or reducing some of *[INSERT RESIDENT'S NAME]'s* medicines? ***Patient needs & resources***

    Probes. Would you do it? Is there anything that would prevent you doing it? Why?

Closure

Is there any other information regarding your opinions or experiences that you think would be useful for me to know?

Again, I want to let you know that your [resident's] medicines are not being changed based on what we have talked about. If you wish to change your [resident's] medications as a result of this discussion, we will let the care home staff know so you can discuss this with your general practitioner and any other relevant people. Please do not change your [resident's] medicines until you have talked with the appropriate healthcare professional.

Thank you very much for meeting with me. Your time is very much appreciated and your comments have been very helpful.

To finish, I am going to ask a few questions to get some basic information about you.

STOPPING CODEBOOK

Characteristics of deprescribing	
Evidence Strength & Quality	Definition: Stakeholders' perceptions of the quality and validity of evidence supporting the belief that deprescribing will have positive outcomes for residents or will do no harm (adverse outcomes). Inclusion Criteria: Include statements regarding awareness of evidence that deprescribing will work including the strength and quality of evidence (e.g. NICE guidelines, news articles), as well as the absence of evidence or a desire for different types of evidence. Exclusion Criteria: Exclude or double code statements regarding the receipt of evidence as an engagement strategy to *Process, Key Stakeholders*. For example, statements regarding what evidence is needed for engagement.
Relative Advantage	Definition: Stakeholders' perception of the outcome deprescribing (i.e. better, worse, no change) versus an alternative solution (i.e. continuing medications). Split into **organisation level** (care home staff) and **individual level** (residents and families) including statements on the advantages and disadvantages of deprescribing. Inclusion Criteria: Include statements that demonstrate the deprescribing is better (or worse/the same) than not changing medication. Exclusion Criteria: Exclude statements that demonstrate a strong need for deprescribing and/or that the current situation is untenable and code to *Tension for Change*.
Adaptability	Definition: The degree to which deprescribing can be adapted, tailored, refined, or reinvented to meet needs at **organisation/provider** (care home) and **individual** (resident) level. Inclusion Criteria: At **organisation level,** include statements regarding the (in)ability to adapt deprescribing to care home context e.g., perceptions on whether a different approach is needed. **Individual level** determinants may include statements on flexible, holistic and person-centered approaches.
Trialability	Definition: The ability to test deprescribing on a small scale in the care home, and to be able to reverse course (undo implementation) if warranted (i.e. restart medications). Inclusion Criteria: At **organisation level**, include statements related to whether the care home piloted deprescribing for a short period of time (in the past or has plans to in the future) and comments about whether they believe it is (im)possible to stop medications for a short period of time. At **individual level**, include statements about resident's views on stopping medications for a short time.

Complexity	Definition: Perceived difficulty of the deprescribing. On an **organisation/provider** level, this is reflected by duration, scope, radicalness, disruptiveness, centrality, and intricacy and number of steps required to implement. On an **individual** level this is reflected by individual complexities such as severity of health condition or cognitive abilities. Inclusion Criteria: Code statements regarding the complexity of the deprescribing process. Exclusion Criteria: Exclude statements regarding the complexity of implementation and code to the appropriate CFIR code, e.g., difficulties related to space are coded to *Inner setting, Available Resources* and difficulties related to engaging participants in deprescribing are coded to *Process, Innovation Participants*.
Design Quality & Packaging	Definition: Perceived excellence in how the deprescribing tool, guidance or approach is bundled, presented, and assembled. Inclusion Criteria: Include statements regarding the quality of the materials and packaging. Exclusion Criteria: Exclude statements regarding the presence or absence of materials and code to *Available Resources*. Exclude statements regarding the receipt of materials as an engagement strategy and code to *Engaging*
Cost	Definition: Costs of deprescribing and costs associated with implementing deprescribing including investment, supply, and opportunity costs. Inclusion Criteria: Include statements related to the cost of deprescribing and its implementation. Code statements related to medication use including waste (implied cost). Exclusion Criteria: Exclude statements related to physical space and time, and code to *Available Resources*. In a research study, exclude statements related to costs of conducting the research components (e.g., funding for research staff, participant incentives).
Outer Setting	
Cosmopolitanism	Definition: The degree to which the care home is networked with other external organisation i.e. primary care networks (**community/systems** level) and family carers. Inclusion Criteria: At a **community/systems level**, include descriptions of outside group memberships and networking done outside the care home. For example, communication between the care homes with GPs and pharmacists. At an **individual level**, include statements about communication between family carer, GP and care home, also double-code to innovation participants.

	Exclusion Criteria: Exclude statements relating to information sharing or networking internally code to *Inner setting, Networks & Communication.* Exclude statements relating to stakeholder role in deprescribing and code in *Process, external change agents/key stakeholders*.
External Policy & Incentives	Definition: A broad construct that includes external strategies to spread innovations including policy and regulations (governmental or other central entity), external mandates, recommendations and guidelines, pay-for-performance, collaboratives, and public or benchmark reporting. Inclusion Criteria: Include descriptions of external performance measures from the system. For example, requirements for annual medication reviews (Quality Outcome frameworks).
Inner Setting	
Resident Needs & Resources	Definition: The extent to which the needs of care home residents, as well as barriers and facilitators to meet those needs, are accurately known and prioritized by the care home (**organisation/provider** level). Inclusion Criteria: Include statements demonstrating (lack of) awareness of the needs and resources of care home residents. Analysts may be able to infer the level of awareness based on statements about: 1. Perceived need for deprescribing based on care home residents and if deprescribing will meet those needs; 2. Barriers and facilitators of care home residents to participating in deprescribing. Exclusion Criteria: Exclude statements that demonstrate a strong need for the innovation and/or that the current situation is untenable and code to *Inner setting*, *Tension for Change*. Double code statements relating to resident and family perception of need for deprescribing (**individual** level) to *Process, Innovation participants.*
Networks & Communications	Definition: The nature and quality of webs of social networks, and the nature and quality of formal and informal communications within the care home (**organisation/provider** level). Inclusion Criteria: Include statements about general networking, communication, and relationships in the care home, such as descriptions of meetings, email groups, or other methods of keeping people connected and informed, and statements related to working relationships. Includes how care home staff know when and why medication has been changed (or not). Exclusion Criteria: Exclude statements related to knowledge and information regarding deprescribing and code to *Access to*

	Knowledge & Information. Exclude statements related to stakeholder's (care home staff) role in implementation and code to *Process, Key Stakeholders.* Exclude descriptions of external group memberships and networking done outside the organisation and code to *Outer setting, Cosmopolitanism.*
Tension for Change	Definition: The degree to which stakeholders perceive the current situation as intolerable or needing change. Inclusion Criteria: Include statements that (do not) demonstrate a strong need for deprescribing and/or that the current situation is untenable. For example, statements acknowledging residents are on 'too many' medication and suggest 'need' to change/deprescribe. Exclusion Criteria: Exclude statements regarding specific needs of individuals that demonstrate a need for deprescribing, but do not necessarily represent a strong need or an untenable status quo, and code to *Inner setting, Resident Needs and Resources.*
Available Resources	Definition: The level of resources the care home (**organisation/provider** level) dedicated for making changes to the way things are done and on-going operations including physical space and time. Inclusion Criteria: Include statements related to the presence or absence of sufficient resources specific to deprescribing that is being implemented. Exclusion criteria: At a **community/system** level, resource changes/challenges as a result of COVID-19 double-coded as *Outer Setting, External Policy*. For example, reduced in-person medication reviews (impacting **organisation/provider** and **individual** levels).
Access to Knowledge & Information	Definition: Ease of access to digestible information and knowledge about deprescribing and how to incorporate it into the way staff provide care for residents. Inclusion Criteria: Include statements related to care home staff access to knowledge and information regarding deprescribing (**organisation/provider**).
Compatibility	Definition: The degree of tangible fit between meaning and values attached to deprescribing by involved individuals, how those align with individuals' own norms, values, and perceived risks and needs, and how the deprescribing (including tools, guidance and approaches) fits with existing workflows and systems. Inclusion Criteria: Include statements that demonstrate the level of compatibility deprescribing has with organizational values and work processes. Include statements that the innovation did or did not need to be adapted. Exclusion Criteria

	Exclude or double code statements regarding the priority of deprescribing on compatibility with organizational values to *Relative Priority* e.g., if an deprescribing is not prioritized because it is not compatible with organizational values.
Individual characteristics (staff and resident determinants)	
Knowledge & Beliefs	Definition: Individuals' attitudes toward and value placed on the deprescribing, as well as familiarity with facts, truths, and principles related to deprescribing. Inclusion Criteria: Include statements from care home staff (**organisation/provider**), residents and families (**individual**) about their attitudes and opinions about deprescribing. For example, statements about generational differences in accepting opinion of doctor regarding medication. Exclusion Criteria: code statements related to stopping medication for a short time to *Intervention Characteristics, Trialability*. Double code knowledge of prescriptions (rationale, benefits) to *Inner setting>Resident needs and resources*.
Self-efficacy	Definition: Individual belief in their own knowledge, capabilities, and ability to action deprescribing. Inclusion Criteria: Includes statements related to ability to question amount of medication on both an **organisation/provider** (care home staff) and **individual** (residents and families) level. Not only cognitive aspects (i.e. beliefs in own ability to question prescriptions) but also practical aspects (i.e. staff role restrictions). Exclusion criteria: Double code information about staff role restrictions to *Process>Key Stakeholders* or *Outer Setting>External Policy*
Process	
Planning	Definition: The degree to which a scheme or method of behavior and tasks for implementing deprescribing are developed in advance, and the quality of those schemes or methods. Inclusion Criteria: Include evidence of pre-implementation diagnostic assessments and planning (i.e. what should be done before deprescribing). For example, medication review, physical health checks. Include the perspectives of care home staff (**organisation/provider**) and residents (**individual**).
External Change Agents	Definition: Individuals who are affiliated with *outside* care home stakeholders who formally influence or facilitate deprescribing. These include GPs and pharmacists (**community/system** level). Inclusion Criteria: Include statements related to how the external change agent (e.g. primary care networks) became engaged with

	deprescribing and what their *role* is in implementation. For example, their capabilities, motivation, and skills. Exclusion Criteria: Note: It is important to clearly define what roles are external and internal to the organisation. If staff member *internal* to the organisation, it should be coded elsewhere (*Key stakeholders*) even though their support may overlap with what would be expected from an External Change Agent. Although family members are external to the organisation, information about role should be coded to Innovation Participants due to their position in advocating for the health of the resident/their relative.
Key Stakeholders	Definition: Care home staff role from *within* the care home (**organisation/provider** level) that are directly impacted by deprescribing. Inclusion Criteria: Include statements related to how care home staff became engaged with deprescribing and what their role is in implementation. For example, staff perception of their role in challenging resident prescriptions, requesting reviews, initiating deprescribing discussions, reporting drug errors (professional fear of malpractice). Exclusion Criteria: Exclude statements about general networking, communication, and relationships in the organisation, such as descriptions of meetings, email groups, or other methods of keeping people connected and informed, and statements related to team formation, quality, and functioning, and code to *Inner setting, Networks & Communications.* If statements relate to belief in capabilities rather than practical roles then code to *Individual Characteristics, Self-efficacy.*
Innovation Participants	Definition: Care home resident role in deprescribing (**individual** level). Links with family carers. Inclusion Criteria: Include statements that capture whether or not resident needs and preferences are included in decisions around deprescribing, how residents are engaged/involved with deprescribing, and difficulties related to engaging residents in deprescribing. Exclusion Criteria: Exclude statements demonstrating (lack of) awareness of the needs and resources of those served by the organisation and code to *Inner setting, Resident Needs & Resources> Organisation level.*
Reflecting & Evaluating	Definition: Quantitative and qualitative feedback about the progress and quality of deprescribing. Includes statements about what should happen after or be the outcome of deprescribing.

	Inclusion Criteria: Include statements that refer to the care homes (lack of) assessment of the impact and outcomes related to deprescribing. For example, how deprescribing can be done better. When participants discuss the need for monitoring following deprescribing. Exclusion Criteria: Exclude statements that capture reflecting and evaluating that participants may do during the interview, for example, related to the success of the implementation, and code to *Individual Characteristics, Knowledge & Beliefs (about deprescribing)*.